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**BAILING AND JAILING THE FAST AND FRUGAL WAY:
AN APPLICATION OF SOCIAL JUDGEMENT THEORY AND SIMPLE
HEURISTICS TO ENGLISH MAGISTRATES' REMAND DECISIONS**

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Thesis submitted for Ph.D.
City University
Department of Psychology
January 2001

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Acknowledgements

Research presented in this thesis has appeared in different forms at various conferences and seminars, which are listed in Appendix H. As a result, I have received the following awards:

De Finetti PhD Student Prize, 1999, awarded by the European Association for Decision Making for research presented in Chapter 3.

The Student Poster Prize, 1998, awarded by the Society for Judgement and Decision Making for research presented in Chapter 4.

The Hammond-Brunswik Investigator of the Year, 1998, awarded jointly with Clare Harries, for a paper discussing the Matching Heuristic. This paper is detailed in Chapter 6.

The present research was funded by the Department of Psychology, City University, London, UK. I would like to thank the Department for awarding me a Postgraduate Scholarship, 1996-2000, to fund my doctoral degree. I would also like to thank to the British Psychological Society, Cognitive Psychology Section, for awarding me a Postgraduate Bursary in order for me to present a poster at their 1997 meeting.

There are many people who, over the years, have given me practical advice and help on specific aspects of the present research. In particular, I would like to thank Clare Harries, Alastair McClelland and Laura Martignon. I owe a special debt of gratitude to Torsten Mohrbach who programmed the Matching Heuristic, Franklin's rule, and Dawes' rule, and to Michelle Gates who helped me collect the observational data presented in Chapter 4.

On a personal note, I would like to thank my family, and my friends, Clare Miles and David Mandel, who have provided continuing encouragement and support.

The research presented in this thesis was conducted under the supervision of Peter Ayton. I have appreciated his guidance.

Finally, this research would not have been possible without the assistance of the magistrates and their managers, who kindly volunteered their time and effort to participate in the studies and help in the design of the research.

Declaration

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Abstract

In the English criminal justice system, magistrates may bail a defendant unconditionally, with conditions, or remand a defendant in custody, whenever a case is adjourned. In three studies, magistrates' remand decision making was investigated using the technique of judgement analysis and the simple heuristics approach, within the framework of social judgement theory. The decisions made by individual magistrates on hypothetical cases, and by benches on real cases were examined. It was found that there were few inter-correlations among the cues presented in court, and often some information was lacking. In such cases, some magistrates bailed unconditionally. Decisions were generally made rapidly. Magistrates' decisions could be better described and predicted by the non-compensatory fast and frugal, Matching Heuristic, than by either of two linear compensatory integration models. According to the Matching Heuristic, magistrates searched through a small amount of the available information, and based their decisions on one cue. While some used legal cues as contained in the law on bail, others used defendant and crime control related cues. However, magistrates did not report the "extra-legal" cues as being influential. When granting conditional bail, magistrates typically imposed a condition of residence. Most magistrates demonstrated some degree of inconsistency in their decisions, and all showed disagreement from the modal response on some cases. Bail information schemes did not affect magistrates' decisions, although they did increase their post-decisional confidence. In fact, all magistrates were highly confident in their decisions. Although there were some differences in the performance of magistrates located in metropolitan and provincial courts, there were few differences between lay and stipendiary magistrates, and more and less experienced magistrates. In sum, magistrates' behaviour did not conform to the principles of due process, and so intervention is required. Finally, it is recommended that social judgement theorists consider using simple heuristics in future research.

Overview of Thesis

This thesis is organised into six chapters. The first chapter provides a review of the judgement domain to be investigated, namely English magistrates' remand decision making. The second chapter presents a review of social judgement theory, the technique of judgement analysis, and the simple heuristics approach, which will be used to investigate magistrates' decisions. At the end of each of these chapters is a list of research questions that have emerged from the preceding reviews and that will be addressed in the research presented in this thesis. The three empirical studies are presented in chapters three to five. Finally, a general discussion of the limitations, generality, and the implications of the findings of the present research is provided in chapter six.

1. THE ENGLISH MAGISTRACY AND REMAND DECISIONS

In the United Kingdom there are three separate criminal justice systems in England and Wales, Scotland, and Northern Ireland. Although legislation passed by parliament may be applicable to all three systems, each is characterised by its own distinct procedures and professional agencies. The research presented in this thesis was conducted in England and Wales (hereafter referred to as the English system).

This chapter is organised into seven sections. In the first section, I describe the characteristics of the English system. In particular, I emphasise the significance of the magistracy. Working in magistrates' courts, magistrates make decisions on the vast majority of criminal cases. I discuss the appointment, training and the demographic make-up of magistrates, and refer to literature that evaluates their skills as decision makers. I also provide a brief summary of the historical development of the magistracy. In the second section, I introduce the remand decision that is made by magistrates. This is one of the most frequent decisions made in the English system. I evaluate the impact of this decision upon the lives of the defendants and their families, the English prison system and the general public. In the third section, I summarise the legislation that governs the remand decision making process in the English system. I also provide a brief analysis of the events that led to the development of this legislation. In the fourth section, I review the conditions under which magistrates must apply the legislation when making their remand decisions. The conditions include the way in which information is presented in the courtroom, its availability and usefulness, the implicit time pressure involved when making decisions, and the nature of the feedback provided to magistrates regarding the quality of their decisions. In the fifth section, I describe the crime control and due process models that are often used by criminologists as theoretical frameworks to evaluate legal decisions. The relative contribution of these two models to the remand decision making process in the English system is also assessed. In the penultimate section, which makes up half of the present chapter, I review past research on magistrates' remand decision making. This research bears upon a number of issues, namely the information that magistrates use to make their remand decisions, the conditions which they attach if they decide to release a defendant on conditional bail, the extent of disagreement among courts in remand decisions made on similar cases, and the effectiveness of the bail information scheme policy initiative. I detail the method and findings of the past studies, and critically evaluate them. In the last section, I summarise the key points of the chapter. I then draw conclusions as to the

main research questions that have emerged, and that will be empirically examined in this thesis.

1.1. Magistrates in the English Criminal Justice System

1.1.1. History of the magistracy. When discussing the magistracy, Darbyshire (1997a) concluded that “like everything else in the English legal (non-) system, there is not a shred of principle or thinking behind our weird hierarchy of decision-makers. We have just arrived at it through history and expediency” (p. 641). The role of justices of the peace (or the magistracy) can be traced back to 1195 when King Richard I declared that “four knights in every hundred were to take an oath from all men over fifteen years of age to aid in keeping the peace” (Skyrme, 1979, p. 1). Later, the Justice of the Peace Act 1361 stipulated that a handful of noblemen in each county representing the crown would be responsible for detecting, arresting and punishing people who broke the law or rioted, and enabled these representatives to take surety of good behaviour. Justices of the peace also had considerable administrative duties such as controlling labour laws, and were responsible for local government throughout England and Wales.

Nowadays, these “lay” magistrates are seen as a cheap way of administering justice. The fact that they work in small groups suggests that a few heads are better than one, and that they can regulate one another’s behaviour. It is also assumed that their ties with the local community will make the public amenable to the punishments meted out by their peers. Finally, it is hoped that their part-time work pattern will enable them to approach cases afresh.

Although lay magistrates were considered to be effective in performing their duties, it became clear in the early 18th century that there was widespread corruption among those working in metropolitan areas, London in particular. Therefore, a small number of “stipendiary” magistrates, who were legally qualified, were appointed to work as paid professionals in these areas (Skyrme, 1979).

During the 1800s magistrates’ administrative duties were reduced. Their police duties were replaced by the introduction of the police force and their local government powers were transferred to locally democratically elected government bodies. Magistrates’ judicial functions (both criminal and civil) however, were extended.

Although since 1362 magistrates met four times a year at what were called Quarter Sessions, for a long time they had also sat without a jury in ones and twos, outside Quarter Sessions. This was due to the practical necessity of coping with increasing caseloads and the difficulty of gathering magistrates at Quarter sessions.

During the 16th century these extra meetings were formalised and called Petty Sessions. The powers of summary jurisdiction were conferred upon these meetings and eventually, the Petty Sessions Act 1849 called them courts.

1.1.2. The magistrates' court. Currently, there are approximately 600 magistrates' courts. As illustrated in Figure 1.1, these courts lie at the heart of the English system.¹ These courts, varying in the number of magistrates and the frequency of sittings, serve the justice needs of the local community. Defendants aged 18 years or over are dealt with in the adult magistrates' court and defendants aged under 18 years are dealt with by magistrates in the youth courts. All criminal cases appear in the magistrates' court at some point during their proceedings. Magistrates can, amongst other things, try and pass sentences to summary offences, which are mostly minor (e.g., shop lifting).² They will however, refer very serious (indictable) offences such as murder to the crown court for trial and sentence by judge and jury. Other offences that are triable either-way such as aggravated bodily harm may be tried in either court, at the request of the defendant or the magistrates. At present the magistracy deals with approximately 98% of all criminal cases from start to finish (Lord Chancellor's Department, 1999c), and in 1998 this represented nearly two million completed proceedings (Home Office, 1999a, 1999b).

Proceedings are conducted in open court and can be observed from the public gallery. A defendant is located in the witness box. The defendant appears before the court either after being summonsed or after being charged by the police, on allegations of an offence having been committed. The defence solicitor sits in the defence benches. The duty solicitor scheme means that defendants, who have not already obtained a solicitor, can choose to be represented by a solicitor on duty at the court. A prosecutor, who usually represents the crown prosecution service (CPS), sits on the prosecution bench. Prior to the introduction of this service in 1985, the police was largely responsible for prosecuting crime. It is typical for the same prosecutor to deal with most of the cases appearing in a particular courtroom on one day. Facing the public gallery, the defendant, defence and prosecution solicitors, are a court clerk (also known as clerk to the justices) and a bench of magistrates. The clerk sits in front of the bench and manages the administration of each sitting, and advises the bench as to matters of law

¹ The Justices of the Peace Act 1979 lays out rules regarding the organisation of the courts, and the Magistrates' Court Act 1980 contains rules regarding their jurisdiction (i.e., offences committed in the local area) and powers. The Lord Chancellor's Department took over full management of the magistracy in 1992, which before this date it shared with the Home Office.

² Appeals against decisions made in the magistrates' courts are dealt with by the crown court or high court.

and procedure. However, the magistrates preside over the proceedings and they are solely responsible for making the decisions.

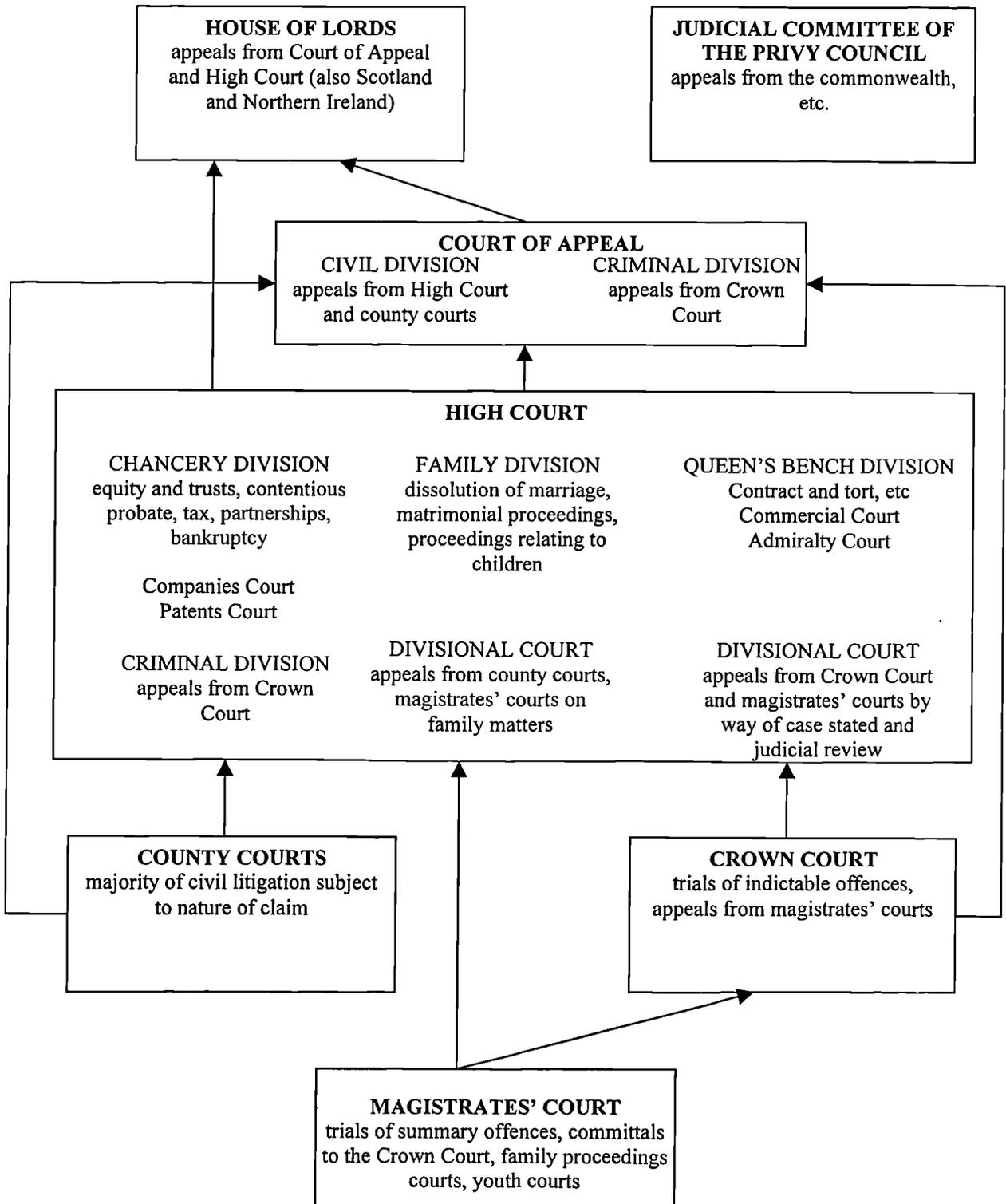


Figure 1.1. The court structure in England and Wales (adapted from Lord Chancellor's Department, 1999c)

1.1.3. Lay and stipendiary magistrates. At the 1st of January 1999, there were 30,260 lay magistrates, 93 full-time stipendiary magistrates and 104 acting stipendiaries (Lord Chancellor's Department, 1999c). In line with their history, lay magistrates are members of the local community who perform judicial duties on a part-time, unpaid basis.³ They sit in court for a minimum of 26 half days a year (e.g., a morning or afternoon every one or two weeks). They are not required to have any formal legal qualifications, although they are expected to possess "six key qualities", namely, good character, understanding and communication, social awareness, maturity and sound temperament, sound judgement, and commitment and reliability (Lord Chancellor's Department, 1999a, p. 1). They usually hear cases and make decisions as a bench of two or three (including a chairperson who is elected by secret ballot each year). The chairperson presides over the proceedings and speaks for the bench, but has no greater power than his or her colleagues.

Unlike their lay counterparts, stipendiary magistrates perform judicial duties on a full-time, paid basis. They sit in courts as designated by the Lord Chancellor and nearly half of them sit in courts located in the London area (Lord Chancellor's Department, 1999b). Stipendiaries are required to have a formal legal qualification and have typically practised law for a number of years (Lord Chancellor's Department, 1999a). In addition, they should have the following skills and abilities: intellectual and analytical ability, sound judgement, decisiveness, communication skills and authority, and the following personal qualities: integrity, fairness, understanding of people and society, maturity and sound temperament, courtesy and humanity, and commitment (Lord Chancellor's Department, 1999d). Stipendiary magistrates usually hear cases and make decisions alone, and may also be expected to hear prolonged cases and those that hinge on complicated legislation (Lord Chancellor's Department, 1999a, 1999b).

Lay magistrates receive some training before sitting on the bench and they continue to be trained throughout their service.⁴ In the first year of appointment, they undergo induction and basic training courses that cover issues such as rules of court procedure, current legislation, sentencing powers and options, decision making and communication skills (see e.g., Miles & Thomson, 1992; Middlesex Commission Area, 1996). Training also includes visits to prisons and other courts. Additional training is undertaken at regular periods thereafter. Specialist training is also provided, for

³ They are however, reimbursed for travel expenses, subsistence and financial loss incurred due to performance of their duties (Lord Chancellor's Department, 1999b).

⁴ Training is largely organised by the Judicial Studies Board and is administered by the clerk to the justices.

example, to those who chair the bench. Winfield (1984) however, comments that magistrates do not receive any training on some important points such as punishment and treatment until after they begin working.

Stipendiary magistrates will undergo two years experience as acting stipendiaries. During this training period they assist in the work of the magistrates' court, thereby receiving work experience directly related to the tasks that will be undertaken by a full-time stipendiary (Lord Chancellor's Department, 1999a, 1999b).

Lay magistrates are appointed by the Lord Chancellor (or the Chancellor of the Duchy of Lancaster in Manchester, Liverpool and Lancashire). Approximately 100 advisory committees appointed by the Chancellor recommend prospective magistrates, who may be either self nominated or nominated by others.⁵ Stipendiary magistrates are appointed by the Queen, on the recommendation of the Lord Chancellor (Lord Chancellor's Department, 1999b, 1999c). They are usually selected from the ranks of practising barristers and solicitors. Approximately 1,500 lay magistrates and a handful of stipendiary magistrates are appointed each year (Lord Chancellor's Department, 1999c).

The magistracy has often been criticised for being unrepresentative of the local community it serves and the defendants who appear before them, in terms of race, age, social class and political persuasion (e.g., Baldwin, 1976; Darbyshire, 1997b; Gifford, 1984; King & May, 1985). Statistics on the demographic make-up of the lay magistracy are closely guarded, however, some reports state that 98% are white, 78% are over 40 years old, most are from the middle social classes, and 41% vote conservative (see e.g., Darbyshire, 1997b). A noteworthy exception is that a balance in terms of sex has been achieved because 49% are female (Lord Chancellor's Department, 1999c). This does not hold for stipendiary magistrates as currently, only 17% are female. In addition, 4% of stipendiary magistrates are from an ethnic minority group. Thirty-seven percent of stipendiaries were barristers, and the remainder were solicitors (Judicial Group, personal communication, 2000). Such unrepresentativeness has fuelled concerns about biases and prejudicial attitudes influencing magistrates' decisions (e.g., Brown, 1991). The British Crime Survey interviewed a representative sample of 7,462 people (from different

⁵ Posts are also advertised. The youngest age at which people can be recruited is 27 years, although appointments are usually made to those aged between 40 and 55 years (Lord Chancellor's Department, 1999a). People working in (or who have worked in the past, or who are closely related to someone who is or has worked) the police force, other criminal justice agencies, the armed forces, or as a member of Parliament, are all ineligible. The applicant is normally interviewed twice. The names of members (except the secretary) of the committees are kept secret although recently there have been moves to include members of the local community. The secrecy surrounding selection procedures has often been criticised (e.g., Darbyshire, 1997a; King & May, 1985).

households) aged over 16 in 1998 and found that 61% thought magistrates were “out of touch” with what “ordinary” people think, and 17% believed that magistrates were doing a “poor” job (Mattinson & Mirrlees-Black, 2000a, 2000b).⁶

It has been shown that stipendiary magistrates work faster than lay magistrates, presumably because they do not need to consult with others (e.g., Ernst & Young, 1999; Seago, Walker, & Wall, 1995). Although the evidence is largely lacking, it is believed that lay and stipendiary magistrates also differ in performance (e.g., Sanders, 2000; Winfield, 1974).⁷ The little evidence that exists shows that lay magistrates are more lenient in their sentencing than stipendiary magistrates (e.g., Diamond, 1990; Hedderman & Moxon, 1992). Studies of remand decision making show that stipendiary magistrates are more “probing” (Burrows, 1994), that they are more likely to disagree with the prosecution request, and that they are more likely to remand defendants in custody (Hucklesby, 1997b). These findings may however, be partly due to the fact that stipendiary magistrates deal with more serious and complicated cases. Some studies have failed to find a significant difference in the remand decisions made by the two types of magistrate (Doherty & East, 1985; King, 1971). The fact that lay magistrates work on a sporadic basis while stipendiary magistrates work on a full-time basis makes it reasonable to assume that there may be differences in the consistency of their decisions. No research has tested this hypothesis, however. Whatever the similarities and differences are in the performance of lay and stipendiary magistrates, it is clear that they play a crucial role in the English system.

1.2. Remand Decisions in the English Criminal Justice System

The remand decision (also known as the bail decision) is one of the most frequent decisions made by magistrates.

1.2.1. The remand decision. After the police arrest and charge a suspect, they must decide what to do with him or her until the suspect’s first appearance at court, usually the next morning.⁸ Similarly, when the proceedings in a case are adjourned (postponed) at court, magistrates must decide what to do with the defendant until the

⁶ The 1996 British Crime Survey reported slightly higher figures, 63%, and 21%, respectively, in their sample of 16,348 people (Hough & Roberts, 1998a, 1998b).

⁷ In order to remedy this, the government has recently commissioned research on the differences in performance of lay and stipendiary magistrates, the results of which are to be reported in September 2000 (Lord Chancellor’s Department, 1999c).

⁸ In some cases the police may summons a defendant to court rather than charge him or her. Usually, only relatively minor offences are summonsed and so these are more likely to be bailed by magistrates (Jones, 1985). There has however, been a decline in the use of summons (Home Office, 2000b). In 1998, 45% of those appearing at magistrates’ court had been arrested and charged by the police (Home Office, 1999a).

proceedings are resumed. Both the police and magistrates have three options. Suspects (in the case of the police decision) or defendants may be:

- (a) remanded on unconditional bail, so they are allowed to “go free”,
- (b) remanded on conditional bail, meaning that they are required for example, to reside at a particular residence or abide by a curfew,⁹ or
- (c) remanded in custody, meaning that they are held in police cells (in the case of a police decision to remand in custody) or in prison.

At court, proceedings may be adjourned at any time. Whittaker, Mackie, Lewis and Ponikiewski (1997) collected data over a four to six week period on 4,577 hearings in 25 courts where an adjournment was requested. There were significant differences in adjournment rates between courts and amongst different categories of offence. Overall, the average number of adjournments per case was between 0.7 to 2.1 and in 54% of cases adjournments were requested because the case was not ready to proceed to trial (e.g., because the defence was not fully prepared). Other reasons for adjournments included the need to gather more information, the defendant’s failure to appear at court and the date for trial being set in the future or at Crown Court. In 1998, the average length of an adjournment was 26 days (Home Office, 1999a), and magistrates made a remand decision on 30% of all those proceeded against at magistrates’ court. Of these, 85% were bailed (unconditionally or conditionally) and 15% were remanded in custody (Home Office, 1999a).

1.2.2. Impact of remand decisions. The remand decision has significant consequences for defendants, their families, the penal system and the general public. King (1971) states that “magistrates in general pay insufficient attention and give insufficient weight to the possible detrimental effects of detaining a defendant in custody” (p. 84). Evidence suggests that compared to their bailed counterparts, defendants who are remanded in custody are more likely to lose their homes because defendants may be unable to pay the rent or mortgage (e.g., Davis, 1971; Hammond, 1988; King, 1971; Williams, Nooney, & Ray, 1987; Winfield, 1984). Few employers will tolerate employees spending a spell in prison and so defendants remanded in custody are more likely to lose their jobs (e.g., Hammond, 1988; King, 1971; Williams et al., 1987; Winfield, 1984). Imprisonment is socially stigmatising and defendants

⁹ The police were given the power to attach conditions to bail in the Criminal Justice and Public Order Act 1994.

remanded in custody are more likely to suffer loss of reputation (e.g., King, 1971; Winfield, 1984). Prison visits for remand prisoners are limited in frequency and duration, and they are expensive in terms of travel costs and time, thus defendants remanded in custody are more likely to suffer deterioration in family ties (e.g., Hammond, 1988; King, 1971; Williams et al., 1987; Winfield, 1984).

Other consequences for the defendant include the future outcome of his or her case. Evidence suggests that defendants who are remanded in custody are more likely to plead guilty than their bailed counterparts (e.g., Bottomley, 1970; Bottoms & McClean, 1976; Davis, 1971). They are also less likely to be acquitted (e.g., Bottomley, 1970; Bottoms & McClean, 1976; Davis, 1971; Simon & Weatheritt, 1974).¹⁰ Finally, they are more likely to receive a custodial sentence upon conviction (e.g., Bottomley, 1970; Bottoms & McClean, 1976; Davis, 1971; Gibson, 1970 cited in Bottomley, 1973; Hedderman, 1991; Jones, 1985; Simon & Weatheritt, 1974). For example, Davis (1971) found that in a 1967 sub-sample of 191 defendants matched for age, offence, previous convictions and residence, 88% of the defendants who were remanded in custody pleaded guilty, compared to 69% of those bailed. Verdicts had been passed on 41 of the defendants in the matched sample and it was revealed that 14% of defendants remanded in custody were acquitted, compared to 47% of their bailed counterparts. Finally, sentence had been passed on 178 of the defendants in the matched sample and it was found that 69% of defendants remanded in custody received a custodial sentence, compared to 51% of bailed defendants.

The prison statistics for England and Wales in 1998 show that of those remanded in custody, 23% of males and 20% of females were subsequently acquitted, 46% of males and 33% of females received a custodial sentence, and 26% of males and 40% of females received a non-custodial sentence (Home Office, 1999b).¹¹ The criminal statistics for England and Wales show that in 1998, 81% of those remanded in custody, awaiting trial at the crown court, eventually pleaded guilty, compared to 64% of their bailed counterparts (Home Office, 2000b).¹² Furthermore, 79% of the former group received a custodial sentence while only 40% of the latter did so. Fifty-two percent of those remanded in custody, awaiting trial at the crown court who did not plead guilty were acquitted, compared 63% of their bailed counterparts. Seventy-seven percent of those who were tried in the magistrates' court and were remanded in custody

¹⁰ Unlike many other countries such as France, Hungary and Sweden, England does not compensate individuals for wrongful arrests, as revealed in terms of acquittals (Winfield, 1984).

¹¹ These are provisional figures and so don't add up to 100%.

¹² The criminal statistics state that the figures are under recorded.

while awaiting sentence in the crown court, received a custodial sentence, and only 44% of their bailed counterparts also did so. Finally, 42% of those who were remanded in custody at either the magistrates' court or crown court were sentenced to custody and 22% were acquitted, whereas only 8% of those who were bailed (unconditionally or conditionally) were given a custodial sentence and 29% were acquitted.

The findings reporting on the impact of the remand decision upon the outcome of the case, may partly be explained by the fact that defendants plead guilty to avoid time spent in custody awaiting trial; they are convicted because of the practical difficulties they face in preparing a successful defence while in custody; and they receive a custodial sentence to justify a custodial remand. However, the above studies (with the exception of Davis, 1971) are largely based on correlational data. Therefore, it is also possible that later decisions are influenced by factors similarly influencing the remand decision such as the nature and seriousness of the offence the defendant is charged with.

Remand prisoners place a burden upon the penal system and the public purse. Each prison place costs around £25,000 a year (costs estimated for 1998 to 1999) (White, 1999). In 1998, remand prisoners constituted 19% of the total prison population and 65% of the 12,570 remand prisoners were untried (Home Office, 1999b). Thirty-three per cent of remand prisoners (34% of untried prisoners) spent from three months to over a year in prison (Home Office, 1999b; White, 1999).¹³

In prison, remand prisoners are often neglected because the philosophy of imprisonment states that prisons are for convicted prisoners. Indeed, prison rule 1 states that "the purpose of the training and treatment of convicted prisoners shall be to encourage and assist them to lead a good and useful life" (Prison Rules, 1964 cited in Morgan & Jones, 1992, p. 49). Remand prisoners are typically held in local prisons that are near courts in cities and towns.¹⁴ These prisons are overcrowded and are characterised by impoverished regimes (Home Office, 1992; King & McDermott, 1989; King & Morgan, 1976; Morgan, 1989, 1994; Morgan & Jones, 1992; Windlesham, 1988). Remand prisoners sometimes have to share cells and may remain locked in their cells for a large part of the day because of the lack of sufficient activities such as work, education and gym, and they may have infrequent visiting opportunities (HM Inspectorate of Prisons, 1999). Lord Justice Woolf and Judge Tummim (1991) referred

¹³ The average time spent in custody for untried males was 47 days and 38 days for convicted unsentenced males, and 34 days for untried females and 30 days for convicted unsentenced females (Home Office, 1999b).

¹⁴ These prisons also hold prisoners convicted and sentenced for a whole range of crimes.

to poor prison conditions when they explained why so many remand prisoners participated in the prison riots in 1990. Although a specific set of rules (Casale & Plotkinoff, 1990) and a model regime (HM Prison Service, 1992) were developed for remand prisoners, Morgan (1994) argues that little has changed.

It is perhaps also not surprising that the poor living conditions coupled with the uncertainty of not knowing what the future holds has made it more likely for remand prisoners than any other prison group, to kill themselves whilst in prison (HM Inspectorate of Prisons, 1999). In 1999, 64% (58) of the self-inflicted deaths amongst the prison population in England and Wales were by remand prisoners (including 41 untried prisoners and 17 convicted but unsentenced prisoners) (Suicide Awareness Support Unit, 2000). Moreover, the number of self-inflicted deaths by remand prisoners have risen over the past decade (from 28 in 1990) (Suicide Awareness Support Unit, 2000).

Although maybe not as harsh as the impact of a remand in custody, the impact upon a defendant of a remand on conditional bail is noteworthy. It has been argued that attaching conditions to bail such as reporting to the police station, residing at a specific address or keeping curfew do not effectively prevent offending, interference with witnesses or absconding but do curtail a defendant's liberty and interfere with his or her life (Block, 1990; Corre, 1986; Raine & Willson, 1994, 1995b). Indeed, Raine and Willson (1994, 1995b) reported that magistrates often impose conditions because they will structure the defendant's life or will give the defendant a taste of punishment.

The decision to remand a defendant on bail (conditional or unconditional) has an impact upon the general public too. If too many of the "wrong" defendants were released the general public would be the victims of offending on bail. Studies define offending on bail as the number of people arrested, or charged, or convicted of an offence committed while on bail (Henderson & Nichols, 1992). This means that studies using different definitions will report different figures. Nevertheless, the rate of offending on bail reported by any study is likely to be an underestimation because the figure is based on crimes reported to the police or detected by the police (Morgan, 1992). Studies conducted by the police report that from 23% (Northumbria Police, 1991) to 34% (Brookes, 1991) of suspects were on bail at the time of arrest, and that from 12% (Ennis & Nichols, 1991) to 17% (Northumbria Police, 1991) of bailed defendants were convicted of offences committed while on bail. A study by the Home Office reported that 10% of defendants were convicted of offences committed while on bail (cited in Henderson & Nichols, 1992). Despite difficulties in comparisons across

studies due to the differences in the defendants sampled and the definitions and measurement of offending, Morgan (1992) reviewed the above studies and concluded that 10% of defendants granted bail in England and Wales (excluding London) and 17% in London were found guilty of offences committed while on bail.¹⁵ More recently, Brown (1998) has reported higher figures of offending on bail in Greater Manchester and Northumbria, namely 24% (12% were on police bail and 15% were on court bail). Nine percent of his sample had offended while on bail more than once. However, this study adopted a broad definition of offending on bail and included a sample of juvenile defendants, who have a higher rate of offending on bail (Brown, 1998).

In fact, concern over the impact of the remand decision (Bottomley, 1970; Bottoms & McClean, 1976; Davis, 1971; King, 1971; Simon & Weatheritt, 1974) was one of the sources of impetus for the introduction of legislation specifically governing the whole remand decision making process in England and Wales.

1.3. The Law Governing Magistrates' Remand Decisions

1.3.1. Antecedents to the Bail Act 1976. The Bail Act 1976 came into force on the 17th of April 1978 (reproduced in Cavadino & Gibson, 1993).¹⁶ Prior to this Act, the 1967 Criminal Justice Act contained some guidance for how remand decisions should be made. It stated that bail should be granted except in certain circumstances such as if the offence is imprisonable, the defendant failed to comply with bail conditions in the past, is charged with an offence committed while on bail, has no fixed abode, has committed an offence involving indecency, violence or firearms and where detention is necessary for the defendant's own protection.

Second, at the time, in addition to the concerns over the impact of remand decisions, there were also concerns with the rising prison population and the remand population in particular. Robertshaw (1983) for instance, notes that the prison remand population increased by 157% between 1964 to 1974. It had been hoped that the provisions regarding bail contained in the Criminal Justice Act 1967 would be sufficient to lead to a reduction in the number of remands in custody (Corre, 1986; Simon & Weatheritt, 1974; Robertshaw, 1983). These hopes however, were not fulfilled (King, 1971), and Bottoms and McClean (1976) explained this in terms of the complexity of the 1967 Act and the difficulty encountered in its implementation.

¹⁵ The situation has not altered much. In 1978 the national rate of offending on bail was 9%, and 12% in London (Home Office, 1981).

¹⁶ The first law on bail, which stood for over five centuries, was contained in the Statute of Westminster of 1275 (see Home Office, 1974).

Third, there were concerns about the information used by magistrates to make a remand decision. Research into magistrates' remand decision making revealed that although magistrates attended to cues such as the nature and seriousness of the offence (King, 1971; Simon & Weatheritt, 1974) and previous convictions (Bottoms & McClean, 1976; Davis, 1971; Simon & Weatheritt, 1974) that were deemed relevant to the decision, they also relied upon other cues such as age (Davis, 1971; Simon & Weatheritt, 1974) and gender (Simon & Weatheritt, 1974) that were considered irrelevant, "extra-legal" cues. It had also been observed that the police objected to bail on grounds that it would, amongst other things, impede police inquiries and create a risk of offending on bail (Bottomley, 1970; Zander, 1967). This caused concern about magistrates' reliance upon crime control related cues, such as the police request regarding the remand decision (Bottoms & McClean, 1976; Bottomley, 1970, 1973; King, 1971; Zander, 1967) and the prior police remand decision (Bottoms & McClean, 1976; Bottomley, 1970, 1973; Simon & Weatheritt, 1974). In fact, some studies scored defendants on an objective scale originally developed by the Vera Institute in America and which was used to objectively determine the risk of a defendant absconding (Ares, Rankin, & Sturz, 1963). Here, information about a defendant's community ties is scored and a recommendation for bail is made on this basis. It was found that more defendants were qualified to be released on bail than actually had been (Bottomley, 1970; Davis, 1971; Simon & Weatheritt, 1974). For instance, 85% of the 241 defendants remanded in custody in Davis' (1971) sample were actually judged to be "good" bail risks according to the criteria.

Fourth, there was evidence of variation in bail and custody rates among courts (Bottoms & McClean, 1976; Bottomley, 1970, 1973; King, 1971). For instance, Bottomley (1970) found that defendants appearing before magistrates sitting in one urban court were more likely to be remanded in custody than defendants appearing before magistrates in the two rural courts that he studied during 1964-1965. King (1971) observed differences in the number of cases granted conditional bail in courts located in five different areas.

Fifth, studies also commented upon the paucity of information available to magistrates when they made their remand decisions (Bottomley, 1970; King, 1971; Simon & Weatheritt, 1974; Zander, 1967, 1971). Bottomley (1970) for example, found that in 28% of the 171 remand hearings he observed during 1964-1967, no information about the defendant or the offence was provided to magistrates. This was mostly in cases either where there was no objection to magistrates granting bail or there was no

application for bail after an objection had been made. King (1971) observed that magistrates in 23 courts located in cities in England in 1970/71, made a decision with only the information regarding the charge against the defendant in over 50% of the 1001 cases in his sample. Information about the defendant's community ties was given in only 35% of cases, and "it was usually sparse and rather vague in nature" (King, 1971, p. 91).

Sixth, it was revealed that very few defendants were legally represented at remand hearings and that such defence representation was related to positive outcomes for the defendants being bailed (Bottoms & McClean, 1976; Davis, 1971; King, 1971; Zander, 1967). For example, only 20% of King's (1971) sample were legally represented at their first court appearance. Zander (1967) found that 66 of the 93 defendants in his sample were not represented and only 20% of these were bailed compared to 41% of the represented defendants.

Finally, studies documented the speed with which remand decisions were made (King, 1971; Zander, 1967). King (1971) reported that in 879 cases in his sample the average duration of a remand hearing in 843 cases was three minutes. The duration exceeded five minutes in only 20% of cases.

It was no surprise therefore, that Zander (1967) concluded that "the present system governing the determination of bail applications requires reform" (p. 142). Critics such as King (1971) and Zander (1967) made numerous proposals for change. These included declaring bail as a right, using bail information schemes that collect information on the defendant's community ties and present them to the court, issuing instructions or guidelines to magistrates for making bail decisions, and only remanding in custody when it is likely that the defendant would be given a custodial sentence upon conviction.

In light of this situation, the government set up a working party to review the bail practice and procedures in magistrates' courts in England and Wales. The working party considered the findings of previous research and gathered information from meetings with organisations such as the Magistrates' Association and the Justices' Clerks' Society, before making their recommendations for change (Home Office, 1974). The recommendations included setting up a standard procedure with information presented on a standard form; a presumption in favour of bail before conviction; giving reasons for refusing bail; making absconding on bail an offence; providing information about the defendant's community ties in the form of bail information schemes; and establishing more bail hostels. The Working Party also recommended maintaining the

existing practice of refusing bail to prevent absconding, offending on bail and interfering with witnesses. Not all of the recommendations were taken up in development of the Bail Act 1976 and it was criticised. For instance, one government minister commented: “I do not welcome any legislation which will not remedy positive evil or do positive good. We spend too much of our time churning out legislation which will not achieve very much” (cited in King, 1981, p. 136).

1.3.2. The Bail Act 1976. The provisions contained in the Bail Act 1976 do not depart much from previous guidelines. Section 4 of the Bail Act 1976 provides a general right to bail for unconvicted defendants, and convicted defendants awaiting a pre-sentence report. There are however, several statutory exceptions to the right to bail. The court may nevertheless, still grant bail at its discretion when there are grounds for finding an exception to the right.

Part 2 of Schedule 1 to the Act lists four grounds for denying bail to defendants accused or convicted of non-imprisonable offences such as careless driving. Bail may be denied if the defendant has failed to surrender to court when previously bailed and the court believes the defendant may do so again; for the defendant’s own protection, if the defendant is already serving a sentence in custody; or if the defendant has been arrested for absconding or breaking conditions of bail (part 2, Schedule 1, paragraphs 2 to 5 of the Bail Act 1976).

Part 1 of Schedule 1 to the Act sets out eight grounds for denying bail to defendants accused or convicted of imprisonable offences such as theft. It is stated that bail may be denied if the court is “satisfied that there are substantial grounds for believing” that the defendant would fail to surrender, offend, or interfere with witnesses/obstruct justice, if released on bail (part 1, Schedule 1, paragraph 2 of the Bail Act 1976). Furthermore, defendants may be kept in custody for their own protection, if they are already serving a sentence in custody, if they have been arrested for absconding or breaking conditions of bail, if there has not been enough time to obtain sufficient information to inform a decision, and if it would be otherwise impractical to make pre-sentence reports (part 1, Schedule 1, paragraphs 3 to 7 of the Bail Act 1976).

In order to judge whether there are exceptions to the right to bail in terms of failing to surrender, offending while on bail or interfering with witnesses/obstructing justice, the Bail Act 1976 states that:

the court shall have regard to such of the following considerations as appear to it to be relevant,....-

(a) the nature and seriousness of the offence or default (and the probable method of dealing with the defendant for it),

(b) the character, antecedents, associations and community ties of the defendant,
(c) the defendant's record as respects the fulfilment of his obligations under previous grants of bail in criminal proceedings,
(d) except in the case of a defendant whose case is adjourned for inquiries or a report, the strength of the evidence of his having committed the offence or having defaulted,
as well as to any others which appear to be relevant (part 1, Schedule 1, paragraph 9 of the Bail Act 1976).

Thus, essentially, the Act is silent on exactly what information should be used and how that information should be weighted and integrated when magistrates make a remand decision.

Before deciding to remand in custody, the court must decide whether one or more conditions could be attached to bail that would prevent the defendant from absconding, offending on bail, or interfering with witnesses/obstructing justice (part 1, Schedule 1, paragraph 2 of the Act; section 3 of the Bail Act 1976).¹⁷ Conditions may also be attached to ensure that defendants make themselves available for reports, comply with the rules of a bail hostel, and if accused of murder, that they undergo a medical examination with regard to their mental condition (section 3, subsection 6 of the Bail Act 1976).

Conditions that do not meet these aims may be unlawful (Block, 1990). It must be possible for the defendant to be able to comply with the condition imposed and the condition must be enforceable (Corre & Wolchover, 1999 cited in Law Commission, 1999). Conditions may not be imposed for all the reasons for which bail may be denied (e.g., for a defendant's own protection). "Substantial grounds for believing" are necessary for refusing bail, but conditions may be imposed if the risk of failing to surrender etc is "a real and not fanciful risk" (Corre, 1989).

Defendants may also be bailed on a surety, where a third party agrees to pay the court a sum of money (which should not be set unfairly high) if the defendant absconds (section 8 of the Bail Act 1976).¹⁸ A defendant may be required to deposit a security (money) with the court until next appearance at court (section 3, subsection 5 of the Bail Act 1976). These two conditions apply equally to defendants charged with non-imprisonable and imprisonable offences.

The court is required to record and provide the defendant with reasons for denying bail or attaching conditions to bail (section 5, subsections 1 to 4 of the Bail Act

¹⁷ Schedule 1, paragraph 8, sub-paragraph 2 essentially duplicates section 3.

¹⁸ The suitability of a surety may be assessed through considering his or her finances, character, previous convictions, and proximity (including relational and physical) to the defendant (section 8, subsection 2 of the Bail Act 1976).

1976). Conversely, if the court grants bail in cases of murder (including attempted), manslaughter and rape (including attempted), it must state and record the reasons for its decision (part 1, Schedule 1, paragraph 9A of the Bail Act 1976).

A remand in custody decision must be accompanied by the exception to the right to bail and the reason for its application. For example, a remand in custody may be stated as follows: “you are refused bail in this case because we feel that there are substantial grounds for believing that if released on bail you would fail to surrender to custody, and in reaching our decision we have had regard to your record as respects the fulfilment of your obligations under previous grants of bail in criminal proceedings” (Moore, 1997, p. 458). A remand on conditional bail may be stated as follows: “The court grants bail in this case. You will be released with a duty to surrender to the custody of this court on (date) at (time). The bail will be subject to the following conditions... You are to report at police station between the hours of and on (specify days). The court considers it is necessary to impose the condition(s) to prevent you failing to surrender to custody” (Moore, 1997, p. 458). Appendix A contains copies of two bail forms on which the bail decision is recorded (taken in 1998 from Camberwell Green magistrates’ court and Haringey magistrates’ court).

However, researchers have commented that the grounds for decisions is not always clearly articulated (e.g., Raine & Willson, 1994). Moreover, this way of justifying a particular decision is not foolproof. White (1985) states that “it would be a poor clerk who could not formulate a reason falling within the terms of the Act and it would be a foolish magistrate who insisted on recording a personal prejudice as the reasons for the decision” (p. 84). Even if all of the magistrates on the bench agree that a defendant should be treated punitively, they may do so for different reasons. The perfunctory nature of the reasons stated in open court is insufficient for highlighting these differences in reason. It has also been found that the bail form given to the defendant at the end of each hearing is an unreadable carbon copy, with illegible writing and the use of legal jargon makes it difficult to comprehend (Raine & Wilson, 1994, 1995b). Furthermore, it is not always given to defendants (Zander, 1979).

Once a remand decision is made, a certificate recording that a fully argued bail application has been heard is issued to the defendant. If bail is denied, the court must reconsider the question of bail at subsequent hearings (part 2A, Schedule 1 of the Bail Act 1976). A defendant is allowed two fully argued bail applications. The defendant must make a fully argued bail application at the next appearance in court after the time when he or she was last denied bail. Any further applications will be heard at the courts

discretion, or if the defence can bring new information to light (section 5, subsection 6A and 6B, and part 2A of Schedule 1 of the Bail Act 1976). This originally afforded the court discretion as to whether more than two bail applications were heard and whether the same information was considered again. However, this was strictly and controversially interpreted by justices at the Nottingham court as defendants being allowed only two full applications and any further applications if they could prove new information relevant had come to light (*R v Nottingham Justices, ex p Davis* [1980] QB 38 cited in Cavadino & Gibson, 1993; Hayes, 1981). Although different courts interpreted the statute differently (see e.g., Brink & Stone, 1988; Lydiate, 1987) the Nottingham justices case was influential.¹⁹

In general, magistrates can only remand a defendant on bail or in custody for up to eight days. This period may vary depending on the reason for the adjournment. For example, a remand on bail may be longer if adjourning during trial. There are however, limits to the length of a remand in custody awaiting trial, and these limits differ depending upon the offence. The limit is 70 days for triable-either way offences and 56 days for summary offences remanded in custody pending trial, by a magistrates' court (Sprack, 1992).²⁰ A defendant may be in custody longer during trial (whereupon a defendant may receive a non-custodial sentence).

The court may ask if the defendant consents to further remand decisions being made in his or her absence. Courts can remand in absence if the defendant is on bail, or if the defendant is in custody and cannot attend court due to illness for example (McClellan, Morrish, & Greenhill, 1996; Moore, 1997; Sprack, 1992).

Once bailed, a defendant must surrender to the court at the specified time, date and place. Failure to surrender without an acceptable reason is a summary offence of absconding on bail and is punishable by imprisonment (section 6 of the Bail Act 1976). According to the criminal statistics, 12% of those bailed in England and Wales in 1998 failed to subsequently appear at court, and 45,000 defendants were prosecuted for this offence (Home Office, 2000b). This reflects a rise from 1997. Although failure to comply with a condition of bail is not in itself an offence, a defendant may be re-arrested and brought before the court, and bail may consequently be withheld or conditions attached or varied. Raine and Willson (1994, 1995b) found that 44.80% of

¹⁹ Section 154 of the Criminal Justice Act 1988 attempted to amend this situation, so that bail should be considered for defendants who are remanded in custody. At the next hearing following the decision to remand them in custody defendants can put forward the same arguments in favour of bail, and after this the court need not hear arguments it has heard before.

²⁰ These time limits may be extended if the court feels there is a good reason to do so (section 22(3) of the Prosecution of Offences Act 1985).

their sample of 1,050 defendants reported not complying with the conditions imposed. Finally, if the defendant was granted bail with a surety, and subsequently absconds, then the surety must pay the sum agreed upon (section 9 of the Bail Act 1976).

Since its introduction the Act has been subject to numerous revisions. Revisions to the Bail Act 1976 have so far been made by sections 153 to 155 of the Criminal Justice Act 1988 (reproduced in Emmins & Scanlan, 1988), Bail (Amendment) Act 1993 (reproduced in Cavadino & Gibson, 1993), Sections 25 to 30 and Schedule 3 to the Criminal Justice and Public Order Act 1994 (reproduced in Wasik & Taylor, 1995), and sections 54 to 56 of the Crime and Disorder Act 1998 (reproduced in Card & Ward, 1998).²¹

Section 153 of the Criminal Justice Act 1988 requires the court to provide a justification for granting bail to defendants accused of murder (including attempted), manslaughter, rape (including attempted). Section 155 enables magistrates to remand in custody for more than eight days. The Bail (Amendment) Act 1993 gives the prosecution the right to appeal to the crown court against a decision to grant bail to defendants charged with or convicted of an offence punishable by a 5 year or more prison sentence, or of taking a conveyance without authority and aggravated vehicle-taking. An appeal can only be made if the prosecution had objected to bail. Upon notification of an appeal, the bailed defendant is immediately remanded in custody. Legal commentators argued that “this is contrary to the notion of ‘due process’ operating at the pre-trial stage, which emphasises the presumption of ‘innocence until proven guilty’”, that it “undermines the power of magistrates...to make the ultimate remand decision and shifts it to the prosecution”, and will lead to further delays and costs (e.g., Hucklesby, 1993, p. 233, 234).

Section 25 of the Criminal Justice and Public Order Act 1994 denies the right to bail to defendants charged with or convicted of murder (including attempted), manslaughter, rape (including attempted), and who have previously been convicted of such offences. Bail may be granted in only “exceptional circumstances which justify it.” Section 26 denies the right to bail to defendants accused or convicted of an offence while on bail.²² Section 30 enables the prosecution to ask the court to reconsider a grant of bail to defendants accused of a non-summary offence, on the basis that new relevant information can be presented that was not available at the time of the previous decision.

²¹ It is likely that further revisions will be made when the Human Rights Act 1998 requires English law to conform to the European Convention on Human Rights in October 2000 (Law Commission, 1999; Uglow, Cheney, Dickson, & Fitzpatrick, 1998).

²² Sections 27 to 29 pertain to police remand decision making.

Finally, section 54 of the Crime and Disorder Act 1998 has widened the net for the imposition of conditions. Any defendant may be asked to provide a security (money) before being released on bail and the court may impose a condition that the defendant must see a defence representative before the next court appearance. Section 55 grants the court power to declare an immediate forfeiture of a recognisance where a defendant fails to surrender to court and summon the surety to court in order to explain why he or she should not pay. Although section 56 returns the power of discretion to the court to grant bail to defendants charged with or convicted of murder (including attempted), manslaughter, rape (including attempted), the onus is upon the defendant to show that there are exceptional reasons for not remanding him or her in custody.

1.4. Other Characteristics of the Magistrates' Remand Decision Making Task

In practice, magistrates' remand decision making is not only affected by the law, but is also subject to constraints by other features of the decision making task. These include the order of information presentation, the availability and quality of information, opportunities to learn from the task, and time pressure.

1.4.1. Court procedure and order of information presentation. There are no statutory rules of procedure governing remand proceedings in magistrates' courts. Lydiate (1987) argues that this situation has resulted in individual courts developing their own procedures and practices. A remand procedure that is commonly described in texts (e.g., Moore, 1997; Sprack, 1992) is as follows: The prosecution or defence may apply to the court for an adjournment. Alternatively, the court may require an adjournment. If the magistrates grant the adjournment, they then ask the prosecution if there is an objection to bail. The prosecution will put forward any reasons for an exception to the right to bail or will request that conditions be attached to bail. On rare occasions a police officer may be called as a witness. The defence will then attempt to counter these objections. The defendant need not be present in court, but if so, he or she may be asked by the defence or the magistrates to contribute to the proceedings. It has been observed however, that the defendant's contribution is usually nothing more than verification of his or her name, date of birth and address (Hucklesby, 1996). The prosecution will then have the opportunity to reply to the defence. Even if the prosecution does not object to bail, or both the prosecution and defence agree to conditional bail or a remand in custody, the court must make a decision in an independent manner, by weighing up the information, and assessing it in accordance with the Bail Act 1976.

Although discrete pieces of information may be presented in any order by the prosecution or the defence, some information such as the nature and seriousness of the offence a defendant is charged with will tend to precede other information such as his or her previous convictions. Nevertheless, the order in which information is presented to magistrates may affect the information they use to make their remand decisions.

1.4.2. Availability of information. As in research conducted before the introduction of the Bail Act 1976, later studies have documented the lack of information available to magistrates when they make remand decisions (Burrows, 1994; Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996; Morgan & Henderson, 1998; Zander, 1979). In the courtroom, information may be made available to magistrates from a variety of sources. The courtsheet that lists the cases to be heard on a particular day contains written information regarding the defendant's name, address, date of birth and gender, how he or she came to court (e.g. arrest), the category, seriousness and number of charges against the defendant, the date, time, location and victim of the offences, and the monetary cost of the crime where applicable, the maximum sentence if convicted, the defendant's plea, the number of previous adjournments and the previous court decision if any, the defence representative, and the circumstance of the present adjournment (e.g. adjourn for trial). The information on the courtsheet may be supplemented with further information provided by the prosecution, the defence and the defendant. This additional information may include information such as the defendant's previous convictions.

Burrows (1994) reported that courts often receive incomplete information regarding the defendant's previous convictions. Zander (1979) noted that in 56% of the cases in his sample, none of the information explicitly verbally referred to in the Bail Act 1976 (e.g., the nature and seriousness of the offence) was mentioned in court. However, he did not have access to written documents that may have been available to magistrates. More recently, Hucklesby (1996) observed that additional information to that contained in the courtsheet was provided in only one third of her sample of 1,524 cases heard in three courts in Wales between April and July 1991. Moreover, in 41% of these cases the additional information was of limited breadth because it covered only one aspect of the case (e.g., bail record).²³ No verbal information was provided to the magistrates and no discussion took place in cases where the defence applied for bail in the absence of objections from the prosecution. Information about the offence the

defendant was charged with was most commonly presented. When information about the defendant's community ties was presented, it was usually pertaining to residence. Hucklesby's (1996) quantitative findings were buttressed by findings from her questionnaire and interview surveys of 60 professional court participants, including magistrates.²⁴

It is also evident that the police or prosecution often do not provide reasons for why they oppose bail and request a remand in custody (East & Doherty, 1984; Hucklesby, 1996). East and Doherty (1984) observed that the police failed to give any reasons for their request 12% of the time. This figure was greater in Hucklesby's (1996) study, where she noted that the prosecution provided a rationale for their request only 12% of the time. Magistrates were seen to be unquestioning as they rarely asked for reasons, or for evidence supporting the reasons (e.g., the evidence that the defendant may offend on bail) (East & Doherty, 1984; Zander, 1979). Moreover, Morgan (1994) observed that magistrates did not seek information in 96% of the cases where the prosecution did not make any recommendation regarding the remand decision. Others have found a similar lack of information seeking behaviour in magistrates in uncontested cases (Burrows, 1994; Hucklesby, 1996). Information seeking behaviour differs between lay and stipendiary magistrates. Studies have found that the latter are more probing and ask prosecutors to give reasons for their request (Burrows, 1994). Burrows (1994) notes that the discrepancy between lay and stipendiary magistrates is supported by the fact that stipendiary magistrates have a greater tendency to remand in custody until further information is gathered to inform a decision. Morgan and Henderson (1998) asked magistrates if they thought the information they were given in court when making a remand decision, was unreliable or deficient. Magistrates responded yes in 12% of 1,000 cases in 1993 and 900 cases in 1994. They stated that they would have liked further information in 8% of these cases in 1993 and 1994. In both years, magistrates more often wanted further information on the previous

²³ Hucklesby (1996) had organised additional information into 24 categories which were then summarised as either offence related, bail history, community ties, other defendant related information and court factors.

²⁴ When examining the source of the information, Hucklesby (1996) found that in half of the cases where additional information was provided, the prosecution was often the source. The prosecution and defence tended to provide additional information on different topics. The former tended to provide information regarding the offence and previous convictions, whereas the latter tended to provide information about the defendant's personal circumstances and community ties. (The defence provided information regarding the offending related issues in order to negate the prosecutions objections to bail.) Indeed, the defence provided additional information of greater breadth than the prosecution. Finally, when the defendant provided information, it was mostly concerning plea, or a simple verification of his or her name, age and address.

convictions, current offence, residence, other charges, reasons for any previous remand decision either by the police or court, in this order.

The provision of information is particularly important because the law on bail states that insufficient information is a ground for a remand in custody (until further information has been gathered). In 1988, Bail Information Schemes (BIS) were introduced in England and Wales to collect, verify and provide information to the court (via the prosecution) regarding a defendant's community ties. Community ties information is considered important in determining whether a defendant is likely to abscond because it is believed that a defendant tied to the local area will have much to lose if he or she absconds. Studies evaluating these schemes have found that some defendants are diverted from custody when magistrates are provided with community ties information (e.g., Lloyd, 1992; Stone, 1988). Thus, it seems likely that providing more information would lead to fewer punitive decisions.

1.4.3. Usefulness of information. When information is available, magistrates do not know how useful different information is in predicting whether a defendant if bailed unconditionally will abscond, offend or interfere with witnesses. Few attempts have been made to measure the relative predictive validity of different pieces of information (e.g., Morgan & Henderson, 1998), and these have not been done in any comprehensive way. For instance, Morgan and Henderson (1998) solely investigated the factors associated with higher rates of offending on bail and did not study absconding or interfering with witnesses/obstructing justice.

However, even if data were gathered, it would at best provide only a partial measure of the objective predictive validity of the information. This is because it would never be known how many defendants who were remanded in custody would have offended if they had not been imprisoned. The two groups (bailed defendants and defendants remanded in custody) differ in many ways and so generalisations cannot be made from one sample to the other. Furthermore, although it is relatively easy to discover if a bailed defendant failed to surrender to custody, it is impossible to measure exactly how many defendants who were released on bail actually offended or interfered with witnesses/obstructed justice. Crimes and obstructions of justice may not be detected, or if detected, may not be reported, and some crimes may not be recorded (Maguire, 1994). In order to overcome these difficulties, defendants could be asked to self-report crimes and obstructions as is done in other self-report research on crime (e.g., West & Farrington, 1973). However, self-reports may be unreliable due to

problems with remembering and they may also be invalid due to respondents providing socially desirable responses or responses that will not incriminate them.

Magistrates may learn the usefulness of different pieces of information from informal sources such as the media's coverage of offending by defendants on bail. However, these sources are prone to bias and error.

1.4.4. Feedback of outcomes. An informal way of establishing the relative predictive validity of different pieces of information is for magistrates themselves to gather outcome feedback after having made a remand decision on a case. For example, they may recognise a defendant whom they bailed unconditionally on the defendant's return to court after being charged with committing an offence while on bail. This method is thus prone to bias and is peculiar to an individual. However, the fact that lay magistrates only sit in court on a part-time basis means that many such defendants will not be recognised on re-appearance because the magistrates themselves will not be in court on that day.

In the English system, there is no formal procedure for providing magistrates with outcome feedback. Although learning from outcome feedback and experience alone is difficult (Brehmer, 1980; Klayman, 1988), magistrates currently do not know if they made an appropriate decision and this may restrict their ability to learn whether they are using the right information in the right way. Therefore, it is likely that there may not be any differences in the performance of more and less experienced magistrates.

1.4.5. Caseload and time pressure.²⁵ Despite the lack of time limits for making decisions on a case being presented, magistrates may implicitly feel that they are working under time pressure due to the high daily caseload. Although over the past three decades the average duration of a remand hearing has increased slightly (e.g., since King, 1971), magistrates nevertheless make remand decisions rapidly (Doherty & East, 1985; Zander, 1979). Based upon observations of 261 remand hearings conducted in 18 London courts on one day in October 1978, Zander (1979) reported that 47% of cases were dealt with in one to two minutes. Unsurprisingly, magistrates took longer to make a remand decision on cases where the police objected to bail being granted. Doherty and East (1985) recorded the duration of 209 remand hearings in a court in Wales between August 1981 and January 1982 involving defendants who had been

²⁵ Possible explanations for the speed of remand decisions include that professional court participants are known to one another and a "camaraderie" leads to many non-adversarial proceedings (e.g., Doherty & East, 1985; Brink & Stone, 1988; Hucklesby, 1996, 1997a), and sometimes even to bail bargaining

charged. Sixty-two percent lasted less than two minutes and 96% lasted less than 10 minutes. Although the decisions to remand in custody took longer, there were cases that nevertheless lasted less than two minutes. The implicit feeling of time pressure and the subsequent speed with which magistrates make their remand decisions may affect their decision making strategies. Finally, decisions are made quicker when there are no objections to bail (Morgan & Henderson, 1998; Zander, 1979) and when defendants do not apply for bail (Brink & Stone, 1988).

1.5. Regulating the Remand Decision

It is clear from what has been discussed above that when making a remand decision, magistrates must consider the ramifications of their decisions for both the individual defendant and for society. They must work within the legal guidelines and the constraints of the task. Various theoretical frameworks have been developed to help describe, explain and evaluate the manner in which legal decisions are generally made and how the criminal justice system operates (see e.g., Bottoms & McClean, 1976; Davies, Croall, & Tryer, 1995; Griffiths, 1970; King, 1981; Packer, 1968).²⁶

1.5.1. Ideal practice. Packer's (1968) due process and crime control models are by far the most widely known both inside and outside the criminal justice system. These two models make a statement regarding the function of the criminal justice system and the goals and roles of the agencies operating within the system. Both models represent ideal types or in Packer's (1968) terms "*normative*" models that lie on two opposite ends of a continuum (p. 153).

The crime control model minimises the adversarial aspect of the judicial process. The function of the justice system is to repress crime, and a failure in controlling crime would result in public disorder. The law abiding society who are the victims of crime need to be protected from deviant individuals. There are only limited resources available for dealing with crime. Thus, there is an emphasis upon efficiency and a high rate of detection and conviction is ensured through speed and finality. Speed can be achieved by adopting informal and uniform practices. "Facts can be established more quickly through interrogation in a police station than through the formal process of examination and cross-examination... Routine, stereotyped procedures are

between the prosecution and defence (Burrows, 1994; Hucklesby, 1996, 1997a). The evidence on this issue is however, limited.

²⁶ The specific models are: Packer's (1968) due process model and crime control model. King's (1981) medical model, bureaucratic model, status passage model and power model, Bottoms and McClean's (1976) liberal bureaucratic, Griffiths' (1970) family model, and the just desserts model described by

essential...The model...must be an administrative, almost managerial model” (Packer, 1968, p. 159). Thus, the system is like an “assembly-line conveyor belt” where individuals are screened at each stage (Packer, 1968, p. 159). Those that are probably innocent are filtered out early in the process by the police. The remainder are either expected to plead guilty or are then rushed through to conviction in court by prosecutors. There is thus a presumption of guilt. Finality is achieved through minimising opportunities for challenge. Errors, which are defined in terms of acquittals or successful appeals, are redefined as due to a technicality, thus maintaining faith in the police and prosecution. Finally, as a deterrent, the whole experience is supposed to be unpleasant for the defendant.

By contrast, the due process model places the adversarial aspect at the centre of the justice process. The police may be unreliable and prone to errors in their gathering of the facts, not simply for self-serving reasons, but also because witnesses may not accurately recall events for example. Therefore, an “obstacle course” is placed along the process, and there is “an insistence on formal, adjudicative, adversary fact-finding processes in which the factual case against the accused is publicly heard by an impartial tribunal and is evaluated only after the accused has had a full opportunity to discredit the case against him” (Packer, 1968, p. 163-164). The due process model “resembles a factory that has to devote a substantial part of its input to quality control” and so the manner in which cases are dealt with is deemed more important than quantity of cases dealt with (Packer, 1968, p. 165). Factual guilt is set aside for the notion of legal guilt. For instance, cases must be dealt with by the court that has the power to deal with it, in an appropriate venue, within a limited period of time, and the defendant cannot be tried for the same case twice and may plead insanity. Rules govern police powers and the admissibility of evidence, there is a presumption of innocence and the burden of proof is placed upon the prosecution. Defendants have the right to a defence solicitor, and they must be treated equally. A conviction of guilt can only be upheld if the case has been dealt with according to the procedural guidelines. As an acknowledgement of the fallibility of the system, there are opportunities to re-open a case. Thus, the police and prosecution are made aware of the need to adhere to rules, as otherwise factually guilty defendants will go free. The rule abiding behaviour of the system acts as an exemplar to the public, who should also abide by the law. Finally, the due process model aims to control the power of the state against an individual.

Davies, Croall and Tryer (1995). King (1981) states the system is best described by some features of a number of these models, rather than by any one model.

In all of the above it is evident that legal decision making is not necessarily related to discovering the truth or making the "correct" decision. For instance, a trial does not establish whether the defendant is innocent of the offence he or she has been charged with, but whether the evidence is sufficient, beyond reasonable doubt, to establish guilt. Similarly, a successful appeal against conviction does not establish the defendant's innocence; it merely states that the correct procedures were not adhered to.

The remand decision making task is probabilistic. The question of whether or not a defendant would offend if released on bail cannot be perfectly predicted by the information available (e.g., the seriousness of the offence the defendant is charged with). Thus, there are two types of error that could result: type I error and type II error. The former is also known as a false positive, so that an innocent defendant would be convicted, and the latter is known as a false negative, so that a guilty defendant would be acquitted. The inverse relationship between the two types of errors means for example, that minimising the probability of making a type I error maximises the probability of making a type II error. The due process model tips the balance in favour of the individual citizen's right to liberty, thus minimising a type I error, whereas the crime control model tips the balance in favour of the public's right to be protected, thus minimising a type II error. In other words, the crime control model prioritises the conviction of the guilty, at the risk of also convicting the innocent, while the due process model prioritises the acquittal of the innocent at the expense of also acquitting the guilty. King (1981) notes that the social function of the crime control model is to meet out punishment and by contrast the due process model functions to serve justice.

In the *Hobson* case, Holroyd J declared that "it is a maxim of English law that ten guilty men should escape rather than one innocent man should suffer" (1823 1 Lew CC 261 cited in Sanders & Young, 1994, p. 3). Although the rhetoric of English law is that it is more important that an innocent defendant should be protected from wrongful conviction than a guilty defendant be convicted, Sanders and Young (1994) point out that the Government's proposals for the working of the justice system do not make reference to the importance of acquitting the innocent. Moreover, judges have in some instances stated that type I and type II errors should be weighted equally.

Although pre-trial decisions, such as the decision to remand before trial lack regulation, due process ideals are often recommended as ways to regulate such decisions (e.g., Galligan, 1987). King (1981) notes that in the due process model magistrates are impartial adjudicators between the prosecution who represents the state and the defence who represents the individual, and both parties are considered equal.

All of the court participants must adhere to formal rules of procedure. Magistrates for example, must carefully examine all of the evidence, and treat individuals fairly, impartially and without bias.

1.5.2. Crime control and due process in the remand process. When discussing the principles of crime control and due process, Packer (1968) illustrated how these could manifest themselves in the remand process. According to the crime control model, the defendant, although at the pre-trial stage, is nevertheless considered a criminal and treated as such. Bailing the defendant increases the chances of him or her absconding and re-offending. Indeed, as Packer (1968) notes, a short period in custody pre-trial is a “useful reminder that crime does not pay” and it can act as a deterrent (p. 212). The defendant is more likely to enter a guilty plea if he or she is in custody pre-trial. Finally, “if pre-trial detention is to be mitigated for some people, it ought to be done explicitly for the purpose of promoting the efficiency of the criminal process rather than for the purpose of adhering to some abstract notion of a ‘right’ to pre-trial liberty” (Packer, 1968, p. 214).

The due process model does not consider the defendant a criminal at the pre-trial stage. It is recognised that pre-trial custody would impede the preparation of an effective defence and may result in personal hardships for the defendant and his or her family. In addition, guilty pleas entered because the defendant wishes to end his or her pre-trial custody are to be avoided. Thus, the defendant should be allowed to go free until he or she is convicted. If there are concerns that the defendant may abscond before trial, alternatives to custody such as penalties for non-appearance and requirements of surety or security should be used. In cases where it is considered that the defendant may interfere with witnesses or obstruct the course of justice if released on bail, alternatives to pre-trial custody should be considered. For example, conditions could be attached to bail. “Essentially, a hearing for the setting of bail must be a fact-finding process” (Packer, 1968, p. 216). If there is insufficient information, the defendant should be set free. Procedures for appeal against a remand decision should be made available to the defendant. A defendant should not be held in custody pre-trial either for punishment or as a measure to prevent him or her from committing further offences. Objective procedures should be employed to determine if a defendant is dangerous and these defendants should be dealt with accordingly.

Although the Bail Act 1976 contains due process and crime control principles, it also affords magistrates much discretion in which of these principles is enforced, and how they are enforced. The training given to magistrates on the topic of remand

decision making does not differentiate between crime control and due process and does not structure their discretion (e.g., Miles & Thomson, 1992). Some critics argue that the remand decision is predominately concerned with crime control (Bottoms & McClean, 1976; Hinchliffe, 1992; Hucklesby, 1993, 1996; Jerrard, 1992; Jones, 1988; King, 1981; Sanders & Young, 1994; Robertshaw, 1983). For instance, pre-trial custody maybe considered as punishment. It also reflects concern with crime control because it ensures a defendant appears for trial, does not offend and does not obstruct justice. It also reduces the defendant's opportunity to prepare an effective defence and his or her decision to plead not guilty. A remand in custody may also lead to a reduced chance of acquittal and a greater chance of a punitive sentence (e.g., Davis, 1971). Crime control principles are reflected in the three main grounds for refusing bail (e.g., remanding a defendant in custody because he or she is dangerous seems contradictory to the presumption of innocence). Defendants are remanded in custody where there is insufficient information on which to base a remand decision. The whole remand experience is unpleasant and has negative consequences for the defendant. Finally, there is no compensation for defendants who were remanded in custody but later acquitted or who are successful in their appeal against a decision to remand in custody. This indicates that the system does not recognise or admit to its errors. Critics also argue that the revisions to the Act have essentially served to further restrict a defendant's right to bail, thus reinforcing the notion of crime control contained in the original Act (e.g., Hucklesby, 1993; Hinchliffe, 1992).

1.6. Review of Research on Magistrates' Remand Decisions After the Bail Act 1976

Past research on magistrates' remand decision making before and after the Bail Act 1976 has predominantly been conducted by criminologists. I have found no published psychological research on this topic. Criminological researchers have adopted sociological methods such as observations of remand hearings in the courtroom, analyses of court registers and criminal statistics, and questionnaires and interview surveys of magistrates as well as other court participants (e.g., Hucklesby, 1996). The large majority of studies have tended to focus on remand decisions made in the adult magistrates' courts.²⁷

1.6.1. Cues used to make remand decisions. Although the Act permits magistrates to use any cues that "appear to be relevant", "legal" cues may be

²⁷ It is evident that remand decisions made in the adult courts are not completely comparable with the decisions made by magistrates in the youth courts (see e.g., Cavadino & Gibson, 1993).

distinguished from “extra-legal” cues. Legal cues are defined as those explicitly referred to in the Bail Act 1976 and extra-legal cues refer to defendant related cues such as age, gender and race, and crime control related cues such as the police remand decision and the prosecution request. This legal/extra-legal dichotomy is well established (Nagel, 1983). In theory, extra-legal cues are considered to be both socially and professionally undesirable influences upon legal decisions. Past research has studied the relative effects of these legal and extra-legal cues on magistrates’ remand decisions.

Influence of legal cues. There is evidence to suggest that magistrates’ remand decisions are influenced by legal cues such as the nature and seriousness of offence the defendant is charged with (Doherty & East, 1985; Jones, 1985; Hucklesby, 1996; Morgan & Henderson, 1998), the defendant’s previous convictions (Hucklesby, 1996), past bail record (Hucklesby, 1996; Morgan & Henderson, 1998), and the strength of his or her community ties (Doherty & East, 1985; Hucklesby, 1996). These four sets of findings shall be discussed in turn.

First, Jones (1985) analysed the official criminal statistics on 222,000 remand decisions made at first court appearance on defendants charged and summonsed with triable-either way or indictable offences in 1980. Using multivariate statistics, he found that defendants charged with indictable offences were more likely to be remanded in custody than those charged with triable-either way offences. There were also variations according to the nature of the offence. For example, defendants charged with motoring offences were the least likely to be remanded in custody, whereas those charged with sexual offences were the most likely to be so. Doherty and East (1985) found that in their total sample of 496 cases, those involving burglary were significantly less likely to be bailed than other offences taken together, and those involving more than £100 were less likely to be bailed. Hucklesby (1996) reported that the average custody rate was 13% for all types of offences in her sample (which included 1,524 observed remand decisions and 2,069 decisions recorded in court registers) from three courts. The rate was significantly greater for defendants charged with breaking and entering, and lower for those charged with motoring offences and property damage offences. Finally, Morgan and Henderson (1998) collected data on 3,955 remand decisions made in five courts over three months in 1993 and three months in 1994. They found that defendants charged with more serious offences were more likely to be remanded in custody than those charged with less serious offences.²⁸ However, Morgan (1994) did not find any

²⁸ The category of more serious offences included burglary, robbery, grievous bodily harm, indictable and triable either-way sex offences and drug trafficking (Morgan & Henderson, 1998).

difference in the custody rate for different type of offences. She conducted an observational study of 277 cases at first appearance in five courts over a week during January 1993, and found that the defendants remanded in custody were charged with a variety of offences ranging from violence, through theft, to drugs.

Second, it has also been found that defendants with previous convictions had a significantly higher custody rate than those with no previous convictions (Hucklesby, 1996), especially when the previous convictions led to a past custodial sentence (Morgan & Henderson, 1998). Third, defendants with a poor bail record had a higher custody rate than those with a good bail record (Hucklesby, 1996) or no bail record (Morgan & Henderson, 1998). Fourth, evidence suggests that defendants living outside the geographical area in which the court was situated (Hucklesby, 1996), and those with no fixed abode were significantly more likely to be remanded in custody than their counterparts living in the area and with a fixed address (Doherty & East, 1985; Hucklesby, 1996; Morgan & Henderson, 1998). In addition, Morgan and Henderson (1998) reported that of defendants who had a fixed address, those who were unemployed, with either a previous custodial sentence or bail history were more likely than their employed counterparts to be remanded in custody.

Influence of extra-legal cues. Although researchers have little evidence for the direct effect of age upon magistrates' remand decisions (Brown & Hullin, 1993; Doherty & East, 1985; Morgan & Henderson, 1998), it has been reported that magistrates' remand decisions are influenced by other extra-legal cues.²⁹ These include gender, race, police remand decision and prosecution request (Doherty & East, 1985; East & Doherty, 1984; Eaton, 1987; Fitzgerald, 1993; Hood, 1992; Hucklesby, 1996, 1997a; Jones, 1985; Morgan, 1994; Morgan & Henderson, 1998; Voakes & Fowler, 1989; Walker, 1989; Zander, 1979). Each of these will be discussed in turn.

With regard to gender, it has been found that females were significantly less likely to be remanded in custody than males (Doherty & East, 1985; Jones, 1985; Morgan & Henderson, 1998), even after accounting for differences in offence and previous convictions (Hucklesby, 1996). It should be noted however, that the effect reported by Doherty and East (1985) may be partly explained by the greater number of police objections to bail for male defendants and the greater seriousness of their offences. Brown and Hullin (1993) did not find a significant effect of gender. Eaton (1987) argues that the influence of gender upon magistrates' remand decisions is more

²⁹ Jones (1985) reported that the trend to remand males in custody as their aged increased was the reverse for women.

complex than a simple comparison between males and females. Using eight case studies of three male and five female defendants observed in court between 1980 and 1981, she described how magistrates' decisions served to reinforce traditional gender roles. Married women with children and married, employed men, occupy roles involving a high degree of social control, namely within the family and the workplace, respectively. Thus, magistrates can choose between the formal control of the prison system when remanding these defendants in custody or the informal social controls. These informal controls are perceived as being absent for unmarried mothers and unemployed men, and so such defendants are more likely to be treated punitively.

Research examining the influence of race on magistrates' remand decisions differentiates between different ethnic groups, such as Afro-Caribbean, Asian and white. Asians have the lowest remand in custody rate (Fitzgerald, 1993; MacLeod, 1990 unpublished cited in Fitzgerald, 1993). However, the number of defendants who are Asian is small and this has sometimes created difficulties in gathering sufficient data for meaningful analysis (Brown & Hullin, 1993). Researchers have thus tended to compare the remand decisions made on Afro-Caribbean and white defendants. It is clear that compared to their proportion in the general population, Afro-Caribbean defendants are over-represented in the prison remand population (Fitzgerald, 1993; Walker, 1989). From another perspective, it is also true that of those defendants who are given a custodial sentence upon conviction, Afro-Caribbean defendants are more likely than white defendants to also have been remanded in custody; even after controlling for factors such as offence (Fitzgerald, 1993). Hood (1992) controlled for offence and a whole host of other legally relevant factors, and concluded that Afro-Caribbean defendants were significantly more likely to be remanded in custody. Although their findings do not bear upon the effects of race and a decision to remand in custody, Voakes and Fowler (1989) did not find any association between magistrates' decisions to grant bail (unconditional and conditional) and the defendant's race. In their study, Brown and Hullin (1993) noted the ethnic appearance of 496 defendants appearing in court over six months in 1989. There was no significant difference in the remand decisions made on Afro-Caribbean and white defendants, who were similar in terms of age, gender, employment, previous convictions, nature and seriousness of the offence, past record of absconding and the judged likelihood of them offending.³⁰ However, for defendants who were given conditional bail, Afro-Caribbean defendants were significantly more likely to be told not to enter certain areas. It should be noted that all

³⁰ The last three variables were statistically controlled.

of the 496 cases involved applications for bail that were being contested by the prosecution, and this may explain the disparity between Brown and Hullin's (1993) findings and those of Walker (1989) for example, whose sample also included uncontested hearings.

The significant effect of crime control related cues on magistrates' remand decisions has also been documented (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1997a; Jones, 1985; Morgan, 1994; Morgan & Henderson, 1998). Jones (1985) found that the majority of cases granted bail (unconditionally or conditionally) by magistrates, also had been granted bail by the police, and the majority of cases remanded in custody by magistrates also had been remanded in custody by the police. Morgan (1994) reported that magistrates granted bail in 99% of the cases in which the police had done so. Hucklesby (1997a) reported that in her study, of the 145 defendants who had been released on police bail, 99% were subsequently bailed by magistrates. Furthermore, magistrates bailed only 60% of the 132 defendants who had been remanded in custody by the police. Of the 2,115 defendants granted police bail in Morgan and Henderson's (1998) sample, over 99% were also granted bail by magistrates, whereas only 61% of the 1,552 defendants remanded in custody by police were granted bail by magistrates. By comparison, Doherty and East (1985) observed that magistrates bailed a significantly high proportion (71%) of defendants whom the police had remanded in custody.

Studies have also commented on the effect of the police or prosecution request on magistrates' remand decisions (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996, 1997a; Morgan, 1994; Morgan & Henderson, 1998; Zander, 1979). East and Doherty (1984) found that in 69% of the 88 cases in their sample where the police objected to bail, magistrates remanded the defendant in custody, whereas magistrates decided to bail 90% of the 408 cases where there was no police objection to bail (see also Doherty & East, 1985). Thus, in contested cases, magistrates were significantly more likely to agree with the police request than the defence request. The effect of the police request was moderated by whether or not the defence actively sought bail, because magistrates bailed defendants in spite of police objections in around a third of the cases when the defence also sought bail (Doherty & East, 1985). Since the introduction of the CPS, the police request has been replaced by the prosecution request. Nevertheless, the prosecution often relies upon police information about the case and

the defendant, when making a request.³¹ Morgan (1994) found that the court granted the prosecution's request in 80% of cases. Hucklesby (1996, 1997a) reported that magistrates agreed with the prosecution request 95% of the time. Similarly, Morgan and Henderson (1998) found that magistrates granted bail in 99% of cases where the prosecution did not object to bail, and magistrates agreed with the prosecution request for conditional bail 89% of the time and for a remand in custody 75% of the time.

It could be argued that rather than being directly influenced by the police remand decision or the prosecution request, the above findings may reflect an indirect influence. Magistrates may be using information that is similarly used by these two crime control agencies. Hucklesby (1997a) however, argues that this explanation is unlikely because magistrates often have only limited information available to them, which they assess quickly, and other court participants have reported that the prosecution is influential. In addition, the fact that bail information schemes provide information gathered about a defendant's community ties to the prosecution rather than directly to the court suggests that the prosecution request is influential.

Some studies have also revealed that defence representation may not be very influential in magistrates' remand decision making (Doherty & East, 1985; Eaton, 1987; Hucklesby, 1997b; Zander, 1979).³² Doherty and East (1985) reported that 88% of the cases in their sample were legally represented. (This high figure can be explained by the fact that a duty solicitor scheme operated in the courts they studied.) It was found that the defence actively sought bail in only 22% of the 434 legally represented cases, and bail was granted in half of these. There was a significant difference in the decisions made on defendants who were represented and those who were not, as the latter were more likely to be granted bail. Zander (1979) also reported similar findings. In addition, Doherty and East (1985) found that magistrates were significantly more likely to agree with the police request than the defence request, in the cases where the defence applied for bail in the face of police objections. Hucklesby's (1996) qualitative data suggested that compared to the information presented to magistrates by the prosecution which was perceived as "factual", the defence information was perceived as "unverified and sometimes of little, if any, relevance to the case" (p. 224). Hucklesby (1996) also observed that defence representatives perceived their task as negating the objections put forward by the prosecution, and they were often involved in negotiations with the

³¹ The introduction of bail information schemes aimed to reduce the prosecution's reliance upon the police when making a request (Stone, 1988).

prosecution, or bail bargaining, before the bail hearing. In her study, Eaton (1987) found that defence solicitors were unwilling or unable to put forward strong applications for bail in cases where defendants had no family ties. Moreover, research has highlighted how defence solicitors do not want to waste their limited bail applications by putting forward a risky application on the first appearance and so forfeiting the defendant's opportunity to apply for bail in the future (Brink & Stone, 1988; Hucklesby, 1996). Doherty and East (1985) also noted that often the defence did not make any statement as to bail because the right to bail according to the Bail Act 1976 applied, and that sometimes the Nottingham Justices' principle obstructed applications. Indeed, Hucklesby (1997b) observed that the defence sought bail in just over half of the 229 cases where the prosecution requested a remand in custody, and most of these were at first appearance.

Criticisms of past research on cue use. Although there are exceptions, the findings of past criminological research on the cues that influence magistrates' remand decisions are generally consistent. This is perhaps surprising considering that studies differed in terms of the courts, magistrates and cases sampled, the method and date of data collection, and the technique of data analysis. Nonetheless, the studies may be criticised on methodological grounds, and their findings may therefore be unreliable.

First, although the studies conducted by criminologists have high external validity because they are based on real cases, some studies do not control for the inter-correlations that may exist between variables, either at the design or analysis stage of research (East & Doherty, 1984; Doherty & East, 1985; Eaton, 1987; Hucklesby, 1996, 1997b; Morgan, 1994; Morgan & Henderson, 1998; Zander, 1979). In fact, they do not routinely report the size of cue inter-correlations. This means that the effect of one variable such as race cannot be discerned independently of the effect of another variable such as offence. Hucklesby (1996) for example, concluded that the prosecution request was a "very influential" cue, but she did not statistically disentangle the relationship between the prosecution request and other factors such as offence (p. 134). Doherty and East (1985) could not make a conclusion regarding the effect of gender on magistrates' remand decisions because in their sample, gender was correlated with seriousness of the offence. Some studies make conclusions about causal relationships from correlational analyses. For example, under a section headed "influences on the remand decision", Hucklesby (1996) reported a series of correlational analyses between factors such as the

³² Although it may seem reasonable for magistrates to base their remand decisions on the prosecution or defence requests, these requests should only be used as information alongside other information such as

prosecution request and the magistrates' decision. In addition, some studies do not employ inferential statistics to test claims that there are differences between groups in terms of the remand decisions made (e.g., Eaton, 1987; Morgan & Henderson, 1998).

Second, some studies do not control for the information available to magistrates, and so they can at best only speculate as to the information attended to when magistrates made a remand decision (Jones, 1985; Hucklesby, 1996, 1997b; Morgan & Henderson, 1998). For instance, Jones (1985) conducted an analysis of the official statistics on remand decisions and concluded that the police bail decision was the "most significant" cue (p. 116). He failed to point out that this information may not have been available to magistrates when they made their decision. As pointed out earlier, magistrates often do not have such information available to them (e.g., Zander, 1979). The studies that involved observations of bail hearings may have only collected data on the oral and non-verbal information presented to magistrates, and not on any written information that was available to magistrates (Doherty & East, 1985; East & Doherty, 1984; Eaton, 1987; Hucklesby, 1996, 1997b; Morgan, 1994; Zander, 1979). For instance, this is likely to be the true for Zander's (1979) study where law students conducted observations from the public gallery.

Third, studies focusing on real cases face problems of obtaining a large enough sample of a relatively infrequent event (e.g., Brown & Hullin, 1993; Doherty & East, 1985; Morgan & Henderson, 1998). For instance, Brown and Hullin (1993) found that only 14 defendants in their sample of 496 were Asian, and this prevented them from comparing this small sample with two much larger samples of white and Afro-Caribbean defendants. Other studies nevertheless made conclusions based on small samples. Eaton (1987) for instance, referred to eight cases observed (i.e., three men and five women) to support her conclusions regarding the effect of gender roles on magistrates' remand decisions.

Fourth, with the exception of a few (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1997b; Morgan, 1994), most studies do not point out whether the decisions were made by lay or stipendiary magistrates. Moreover, studies do not report how the courts and magistrates were sampled. Studies often involve only a small sample of courts (Brown & Hullin, 1993; Doherty & East, 1985; East & Doherty, 1984; Eaton, 1987; Hucklesby, 1996, 1997b; Morgan, 1994; Morgan & Henderson, 1998). For instance, Brown & Hullin's (1993) findings on the effect of race on magistrates' remand decisions was based on the decisions made in one court. There is evidence to suggest

the defendant's previous convictions.

that lay and stipendiary magistrates (Burrows, 1994; Hucklesby, 1997b) and magistrates working in different courts may differ in their practices (Hucklesby, 1997a). The fact that the criminological studies aggregate the decisions made over different magistrates and benches also means that individual differences are obscured.

Finally, when considering cue use, all of the studies reviewed here differentiate a decision to bail (unconditional and conditional) from a decision to remand in custody. The three categories are rarely analysed separately. Although this distinction reflects the tone of the Bail Act 1976, there is some evidence to suggest that this is not how magistrates perceive the categorisation in practice. For example, in their study of conditional bail, Raine and Willson (1994) found that bail conditions were perceived as being on the mid-point of a continuum between unconditional bail and remand in custody. Alternatively, it may be reasonable to group together the decisions to bail conditionally and to remand in custody, and consider them separate from the decision to bail unconditionally. A decision to attach conditions to bail or to remand a defendant in custody both require action on the part of the justice system. One may expect the cues used to make a punitive decision, which categorises the former group, to be more similar than those used to inform a non-punitive decision.

1.6.2. Conditions attached to bail. Although conditional bail is a decision more frequently made by magistrates, than the decision to remand a defendant in custody, there is relatively little past criminological research on the conditions attached to bail. Many of the studies reviewed above did not examine the type and number of conditions imposed, where conditional bail was granted (with the exception of Brown & Hullin, 1993; East & Doherty, 1984; Morgan, 1994; Morgan & Henderson, 1998; Zander, 1979).

Conditions may be perceived and experienced by the defendant as punitive. Conditional bail may also bring others, such as family members who may act as a surety for good behaviour and the police to whom the defendant may have to report daily, actively into the remand process. According to the Bail Act 1976, conditions may be imposed if they, amongst other things, would prevent the defendant from absconding, offending on bail or interfering with witnesses/obstructing justice. It may thus be necessary to impose several different conditions because each may be appropriate for preventing different behaviours. The conditions imposed must however, also be practicable and enforceable (Corre & Wolchover, 1999 cited in Law Commission, 1999).

Although in theory courts may impose any condition, Block (1990) states that magistrates are not very “creative” in their choice of conditions (p. 83).³³ The small range of conditions imposed in practice include: Producing a surety or security (surety), residing at specified address (residence), residing at a bail hostel and abiding by its rules (hostel), periodically reporting to the police station (reporting), abiding by a curfew order (curfew), not contacting specified people such as co-defendants and witnesses (not contact), not entering a specified area (boundary), and surrendering a passport (passport) (Block, 1990; Raine & Willson, 1994).

In his study, Zander (1979) concluded that “the courts are using conditions on bail much more frequently than in the past” (p. 110). Conditions were attached to bail in 34% of the 216 cases that were bailed. On average 1.2 conditions were imposed. The condition of reporting was imposed in over half (38) of the cases. This was followed by residence (19), boundary (10), not contact (8), passport (7) and curfew (4).³⁴ Defendants were asked for a security or surety in only 27 cases in which bail was granted. East and Doherty (1984) reported that 38% of the 396 defendants in their sample who were bailed, had conditions attached to their bail. On average 1.75 conditions were imposed. Reporting was imposed in 50% of cases, followed by curfew (42%), residence (41%), boundary and not contact (36%) and passport (5%).³⁵ In Morgan’s (1994) sample, 18% of 277 defendants were given conditional bail. One condition was imposed in 23 cases, two in 20 cases, three in eight cases and four conditions were imposed in two cases. A condition of residence was imposed in the majority (79%) of cases, followed by boundary or not contact (45%), reporting (21%), curfew (19%) and surety (6%).³⁶ Residence was usually combined with other conditions in cases where more than one condition was imposed. More recently, Morgan and Henderson (1998) found that 26% of the 3,667 defendants were given conditional bail in their sample. Seventy-two percent were given a condition of residence, 41% of not contact, 28% of boundary, 20% of curfew, 18% of reporting, 6% of surety and 3% of passport.

³³ It is quite common that defence solicitors may suggest conditions in order to counter a prosecution opposition to bail altogether (Burrows, 1994; Raine & Willson, 1994, 1995b). “Many magistrates and other practitioners acknowledged that sometimes the Bench simply ‘rubber stamped’ a package of conditions that had been agreed in advance by the prosecution and defence” (Raine & Willson, 1994, p. 15, 1995b).

³⁴ The other conditions imposed were to obtain a medical report in one case and a driving ban in another case (Zander, 1979).

³⁵ The other conditions imposed in 2% of East and Doherty’s (1984) cases required the defendant to attend a hospital.

³⁶ Other conditions were imposed in 8% of cases (Morgan, 1994).

Finally, in a study specifically designed to address the issue of conditional bail Raine and Willson (1994, 1995b) conducted interviews with court participants including magistrates. They also collected data on 1,050 decisions from records of five courts that were known to vary in their use of conditional bail (Home Office, 1989), between October and November 1993. It was found that residence was imposed most frequently (i.e., 78.5% of the time). This was followed by not contact (46%), boundary (28.1%), curfew (21.1%), reporting (17.4%), hostel (4.1%), surety/security (3.7%), passport (3%), and other conditions such as a driving ban (2.6%).³⁷ On average, two conditions were attached to bail. There were no significant correlations between the number and type of conditions attached and the seriousness of the offence, age and gender of the defendant.

The rationale for imposing certain conditions seems clear. For instance, surety, residence, hostel, reporting and passport may be imposed to prevent absconding, whereas curfew and boundary may be imposed to prevent offending, and not contact may be imposed to prevent interference with witnesses. Raine and Willson (1995a) have grouped conditions according to those that are defined in terms as “locating” (e.g., reporting, surety/security, passport, residence, hostel), “containing” (e.g., curfew), “banning” (e.g., driving), and “bounding” (e.g., boundary, not contact) (p. 576). Conditions may also be classified according to the degree of their perceived impact upon crime control and their ease of enforceability (Raine & Willson, 1994, 1995b). However, as Block (1990) points out, conditions may not be effective in their intention. It is easy to think of a situation where a defendant may offend during the time outside a curfew. A defendant may obtain a new passport and then abscond, or may abscond after reporting to the police station. To summarise, Block (1990) argues that “most of the time conditions of bail cannot deliver” (p. 84).

Raine and Willson (1994, 1995b) did not find a significant correlation for each of the five courts, between the type of condition attached and the reasons cited for imposing them. Raine and Willson’s (1994, 1995b) qualitative findings support the view that the use of conditional bail is complex and not fully in line with the Bail Act 1976. For example, conditional bail was used for a number of reasons, including the need to reduce prison overcrowding, deterrence, punishment, to add structure to the defendant’s life and to satisfy both the defence and prosecution simultaneously. Corre (1989) also notes that often conditions are attached as a compromise between the

³⁷ Here, boundary includes the 23.8% of cases where defendants were to keep away from a specific address and the 4.3% that involved exclusion from the city centre or neighbourhood (Raine & Willson,

prosecution and defence requests. The penalty function of conditional bail in particular has been well recognised by researchers (e.g., Block, 1990; Burrows, 1994; Corre, 1989; Raine & Willson, 1994, 1995b). Block (1990) argues that conditions “are all too often made by justices who want to grant bail but who do not wish to appear too soft, or do not want the defendant to think he has got bail too easily, or who want to make some concession to a prosecutor who has opposed bail” (p. 84).

In sum, conditional bail is a popular alternative to unconditional bail or a remand in custody. A comparison across studies fails to provide a general pattern in the use of conditions, although it does show that residence is the most commonly imposed condition, and that often more than one condition is imposed. Relatively little is known about the effect of legal and extra-legal factors on the conditions imposed.

1.6.3. Disagreement in remand decisions.³⁸ It may not be unreasonable to expect a group as homogenous as the magistracy to make the same remand decisions on like cases. Indeed, researchers have suggested that magistrates do not like to disagree with a decision made by a previous bench on a prior adjournment in the same case (Burrows, 1994; Doherty & East, 1985). The evidence however, suggests otherwise, and criminological researchers have commented upon the extent of disagreement among magistrates’ remand decisions. As an indication of disagreement, they have pointed to the differences in bail and custody rates among courts that cannot be fully explained by the differences in the cases presented (Jones, 1985; Home Office, 1987; Hucklesby, 1996, 1997b; Morgan & Henderson, 1998; Raine & Willson, 1994, 1995b).

A Home Office (1987) study of remand decisions made between 1980 to 1986 found that there were considerable variations in the custody rates among areas. For instance, the rate per 1,000 indictable offences was 313 for the Bournemouth area and 26 for Wakefield. One possible explanation for these variations is that there were also differences among areas in the proportion of defendants summonsed rather than charged. Jones (1985) found large variations in custody rates among courts located in different police force areas, for example, from below 10% in Bedfordshire and over 30% in Dorset. Using a loglinear analysis, he found that the police remand decision, offence category and police force could account for a significant proportion, but not all, of the variance across areas. The police remand decision was the most influential

1994, 1995b).

³⁸ In the present thesis, the term disagreement is used to describe what criminologists often call inconsistencies or variations in decisions made among magistrates or courts. In the psychological literature reviewed in the next chapter, inconsistency refers to intra-individual behaviour, while disagreement refers to inter-individual behaviour. In this sense, the term disagreement best describes the criminological findings.

predictor of variance across areas.³⁹ Other factors such as the defendant's age and gender, and whether the defendant came to court as a result of a summons or charge, accounted for a negligible proportion of the variance across areas.

After an analysis of the court records from three courts, Hucklesby (1996, 1997b) reported that two of the courts had a remand in custody rate of 9%, which varied greatly from a 25% rate recorded in the third court. These variations existed despite the fact there were no significant differences among the courts in terms of the cases presented (i.e., defendants' address, age, gender, the offence he or she was charged with and whether the adjournment was before or after conviction). The observational data collected from these courts did however suggest that there were some differences among courts in terms of the defendants' bail record and previous convictions, and the prosecution request. The prosecution was more likely to request a remand in custody in the court with the higher custody rate, and Hucklesby (1996, 1997a, 1997b) had concluded that the prosecution request had a significant influence on magistrates' remand decisions.⁴⁰

A Home Office (1989) study found significant differences in the proportion of cases that were granted conditional bail in 60 magistrates' courts (cited in Raine & Willson, 1994). This finding was confirmed by Raine and Willson (1994, 1995b) who reported a variation among their five courts, in the frequency with which conditional bail was granted (i.e., 46.3% in one court and 61.7% in another court). Finally, they also found that the courts disagreed as to the conditions to be attached to bail, in cases where conditional bail was granted. For instance, the variation among the courts when imposing residence as a condition of bail was from 65.4% to 88.4%.

Criminologists propose that differences in "court culture" may account for disagreement in decisions among courts (e.g., Hucklesby, 1997a). Hucklesby (1997a) defines court culture as "a set of informal norms which are mediated through the working relationships of the various participants" (p. 130). She explained the difference in the remand decisions made by the courts in her 1996 study in terms of the differences in the practice of the prosecution and the number of bail applications in these courts. The "court culture" explanation however, cannot account for differences in the decisions made by magistrates working in the same court.

³⁹ Some areas were not influenced at all, some were influenced by the police decisions to remand in custody, and others were influenced by the police decisions to bail.

⁴⁰ In further analysis of this data, Hucklesby (1997b) argues that variations can be explained by "court culture", which is defined as "a set of informal norms which are mediated through the working relationships of the various participants" (p. 130).

In sum, past criminological research based on an analysis of real cases, indicates that magistrates and courts disagree as to the remand decision to be made on similar cases. However, the fact that the cases are similar, but not the same, precludes concluding that the criminological research has found evidence of true disagreement. A stronger test is needed. Moreover, the criminologists' explanation for disagreement, namely the concept of court culture, says little about the characteristics of the individual decision makers that may underlie the formation of different informal norms among courts. Perhaps more importantly, the concept of court culture cannot explain the disagreement found among individuals working within the same court. Finally, although research pre-dating the Bail Act 1976 found evidence for differences in the practices of urban and rural courts (e.g., Bottomley, 1970), it is not known if this is true today.

1.6.4. Effectiveness of bail information schemes. As mentioned earlier, the report of the government working party that led to the development of the Bail Act 1976, also recommended that information about a defendant's community ties should be made available to the court on a standard form, by what are now called bail information schemes (BIS) (Home Office, 1974). Research had revealed that often there was insufficient information about the defendant on which to base a remand decision (Bottomley, 1970; King, 1971; Simon & Weatheritt, 1974; Zander, 1967, 1971). It was believed that the likelihood of a defendant absconding could be predicted by the degree and nature of his or her community ties, for example, by whether or not the defendant had a fixed address, a spouse or dependants, and a job or educational commitment (Home Office, 1974).

BISs originated in the U.S. In 1961, the Manhattan Bail Project, which was organised by the Vera Institute of Justice, was the first pilot scheme to be set up (Ares et al., 1963).⁴¹ Structured interviews were conducted with defendants arriving in the court cells prior to their court appearance. Defendants charged with serious offences and those with previous convictions were excluded. Information was gathered on five factors, so as to decide whether the defendant was a good bail risk (i.e., the defendant had a present residence and employment, relatives in the New York area with whom the defendant was in contact, no previous convictions, and evidence of long term residence in New York). The information was then verified and scored on a fixed scale. A recommendation was made to the court, the prosecution and defence, concerning the defendant's suitability for bail. Suitable defendants could be released on their own

⁴¹ The project was later renamed the New York Release on Recognizances Project and expanded to other areas such as Washington DC (Home Office, 1974).

recognisance without need for a bail bond.⁴² See Appendix B for a copy of the standard form and scoring scheme used in the Manhattan project, and a copy of the form recommended by the Home Office (1974). The Manhattan scheme was evaluated over the first year. This involved assigning defendants randomly to the experimental group, for whom a recommendation was conveyed to the court, or the control group, for whom the recommendation was suppressed. It was found that 60% of the experimental group were bailed compared to only 14% of the control group, and only three defendants in the experimental group absconded (Ares et al., 1963).

In 1975, the Inner London Probation and After-Care Service, as it was then called, teamed up with the Vera Institute, to set up a pilot BIS in Camberwell Green magistrates' court (Pearce & Smith, 1976). This scheme targeted defendants remanded in custody overnight by the police, after arrest, who were awaiting first appearance at court the next morning, and who were also likely to be remanded in custody by the court. Probation officers interviewed defendants and gathered information on their community ties. This information was then verified (if possible) via telephones and visits, and recorded on a bail information sheet. Only positive information was provided because BISs aim to divert defendants from custody. If negative information was discovered a bail information sheet would not be produced. Copies of the sheet were then given to the defence representative (or the defendant if he or she was not legally represented), the police (prosecution) and the court. The sheet did not contain a recommendation regarding bail from the probation officer. Rather, the BIS was considered "an aid to the court in making the most responsible and fully-informed decision possible" (Pearce & Smith, 1976, p. 4).

After the first year, the scheme had dealt with 1,150 defendants. A quantitative evaluation of the success of the scheme was not considered feasible. Perhaps unconvincingly, Pearce and Smith (1976) claimed that this was because observed changes in magistrates' decisions may in fact be due to the presence of the scheme rather than the information provided; other factors such as changes in the seriousness of the offences defendants were charged with could affect the findings; the past court records would not enable reliable pre-post measures; and the number of cases in the scheme were still too few. However, it was noted that magistrates reported finding the information useful, that the police withdrew objections to bail after the information was

⁴² Bail in the U.S. differs from that in the English system. In the U.S., the bail decision is in theory based solely on the risk of a defendant absconding. Bail is set at a certain monetary level and the defendant must raise the amount before release. However, in practice, if there are concerns that the defendant may offend

provided, and the number of contested bail cases had risen. On this basis alone, Pearce and Smith (1976) concluded that the provision of information on community ties "seems to encourage more frequent granting of bail at first appearance, and there are no indications that those thus bailed are increasing the rate at which defendants abscond or commit further offences" (p. 48).

Although BISs were developed in some other courts, these were largely uncommented upon. The initiative did not gain wide support (King, 1981) and consequently the initiative was abandoned after a few years.⁴³ Nevertheless, BISs were re-established in the late 1980s. The Home Office funded a proposal by the Association of Chief Officers of Probation (ACOP) to pilot BISs (ACOP, 1986).⁴⁴ A Home Office circular No. 25 (1988) entitled *Bail* stated that defendant related information was required early in the proceedings to avert unnecessary remands in custody. The schemes only deal with defendants until their second appearance at court, thus creating a manageable daily workload. The schemes collect and verify information that would be in favour of bail. All information is written on a standard self-carbonated form, copies of which are presented to the prosecution and defence. A copy of a bail information sheet is presented in Appendix B. The information is not provided to the court because it may give a false impression that the probation service recommends bail in some cases and not others where the scheme has not been involved. Negative information is not presented, and the current offence is not discussed. It should be noted that the probation officers have much discretion when operating a BIS, in terms of for example, the selection of cases, the content of the interview and the information collected, verified and presented.

Recent evaluations of BISs. In 1987, BISs were piloted in eight courts throughout England and were evaluated after their first year by Stone (1988), with the help of the Vera Institute.⁴⁵ The staff operating the schemes recorded details of the

for example, bail may be set very high. Consequently, professional bail bondsmen have emerged. They put up the money after the defendant pays a premium.

⁴³ Reasons for the waning enthusiasm included the fact that probation officers were being less frequently used in courts; there was a belief that the Bail Act 1976 would be sufficient to reduce remands in custody; duty solicitors were introduced; the size of the remand population was considered to be moderate; and there was a lack of organisation regarding what information should be collected, in what form and for whom (Godson & Mitchell, 1991).

⁴⁴ The renewed interest can be first explained by the fact that the newly formed prosecution service wished to be independent of the police. It thus required an independent source of information, such as the probation service, on which to make bail requests. The probation service was similarly keen to establish links with the new prosecution agency. Second, the penal system experienced a seemingly relentless rise in the prison population which created severe overcrowding in remand prisons in particular.

⁴⁵ These schemes dealt with defendants over 17 years of age. During the pilot phase, the schemes did not consider cases that had been summonsed or bailed by the police, or most of the defendants for whom the police had asked the prosecution to request conditional bail.

cases they interviewed, and recorded the prosecution and defence requests and the court decisions on all cases (including those they didn't provide information on). A technique of statistical prediction was used to predict the number of cases dealt with by the BISs that would have been bailed in the absence of the BISs. Multivariate statistical models were constructed for each of the eight courts using data from cases appearing in the court during the pilot period, but which were not dealt with by the BISs.⁴⁶ The models were validated on cases appearing at the court prior to the pilot period and were adjusted for the two types of error, so that they would err on over predicting bail, thus providing a conservative estimate of the impact of the BISs. The results indicated that of the 1,367 cases dealt with by the BISs in the eight courts, 36% were remanded in custody, 35% were bailed and would have been bailed in the absence of the BISs, and 29% were bailed because of the schemes. There were variations in the effectiveness of the schemes among courts (e.g., from approximately 10 to 90 defendants were diverted from custody at first court appearance). Data from four of the schemes also indicated that the use of bail hostels as a condition of bail was large. Other evidence supports this finding (Burrows, 1994).

Stone (1988) also assessed the effectiveness of BISs with respect to subsequent bail breaches. This is because it could be argued that BISs would result in more of the "wrong" defendants being released. Cases were followed up until their first re-appearance at court, after being arrested and charged with an alleged breach of bail conditions or for offences committed while on bail. Defendants who were subsequently re-bailed were distinguished from those who were then remanded in custody. Data was only available for three schemes. The results revealed that for two schemes, defendants granted bail after the intervention of a BIS (hereafter called BIS defendants) were slightly less likely to be arrested for a new offence while on bail (i.e., 14% and 9% in Ipswich and Newcastle courts, respectively) than those bailed in the absence of a BIS (hereafter referred to as no BIS defendants) (i.e., 17% in Ipswich and 12% in Newcastle, respectively). However, for the Leicester scheme, the reverse was true. The rate of arrest due to failure to appear was very low overall and slightly less for bailed BIS defendants than bailed no BIS defendants in the Leicester and Newcastle courts. In Ipswich court, none of the bailed BIS defendants failed to appear, compared to 7% of the bailed no BIS defendants. Finally, the rate of arrest for breach of bail conditions was

⁴⁶ The predictors (cues) included offence, alleged bail breach, offence already on bail for, number and type of previous convictions, year of most recent one, age, nature of address as recorded by police, police objections to bail, and bail decision. These predictors were not all significant for all models. Stone (1988) gave no more details of the statistical modelling technique.

slightly lower for bailed BIS defendants than for bailed no BIS defendants in Newcastle court, but was higher in the other two courts. Stone (1988) concluded that the provision of bail information “can avoid the apparent necessity of a substantial number of custodial remands” (p. 61).

Consequently, Stone (1988) and the Vera Institute recommended that BISs be established in magistrates’ courts throughout England and Wales, and this recommendation was agreed upon by the ACOP, the CPS, the police and the Home Office.⁴⁷ Prison based schemes were also developed (Mair, 1988). Such schemes target defendants remanded in custody by magistrates at their first appearance, and are intended to help a new application for bail at the next hearing. Information is often given to the defence. Prison based schemes have the advantage of having more time to collect and verify information, but they are isolated from the court. Since 1988, several further evaluations of the effectiveness of BISs have been conducted (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; HM Inspectorate of Probation, 1993; Lloyd, 1992; Mair, 1988). The results of these evaluations shall be presented before a review of the methods involved.

Lloyd (1992) evaluated BISs operating in three courts in England and one prison based scheme, with the aim of assessing their affect on the decisions made by the prosecution, the defence and the magistrates. In the court based schemes, monitoring forms were completed for 1,581 defendants held in police custody overnight and where the police were objecting to bail, from May to October 1990. Of these, 1,270 defendants were interviewed. The BISs provided information to the court on around 60% of these defendants, and although information was collected for the other 40% it was not provided to the court for various reasons. Therefore, Lloyd (1992) compared these two groups (which he called the “information present” and the “information absent” groups) (p. 37). Here, these will be referred to as the BIS and no BIS groups, respectively. Both groups were matched on factors such as age, sex, offence and reason for arrest. The BIS and no BIS groups at Hull and Manchester courts were comparable, but not at Blackpool court. The reasons for not providing bail information for cases were ascertained to discover if they could affect the remand decision. Across the three courts, in the majority of cases information was not provided after the defendant was

⁴⁷ The report also recommended the development of a national set of guidelines to govern BISs and special training for bail information officers (Stone, 1988). In 1988, two national committees were set up to promote BISs (HM Inspectorate of Probation, 1993). The National Steering Committee advised on policy and strategy matters and the ACOP Bail Practice Committee advised on professional matters. The latter committee produced a statement of principles and good practice in 1991 to provide guidance to

interviewed because it could not be verified. However, for Hull, in around half of the cases where information was not provided the reason was that negative information was uncovered. Thus, defendants who were in the no BIS group and for whom information was not provided for remand related reasons were excluded from analyses.

It was found that in all of the three courts, magistrates were less likely to remand BIS defendants in custody (i.e., 21% in Blackpool, 29% in Hull and 28% in Manchester) than no BIS defendants (i.e., 28%, 56% and 45%, respectively). Because the two groups were considered comparable the effect of the BIS on the number of defendants diverted from custody was calculated by taking the proportion of bailed no BIS defendants as the baseline and subtracting this from the proportion of bailed BIS defendants. This procedure showed that in total 175 defendants, who would otherwise have been remanded in custody, were bailed because of the intervention of the BISs (Lloyd, 1992).

Lloyd (1992) also measured the success of BISs in bailing the “right” defendants (i.e., those who don’t breach bail). His assessment was more stringent than Stone’s (1988) because he included both defendants who were subsequently bailed after re-arrest and those that were subsequently remanded in custody. It is clear that even those re-bailed create a burden for the justice system. Defendants from the Manchester scheme were excluded due to insufficient data. There was no significant difference between the BIS and no BIS groups regarding the percentage of defendants who re-appeared for a new offence (i.e., 11% and 10%, respectively) and those who re-appeared for breaching bail conditions (i.e., 6% and 8%, respectively). “Thus, of those defendants bailed despite police objections to bail, there is no indication that cases bailed with bail information are any more likely to offend on bail or breach bail conditions than those bailed without bail information” (Lloyd, 1992, p. 56).

In Lloyd’s (1992) evaluation of the BIS based at Lincoln prison, information was gathered on 123 defendants over four months. The BIS provided information in 63% of the cases interviewed. The reasons for not providing information in the remaining cases included that information could not be verified, there were no hostel places available, or there was a warrant out for the defendant’s arrest. For 32% of the BIS defendants, the bail information sheets were sent by mail to the probation officer in the court, but in the majority of cases it was telephoned through. Applications for bail had been made at the previous court appearance for a significantly greater number of

areas wanting to set up a BIS (ACOP, 1993). Schemes were “approved” by this committee. BISs are now overseen by only one national committee (Burrows, 1994).

BIS defendants than for no BIS defendants. It was found that magistrates remanded in custody fewer BIS defendants (i.e., 47%) than no BIS defendants (i.e., 58%). Thus, 21 out of 75 defendants were granted bail due to the intervention of the BIS. Lloyd (1992) concluded that “bail information does seem to be having a considerable effect on the proportion of cases given bail” (p. 60).

The first evaluation of a prison based scheme was in fact conducted by Mair (1988). The “temporary bail action project” was set up in 1987 in Wormwood Scrubs prison by the Inner London Probation Service, for a four week period. Here, the BIS interviewed 48% or 323 of the men remanded into prison during that period. Mair (1988) referred to the interviewed men as the “experimental group” and the 52% of men who were not interviewed as the “control group” (p. 18). Although cases were not randomly assigned to each group, both groups were similar in age. Seventeen percent of the BIS group was bailed compared to only 3% of the no BIS group. However, the situation is more complicated than it appears because as Mair (1988) points out, the outcome of 29 cases in the BIS group could be due to other factors such as the work done by the defence solicitor. In addition, eight cases, although bailed, resulted in bail failures as men absconded from bail hostels, for example. Nevertheless, other evaluations have reported that prison based schemes were effective in bailing defendants who were originally remanded in custody (Williams, 1992; Wilkinson, 1990; Mitchell, 1991 all cited in Cavadino & Gibson, 1993).

It has been argued that rather than directly influencing magistrates’ decisions, the information provided by BISs may influence the prosecution request, the defence request or both, and may thus only indirectly affect magistrates’ decisions (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; Stone, 1998; Lloyd, 1992). Past research had demonstrated that magistrates tended to agree with the prosecution request (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996, 1997a; Morgan, 1994; Morgan & Henderson, 1998; Zander, 1979), and that defendants were more likely to be bailed in the face of prosecution objections, if the defence applied for bail (Doherty & East, 1985; Zander, 1979). Data from three of Stone’s (1988) courts suggested that the prosecution requested a remand in custody, following a police recommendation to do so, less frequently for BIS defendants than no BIS defendants. Qualitative data from interviews with the prosecution indicated that the prosecution was responsive to the BIS when making a request (Stone, 1988). Lloyd (1992) similarly reported that BISs had an effect on the prosecution request. For instance, the prosecution was less likely to request a remand in custody for BIS defendants (i.e., 56% in Hull and 39% in Manchester) than

no BIS defendants (i.e., 77% in Hull and 54% in Manchester). However, the opposite was true for Blackpool. The proportion of no BIS defendants for whom the prosecution did not request a remand in custody was subtracted from the proportion of BIS defendants for whom the prosecution did not request a remand in custody. It was discovered that due to the intervention of the BIS, the prosecution did not request a remand in custody for a total of 94 defendants. Lloyd (1992) also found that the defence applied for bail in the face of prosecution objections more often for BIS defendants than for no BIS defendants in all three courts, and for a total of 83 defendants, this was due to the intervention of the BIS. Interviews with defence solicitors revealed that the information provided by the BIS was useful in bolstering the defence's arguments for bail. Finally, the bench bailed defendants in 99% of the cases the prosecution requested bail and in 70% of cases that the defence applied for bail.

Fiddes and Lloyd (1990) monitored BISs in a number of courts from April 1989 to March 1990.⁴⁸ They reported that the prosecution was less likely to request a remand in custody for BIS defendants (i.e., 45%) than no BIS defendants (i.e., 54%). Moreover, the former group (i.e., 26%) were less likely to be subsequently remanded in custody than the latter group (i.e., 41%). The fact that the disparity was greater in the former group led Fiddes and Lloyd (1990) to conclude that "although bail information has its major effect on CPS recommendations, it also has an independent effect on magistrates' decisions – either directly or indirectly through the defence solicitor" (p. 26). In addition, Fiddes and Lloyd (1990) discovered that at second court appearance, there was a bail rate of 52% in court based BIS cases and 48% in prison based BIS cases, and although there was no comparable no BIS group, court statistics prior to the introduction of the BIS indicated lower bail rates at second court appearance (Fiddes & Lloyd, 1990). "The basic monitoring statistics suggest that providing bail information on defendants increases their chances of being bailed" (Fiddes & Lloyd, 1990, p. 27). In fact, they attributed the reduction in the prison remand population over that period to the effectiveness of the schemes.

In their study, Godson and Mitchell (1991) evaluated the effect that BISs had on the prosecution request in seven courts in England. Data was collected on 4,665 defendants at first court appearance. The BIS and no BIS defendants were similar in terms of age, gender, type of residence, and the prosecution request. It was found that the BISs seemed to have an impact on the prosecution a request for remand in custody,

⁴⁸ They reported that the monitoring began with nine courts and ended with 46 courts and four prison based schemes (Fiddes & Lloyd, 1990).

where the police had objected to bail. The prosecution requested a remand in custody for a greater number of no BIS defendants (i.e., 73%) than for BIS defendants (i.e., 51%). Furthermore, Godson and Mitchell (1991) discovered that magistrates agreed with a prosecution request for a remanded in custody in 79% of cases, and they granted bail in 98% of cases where the prosecution did not oppose bail.⁴⁹ The defence applied for bail more often where BIS information was provided (i.e., for 74% of BIS defendants and 52% of no BIS defendants), and where there was evidence of a stable address. This suggests that providing the defence with information from the BIS can improve applications for bail. However, it is evident that although the magistrates agreed with the defence and disagreed with the prosecution, the impact of BISs on this was rather small (the defence was successful against prosecution objections in 6% more cases when bail information was provided). Godson and Mitchell (1991) concluded that the BIS had an impact on the prosecution request.

The HM Inspectorate of Probation (1993) visited BISs in eight probation areas throughout England and Wales (which may include many court based BISs) and BISs in six prisons. Two probation areas with no BISs were also visited. Interviews were conducted with those running the schemes. The prosecution claimed that the BISs were useful. It was therefore concluded that “bail information schemes have been a significant influence on the CPS’s recommendations on the use of bail and are cost effective” (HM Inspectorate of Probation, 1993, p. 16). Finally, more recently, Morgan and Henderson (1998) asked the prosecution to rate how “important” the information provided by the BIS was to their request (p. 75). Around two thirds rated it as “very important” and approximately two fifths rated it as either “not very important” or “of no value” (p. 76).

In his evaluation, Stone (1988) had noted how the BISs gathered information specific to the needs of the individual case. For example, in 33% of the 1,949 cases, a private address was verified, in 22% of cases the availability of a hostel or other supported accommodation was considered and in 10% of cases the services available were considered. Bail information officers also verified community ties, employment or other sources of reliability, good supervision history, and other local support. Lloyd (1992) found that the detail and sometimes the type and amount of information collected varied among BISs. For two courts, the information was more detailed and

⁴⁹ It should be noted that the defence applied for bail in 62% of the cases that the prosecution objected to bail, and that magistrates agreed with the defence request in 34% of these cases (conditional bail was usually sought), thus accounting for virtually all of the cases where the magistrates disagreed with the prosecution request for a remand in custody (Godson & Mitchell, 1991).

concerned a wide range of factors such as external sources of support for the defendant, while in one court information was concise and often only concerned the defendant's address. Residence (including the availability of a bail hostel) was the most common type of information provided by the Lincoln prison based scheme.

The ACOP guidelines state that bail information should be "verified", "factual", "favourable", and there should be "no discussion or comment on the alleged offence", "no opinion expressed" and "no recommendation" (cited in Lloyd, 1992, p. 51). The HM Inspectorate of Probation (1993) investigated the quality of the information provided on the bail information sheets by examining the last 60 sheets in each prison and court based scheme. Seventy-seven percent satisfied the criteria that the sheets should include verified, factual, favourable data and 20% were considered "acceptable" (HM Inspectorate of Probation, 1993, p. 39). However, 3% were deemed poor. In fact, many sheets were "one liners" that included information pertaining solely to the defendants living arrangements (HM Inspectorate of Probation, 1993, p. 39). Others have made similar comments (e.g., Lloyd, 1992).

Criticisms of past research on BISs. According to the research reviewed above, the BISs constitute a policy initiative that so far has been effective in diverting defendants from custody, with no adverse affect on the number of defendants who breach bail. In fact, the evaluations have also reported that BISs are cost effective (e.g., HM Inspectorate of Probation, 1993; Lloyd, 1992). For example, Stone (1998) claimed that the annual cost of a BIS, plus the cost of bail hostel places, was less than the cost of a prison cell and legal aid to defendants remanded in custody. Mair (1988) subtracted the actual time spent in custody by defendants in the BIS group who were bailed as a results of the intervention of the BIS, from the average time spent in custody, and multiplied this by the cost of custody per day. There were savings. Hedderman (1991) argues that BISs are also likely to be cost effective in that a remand in custody is more likely to lead to a custodial sentence.

Despite the seemingly consistent findings of the effects of BISs reported above, the findings should not be taken to be conclusive. For instance, Stone (1988) conceded that "the results of the first year cannot support any large claims that might be made for the schemes: they will not, on their own, stop the growth in the numbers of defendants remanded in custody" (p. 68). Lloyd (1992) warned that "any attempt to produce actual figures of defendants diverted from a custodial remand due to bail information must be undertaken cautiously: ultimately, definitive figures cannot be produced on complex issues such as this" (p. 44).

Indeed, the reliability and validity of the findings may be limited for a number of reasons. Although the studies comment on the “cause-effect” relationship between BISs and magistrates’ remand decisions, they lacked experimental control. In contrast to the evaluation of the Manhattan scheme (Ares et al., 1963), cases were not randomly assigned to the BIS and no BIS groups. In fact, Mair (1988) misleadingly referred to the BIS and no BIS groups in his study as the “experimental” and “control” groups. The lack of experimental control implies that there may be confounding variables such as differences in the characteristics of the cases (e.g., differences in the seriousness of the offence) in the two groups that may account for differences in the bail and custody rates between the groups. For instance, Lloyd (1992) revealed that for one of the three court based schemes in his study, the BIS and no BIS groups were not comparable in terms of age, offence, reason for arrest and known to probation service. In addition, the two groups in his evaluation of the prison based scheme were not comparable in terms of previous applications for bail. The lack of previous bail applications in the no BIS group may reflect the fact that these cases stood little chance of gaining bail. Stone (1988) did not distinguish between the two groups in terms of the reasons for why bail information was not provided. There may have been cases in the no BIS group for whom these reasons may have affected the remand decision. Stone (1988) also did not provide any details of the demographic characteristics of the cases in the BIS and no BIS groups, and he did not examine whether the prosecution requests, which have an important effect on magistrates’ decisions, varied for both groups. Finally, the fact that BISs have been reported to also affect the prosecution and defence requests (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; Lloyd, 1992; Stone, 1988) means that their direct impact on magistrates’ remand decisions is unclear in the above studies which do not disentangle these variables.

Not only does the lack of experimental control create problems with confounding variables, but it also implies that the independent variable, namely the BIS, may vary among cases. Studies have revealed that the type and amount of information provided varied among cases and courts, and in some cases in the BIS group, the information provided was sparse (HM Inspectorate of Probation, 1993; Lloyd, 1992). Furthermore, studies have shown that community ties information was absent in some, but not all cases (e.g., Hucklesby, 1996). Defence solicitors often provide such information to the court (Hucklesby, 1996). As Mair (1988) discovered the remand decision may be affected by the information provided by the defence solicitor rather than the BIS. This also suggests that magistrates may receive information pertaining to

the community ties of defendants for whom bail information was not provided. Thus, although Lloyd (1992) referred to his no BIS group as the “information absent” group, information may not in fact have been absent for these defendants. In a recent survey, Morgan and Henderson (1998) found that negative information came to light in 12% in their sample of 1,081 cases, and that in 62% of these cases, it was provided to the prosecution. Here, a BIS group may be disadvantaged and so the scheme would appear less successful in diverting defendants from custody. Finally, evaluations of the prison based schemes also lack control over whether information was actually supplied to the prosecution, defence or the court, after it was sent to the probation officer in the courthouse (e.g., Lloyd, 1992; Mair, 1988).

The method used by studies such as Stone (1988) and Lloyd (1992) to investigate bail failures (i.e., defendants who breached bail) is limited. This is because the defendant may after re-arrest appear in another area, or after the duration of the study.

Although Stone (1988) claims that the use of bail hostels was large, there was no pre-BIS comparison made and so it cannot be determined if BISs were responsible for any increase in this condition of bail.

All of the evaluations suffer from problems associated with missing data. For instance, Fiddes and Lloyd (1990) conceded that there was a significant amount of missing information in their data set. In Mair’s (1988) study, data was missing regarding charge for around half of the no BIS. These cases could have been charged with more serious offences and so less likely to have been granted bail.

Another concern with the findings of the above studies is that they may be biased. Some of the evaluations are examples of “action research” (Robertson, 1993). For example, Stone (1988) stated that the interim results of the studies were reported back to the schemes thus affecting their operation and the final results. Some studies were conducted by those operating the schemes (e.g., Mair, 1988). These studies may lack objectivity, and the researchers may have a vested interest in the continuation of the schemes, especially in the face of a lack of alternatives.

Studies may be over-reporting the effect of BISs on magistrates’ remand decisions. The results aggregating over courts hide differences in the success of individual schemes (HM Inspectorate of Probation, 1993; Lloyd, 1992; Stone, 1988). For example, Stone (1988) reported that in one of his courts, only 10 defendants had been diverted from custody as a result of the scheme. Finally, although there is evidence to suggest that magistrates attend to information about the defendant’s community ties

(Doherty & East, 1985; Eaton, 1987; Hucklesby, 1996; Morgan & Henderson, 1998), studies also reveal that other information, such as the nature and seriousness of the defendant's offence has an impact on magistrates' decisions, which may be greater than the impact of community ties information.

In sum, the BISs policy initiative, which was introduced as way of overcoming the problem of lack of information available to magistrates regarding a defendant's community ties, has in numerous reports said to have been effective in diverting the "right" defendants from custody. The methodological shortcomings of these studies however, imply that their findings may lack validity. A more controlled experimental approach should be used in future evaluations. Finally, future studies on BISs could examine the effect of these schemes upon other aspects of magistrates' remand decision making such as their agreement, consistency, and post-decisional confidence.

1.7. Summary and Proposed Research Questions

In the English criminal justice system, the vast majority of legal decisions are made by magistrates. The large majority of magistrates are lay people and very few are legally qualified and a few are stipendiaries. The historical evolution of the magistracy means that today they are often criticised for not being representative of the general population, and the defendants who appear before them. It is also assumed that there may be differences between lay and stipendiary magistrates.

The remand decision is one of the most frequent decisions made by magistrates. They must decide whether a defendant should be bailed (released) unconditionally, bailed with conditions, or remanded in custody, each time a case is adjourned, whether for trial, sentence or appeal. The remand decision is one of the first, and perhaps most important, steps along the path in the justice process as it may affect other legal decisions such as the decisions to convict and sentence. A decision to remand a defendant in custody can have significant adverse consequences for defendants and their families, as well as placing a burden on the penal system. On the other hand, a decision to bail a defendant can have significant adverse consequences for the general public.

Therefore, when making a remand decision, magistrates must consider the ramifications of their decisions for both the individual defendant and for society. In order to protect the former, magistrates must observe due process. By contrast, in order to protect the latter, magistrates may operate according to the principles of crime control. The decision making task is probabilistic, and as with all legal decisions, the task does not require that magistrates make the objectively "correct" decision. Rather,

they should aim to minimise either a type I or type II error. Critics have argued that crime control principles that minimise a type II error, predominate in the law on bail and consequently, magistrates' remand decisions.

Magistrates' remand decision making is governed and guided by the Bail Act, which was introduced in 1976. This piece of legislation is however, vague and ill-defined. Therefore, magistrates have much discretion in its interpretation, and their subsequent remand decisions. Before the introduction of the Act, researchers had noted the considerable discretion afforded magistrates when making their remand decisions. For example, Zander (1967) concluded that "magistrates exercise their discretion to grant bail according to criteria which are far from clear. Nor do they have any real guidance as to what weight should be given to the different factors that are allowed to influence the decision as to bail" (p. 128). After the introduction of the Act, Hayes (1981) stated that the magistrates' remand decision "involves an intertwining of fact with opinion, and the whole reasoning process, and linking together of the various strands of argument, is a highly subjective, evaluative exercise" (p. 22).

In practice, magistrates' decisions may also be affected by other features of the task, such as the order of information presentation, the availability, quality and usefulness of information, magistrates' opportunity to learn from the task, and time pressure.

Research pre-dating the Bail Act 1976, painted a dismal picture of magistrates' remand decision making, and research conducted after the introduction of the Act, has demonstrated that nothing seems to have changed. According to these studies, in addition to legal cues, magistrates attend to extra-legal defendant and crime control related cues when making their remand decisions. Conditional bail is a popular decision and magistrates often impose a small range of conditions that may or may not be effective. Different magistrates make different decisions on alike cases. There may also be differences in the practices of urban and rural courts. Finally, the research evaluating BISs, which provide positive information about a defendant's community ties to the court, has concluded that this policy initiative has been successful in diverting the "right" defendants from custody.

The past research has been conducted by criminologists and is based on decisions made on real cases. However, the lack of experimental control over the variables being measured in these studies creates difficulties in interpretation of their findings. Thus, conclusive evidence is lacking. Previous researchers have also grouped the decision to grant unconditional and conditional bail together, and compared these

decisions with decisions to remand in custody. Although this assumption is compatible with the reasoning in the law on bail, psychologically it may be more appropriate to consider unconditional bail separate from decisions to bail conditionally or remand in custody, because unlike the former, the latter decisions involve behaving in a punitive manner. Previous researchers have also not meaningfully considered magistrates' remand decisions in the context of the task constraints under which magistrates work.

The research presented in this thesis investigates magistrates' remand decision making from a psychological perspective. The aim is to demonstrate how magistrates exercise their discretion when making remand decisions, with the goal of discovering whether crime control or due process predominates. The specific questions that have emerged from the preceding review and which will be pursued in the research presented in this thesis are listed below:

Decision maker related questions:

(a) What information do magistrates use when making remand decisions? How do they process this information to form a decision?

(b) How do magistrates respond to cases when some information is unavailable? Do they make more or less punitive decisions?

(c) What is the extent of disagreement among magistrates in decisions made on the same cases?

(d) What is the pattern of imposition of bail conditions?

(e) What are the effects of BISs on magistrates' remand decision making?

(f) What are the similarities and differences between lay and stipendiary magistrates when they make remand decisions?

(g) What are the differences in the remand decision making between magistrates located in metropolitan and provincial courts?

Decision task related questions:

(a) What information is often unavailable to magistrates in the courtroom when they make their remand decisions?

(b) How does caseload affect the speed with which magistrates make decisions in the courtroom?

The psychological theory and methods that will be used in the research presented in this thesis will be reviewed in the next chapter.

2. SOCIAL JUDGEMENT THEORY AND SIMPLE HEURISTICS

A myriad of approaches have been developed to investigate human judgement and decision making (J/DM). These include decision theory (Keeney & Raiffa, 1976), behavioural decision theory (Edwards, 1954, 1992), the heuristics and biases approach (Kahneman, Slovic, & Tversky, 1982), information integration theory (Anderson, 1974, 1981), social judgement theory (Hammond, Stewart, Brehmer, & Steinmann, 1975), and the simple heuristics approach (Gigerenzer, Todd, & the ABC Research Group, 1999b).¹ Social judgement theory (SJT) originated in the mid 1970s and has since inspired hundreds of studies investigating human J/DM using regression models, from both theoretical and applied perspectives (see Brehmer & Brehmer, 1988). This includes applications to the legal domain (e.g., Sensibaugh & Allgeier, 1996; York, 1992). The simple heuristics approach that proposes the use of fast and frugal heuristics is a recent development in the field of J/DM. Fast and frugal heuristics are simple process models that have been postulated as psychologically plausible alternatives to the use of regression models.² Both SJT and the simple heuristics approach draw from the theoretical and methodological ideas presented by the Austro-Hungarian psychologist, Egon Brunswik (1940, 1943, 1944, 1952, 1955b, 1956). The research presented in this thesis was the first to use fast and frugal heuristics to describe human J/DM. Thus, the aim of this thesis is to integrate SJT and the simple heuristics approach.

The present chapter is organised into six sections. In the first section, I review Brunswik's ideas as presented in his theory of probabilistic functionalism and his method of representative design. Working mostly in the area of perceptual constancy, Brunswik argued that psychological research should investigate how people cope with the probabilistic nature of their environments (e.g., how they use cues that are only imperfect indicators of a criterion, to predict the criterion). Furthermore, he proposed that such research should study people individually, in their natural environments, over a number of trials, and that their behaviour could be captured using correlational analyses. I then discuss Hammond's (a student of Brunswik) interpretation of Brunswik's ideas and his application of these ideas to the study of human J/DM. In particular, I consider Hammond's use of correlational statistics and multiple linear regression as a model for describing the judgement process. At the end of this section, I

¹ There are theoretical and methodological similarities and differences among approaches (see Cooksey, 1996a; Doherty, 1993; Goldstein & Hogarth, 1997; Hammond, McClelland, & Mumpower, 1980; Slovic & Lichtenstein, 1971). However, calls for their integration (e.g., Anderson, 1974; Hammond et al., 1980; Hastie, 1991) have largely gone unheard.

present the main goals and methods of SJT, thus highlighting how Hammond and his colleagues synthesised Brunswik's ideas with their own work on human J/DM. In the second section, I introduce the technique of judgement analysis. This technique is employed by social judgement theorists to collect and analyse judgement data. I describe the single-systems design of studies that look only at information use without reference to accuracy in its use, as the research presented in this thesis is based on this design. I then critically examine the findings of past judgement analysis research using regression models. These findings concern people's consistency in making decisions, the fit of the multiple linear regression model to their judgement data, the number of cues they use, their agreement with others, their self-insight according to the regression model, and their post-decisional confidence. Finally, I review the use of representative design in judgement analysis research. In the third section, I critically examine social judgement theorists' use of the static, structural regression model that integrates cues, as a description of human J/DM. In particular, I refer to the notions of psychological implausibility, inflexible judgement strategy and incomprehensibility of regression models, as arguments against the regression model. In the fourth section, I explore alternative models and methods for describing human J/DM. These include alternative static, structural models, and complex process models. In the fifth section, I introduce the simple heuristics approach recently proposed by Gigerenzer and his colleagues. Unlike the regression model, fast and frugal heuristics are simple process models. Many of these are also non-compensatory, which means that decisions made on a piece of information cannot be altered by other information. I analyse the viability of fast and frugal heuristics as alternatives to the regression model. I then critically evaluate the research conducted to date that has attested to the descriptive validity of these models. In the final section, I summarise the key points of the chapter and list some more research questions that will be empirically examined in this thesis.

2.1. Social Judgement Theory: Origins and Main Tenets

SJT is rooted in Egon Brunswik's (1943, 1952) theory of probabilistic functionalism and employs the lens model framework (Brunswik, 1952), method of representative design (Brunswik, 1944, 1955b, 1956) and correlational statistics (Brunswik, 1940) to investigate human J/DM (Hammond et al., 1975).

² The terms heuristic and model will be used interchangeably throughout this thesis.

2.1.1. Brunswik's psychological theory and method.³ In his theory of probabilistic functionalism, Brunswik (1943, 1952) argued that psychological processes are adapted to the environments in which they function. In this sense, he adopted a Darwinian perspective. The main tenets of Brunswik's theory of probabilistic functionalism are illustrated in his lens model as shown in Figure 2.1. According to Brunswik, an organism's goal is to achieve a distal variable in the environment through the use of proximal variables (cues). He thus distinguished between proximal and distal variables. The double convex lens shows a collection of proximal effects diverging from a distal stimulus in the environment. The former may be used as proximal cues by the organism for achieving the distal variable, and so converge at the point of a response in the organism. For example, the magistrates' task is to make a decision as to whether to release a defendant on bail or to remand him or her in custody, bearing in mind that the defendant should not abscond and so forth. Thus, implicit in the magistrates' decision is their judgement of the likelihood that the defendant would abscond, which is a prediction of the distal variable.

The environment is defined as the "natural-cultural habitat of an individual or group...the objective, external potential offered to the organism for survival and its subordinate needs" (Brunswik, 1955b, p. 198) and is a "reference class" which defines a "population" of stimuli (Brunswik, 1943, p. 257). Stimuli may be considered as sets of "variate packages" because they comprise a number of cues whose values vary along their range (Brunswik, 1955b, p. 197). For instance, for a magistrate in a remand hearing, criminal cases are stimuli that comprise features such as the defendant's age, offence and community ties. In one case, the defendant may be young, may be charged with a serious assault and may not have any permanent residence. In another case, the defendant may be older, may be charged with a minor burglary and may live with his family.

The environment to which an organism must adapt is not always perfectly predictable from the cues (Brunswik, 1943). First, a particular distal stimulus does not always imply specific proximal effects because under some conditions an effect may not be present. Second, particular proximal effects do not always imply a specific distal stimulus because under some conditions the same effect may be caused by other distal

³ For a discussion of the intellectual influences on Brunswik see Leary (1987) and for a review of the development of Brunswik's method see Dhimi, Hertwig and Hoffrage (in preparation). Precursors to the theory of probabilistic functionalism and method of representative that Brunswik developed in the latter half of his career in Berkeley, may be found in early papers he wrote whilst working in the Buhler's laboratory in Vienna (e.g., Brunswik, 1934, for a summary and review see Tolman, 1935; Brunswik, 1937, 1939a, 1939b, 1940; Tolman & Brunswik, 1935).

stimuli. Proximal cues are therefore, only probabilistic indicators of a distal variable. The predictive (or ecological) validity of a cue is measured by the correlation between the cue and the distal variable (Brunswik, 1940, 1952). For example, the strength of the defendant's community ties may be a better predictor of whether he or she will abscond if released on bail than the seriousness of the offence the defendant is charged with. However, not all defendants without a permanent residence will abscond and in fact, some defendants with a permanent address may abscond.

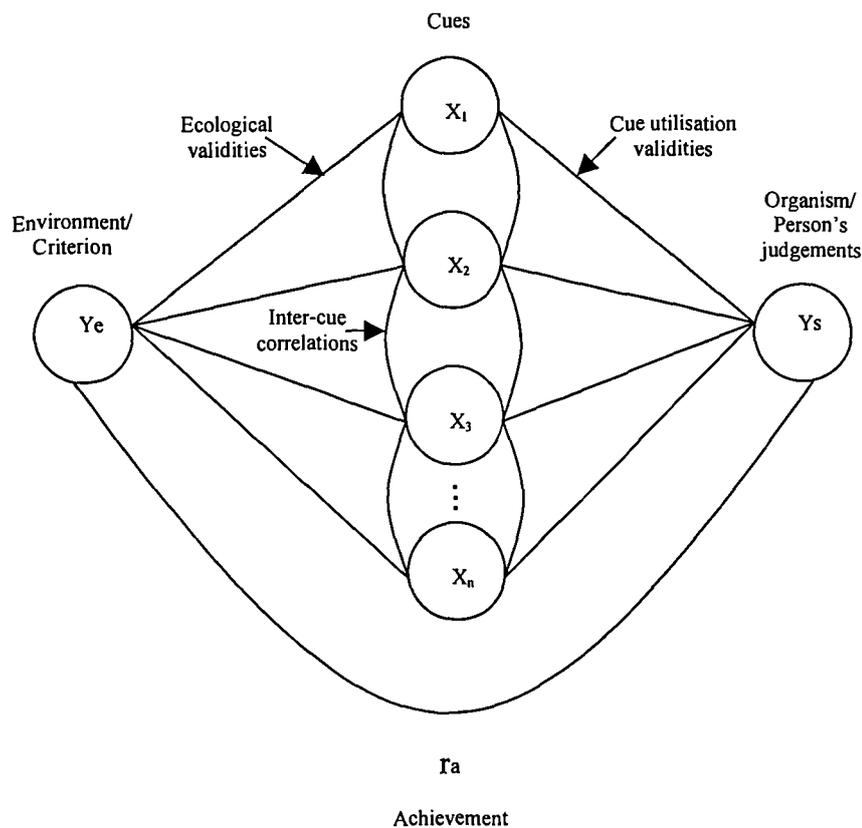


Figure 2.1. The lens model (adapted from Brunswik, 1952)

The proximal cues are themselves interrelated, thus introducing redundancy (or intra-ecological correlations) in the environment (Brunswik, 1952). For instance, when considering the cues that magistrates may use, the defendant's gender may be highly related to the type of offence he or she is charged with. Male defendants may be more likely to be charged with committing sexual offences than female defendants.

The ecological validity of cues and their inter-correlations are learned through experience. In his concepts of vicarious mediation and vicarious functioning, Brunswik (1952) emphasised the equipotentiality of cues in the environment and the equifinality

of an organism's responses, respectively. The environment enables the achievement of a distal variable via alternative proximal cues and an organism must cope with this uncertainty by learning to alternate between different cues, through the "equivalence and mutual intersubstitutability" of these cues (Brunswik, 1952, p. 675-676), in particular, when previously used cues become unreliable or are unavailable (Brunswik, 1934).⁴ In other words, distal variables can be attained vicariously through proximal variables, and proximal variables can themselves be used vicariously through other proximal variables. For instance, in order to predict whether a defendant may abscond if released on bail, magistrates may consider the strength of the defendant's community ties. However, in some cases, this information may not be available. In such cases they may consider the defendant's age, if they believe age to be related to community ties. In this sense, Brunswik (1957) recognised that the study of cognitive processes included a study of cue utilisation.

Although achievement (also called functional validity [Brunswik, 1952, p. 681]) can be maximised by using cues according to their ecological validities (Brunswik, 1943, 1955b, 1957), the fact that cues are only probabilistic indicators of the distal variable means that achievement is at best probabilistic (Brunswik, 1943, 1952). For example, there may be no single cue or any combination of cues that allow perfect prediction of absconding. Brunswik (1940, 1943, 1952) proposed that achievement should be studied at the level of the individual and be measured over a series of responses through the correlation between the distal variable and an organism's responses. For instance, in order to investigate how well magistrates make remand decisions, the decisions made by an individual bench over a series of cases would be studied by correlating the decision made and whether or not the defendant later absconded.

Correlational statistics were therefore used to measure ecological validities of cues, redundancy among cues, cue utilisation validities and achievement (Brunswik, 1955b, 1956, 1957). Brunswik (1943) chose correlations because they captured imperfect relations on a fixed scale from -1 to 1, and they provided simple descriptive statements whose generality was evident. He stated that:

Correlation coefficients are summary statements of results which are descriptive in the sense that they do not in themselves go beyond the actually observed evidence. Yet...they contain...the claim to generality. The degree to which this claim is justified is usually indicated by an added reference to the standard error

⁴ Wolf (1999) more comprehensively defines vicarious functioning as the ability for "accumulating, checking, weighting, interchanging, questioning, partly utilizing, rejecting, or substituting" proximal cues in search of alternative pathways to the distal stimulus (p. 6).

(SE), so that we may anticipate the reasonable limits within which coefficients from other samples may be expected to lie (Brunswik, 1956, p. 38).

Brunswik's (1940) first application of correlational statistics to stimulus-response research was conducted at a time when correlation statistics were only employed in the field of individual differences and heredity (i.e., the Galton-Pearson school of research). Whereas in the latter field correlations are computed between two variables such as IQ and race from the same sample of individuals, for Brunswik's stimulus-response research, correlations were computed between two variables, namely stimulus and response from the same sample of situations in an individual's environment (Brunswik, 1943).⁵

In defence of the suitability of correlation statistics for stimulus-response research, Brunswik (1943) argued that "a correlation coefficient is just as exact...just as public and palpable in its meaning as a law. And it has,...considerably more generality, and thus possibilities of prediction" (p. 269). Correlational analysis however, required sets of observations, which must either be ranked or placed on a common scale, and where pairwise correlations must be computed separately for different aspects of the study (i.e., between distal stimuli and proximal stimuli, distal stimuli and responses, and proximal stimuli and responses) (Brunswik, 1940).⁶ Gigerenzer and Murray (1987) note that Brunswik's understanding of statistics was not very sophisticated.

The use of linear models to study multiple cues was demonstrated in another study (Brunswik, 1944), and in his later writing Brunswik (1956) recommended the use of multiple correlation, not only as a means of isolating variables, but also as a method for describing the process of vicarious functioning. To this endeavour, he referred to his wife, Frenkel-Brunswik's (1951) use of multiple correlation in her analysis of clinical judgement. He also adopted the metaphor of the perceptual system as an intuitive statistician. For instance, in his 1956 book, he referred to the individual subject in his 1944 study as behaving like an "intuitive statistician" (p. 143). The intuitive statistician takes into account means and distributions of variables, for example (Brunswik,

⁵ In the field of individual differences, the fact that characteristics of individuals could not be isolated and controlled forced use of the statistical rather than experimental approach, and Brunswik (1943) argued that a psychology studying achievement should become "statistical throughout, instead of where it seems to be hopeless to be otherwise" (p. 262). Interestingly, when Brunswik (1940) originally introduced the correlation coefficient in his research on perceptual constancy he conducted a between-subjects' analysis.

⁶ Brunswik (1940) replaced his constancy ratio measure with the correlation coefficient. The former had the practical advantages which included only requiring one observation, and of relating the distal variable, proximal variables and responses to one index. However, it was limited for example, to the relationship between two variables, and it did not have a fixed scale.

1955a).⁷ Although Brunswik referred to cue substitution (Brunswik, 1952), he concluded that achievement of perceptual constancy and social perception was due to a statistical integration of cues (Brunswik, 1952, 1956). Therefore, Brunswik equated cognitive processes with statistical inference, and specifically inference that involved compensatory, cue integration. Finally, when discussing the metaphor of the intuitive statistician, Brunswik (1952) also introduced the concept of ratiomorphism, which refers to the issue of modelling cognitive processes.

For Brunswik (1943), the primary aim of psychological research is to discover probabilistic laws that describe an organism's adaptation to the causal texture of its environment in terms of distal achievement. The questions to be answered are: How is an organism perceiving and responding to its probabilistic environment in order to achieve a distal variable? Can the findings of such a study be used to predict future achievement? The first question refers to the study of vicarious functioning and the second question refers to the generalisability of research findings.

In order to achieve these two aims, Brunswik (1955b) contended that the experimenter "must resist the temptation...to interfere" with the environment and instead strive to retain its natural causal texture in the stimuli presented to participants (p. 198). The stimuli should be representative in terms of the number of variables, the distribution of their values and their co-variation (Brunswik, 1956). Rather than disentangling variables at the design stage of research, as is done in systematic design, Brunswik (1943, 1944, 1952, 1955b, 1956) proposed that co-variation can be dealt with at the analysis stage of research through partial correlation, or by leaving out data.

Brunswik (1955b, 1956) proposed the method of representative design as an alternative to the popular method of systematic design.⁸ In systematic design, the experimenter selects and isolates one or a few independent variables, then systematically varies them while holding all other variables constant and observes the resulting changes in the dependent variable(s). The logic of this design lies in the search for perfect, one-to-one, cause-effect relationships. Brunswik (1944, 1955b, 1956) argued that in the most sophisticated variant of systematic design, namely the factorial design, variables are artificially untied. Here, the range of the variables is arbitrary and is divided up into k levels, and levels of one variable are combined with levels of the

⁷ Earlier, Helmholtz (1856-66/1962) had stated that depth and space perception involved inductive "unconscious inferences" where individuals must learn to interpret sensory information in an adaptive way through past experience (cited in Gigerenzer & Murray, 1987). Gigerenzer and Murray (1987) state that Brunswik "transformed the meaning of Helmholtz' unconscious inferences into unconscious multiple regression statistics" (p. 61).

other variable, exhausting all possible combinations. All combinations have equal frequency and the natural co-variation among variables is eliminated by means of experimental control. Factorial designs may thus yield artificial combinations that are impossible in the real world. Systematic design and its policy of isolating and controlling selected variables destroys the naturally existing causal texture of the environment to which an organism has adapted (Brunswik, 1944). Brunswik (1952) argued that “In controlling vicarious mediation, care must be exercised not to interfere with naturally established mediation patterns...Channeling of mediation leaves no room for vicarious functioning” (p. 684-685). Furthermore, he stated that the:

Generalizability of results concerning the relative weights of the variables involved must remain limited unless at least the range, but better also the distribution of the ‘levels of strength’ employed for each variable, has been made representative of a carefully defined universe of conditions. (Brunswik, 1956, p. 55).

In principle, Brunswik (1955b) suggested three ways of achieving a representative design. The first is by random sampling (which he also referred to as situational, representative, and natural sampling) of stimuli from a defined population of stimuli (reference class) to which the experimenter wants to generalise the findings.⁹ Brunswik (1944) attempted this form of sampling in his study of size constancy. The second way is through what Brunswik (1955b, p. 204, 1956) called “canvassing” of stimuli, namely stratified, quota, proportionate or accidental sampling. These only provide a “primitive type of coverage of the ecology” (Brunswik, 1955b, p. 204) and they do not permit statistical generalisations. Third, representative design could theoretically be achieved by a complete coverage of the whole population of stimuli, although Brunswik (1955b) recognised that this may be unfeasible.

Brunswik’s conception of representative design had some major difficulties however.¹⁰ First, there are practical problems in terms of the lack of experimental control, and the time consuming and cumbersome nature of research conducted outside the laboratory (Brunswik, 1944, 1955b, 1956). Second, there are theoretical problems in defining the appropriate reference class (Brunswik, 1956). It is not surprising therefore,

⁸ Brunswik (1944) however did recognise the usefulness of systematic design in explanation based research.

⁹ By stressing the need to sample situations as well as participants, Brunswik (1943) pointed to the “double-standard” in the practice of sampling in psychological research (p. 262). He had noted that whereas care is taken to obtain a representative sample of participants to ensure generalisation to a subject population, the stimuli presented to these participants are not sampled as such, although generalisation to the object population is assumed. This practice was particularly bemusing in the study of social perception, where although the perceivers were sampled, the people they were perceiving were not.

to learn that Brunswik (1944) also suggested that it is “generally possible” and “practically often very desirable” to use a hybrid design in which the researcher introduces certain elements of systematic design into a study employing representative design (p. 42). For instance, in a study by Holaday (1933) an exemplary stimulus was systematically stripped of its complexity through “successive omission” of cues (cited in Brunswik, 1955b). In this sense, experiments lie on a continuum from systematic to representative design (Brunswik, 1956).

It should be noted that in order to overcome the practical difficulties encountered in conducting representatively designed experiments, Hammond (1966) later differentiated between the concept of substantive situational sampling and formal situational sampling. Substantive situational sampling focuses on the content of the task (e.g., size constancy) with its inherent formal informational properties, and is analogous to Brunswik’s original definition of representative design. Formal situational sampling, focuses on the formal properties of the task (i.e., number of cues, their values, distribution, inter-correlations and ecological validities), irrespective of its content. Hammond (1966) advocated that until technological advances allowed substantive situational sampling, researchers should employ formal situational sampling. Here, the tasks presented to participants in the laboratory experiments should be representative of the formal properties of the tasks as they exist in the world outside the laboratory. Note that whereas Brunswik (1944) had taken the researcher outside the laboratory, formal situational sampling brings the researcher back into the laboratory.

The formal properties define the universe of situation populations. For instance, the number of cues ranges from zero to infinity, the ecological validities of the cues and the inter-cue correlations range from -1 to $+1$. Any population of situations lies within these boundaries. Note that Brunswik (1955b) believed that “there will be a limited range and a characteristic distribution of conditions and condition combinations” (p. 199). A researcher who employs formal situational sampling can now sample various combinations of formal properties (i.e., various number of cues, ecological validities and inter-cue correlations). In order to identify the formal properties of the task to be represented in the study, it is clear that researchers should firstly familiarise themselves with the task by conducting some form of task analysis (Cooksey, 1996a; Hammond, 1966; Hammond et al., 1975; Petrinovich, 1979). It should be noted however, that formal situational sampling is in Brehmer’s (1979) terms “no easy road to success”

¹⁰ Others have pointed to the difficulties associated with designing studies to meet Brunswik’s criteria for representativeness (Gibson, 1957; Tolman, 1955).

because the number of all possible combinations may be extremely large and so the researcher needs to know which are the “important combinations” to study (p. 198). Here, if “important” is used to mean representative, and researchers are interested in sampling from an existing population of situations, then the problem of defining a reference class or sampling frame remains.

In sum, Brunswik (1943) called for a paradigm shift in the theory and method of psychology. He insisted that before conducting explanatory research, psychologists should describe how people adapt to their probabilistic environments, by studying people individually, in their natural environments, over a number of trials, using correlational analyses. At the time however, his “revolutionary” ideas (Gibson, 1957, p. 34) were ignored, misunderstood, treated with scepticism and even hostility (e.g., Hull, 1943; Lewin, 1943; Fiegl, 1955; Hilgard, 1955; Krech, 1955; Postman, 1955). On the 7th of July 1955, at the age of 52, Brunswik committed suicide.

2.1.2. Hammond’s extension of Brunswik’s ideas to the study of judgement and decision making. Although Brunswik’s ideas were predominantly based in the area of perceptual constancy, towards the end of his career he studied higher cognitive processes such as interpersonal perception, learning and thinking (see e.g., Brunswik, 1956). However, it was not until after his death that research in J/DM was influenced by his ideas. Kenneth R. Hammond, a student of Brunswik, applied Brunswik’s ideas to the study of clinical judgement (Hammond, 1955), multiple cue probability learning (Hammond & Summers, 1965), cognitive feedback (Todd & Hammond, 1965), interpersonal conflict (Hammond, 1965, 1973; Hammond, Todd, Wilkins, & Mitchell, 1966a) and interpersonal learning (Hammond, 1972; Hammond, Wilkins, & Todd, 1966b). These will be discussed in turn.

In a landmark paper, which set the framework for SJT, Hammond (1955) shifted attention away from the practice of solely studying the accuracy of clinical judgement to also explaining how clinicians achieve their level of accuracy.¹¹ Using Brunswik’s (1952) lens model as a framework, Hammond argued that the clinician and the patient are two different, but interacting systems that should be considered as a whole, and so studies should focus on the relations between a clinician and his or her environment (i.e., patients). He pointed out that the clinician’s judgement process is often “quasi-rational” and difficult to communicate because it is a result of the process of vicarious functioning. Vicarious functioning is essential because clients may present a set of

¹¹ A year earlier, Meehl (1954) had published an influential book comparing clinical versus actuarial prediction.

symptoms that may change over time or may present symptoms different from those presented by another client who is suffering the same problem. Hammond argued that an individual clinician's capacity for dealing with the intersubstitutability of cues, over encounters with a series of patients, should be studied using representative design. Finally, he advocated the use of multiple linear regression to capture the process of vicarious functioning.

Hammond illustrated his points by referring to two studies conducted by Todd (1954) and Herring (1954) (both cited in Hammond, 1955). In the first study, Todd (1954) asked 10 clinicians to judge the intelligence (as measured by an IQ test) of 78 patients using a Rorschach test. The IQ test score was the objective outcome criterion. Achievement was measured in terms of the correlation between the clinician's judgements made over a set of clients and their IQ test scores. Hammond noted that the clinicians' performance improved when they were provided access to more information because the median correlation between judgements and IQ scores which was originally 0.47, rose to 0.64 when clinicians had access to the verbal protocol data from the Rorschach. Then, using the four most valid cues as predictors, a multiple regression equation was computed for the environment (i.e., capturing the relations between the patients' IQ scores and the four Rorschach cues) and separate equations were computed for each clinician (i.e., capturing the relations between each clinician's judgements of IQ and the four Rorschach cues). Each model revealed the relative weights attached to the cues. The model of the environment was then compared to each clinician's model.¹² The match between the two models explained how the clinicians attained their level of achievement. The multiple *R* for the model of the environment was 0.479 and the median correlation between the clinicians' judgements of IQ and the IQ test score was 0.470. The ecological validities of the four cues in the environment, the utilisation validities of the four cues by the clinicians, and the inter-correlations among the four cues in the environment and as used by the clinician, were also elicited. There were variations between the clinicians in terms of the cues they used. "Certain clinicians were found to be using invalid cues, others neglected the valid ones" (Hammond, 1955, p. 261).

Hammond also demonstrated that the multiple linear regression model proved good at predicting the clinicians' judgements. A model was developed for each clinician on 39 patients and cross-validated on a further 39 patients (i.e., it made predictions of

the clinicians' judgements on a set of new cases).¹³ The median correlation between the models' predictions and the clinicians' judgements on the new cases was 0.85.

Hammond concluded that "evidently the multiple correlation model which predicts that the clinician combines the data from the Rorschach in a linear, additive fashion is a good one – it predicts quite successfully in comparison with most psychological efforts" (p. 261).

In the second study, Herring (1954) asked clinicians to judge patients' responses to surgical anaesthesia, on the basis of their psychological test results. Here, no objective outcome criterion was available. Thus, analysis of the environment side of the lens model and consequently analysis of achievement was abandoned, and instead Hammond illustrated how the correspondence or agreement between the judgements of two clinicians (a medic and a psychologist) could be studied. Simply, the match between their regression models could explain their level of agreement. Earlier, Brunswik (1956) had also noted that correlations could be used to measure "agreement among judges" (p. 30).¹⁴

Hammond's (1955) use of multiple linear regression however, only enabled him to capture the linear component of achievement. It was not until he developed the lens model equation, that researchers were also able to relate non-linear aspects of the environment (or another person's judgements) to an individual's judgements. The original formulation by Hirsch, Hammond and Hirsch (1964) was simplified by Tucker (1964), whose version is shown in Equation 2.1. The first part of the equation represents the relations between linear patterns in the environment and the individual's responses, and the second part represents the relations between their respective non-linear patterns. Achievement is explained in terms of an individual's ability to detect and utilise both the linear and non-linear patterns in the environment. Optimal performance is where $r_a = R_e$. If R_e is less than 1, then researchers should not expect participants to demonstrate perfect accuracy. Cooksey (1996b) states that:

The LME [lens model equation] is an elegant, precise mathematical formulation of a simple truth. That is, a person's ability to make correct judgements about reality is a function of three things: (1) how predictable the world is (R_e), (2) how well the person knows the world (G and C), and (3) how consistently the person can apply his or her knowledge (R_s) (p. 165, words in brackets added).

¹² Whereas Meehl (1954), a year earlier, had compared the clinician with a statistical model of the environment, Hammond (1955), compared a statistical model of the clinician with a statistical model of the environment.

¹³ Brunswik (1955b) said that experimental replication in a representatively designed study involved selecting another sample from the population of stimuli.

¹⁴ For Brunswik (1956) the study of agreement was the only time when more than one individual was "brought into the picture" (p. 35).

In the first application of the lens model equation, Hammond et al. (1964) reanalysed data from a study by Grebstein (1963), who compared naïve, semi-sophisticated and sophisticated clinicians' predictions of 30 patients' IQ test scores, using 10 cues from patients' Rorschach tests. Grebstein had concluded that performance did not improve with experience and that there was room for improvement. Hammond et al. (1964) used the lens model equation to determine the upper limit of achievement for this task and found that R_e^2 was 0.79. They also demonstrated that the three groups of clinicians did not differ in terms of R_s , or C as all groups were highly linear. The three groups did however, differ in terms of G as there was a greater match between the ecological validities and utilisation validities of the more sophisticated groups.

$$r_a = GR_eR_s + C\sqrt{1 - R_e^2}\sqrt{1 - R_s^2}$$

Equation 2.1. Lens model equation

r_a represents achievement, and is measured by the correlation between the judgements and the criterion.

R_e represents the predictability of the environment and thus the upper limit of achievement, and is measured by the linear multiple correlation between the cues and the criterion.

R_s represents an individual's ability to utilise his or her knowledge of the task in a consistent manner, and is measured by the linear multiple correlation between the cues and the judgements.

G represents the match of the linear components of the two models, namely the model of the environment and of the individual, and is measured by the correlation between the linearly predictable variance in the environment and the individual's judgements.

C represents the non-linear component of achievement, and is measured by the correlation between the residuals from the linear regressions of the environment and the individual.

The similarity between the multiple linear regression of the environment and of the clinician's judgements, led Hammond et al. (1964) to conclude that "The clinicians' inferential processes were nearly identical with the multiple-regression procedure both in *function* and in *content*" (p. 444). Finally, when proposing further studies, they stated

that “We are confident that...such studies will find small differences between the cognitive processes of the clinician, or any human subject, and the multiple-regression equation” (p. 452).

The lens model was also used to study multiple cue probability learning (Hammond & Summers, 1965).¹⁵ Research in this paradigm investigates how people learn to use cues that are probabilistically related to a distal variable. Participants, who are novices at the task, are presented with a set of cues that they use to make judgements about a criterion and they then receive outcome feedback of the criterion value. Studies examine how over a series of trials, participants acquire knowledge of the formal properties of the task (e.g., ecological validities of cues) and then apply that knowledge when making judgements about the criterion. Hammond and Summers (1965) gave three groups different amounts of information about the task in addition to the outcome feedback (i.e., no information, information that the task contained linear and non-linear cue-criterion function forms, and information that in addition identified the linear and non-linear cues). They asked individuals to predict a criterion value from two cues, one linearly related to the criterion and one non-linearly related. All groups showed learning over five blocks of 20 trials and all groups were able to more efficiently learn to use the linear cue. However individuals in the group given the most information showed a higher degree of achievement and were more likely to learn to use the non-linear cue. The two groups given information about the task were also better at learning the ecological validities of the cues. Other studies conducted in this paradigm have found that people can learn positive relations quicker than negative ones; they can slowly learn to track changes in relative cue weights over time; they can learn to use cues quicker than learning function forms; and they do not use cue redundancies effectively (see Klayman, 1988; Slovic & Lichtenstein, 1971). Therefore, the findings from the multiple cue probability learning paradigm indicate that individuals can learn about the formal properties of the task and adapt to it.

It was clear from Hammond and Summers’ (1965) study that the provision of information about the properties of the task in addition to traditional outcome feedback improved learning. Thus, Todd and Hammond (1965) developed the procedure of cognitive feedback (sometimes also known as lens model feedback).¹⁶ This involves providing information about the formal properties of the task (i.e., ecological validities,

¹⁵ Earlier, Smedslund (1955) had investigated how people learn to use cues of limited predictive validity, to infer a criterion. Research on this topic however, did not flourish until Hammond and Summers’ (1965) study.

inter-cue correlations, predictability and cue-criterion function forms), the individual's judgement policy (i.e., utilisation validities, R_s , consistency and cue-judgement function forms), and the match between properties of the environment and the individual's judgement policy (i.e., achievement, G and C) (see Balzer, Doherty, & O'Connor, 1989; Doherty & Balzer, 1988).¹⁷ Todd and Hammond (1965) provided participants with feedback of their degree of achievement, cue utilisation validities and the ecological validities of the cues, for each of eight blocks of 25 trials. They found that cognitive feedback led to significantly higher achievement than outcome feedback.¹⁸ Other research has found that providing both outcome and cognitive feedback may even impair performance; that cognitive feedback is superior to no feedback at all (see Doherty & Balzer, 1988); and that learning is slow and difficult with outcome feedback alone (see Brehmer, 1980; Klayman, 1988).¹⁹ It is suggested that in stable environments, unlike cognitive feedback, outcome feedback does not provide information useful for making future judgements. Todd and Hammond (1965) believed that cognitive feedback enables people to compare their understanding of the task and discover where they were not using the cues appropriately. However, as Brehmer (1979) points out, in real world conditions feedback isn't always available and people aren't consciously trying to learn the task.

Hammond (1965) applied the multiple cue probability learning paradigm and the technique of cognitive feedback to judgement in social situations, namely in conflict situations. Further research by Brehmer investigated how task conditions may aid or prevent conflict resolution (see Brehmer, 1976). Whereas the study of multiple-cue probability learning involves the use of the traditional lens model as shown in Figure 2.1, the study of interpersonal conflict and learning involve the use of a modified version, as shown in Figure 2.2 (Hammond, 1965). Two individuals, acting independently, make judgements on the same task.

¹⁶ Cognitive feedback is the term used when information about past events is provided and cognitive feedforward refers to information about future events (Doherty & Balzer, 1988).

¹⁷ The information may be represented in a variety of ways, including graphical form (e.g., Hammond, 1971).

¹⁸ Earlier, Newton (1963) had demonstrated that the sole provision of cognitive feedback could significantly improve performance, in a study where 99 sophomore students used 4 cues (i.e., IQ, College Board Score, high school rank, a personality rating by the high school principal) to predict the grade averages of 53 freshman students. Feedback was provided in four conditions and performance improved significantly in the condition involving feedback of ecological validities of cues and their utilisation validities.

¹⁹ Unfortunately, this latter situation reflects how learning takes place in the real world (Anderson, Deane, Hammond, McClelland, & Shanteau, 1981).

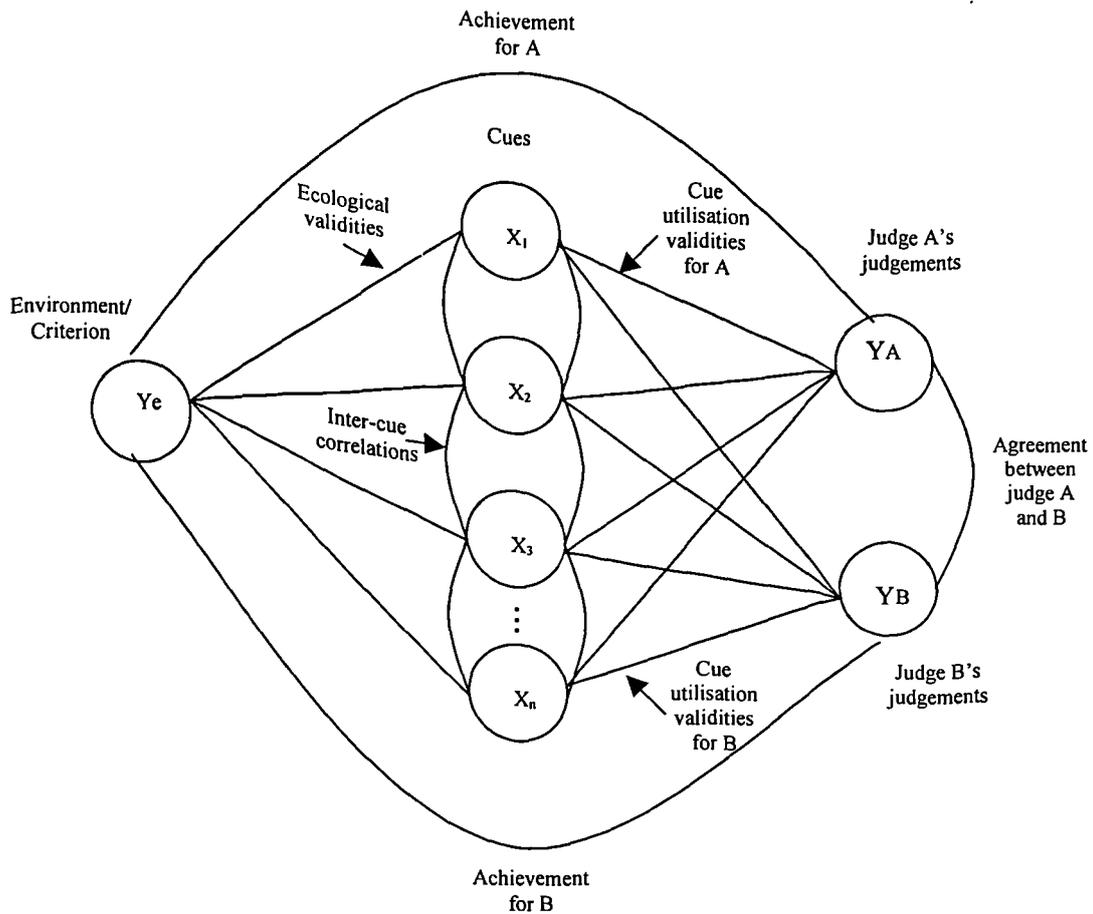


Figure 2.2. Lens model for study of interpersonal conflict and interpersonal learning (adapted from Hammond [1965] and Hammond et al., [1966b])

In a standard interpersonal conflict experiment (Brehmer, 1976; Cooksey, 1996a; Hammond, 1965; 1973), participants may be selected either because they already have conflicting policies or they may be trained to develop conflicting judgement policies. Unaware that they have different policies, participants are brought together and asked to co-operate on solving a set of problems that they are told are real. Essentially, they are required to deal with an artificial judgement task where cues are probabilistically related to the criterion, as they are in the real world. On each trial they study the available information and make judgements of the criterion variable alone and then to communicate these to one another. If they disagree they must discuss the problem until they reach an acceptable joint response. They are then asked to reconsider their original decisions, and these revisions remain private. Finally, they are presented with the correct solution. Conflict or agreement is therefore defined objectively as the actual differences in the judgements made by the two individuals.

Conflict may be due to systematic and non-systematic cognitive differences in the way people perform the task. Systematic differences refer to features of judgement policies such as the relative cue weights and non-systematic differences refer to the idea that people may be inconsistent in the application of their policies (Mumpower & Stewart, 1996). Research has shown that although over a series of trials participants unlearned their conflicting policies and developed similar ones, conflict persisted because individuals simultaneously become more inconsistent in applying their revised policies, and these non-systematic differences accounted for more conflict than did systematic differences in policies (see Brehmer, 1976).²⁰ These findings have been replicated using different types of participants and task conditions (see Hammond & Brehmer, 1973).²¹ Brehmer's (1976) research has shown how the degree and nature of conflict (i.e., whether it is due to systematic or non-systematic differences) is affected by task conditions. For example, he has demonstrated that policy consistency is lower in less predictable tasks leading to less agreement; that non-linear cues lead to lower consistency but do not affect policy similarity; that when the task contains linear cues and people only have to use one cue they are more consistent but their policy similarity is unaffected; that when the task contains both linear and non-linear cues and people only have to use one cue their policy similarity and consistency is higher; and finally that inter-cue correlations lead to less policy similarity (see Brehmer, 1976). Hammond and Brehmer (1973) applied the technique of cognitive feedback and developed a cognitive aid to conflict resolution called POLICY (originally called COGNOGRAPH).²² This is an interactive computer program that enables people to express their policies, compare them, change them, and discover the effects of such changes on conflict. The emphasis was on teaching consistent new policies. It has been found that cognitive feedback helps to speed conflict reduction (Balke, Hammond, & Meyer, 1973). In sum, research in the interpersonal conflict paradigm has demonstrated that agreement could be studied in the same way as achievement. As will be discussed below, the study of two cognitive systems has become popular.

The issues of learning and cognitive feedback have also been studied in the social domains of interpersonal learning (Earle, 1973; Hammond et al., 1966b;

²⁰ Thus, cognitive conflicts may actually be the basis for emotional and motivational conflicts (Brehmer, 1976).

²¹ Much of the early studies were laboratory based, however, cognitive conflict has been studied in many important domains such as nuclear safeguards (Brady & Rappoport, 1973) and selection of police ammunition (Hammond & Adelman, 1976).

²² Brehmer and Brehmer (1988) note however, that the effectiveness of this aid has never been empirically tested.

Hammond, 1972).²³ Furthermore, this research is linked to research on interpersonal conflict because an individual's ability to learn to predict another person's behaviour is central to conflict resolution (Hammond et al., 1966b). The research on interpersonal conflict therefore, is also conducted within the lens model shown in Figure 2.2. Studies examine how individuals learn from and about the judgement processes of another person. Here, instead of making a joint decision, as would be done in a study on interpersonal conflict, participants are asked to predict the other person's response (Hammond et al., 1966b). Comparison of the prediction with the other person's actual response provides a measure of interpersonal knowledge.

Hammond et al. (1966b) found that on average, paired participants were able to predict one another's responses quite well, and were able to predict one another's differential cue weights, linear (although not to the extent hypothesised) and non-linear cue use. Participants were also more likely to learn about the other person if the other person was more reliable and through interaction each pair became more similar in their policies. In addition, Hammond (1972) found that function forms affected cue utilisation validities where for instance, after interpersonal learning, individuals trained to use a non-linear cue could give up reliance on that cue and learn to use a linear cue quicker than individuals trained to use a linear cue. In a set of three experiments, Earle (1973) reported that participants taught to use linear rules required interpersonal learning from participants using non-linear rules in order to switch to using non-linear rules, but not vice versa. Interpersonal learning was also necessary for learning of negative linear or non-linear rules. The other person must convey relevant information about the task for interpersonal learning to be better than individual only task learning. Research has also investigated the effects of task characteristics on interpersonal learning and found the effects to be similar to those found in the above paradigms, with the exception that non-linear policies are easier to learn through interpersonal learning (see Hammond et al., 1975). Finally, it has also been claimed that cognitive feedback is useful in interpersonal learning tasks (Balke et al., 1973; Miller, 1973).

In sum, after Brunswik's death, Hammond employed the lens model framework and correlational analysis to study achievement and agreement in human J/DM. He also extended this analysis to social situations, namely to the study of interpersonal conflict and learning, and developed the technique of cognitive feedback to improve J/DM. In

²³ This paradigm has been applied for example, to the study of psychoactive drugs (see Hammond & Joyce, 1975).

doing all this, like Brunswik, Hammond equated cognitive processes with the features of the multiple regression model.

2.1.3. Main tenets of social judgement theory. In 1975, Hammond et al. synthesised the Brunswikian approach to psychological theory and method, with research extending these ideas to the study of clinical judgement, multiple cue probability learning, cognitive feedback, interpersonal conflict and interpersonal learning. They developed what they called SJT.

SJT is not a theory providing any testable hypotheses about the nature of human J/DM, but is a meta-theory that provides a framework to guide research to this endeavour. There are four basic goals of SJT research: (a) to analyse judgement tasks and processes, (b) analyse the structure of achievement and agreement, (c) to understand how humans learn to achieve and agree, and (d) to find methods for improving achievement and agreement (Brehmer & Joyce, 1988; Hammond et al., 1975). SJT research aims to describe behaviour before prescribing changes to improve it. The model of the environment serves as a benchmark, indicating how judgement can be improved (Brehmer & Joyce, 1988; Hammond et al., 1964). Performance may be enhanced by cognitive feedback and cognitive (decision) aids (Hammond et al., 1975). Social judgement theorists study “life relevant” issues (Hammond et al., 1975, p. 276). In this sense, much of SJT research is applied.

Four types of judgement situations are distinguished in SJT research. These are the double-systems design, single-systems design, triple-systems design, the *N*-systems design and the hierarchical design (see also Hammond, 1972; Hammond et al., 1975). The first refers to Brunswik’s (1952) original lens model as shown in Figure 2.1, and involves an analysis of the interaction between an individual and a task. As discussed above, this framework is used to study achievement and multiple cue probability learning. The other three judgement situations represent modifications to the original model.

In the single-systems design, as shown in Figure 2.3 (the dotted line indicates absent analysis), there is no outcome criterion and so researchers simply describe an individual’s judgement policy. They may also compare policies among individuals. Herring’s (1954) study could be classified as an example of the single-systems design. Much of SJT research uses this design (Dhami et al., in preparation) and the research presented in this thesis does too. This design may be appropriate because often an outcome criterion is unavailable, and usually for quite valid reasons. First, an outcome criterion may not be useful because there is no correct answer, as, for example, in the

diagnoses of a mental illness (Doherty, 1995 personal communication cited in Cooksey, 1996a). Second, an outcome criterion may be difficult to obtain due to concerns with confidentiality, ethics or legality.²⁴ Third, an outcome criterion may be unavailable during the study period. Fourth, studies using hypothetical cases or cases that represent future situations, by their very nature preclude the use of an outcome criterion. Finally, an outcome criterion may not be included because it is irrelevant to the research goal as researchers wish solely to study agreement.

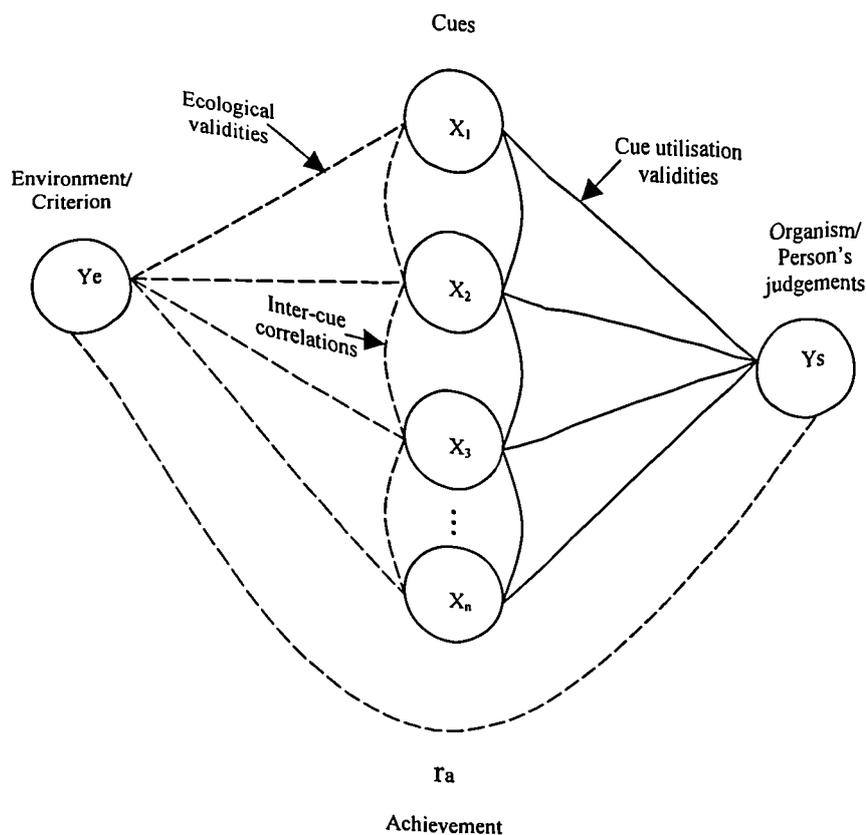


Figure 2.3. Lens model for single-systems design

Many of the above reasons for not collecting outcome data and thus for solely studying agreement apply to research conducted in the legal domain, and the research presented in this thesis. It is theoretically impossible to measure overall achievement (which includes both type I and type II errors). For instance, consider a magistrate who remanded a defendant in custody based on the belief that the defendant was at high risk of offending if bailed. It would never be known if this defendant would actually have

²⁴ In order to overcome problems in obtaining an outcome criterion, some studies have used expert judgements to provide environmental criterion measures (see e.g., Adelman & Mumpower, 1979;

offended if, instead he or she had been bailed. In fact, a valid and reliable measure of the outcome of cases that were bailed is difficult to obtain because although it is relatively easy to discover if a bailed defendant failed to surrender to custody, it is more difficult to ascertain if he or she offended while on bail, or interfered with witnesses/obstructed justice. If self-reports did provide details of crimes and obstructions of justice while on bail, the researcher would be in an awkward position in not being able to report them to the police. The fact that defendants may be bailed for long periods of time also means that outcome data may be difficult to collect for all cases, during the time frame of the study. Finally, there is no objectively correct solution to whether a defendant will or will not abscond, offend or obstruct justice if released on bail, as these have not and theoretically cannot be determined, and so rendering it problematic to elicit expert opinions as substitutes for outcome data.

The triple-systems design, as mentioned earlier, involves one task and two individuals. It is used to study interpersonal conflict and learning. The *N*-systems design involves more than one person and may or may not include an analysis of the task. Research on policy formation is conducted within this framework (e.g., Adelman, Stewart, & Hammond, 1975; Stewart & Gelberd, 1976). Finally, there are judgement situations in which the cues themselves may be judgements made at earlier stages of the judgement process either by the same or different judges. Hammond et al. (1975) refer to such situations as “hierarchical judgment models” (p. 286). Here, an outcome criterion is often unavailable. Each stage is analysed separately. Smith (1975) presented the first application of this design (cited in Cooksey, 1996a).

For all SJT research, judgement data is elicited over a series of trials and is analysed at the level of the individual (Hammond et al., 1975). Hammond et al. (1975) note that “the judgment data are analyzed in terms of multiple regression statistics” (p. 278). Thus, correlational statistics and models such as multiple linear regression are used to describe and explain performance. SJT is also committed to representative design as defined in terms of formal situational sampling (Brehmer, 1979; Cooksey, 1996a, 1996b; Hammond et al., 1975; Hammond & Wascoe, 1980; Hastie & Hammond, 1991, p. 498). For instance, Hastie and Hammond (1991) claim that “the Lens model researchers’ commitment to ‘representative design’ is explicit (and enthusiastic)” (p. 498). Similarly, Cooksey (1996a) states that:

The critical dimension of Judgment Analysis [or SJT] research which distinguishes it from nearly all other research endeavors in the social and behavioral sciences is its insistence upon applying the principle of

Hammond & Adelman, 1976; Mumpower & Adelman, 1980).

representative design to guide the structure of specific investigations (p. 98, words in brackets added).

Hammond et al. (1975) recognised that under representative conditions, the presence of inter-cue correlations may make it difficult to ascertain the relative independent effects of each cue upon judgements. Thus, they recommended multi-method analyses where techniques such as predicting each cue from the others and successive omission of cues may be used.

2.2. Judgement Analysis: A Technique Used by Social Judgement Theorists

2.2.1. Judgement analysis: Procedures. SJT studies employ the techniques of JA or policy capturing. The term policy capturing was coined by Bottenberg and Christal (1961), and refers to the analysis of judgement data using multiple regression techniques.²⁵ According to Dudycha (1970) “‘Capturing’ the policy of a rater (or judge) can be defined as the extent to which one is able to predict the behavior or actions of that rater from the known characteristics of the stimuli he is being required to evaluate” (p. 501). JA (originally called JAN) was coined by Christal (1963), and refers to the combined use of policy capturing and policy clustering methods. Both techniques were developed and so have also been used outside of the neo-Brunswikian or SJT traditions (e.g., Dudycha & Naylor, 1966; Madden, 1963; Naylor, Dudycha, & Schenck, 1967; Naylor & Wherry, 1964, 1965). Nevertheless, the terms SJT, JA and policy capturing are often used interchangeably, and recently Cooksey (1996a) used the term JA to refer to SJT research in order to “deliberately...integrate these two somewhat divergent branches of judgment research” (p. 58). I will do the same.

JA has been fully explicated in a number of publications (Cooksey, 1996a, 1996b; Hammond et al. 1975; Stewart, 1988) and in order to exemplify the main features and the findings that emerge, a study by Sensibaugh and Allgeier (1996) will be referred to here. They used policy capturing to study Ohio juvenile court judges' judicial bypass decisions. Through a postal survey, nine judges were presented with a set of 48 hypothetical cases. The cases were described in terms of a combination of six cues. The cues were selected after a review of the literature and the legal guidelines. The six cues were age, overall intelligence, ability to accept responsibility, future impact of present choices, personal decision/forced decision, and understanding of benefits and risks. The cues themselves varied. For example, age varied from 14 to 17 years, whereas personal

²⁵ Wallace (1923) is often credited with the first use of policy capturing, as it is now called, in his study of corn judges.

decision/forced decision was dichotomous. Other cues were held constant and provided background information to the cases. For instance, all the adolescents were described as being in their first trimester of pregnancy. In order to allow assessment of the relative importance of each cue on the judgements, the values of the six cues were combined so that there were low inter-cue correlations in the set of cases. The resulting cases were then checked to ensure they represented "real-life situations" (Sensibaugh & Allgeier, 1996, p. 38). The judges were first asked to make a dichotomous decision on each case (i.e., decide if the teenager was "mature" or "not mature") (Sensibaugh & Allgeier, 1996, p. 39). They were then asked to indicate how confident they were in their decision on a 7-point scale that they later converted to 14 points (1 to 7 represented "not mature" decisions and 8 to 14 represented "mature" decisions). The judges were also asked to rate how important each cue was on their decisions, so that all self-reported weights summed to 100. In addition to the features of JA illustrated in Sensibaugh and Allgeier's (1996) study, participants may sometimes be presented with a small subset of duplicate cases, in order to measure test-retest consistency in decisions. Finally, studies interested in achievement will also document the outcome (or criterion) for each case.

Once the judgement data has been collected, judgement policies are captured for each individual.²⁶ Traditionally, policies are captured for each individual using multiple linear regression statistics (Cooksey, 1996a, 1996b; Hammond et al., 1975; Stewart, 1988). The dependent variable is the judgement and the cues are the independent variables. An individual's judgements are regressed on the cues. This procedure yields a weighted linear model that describes an individual's judgement policy in terms of statistically significant cues in the model, relative cue weights, the form of the function relating the cues to the judgements (e.g., linear), the rule used to integrate the cues into a judgment (i.e., additive), and an individual's predictability as measured by the model (e.g., R^2). Achievement may be measured and explained by correlating the individual's judgements with the criterion values and comparing the individuals' model with the model of the task, respectively. Inter-individual differences (or agreement) in decisions and policies may then be examined. Participants' insight into their decision making policies may also be examined by comparing their self-reported policies with their model.²⁷ Finally, intra-individual inconsistency in making decisions may be studied by comparing the decisions made in the test-retest situation.

²⁶ As will be discussed later, in some studies, aggregate or composite policies may be captured (Hammond et al., 1975).

²⁷ This procedure for measuring self-insight has been criticised however (e.g., Reilly & Doherty, 1992), and these criticisms will be discussed in more detail later in this chapter.

2.2.2. Judgement analysis: Findings. JA has been used to study judgement in a variety of applied domains including medicine (see e.g., Wigton, 1988; 1996), education (see e.g., Cooksey, 1988; Heald, 1991), social work (see e.g., Dalgleish, 1988) and accounting (see e.g., Libby & Lewis, 1982; Waller, 1988). However, it has only rarely been applied to the legal domain (e.g., Sensibaugh & Allgeier, 1996; York, 1992). Reviews of JA research (Brehmer, 1994; Brehmer & Brehmer, 1988; Cooksey, 1996a; Libby & Lewis, 1982; Hammond et al., 1975; Slovic & Lichtenstein, 1971) have generally concluded that the studies yielded consistent findings, which are discussed below, irrespective of the number and type of decision makers sampled and the nature and content of the judgement tasks studied.²⁸ However, as Brehmer and Brehmer (1988) point out, there are exceptions.

Fit of regression model to judgement data. Studies have typically found that the multiple linear regression model is a descriptively valid model as it provides an adequate fit to individuals' judgement data. Some studies have reported R^2 s of over 0.80 for at least some (e.g., Beatty, McCune, & Beatty, 1988; Deshpande & Schoderbek, 1993; Klaas & Dell'omo, 1991; Pablo, 1994; Klaas & Wheeler, 1990; Sherer, Schwab, & Heneman, 1987; Ullman & Doherty, 1984), if not all (e.g., Gonzalez-Vallejo, Sorum, Stewart, Chessare, & Mumpower, 1998; Kirwan, Chaput de Saintonge, Joyce, & Currey, 1983; Kline & Sulsky, 1995), of their participants, indicating that over 80% of the variation in an individual's judgements could be explained by the model. Nevertheless, some studies have also reported that the linear regression model accounted for much less variance in some (e.g., Deshpande & Schoderbek, 1993; Klaas & Dell'omo, 1991; Klaas & Wheeler, 1990; Pablo, 1994; Sherer et al., 1987; Ullman & Doherty, 1984), if not all (e.g., Al-Tabtabai, 1998; Westenberg, Koele, & Kools, 1998; Zedeck & Kafry, 1977), of their participants' judgements. Indeed, the R^2 for the nine judges in Sensibaugh and Allgeier's (1996) study ranged from 0.25 to 0.56, indicating that much variance remained unexplained.

Researchers have suggested that a high R^2 implies that judgements are the result of a linear additive process (Hammond et al., 1964; Hoffman, 1960). Here, each cue is related to the judgement in a (positive or negative) linear way, so the effect of one additional value of a cue on the judgement remains the same as the effect of the other

²⁸ Slovic and Lichtenstein (1971) reviewed studies conducted in what they called the correlational and analysis of variance paradigms. Hammond et al. (1975) reviewed experimental studies in the multiple cue probability learning, and the interpersonal conflict and learning paradigms. Libby and Lewis (1982) reviewed studies conducted in the domains of accounting and auditing. The reviews by Brehmer and Brehmer (1988) and Brehmer (1994) focused on studies involving participants experienced with the

values of the cue.²⁹ Cues are combined by an additive rule, so that the effects of one cue on the judgement do not depend on the value of another cue. In the regression model, the additive rule often implies compensatory behaviour, where a low weight attached to one cue can be compensated for by a high weight attached to another cue so that the judgement is high, for example. Hammond et al. (1975) emphasised that “although a linear model is used for the initial fit, it is critically evaluated by the following criteria before being accepted as a representation of a cognitive system” (p. 280). These criteria are that if researchers find the linear model is not “*useful*”, there is a low R , or there are correlations among the residuals (Hammond et al., 1975, p. 280). They suggested that in such situations, the descriptive validity of non-linear models should be explored.

In the study of achievement, the lens model equation (see Equation 2.1) incorporates a non-linear component (i.e., C) (Hursch et al., 1964). A high value of C suggests that there is residual variance that may be systematic rather than random, and which is largely unaccounted for by a linear model. However, as Cooksey (1996b) warns, C does not always represent configularity. For instance, C may be high because the judge may rely on cues that were not included in the models and in the environment, or there may be a chance match. Configularity may be due to cue function forms being non-linear and thus unmodelled, or similar cue interactions in the environment and the judge (these can be separated out statistically see e.g., Cooksey and Freebody [1985] and Stewart [1976]). A low value of C also carries different interpretations. It may be that both models are in fact linear and the residuals for one or both models is random, or the two models may have systematic residual variance which is different in each model (Hammond et al., 1975; Stewart, 1988). Critics have thus argued that C is not adequate for studying configularity as it is not specific enough (e.g., Einhorn, 1970; Slovic & Lichtenstein, 1971).³⁰ Finally, although C may indicate that non-linearity exists in the judgements, it does not specify the nature of this non-linearity.

Cues may be related to judgements in a non-linear way, and these can be included in the regression model using for example, exponential, cubic or quadratic functions.³¹ The polynomial model has additive quadratic function forms (Cohen &

judgement task being studied. Finally, Cooksey (1996a) reviewed studies employing the single-systems, double-systems, triple-systems, N-systems and hierarchical designs.

²⁹ A positive linear function form indicates that higher values on a cue lead to higher values on the judgement scale, and a negative linear function form indicates that higher values on a cue lead to lower values on the judgement scale.

³⁰ The lens model equation has also been criticised by others (e.g., Groner, 1972; Rozeboom, 1972). And Castellan (1992) criticised the comparison of G with other components.

³¹ Hammond (1972) identified two quadratic function forms, namely a U-shaped and inverted U-shaped. In the former, the judgement decreases with increases in the cue value until a point when it begins to

Cohen, 1983). Non-linear models may also include non-additive models. Einhorn's (1970, 1971) conjunctive model portrays a cue as being used only when the value of another cue is high. For instance, in the conjunctive model all cue values must be high for a high judgement. Non-additive models such as Einhorn's (1970, 1971) conjunctive and disjunctive models are also non-compensatory, so that for example, once a high judgement is formed on the basis of cue(s) with high values, the judgement will not be altered on the basis of cue(s) with low values.

Hammond and Summers (1965) found that people could learn to utilise non-linear aspects of the task. In fact, participants often report using non-linear or configural processes (e.g., Summers, Dale, Taliaferro, & Fletcher, 1970). Some tasks such as clinical judgment may require configural cue use (Goldberg, 1968; Slovic & Lichtenstein, 1971). There is evidence from studies involving experts to support this (e.g., Hoffman, Slovic, & Rorer, 1968; Rorer, Hoffman, Dickman, & Slovic, 1967; Wiggins & Hoffman, 1968). Wills and Moore (1993) also reported configural cue use in the policies of novices making clinical judgements. The fact that non-linearity may not be a characteristic of those most experienced with the task was also found by Wiggins and Hoffman (1968). Some of the studies which have examined non-linearity, have reported that there were no interactions (e.g., Al-Tabtabai, 1998; Deshpande & Schoderbek, 1993; Pablo, 1994; Powell & Mainiero, 1999; Scherer et al., 1987), while a few studies have found evidence of significant interaction effects (e.g., Graves & Karren, 1992; Kline & Sulsky, 1995; Slovic, 1969; Wills & Moore, 1993). Nevertheless, studies using both regression analysis and analysis of variance that have reported configural policies, have found that the interactions usually account for a very small proportion of the variance in judgements (e.g., Summers et al., 1970; Wiggins & Hoffman, 1968).

One possible explanation for the good fit of linear models to human judgment data is that non-linearity may be designed out of the judgment task (Brehmer, 1969; Hammond & Summers, 1965). Another, more commonly cited explanation for the remarkable ability of the linear regression model in fitting human judgement data is that it is powerful enough to fit also non-linear processes (Dawes & Corrigan, 1974; Goldberg, 1968; Yntema & Torgerson, 1961). According to Dawes and Corrigan (1974) linear models do particularly well when (a) predictor variables are monotonically related to the dependent variable; (b) there is measurement error in the predictor

increase as the cue value increases. In the latter, the judgement increases with increases in the cue value until a point when it begins to decrease as the cue value increases.

variables; (c) relative weights are unaffected by error in the dependent variables; and (d) little is lost if weights deviate from optimal weights.

Most studies (including Sensibaugh & Allgeier, 1996), do not examine the degree of non-linearity in judgement policies, and they do not explore non-additive, non-compensatory models. Slovic and Lichtenstein (1971) concluded that “the evidence to date seems to indicate that subjects are processing information in ways fundamentally different from...regression models. Thus, if we are to pursue this line of research we will have to develop new models and different methods of experimentation” (p. 729). Similarly, Brehmer and Brehmer (1988) concluded that “Reports of an adequate test of the linear model are few” (p. 93). The fact that the regression model, characterised by linear additive (compensatory) processing, does not fit some participants’ judgement data well, that participants often report using non-linear processes and that linear models may hide non-linear processes suggests that further research needs to be conducted on the issue of the descriptive validity of the regression model. In particular, the descriptive validity of other non-linear and non-additive (non-compensatory) models should be investigated.

Number of cues used. Studies vary in the number of cues presented to participants. For example, Dhami et al. (in preparation) found that in their review of 143 JA studies, the number of cues presented ranged from 3 to 38. Stewart (1988) observed a similar range of cue number. The regression model indicates the number of cues used by an individual (i.e., those that have statistically significant beta weights), the relative weights of the cues (e.g., beta weights) and the direction in which cues were used (i.e., the sign of the beta weight).

It has typically been found that regression models contain on average three cues (Brehmer, 1994; Slovic & Lichtenstein, 1971). Indeed, most studies have reported that participants do not use all of the cues presented (e.g., Deshpande & Schoderbek, 1993; Gonzalez-Vallejo et al., 1998; Graves & Karren, 1992; Kirwan et al., 1983; Kline & Sulsky, 1995; Klaas & Wheeler, 1990; Sherer et al., 1987; Ullman & Doherty, 1984; Westenberget al., 1998; Zedeck & Kafry, 1977). Some studies have reported that some participants used only one cue (e.g., Deshpande & Schoderbek, 1993; Gonzalez-Vallejo et al., 1998; Klaas & Wheeler, 1990). According to the regression models, the relative importance of cues is very rarely equally distributed. Rather, the above studies have often found that a few cues are weighted more heavily than the others. In addition, while some studies have found individual differences in the direction of cue use (e.g., Klaas & Wheeler, 1990), others have reported agreement in direction of cue use (e.g.,

Al-Tabtabai, 1998). In their study, Sensibaugh and Allgeier (1996) found that there were from two to four (out of a possible six) statistically significant cues in their nine judges' policies. Furthermore, although the judges tended to use the same cues in the same direction, they weighted them differently.

There are three points to bear in mind when examining the issue of cue use. First, there are many ways of measuring relative cue weights such as through beta weights and usefulness coefficients. Although all of these measures provide similar results when cues are uncorrelated, they however, provide different rank orders of cue importance when cues are inter-correlated, thus rendering their interpretation difficult and even meaningless (Darlington, 1968; Schmitt & Levine, 1977; Ward, 1962). Thus, contrary to Brunswik's (1956) notion of representative design, it is implied that researchers interested in estimating cue use in terms of relative weights should use orthogonal cue sets. Recently however, Stewart (1988) has argued that moderate inter-cue correlations should not cause too great a problem, and Cooksey (1996a) concluded that usefulness coefficients may be the best.³²

Second, as stated earlier, Dawes and Corrigan (1974) demonstrated that there is little loss in the predictive validity of the linear regression model when weights deviate from optimal weights. In fact, unit or equal weights can replace regression weights (optimal weights) with very little loss in predictive power of the model. In their classic paper, Dawes and Corrigan (1974) compared the ability of linear models containing different weights (i.e., optimal regression weights, participants' reported weights, randomly chosen weights and unit or equal weights) to predict a criterion, over four judgement tasks (which included experts performing a clinical judgement task).³³ They found that although the optimally weighted regression model outperformed all other models over the four tasks, when it was cross-validated, the equal weighted model (called Dawes' rule by Gigerenzer and Goldstein [1996]) outperformed it on two tasks.³⁴ The random weighted model performed quite well too, and better than the participants' models. Moreover, the average correlations between the predictions of the equal weighted model and the optimally weighted regression model (before cross-validation) was over 0.70. The average correlations between the latter model and the

³² Lane, Murphy and Marques (1982) demonstrated that raw-score regression weights were more reliable estimates of cue importance under both conditions of orthogonal and correlated cue sets, than four other measures.

³³ The equal weighted model is a more general class of unit weighted models, although the correlation between the predictions of both models is perfect (Einhorn & Hogarth, 1975).

³⁴ When the optimal weights in a regression model are cross validated (i.e., used to make predictions on a new equally sized sample as that used to develop the models) the predictive validity of the model may be reduced because the weights may have overfit the peculiarities of the original sample.

randomly weighted model were also quite high, whereas the predictions from the participants' models and the optimally weighted regression model were slightly lower. Choosing weights in a linear model involves the problem of "flat maximum" where there is more than one solution (von Winterfeldt & Edwards, 1986). The efficacy of equal or unit weighted models has been demonstrated in other studies (e.g., Claudy, 1972; Davis & Sauser, 1991; Dorans & Drasgow, 1978; Einhorn & Hogarth, 1975; Schmidt, 1971; 1972). These findings suggest that JA studies may be providing a rather more complex picture of judgement processes by attributing relative weights to judgment policies. A unit or equal weighted model is cognitively less computationally complex and may prove as descriptively valid as the traditionally used optimally weighted models, when predicting participants' judgements.

Finally, often studies present participants with only a subset of the relevant cues (Dhami et al., in preparation), and they study use of individual cues rather than chunks of cues. Miller (1956) estimated that people can store seven, plus or minus two, chunks of information in their working memory, although Simon (1974) later argued that this capacity was smaller (i.e., four or five chunks). Indeed, experts are often distinguished from novices in terms of their greater ability to chunk or relate large amounts of information together (Simon, 1974), although Shanteau (1992) found otherwise. This means that in JA studies, the limits of participants' ability to use cues has not been fully examined, and the researchers' choice of only the "relevant" cues means that use of "irrelevant" cues has not been fully explored.³⁵ On the other hand, the fact that studies rarely cross-validate regression weights, implies that more cues are seen as significant than they would be. The few studies that do include a large number of cues and do cross-validate cue weights have found that few cues are used (e.g., Roose & Doherty, 1976).

In sum, although JA studies report that people use relatively few cues, which is compatible with the capacity of working memory, they also suggest complex weighting procedures are used. These are incompatible with the limitations of computational processing. There are also many problems with how cue use is defined and measured. Brehmer and Brehmer (1988) concluded that "Unfortunately, the number of adequate studies are too few to support any firm decision about the typical number of cues used by an individual" (p. 103).

³⁵ Presenting participants with only the "relevant" cues may be considered a form of demand characteristic.

Intra-individual consistency in decisions. The ability of a model to describe and predict an individual's judgment data is limited by his or her consistency in making decisions because it is assumed that an inconsistent individual will be difficult to describe and predict. Hammond et al. (1975) state that consistency is "the upper bound for control with respect to any model" (p. 279). Contrary to popular belief however, R^2 is not a reliable measure of consistency. This is because a low value may not imply that the individual is inconsistent, but rather that the linear model is not a good fit to the judgment data. And, as mentioned above, researchers rarely consider the fit of alternative models. Unfortunately, researchers have often used the R^2 as a measure of consistency (e.g., Pablo, 1994; Zedeck & Kafry, 1977).

Hammond et al. (1975) propose that consistency should be measured in terms of the variance of judgements made in a test-retest situation. Studies using such test-retest measures of consistency have often correlated the two sets of decisions, although indexes of agreement may also be used (e.g., Gillis, Lipkin, & Moran, 1981). It has generally been found that correlations are moderate for the majority of participants in a study (e.g., Deshpande & Schoderbek, 1993; Doyle & Thomas, 1995; Kirwan et al., 1983; Kline & Sulsky, 1995; Sherer et al., 1987). However, some studies have reported correlations of over 0.80 for some of their participants, indicating high consistency (e.g., Doyle & Thomas, 1995; Kline & Sulsky, 1995; Zacharakis & Meyer, 1998). In their study, Senisbaugh and Allgeier (1996) did not include a measure of test-retest consistency.

People may be inconsistent in their decisions for a number of reasons, including fatigue, shifts in attention, boredom and the fact that the task is highly unpredictable.³⁶ Nevertheless, inconsistency implies inaccuracy.

Achievement. Once individuals' judgement policies have been captured, they can be compared with the model of the task, in order to examine individual achievement. Most studies however, (including Sensibaugh & Allgeier, 1996) do not examine achievement for some of the reasons outlined earlier when the prevalence of the single-systems design was discussed.

The upper limit of achievement is dependent upon that afforded by the task. Libby and Lewis (1982) concluded that studies in accounting (in particular prediction of business failure and prediction of security return) have reported high levels of achievement in their participants. Nevertheless, while some studies have found that

³⁶ Goldberg (1970) refers to such explanations for the phenomenon of bootstrapping, where the model of the individual outperforms the individual.

achievement is quite high (e.g., Cooksey & Freebody, 1987), others have reported low levels of achievement (e.g., Cooper & Werner, 1990).

Where an outcome criterion is unavailable and achievement cannot be measured, intra-individual inconsistency and disagreement in decisions may provide indirect evidence for inaccuracy or low achievement.

Inter-individual agreement in decisions and policies. Agreement among individuals may be measured at two levels. First, individuals may agree or disagree in their decisions. Often, researchers have used correlations or indexes of agreement such as Cohen's Kappa to measure agreement in decisions. While some studies have reported low correlations (e.g., Westenberg et al., 1998), others have reported moderate (e.g., Deshpande & Schoderbek, 1993; Gonzalez-Vallejo et al., 1998; Ullman & Doherty, 1984) to high correlations (e.g., Graves & Karren, 1992). A few researchers have measured agreement in decisions in terms of consensus in the decisions made on each case (e.g., Brown, Brown, Saunders, Castelaz, & Papasouliotis, 1997; Strauss, Chassin, & Lock, 1995). Sensibaugh and Allgeier (1996) found that their judges agreed as to the decision to be made in one third of the cases, and the median correlation was 0.39 among their nine judges' decisions over the cases.

Second, agreement may be considered at the level of the decision making policies, by comparing relative cue weights through computing correlations or a cluster analysis (Hammond et al., 1975). Studies using correlational analyses have found individual differences in cue weights (e.g., Al-Tabtabai, 1998; Westenberg et al., 1998). Cluster analysis often reveals several clusters or subgroups of individuals with similar policies (i.e., cue weights) (e.g., Beatty et al., 1988; Graves & Karren, 1992; Klaas & Dell'omo, 1991; Powell & Mainiero, 1990). Sensibaugh and Allgeier (1996) found that two subgroups of policies emerged, which they termed "conservative" and "nonconservative" (p. 40).

Alternatively, judgement policies may be compared with a priori or post hoc defined groups on demographic variables such as experience and training (e.g., Beatty et al., 1988; Cooper & Werner, 1990; Klaas & Dell'omo, 1991; Pablo, 1994; Powell & Mainiero, 1999). Here, aggregate or composite policies may be computed.³⁷

Interestingly, Shanteau (1992) found that experts' policies differed from the policies of novices in that the former were more likely to use the relevant cues. Sensibaugh and Allgeier (1996) computed a composite policy too. They found that this policy had a

³⁷ In order to overcome the problem of autocorrelation in the regression analyses, researchers calculate the mean judgement across participants for each case.

higher R^2 than the nine judges' individual policies, although the number of cues that were significant was similarly small.

In sum, there are inter-individual differences in the judgements and the judgment policies of individuals experienced at performing the same task. As Brehmer (1994) points out, disagreement in policies may not be something to be concerned about, if people are using alternative means to reach the same goal. By contrast, disagreement in the decisions made indicates inaccuracy in some peoples' decisions.

Self-reported policies. Researchers have also compared the captured policies with individuals' own statement of their policies, as elicited by a direct report method.³⁸ Subjective weights may be compared with statistical weights derived from the regression model, the fit of models containing each set of weights may be compared, or the predictions made by the two sets of weights may be compared (Reilly & Doherty, 1992). According to social judgement theorists, this provides a measure of an individual's insight into his or her decision making policy (e.g., Ullman & Doherty, 1984).

One of the earliest studies measuring self-insight was conducted by Summers et al. (1970) and involved participants (i.e., students) who were performing an unfamiliar task. Summers et al. (1970) found that the cues were weighted roughly equally in their participants' self-reported policies, whereas their captured policies indicated that they relied heavily on one cue and ignored one other. Participants also reported using significantly more cues than as indicated by their captured policies, and their self-reported policies were also more complex (i.e., non-linear) than their captured policies. Indeed, the linear model was worse in fitting the judgements of those participants who reported non-linear cue use, than the judgements of those who reported linear policies, although, when non-linear terms were added, the model fit was not much greater for the former group. Finally, participants' judgements could be better predicted by the captured cue weights than the self-reported cue weights. Earlier, Todd (1954 as cited in Hammond, 1955) had found that his participants were not able to accurately articulate the weights they attached to the cues, and Hoffman (1960) had found discrepancies between regression weights and subjective weights. Studies involving experts that compute correlations between reported and captured policies have similarly found only moderately sized correlations between the two (e.g., Deshpande & Schoderbek, 1993; Sherer et al., 1987). Brehmer and Brehmer (1987) asked participants to simply indicate

³⁸ The policy captured by the regression model is also referred to as a tacit, implicit or objective policy, and the individual's own statement of policy is also called his or her explicit or subjective policy.

the most important cue, and they found that this did not correspond to the most important cue as indicated by the regression weights in the objective policy (unpublished manuscript cited in Brehmer & Brehmer, 1988). Sensibaugh and Allgeier (1996) found that although there were individual differences in self-insight, their nine judges reported using all of the six cues weighted equally, which did not correspond to the pattern of their captured policies. Therefore, researchers have generally concluded that people lack insight into their judgement processes.

The techniques of measuring self-insight through comparing self-reported and captured policies has been criticised for a number of reasons. First, as mentioned earlier it is difficult to determine the true objective model against which to measure subjective policies, especially when researchers do not explore the fit of models other than the linear regression model. Second, for a number of reasons, the method by which subjective policies are elicited may also be inadequate. When being asked to report the cues that have an impact on their judgements, people may interpret importance differently from the way it is represented in the regression weights (Goldstein, 1990; Goldstein & Beattie, 1991). Brookhouse, Guion, and Doherty (1986) found that unlike regression weights, subjective weights are affected by social desirability response bias. Shepard (1964) argues that people may recall attending to all of the cues at some point but not realising that only a few were used at each point. Indeed, evidence suggests that decision makers attend to more information than they use (e.g., Biggs & Mock, 1980 working paper cited in Libby & Lewis, 1982). Due to the difficulties in communicating cognitive processes, people may report policies that they should be using, rather than those they are using (Nisbett & Wilson, 1977). Finally, researchers may not have accurately interpreted the verbal protocol data provided by participants' verbal descriptions of their policies.

Valenzi and Andrews (1971) found no significant difference between the measure of insight indicated by the simple rank order methods and the more complex method of distributing 100 points among cues. Cook and Stewart (1975) compared seven different direct report procedures, namely distributing 100 points among cues, rating cues on a 100 point scale, paired comparison ratings of cues, ratio comparison ratings of cues, the number of times cues were influential, aggregation of judgements made using each cue one at a time on each case, and aggregation of ratings of each cue's contribution to the judgement of each case. The seven procedures did not differ, and in fact, they all corresponded fairly closely to the objective weights, when the subjective and objective weights were used to predict the participants' judgements. The

correspondence was particularly close when the judgment task involved only three cues, than when it involved seven cues. This suggests that insight may be a function of the demands of the task.

Nevertheless, it has been argued that direct methods provide an unreliable and invalid method for demonstrating self-insight because of the difficulties in introspection and articulating policies. Thus, subjective weights should not be directly compared to statistical weights (Cook & Stewart, 1975; Nisbett & Wilson, 1977; Reilly & Doherty, 1989, 1992; Schmitt & Levine, 1977). As an alternative, Reilly and Doherty (1989, 1992) used a policy recognition method, whereby participants were asked to identify their own policy, defined in terms of cue weights, from a set of other policies. They found that this method indicated a greater degree of insight as participants were quite successful in recognising their policies. Sensibaugh and Allgeier (1996) lamented that this was not possible in their study because participation was anonymous.

Thus, people report using more cues, weighing them more equally, and using them in a less linear manner than as indicated by their captured policies. A number of other possible explanations for the lack of correspondence between reported and captured policies have been postulated, and many of these bear upon the difficulty in obtaining valid reported policies. "It is not possible to draw any general conclusions about insight from these results" (Brehmer & Brehmer, 1988, p. 98). In the research presented in this thesis a policy captured via such direct methods will be considered to be a statement of an individual's explicit policy; that which he or she is consciously willing and able to express to others, rather than as an expression of insight. Legal decision makers, like other professional groups, are often required to make such public statements of policy, and as in the case of magistrates' remand decisions, reasons for decisions are requested in the courtroom.

Post-decisional confidence. Finally, often one of the goals of SJT research is to improve existing judgement policies by providing cognitive feedback and/or decision aids (Hammond et al., 1975). One way of determining whether individuals will be amenable to such intervention is to measure their feelings of confidence in their judgements. According to Zakay (1997) post-decisional confidence can affect behaviour because "Ongoing feelings of confidence may determine whether or not the execution of an ongoing activity will be continued, and, if it is continued, whether any change in strategy will take place" (p. 233). Thus, high confidence in a policy may imply an unwillingness to change it (Zakay, 1997).

In fact, social judgement theorists only rarely elicit confidence ratings from participants (e.g., Ullman & Doherty, 1984). Often, such ratings are used as a continuous scale to map onto a categorical judgement (e.g., Sensibaugh & Allgeier, 1996). In Sensibaugh and Allgeier's (1996) study, five of the nine judges demonstrated similarly high mean levels of post-decisional confidence. Research that has compared confidence in judgement with accuracy of judgement has found that high and unrealistic confidence levels are related to suboptimal strategies (e.g., Zakay, 1985; Zakay & Glickshon, 1992). Often, people (including experts) are either under or over-confident as they under or over estimate the accuracy of their judgements, respectively (see Zakay, 1997). If feelings of confidence are not matched to accuracy of judgement, then individuals may be misled into using ineffective strategies. There are debiasing methods that aim to reduce overconfidence (Granhag, 1996 unpublished doctoral thesis cited in Zakay, 1997; Trafimow & Sniezek, 1994), but as Zakay (1997) argues, they are ineffective because they do not take account of the many factors that influence confidence. There is a large body of research on confidence that has been conducted in the field of J/DM generally, which is not pertinent to the present discussion and so will not be reviewed here (see Fischhoff, Slovic, & Lichtenstein, 1977; Gigerenzer, Hoffrage, & Kleinbolting, 1991). Suffice it to say that overconfidence may not be due to a cognitive bias (e.g., Gigerenzer et al., 1991; Juslin, 1994).

Confidence is related to features of the decision task. For example, it has been found that confidence may increase with the amount of available information (e.g., Russo & Schoemaker, 1989), consistency of information (e.g., Kahneman & Tversky, 1973), and the use of non-compensatory strategies (Zakay, 1985). Professionals such as meteorologists who receive unambiguous feedback soon after they make their judgements have been found to be better calibrated (Murphy & Winkler, 1977). Finally, it has also been found that the rapidity of decisions is related to greater feelings of confidence (Zakay & Yaaron, 1996 unpublished manuscript cited in Zakay, 1997).

Post-decisional confidence has also been reported to be related to personality traits such as personal balance and adaptiveness (Block & Peterson, 1955) and dogmatism (Long & Ziller, 1965), level of internal conflict when performing the task (e.g., Zakay, 1985), motivation (e.g., Fischhoff & Beyth Marom, 1983), perceived expertise (Trafimow & Sniezek, 1994), and post-decisional factors such as familiarity of strategy and perceived investment of cognitive effort (Zakay & Tsal, 1993). Zakay (1997) reported that post-decisional confidence is not related to accuracy, but rather, is affected by prospective feelings of confidence prior to the task. Allwood and Grahag

(1999) argue that confidence, like other cognitive processes, is affected by social factors, which may explain why certain professional groups may have to act confident. Therefore, the fact that feelings of confidence may be influenced by factors unrelated to the decision process may explain why confidence does not reflect accuracy (Allwood & Grahag, 1999; Zakay, 1997).

To summarise the review of JA, it is clear that studies using JA typically involve participants who are experienced (or at least familiar [Cooksey, 1996a]) with the judgement task. Inexperienced participants will not have any developed policy that can be captured (Brehmer & Brehmer, 1988). Participants are each presented with a set of cases that may either real or hypothetical, on which they must make a judgement. The judgement process is inferred from judgement behaviour. This avoids the pitfalls of direct report methods such as interviews and questionnaires that are susceptible to social desirability response bias (Arnold & Feldman, 1981; Brookhouse et al., 1986; Madden & Martin, 1979), inaccuracy due to forgetting, difficulty in introspecting (Wilson & Stone, 1985) and complexity in process (Dreyfus & Dreyfus, 1986 cited in Benbenishty, 1992). Over the past 40 years researchers have alluded to a stable body of evidence emerging from JA studies. This states that: (a) judgements are the result of a linear, additive process, (b) where few differentially weighted cues are used. (c) People show some degree of inconsistency in their decisions, and (d) there are inter-individual differences or disagreement among their judgment policies for the same task. (e) People lack insight into their own judgment policies, (f) although they are highly confident in their judgement abilities. However, it is clear from the preceding review that there are numerous wide variations from these findings. Moreover, the stability and validity of these findings is threatened by the limitations of the methods often employed by researchers and by the fact that researchers have rarely tested alternative explanations for their findings. Finally, another threat to these findings may come from whether or not researchers employed a representative design in their studies.

2.2.3. Representative design in judgement analysis research. In JA, the cases or stimuli comprise a combination of cues. Real cases may be past cases that have been sampled from records or present cases that are studied via observations. Their sampling should follow the procedures of random or probability sampling advocated by Brunswik (1955b). Where the cases are hypothetical, their construction should adhere to the notion of formal situational sampling as proposed by Hammond (1966). Here, all of the relevant cues, cue values, cue distributions, inter-cue correlations and ecological

validities of cues should be representative of those that exist naturally in the real world version of the task.

In order to discover what the formal properties of the task are, it is often necessary to conduct a task analysis prior to the study. This may involve interviews with individuals who are familiar or experienced with the task, observations of individuals performing the task, document analyses of past case records and a review of the previous research on the task. The face validity and construct validity of the task is important because experienced participants will be sensitive to deviations from representativeness which may affect their ability to express their judgement policies (Brehmer & Brehmer, 1988; Shanteau & Stewart, 1992) and their motivation to complete the task (Brehmer, 1979).

Although the importance of, and commitment to, representative design is stated in SJT and in texts describing JA (Cooksey, 1996a, 1996b; Hammond et al., 1975; Stewart, 1988), in practice representative design is rarely achieved (Dhami et al., in preparation). Dhami et al. (in preparation) conducted an analysis of the design of 143 published JA studies. The studies were identified after an exhaustive literature search on four databases, using six keywords. A coding scheme was used to analyse the method section of each study. They found that approximately half of the studies were conducted in the SJT tradition and half in the tradition in which the JA and policy capturing techniques were first developed (Christal, 1963; Dudycha, 1970). Most studies involved experienced participants making judgements in professional domains. Approximately one third of studies presented participants with real cases. Here, only 13% of studies used cases that were randomly sampled, 38% used some form of time sampling, one study used stratified sampling and one study sampled the whole population of cases. However, 44% of studies did not provide any details of the sampling procedure employed so it was impossible to determine if the cases were representative. An analysis of the two thirds of studies using hypothetical cases revealed that 16% did not conduct any form of task analysis, and of the remainder that did, usually the only information elicited concerned identification of the relevant cues and their values. No information was gathered regarding the cue distributions, inter-correlations and validities. In fact, the majority of studies combined the cues to form cases using a factorial design where inter-cue correlations were zero and cues had rectangular

distributions.³⁹ Thus, Dhimi et al. (in preparation) found very little evidence of SJT researchers fulfilling the criteria for formal situational sampling.

In anticipation of such results, Cooksey (1996a) stated that:

Close adherence to the principle of representative design is often difficult to achieve in practice. Realistically, it must be said that many Judgment Analysis researchers have probably fallen short of Brunswik's ideal vision for the application of his principle, partly because specific techniques one could or should use to translate the principle into practice have either not been developed until recently or have been spread far and wide through a diverse multi-disciplinary literature and thus are not well known (p. 98).

Dhimi et al. (in preparation) found that the authors of the studies in their sample of 143 studies explained their deviations from representativeness in terms of their concern with the later analysis of data. For example, multiple linear regression analysis requires a high case to cue ratio to establish stable beta weights (Tabachnick & Fidell, 1996) and so researchers often chose to include only a small number of the relevant cues.⁴⁰ Furthermore, in order to establish the effect of each cue upon the judgements, independent of the effect of other cues, researchers often reduced or eliminated inter-cue correlations. Little attention was paid to the fact that co-variation may be removed at the analysis stage, using partial correlations for example, as proposed by Brunswik (1943, 1944, 1952, 1955b, 1956). In an effort to deal with any obviously unrepresentative cases, some researchers removed unrealistic cases from the set, while others told participants that they would be dealing with a selected and not a random sample of cases (Dhimi et al., in preparation).⁴¹

More recently, in a paper reviewing his own contribution to SJT and the Brunswikian approach, Hammond (1996b) confessed that one of the "sins of omission" on his part was to fraction Brunswik's theory from his method (p. 245). He feared that otherwise, like Brunswik, he "would become isolated and ostracised" (Hammond, 1996b, p. 245). The fact that systematic design is so prevalent in psychological research may explain the neglect of representative design by social judgement theorists.

Earlier, Brunswik (1955b, 1956) had argued that representative design was necessary for studying the process of vicarious functioning and for obtaining results

³⁹ Cases were also often statistically generated (e.g., Executive Decision Services Inc., 1991; Wherry, Naylor, Wherry, & Fallis, 1965).

⁴⁰ Stewart (1988) recommends that the number of cues presented "should be kept as small as possible" (p. 43). Cooksey (1996a) argues that the use of a small number of cues is justified on the grounds that people have limited short term memory capacity. However, this disregards the fact that people can chunk large amounts of cues (Miller, 1956). Also, research has shown that people often use different cues. A small number of cues may preclude analysis of individual differences in cue use (Brehmer & Brehmer, 1988).

⁴¹ The practice of removing unrealistic cases is advocated by Cooksey (1996a) and Stewart (1988).

generalisable beyond the experimental situation. In a similar vein, Cooksey (1996a) warns that design choices may affect the internal and external validity of the policies captured. A number of reviews have been conducted on this issue (Brehmer & Brehmer, 1988; Cooksey, 1996a; Dhami et al., in preparation; Ebbesen & Konecni, 1980; Jones, Gerrit, & Earp, 1990; Levin, Louviere, Schepanski, & Norman, 1983; Louviere, 1988). While three of the reviews (Brehmer & Brehmer, 1988; Levin et al., 1983; Louviere, 1988) concluded that judgement policies captured under unrepresentative and representative conditions have internal and external validity, Ebbesen and Konecni (1980) came to the opposite conclusion. Cooksey (1996a) and Jones et al. (1990) stated that a conclusion could not be drawn. However, none of the above can be classified as comprehensive reviews. For instance, Ebbesen and Konecni (1980) largely refer to their own research in the legal domain. Levin et al. (1983) and Louviere (1988) mostly refer to studies that did not involve professional judgment but people's judgements about their transport or local amenities, for example. Moreover, some of these reviews confound the issue of the use of written descriptions of cases (called paper-people by Brehmer and Brehmer [1988]), with the issue of representing the formal properties of the task in these cases. Paper-people can be representative people.

In their review, Dhami et al. (in preparation) noted that very few studies have tested the effects of design upon captured policies through systematically manipulating the representativeness of formal properties of the task such as inter-cue correlations. Moreover, the small sample of studies is difficult to compare because while some have captured policies at the individual level, others have captured aggregate policies, and while some studies have correlated the judgements obtained under representative and unrepresentative conditions, others have used the judgements obtained in the unrepresentative conditions to predict behaviour in the representative conditions. Nevertheless, they report that there are studies showing that judgement behaviour (e.g., cues used) demonstrated under representative and unrepresentative conditions differs, and studies demonstrating no difference. Dhami et al. (in preparation) conclude that the issue of the effect of representative design has not been adequately studied and so its importance remains untested.

Therefore, to date, the majority of studies using JA do not adopt a representative design, often for practical reasons. The lack of empirical tests of the effects of design on the judgement behaviour observed, means that the consequences of the use of unrepresentative stimuli on the validity and generalisability of the findings obtained cannot yet be discerned. It is up to the individual researcher to err on the side of caution.

2.3. Critique of Social Judgement Theorists' Reliance on Regression Models

2.3.1. Regression models as metaphors of mind. While Hammond and his colleagues were applying multiple linear regression to the study of achievement and agreement in clinical judgement, Hoffman (1960) wrote a classic paper on the usefulness and the meaningfulness of such mathematical representations of human judgement.⁴² Regarding usefulness, he proposed that mathematical models allow the researcher to test alternative functional relations and combination rules between the cues and the individual's judgements. The researcher can compare the adequacy of description of different models, where adequate description is defined in terms of the ability of the model to correctly predict the individual's judgements. Furthermore, researchers may compare individuals with respect to their models, examine the correspondence between self-reported policies and the models, and discover whether individual differences are related to demographic characteristics such as training and personality.

When considering the meaningfulness of regression models, Hoffman (1960) warned that using these models, "one cannot conclude that the mental process has been 'discovered'" (p. 124). Different models can be used for different levels of description, for example, at the structural and process levels. Algebraically equivalent models may indicate different underlying processes, and algebraically different models may be equally predictive. Using an analogy from mineralogy, where two substances may have the same chemical structure but have a different molecular structure, Hoffman (1960) stated that just as the chemical structure can explain some, but not all, of the properties of a substance, a mathematical model is a "paramorphic representation" of the judgement process (p. 125). It has little psychological reality.

It is clear that although the use of regression models by social judgement theorists has proved fruitful in investigating human judgement and decision making, in many theoretical and applied domains, researchers have not tested alternative models. Moreover, they have at times considered the regression model to be an isomorphic representation of the human judgement process.

In their "*tools-to-theories*" hypothesis, Gigerenzer and Murray (1987) pointed out that a "*scientist's tools, which are considered to be indispensable and prestigious, lend themselves to transformation into metaphors of mind*" (p. 3, see also Gigerenzer,

⁴² Hoffman (1960) focused on the model of the human and unlike Hammond (1955), did not discuss the model of the environment or achievement.

1991a).⁴³ Brunswik (1956) originally had used the analogy of the perceptual system as an intuitive statistician calculating correlations. Subsequently, Hammond and his colleagues likened the clinician's judgement processes to the multiple regression procedure (e.g., Hammond, 1955; Hammond et al., 1964). Later, this is evident in Hammond and Summer's (1972) distinction between cognitive control as represented by R_s in the lens model equation and knowledge as represented by G , so an individual may have knowledge of the task but applies it inconsistently. Reilly and Doherty (1989, 1992) argue that regression models represent some form of psychological reality because people show insight in being able to recognise their policies as captured by statistically derived weights. Finally, it has been suggested that the fact that researchers use statistical weights for feedback purposes implies that they are true psychological representations of the judgements made (Cooksey, 1996a; Schmitt & Levine, 1977). Furthermore, in comparison, subjective weights are treated as "pseudophenomena" with little relation to psychological processes (Schmitt & Levine, 1977, p. 26).

However, social judgment theorists have concurrently argued that they do not consider the regression model as representing the judgment process. For instance, after examining the best way of statistically deriving cue weights, Lane et al. (1982) stated that:

This does not necessarily mean that judges mentally multiply weights and cue values when making decisions. It *does* mean that raw-score regression weights reflect the relative importance of the cues in determining judgements, regardless of the process used by the judge in aggregating information (p. 238).

Brehmer (1979) said that:

A common misunderstanding is that SJT holds that the judgment process itself operates according to the principles of multiple regression...just because they use these methods for investigating the judgment process...Instead, the methods are used to test a series of hypotheses about the nature of the judgment process, hypotheses about the nature of cue weights, function forms, combination rules, and predictability (p. 199).

Indeed, in his first successful application of the regression model to clinical judgement, Hammond (1955) was also cautious in noting that this was just one of "some probability model" (p. 261). The confusion over the status of regression models in JA studies was recently resolved by Hammond (1996b) when he confessed that:

a...sin of commission on my part was to overemphasise the role of the multiple regression (MR) technique as a model for organising information from multiple

⁴³ In recent times, the advent of the computer led to descriptions of the mind as an information processor (e.g., Newell & Simon, 1972).

fallible indicators into a judgement. There is nothing within the framework of the lens model that demands that MR be the one and only model of that organising process (p. 244-245).

Regression models are structural, mathematical models. They provide a static description of judgement behaviour, where the same cues are used in the same way when deciding on each case.⁴⁴ Regression models embody weighting and combination rules. Although cue weights may be non-compensatory and non-linear terms may be included, it is generally assumed that judgements are the product of a linear, compensatory integration of multiple cues that are weighted optimally. This is because social judgement theorists do not consider alternative weighting and combination rules. In their review of social judgement theorists' use of regression models, Dhami and Harries (2001) propose that models should be chosen with respect to their psychological plausibility, flexibility and adaptability, and their ease of understanding.

2.3.2. Psychological plausibility, flexibility and adaptability. For a number of reasons, critics have questioned whether regression models are capable of providing a psychologically valid description of judgment behaviour (e.g., Armelius & Armelius, 1973; Dhami & Harries, 2001; Einhorn, 1970, 1971; Einhorn, Kleinmuntz, & Kleinmuntz, 1979; Gigerenzer & Goldstein, 1996; Gigerenzer et al., 1999b; Zeleny, 1976). First, the judgement process characterised by the regression model is not easily reconciled with what we know about human psychological abilities. According to the regression model, multiple cues are differentially weighted and integrated in a compensatory way, to form a judgement. However, the human mind is characterised by limited attention, memory and cognitive processing capacity (e.g., Kahneman, 1973; Miller, 1956). Selective perception, sequential processing, limited computational ability and limited memory all have implications for judgement behaviour (Hogarth, 1980), so that people often use heuristics (rules of thumb or cognitive shortcuts) when making judgements under uncertainty (see Kahneman et al., 1982). In fact, people may choose strategies that reduce cognitive effort (see Payne, Bettman & Johnson, 1993).

Second, the regression model portrays humans as inflexible. In his concept of vicarious functioning, Brunswik (1952) argued that, in addition to the fact that distal variables can be attained vicariously through proximal variables, proximal variables can themselves be used vicariously through other proximal variables. However, the static regression model does not allow for cues to be substituted for each other when deciding

⁴⁴ Rare cases are therefore treated as random error or noise. Benbenishty (1992) points out that such cases are often those that distinguish expert from novice judgement.

on different cases. In fact, in JA studies the same cues are available in every case. As Brehmer (1988) points out, Hammond's (1955) use of the regression model meant that "the clinician's capacity for vicarious functioning...could not be examined as such. To do so, it would have been necessary to vary the cues from patient to patient and to examine the clinician's ability to use different subsets of cues for making the same kinds of inferences" (p. 20-21).

Third, related to the notion of vicarious functioning is that judgement processes are adapted to the structure and demands of the task (Brunswik, 1952). Regarding the former, multiple cue probability learning studies have demonstrated that people can learn about inter-cue correlations, function forms and validities, and use cues accordingly (e.g., Hammond & Summers, 1965; Hammond, 1972). Other empirical research has reported that certain cognitive strategies are more descriptively and predictively valid under particular task structures (e.g., Czerlinski, Gigerenzer, & Goldstein, 1999; Einhorn, 1971; Einhorn & Hogarth, 1975; see Libby & Lewis, 1982; Martignon & Hoffrage, 1999; Mertz & Doherty, 1974; Schmidt, 1971; see Slovic & Lichtenstein, 1971). For example, Mertz and Doherty (1974) compared the descriptive validity of different models under different conditions of inter-cue correlations. They found that under a condition where cues were inter-correlated, the conjunctive and disjunctive models better described their participants' judgement policies than the linear model. The findings of other studies will be reported in more detail later.

Empirical research has also shown how judgement behaviour is affected by the demands of the task. For instance, in Chapter 1, it was highlighted that when making their remand decisions, magistrates do not always have all of the relevant information available to them, that information may be presented in any order, and that they may feel under time pressure. There is evidence to suggest that missing information leads to negative decisions. For example, in a study on personnel decision making, Jagacinski (1994) found that on average, missing information which was considered of average importance to the decision led participants to rate a candidate less favourably than comparable candidates with complete information. Johnson and Levin (1985) found that in consumer decision making, less favourable evaluations were made of products as the amount of missing information increased. There is also evidence for primacy effects (e.g., Adelman, Bresnick, Black, Marvin, & Sak, 1996) and recency effects (e.g., Highhouse & Gallo, 1997; Kerstholt & Jackson, 1998) for the cues used. Moreover, these order effects are moderated by the amount of information that is provided, the complexity of information and whether the response is made after each piece of

information is presented or not (Hogarth & Einhorn, 1992). Rhiel and Crouch (1993) found that policies changed when the order of cues changed randomly from case to case, and that people used more cues when cues were presented in the same order on each case. Finally, studies have revealed that under time pressure people place disproportionately heavy weights on negative cues (e.g., Wright, 1974) although there also is evidence that people attach increased importance to positive cues (e.g., Edland, 1993), people use less cues (e.g., Edland, 1979; Rothstein, 1986; Wright, 1974), they switch to simple non-compensatory strategies (e.g., Billings & Marcus, 1983; Edland, 1979, 1994; Ford, Schmitt, Schechtman, Hults, & Doherty, 1989; Johnson & Meyer, 1984; Payne et al., 1990, 1993; Rieskamp & Hoffrage, 1999; Shields, 1983; Timmermans, 1993), and they are less consistent (e.g., Davis & Davis, 1996; Rothstein, 1986).

The relationship between characteristics of the task and modes of cognition have been explicated in Hammond's (1996a) cognitive continuum theory.⁴⁵ This theory states that cognition can be placed on a continuum from the intuitive to the analytic, although the most common type incorporates elements of both and is called quasirationality. Tasks can induce certain modes of cognition. Successful performance on a task inhibits movement along the continuum while failure stimulates transition to other modes of cognition. It has been suggested that certain task characteristics such as having more than five cues, inter-cue correlations, normally distributed cues, many decision alternatives, linear function forms, linear integration rule, no outcome feedback, familiarity with the task and time pressure all induce an intuitive mode of cognition. The reverse of these induces an analytic mode of cognition. A combination of the two types of task characteristics will induce quasirationality. Similarly, the features of intuitive and analytic cognition are listed. The few direct empirical tests of this theory that have been conducted to date have found varying degrees of evidence to support the predictions made (Dunwoody, Haarbauer, Mahan, Marino, & Tang, 2000; Hammond, Hamm, Grassia, & Pearson, 1987).

Despite the fact that judgement processes may change as a result of the structure and demands of the task, social judgement theorists have been content with the conclusion that the judgement behaviour, as portrayed by the regression model, is the same across the variety of task domains that they have studied.

⁴⁵ In fact, this theory was developed over a number of publications spanning many years (Hammond, 1978, 1980, 1981, 1986, 1990).

2.3.3. Ease of understanding. Judgment policies may be communicated to individuals in order to aid and train them to make consistent, accurate decisions, or reduce discrepancy between individuals. The ease with which a model is understood is thus an important consideration. In a paper aimed at prospective researchers, Stewart (1988) warns that “The reader who is not familiar with multiple regression analysis will find some parts of this paper rough going and will probably require statistical help in applying judgment analysis” (p. 41). It would therefore, not be surprising that recipients of JA feedback, who may be professionals unfamiliar with statistical techniques, would find it even more difficult to understand the outputs of a regression analysis.

The regression model however, has proved a very useful aid. Studies have demonstrated higher achievement in conditions with cognitive feedback than in conditions with either no feedback or solely outcome feedback (see Balzer et al., 1989; Doherty & Balzer, 1988). Nevertheless, the regression model may be considered to be an obscure mathematical model that an individual may have difficulty applying without the aid of a computer. Regression models are also difficult to apply to a new data set because they are based on variations in the cues and judgements across the data set. Standardised weights are usually calculated by researchers and application of these weights to a new case requires identification of where that case’s cue values fit in the range of cue values that were used in the original data set on which the model was formed. Others have similarly argued that regression models are difficult to understand and communicate (e.g., Benbenishty, 1992; Schmitt & Levine, 1977).

2.3.4. Over-reliance on regression models. The pervasive use of regression models as a description of human judgement processes is surprising. As Doherty and Kurz (1996) note, Brunswik (1955b, 1956) did not rule out the use of other models. Similarly, neither did Hammond (1955).

Social judgement theorists have generally not considered alternative models, such as process models, and models that imply non-compensatory and/or non-linear processing of cues. There are many reasons cited for this. For instance, Brehmer (1994) pointed out that the multiple regression linear model captured the essence of Brunswik’s concepts of vicarious mediation and vicarious functioning quite well. Others point out that the regression model has proved to be a good fit to judgement data (Brehmer & Brehmer, 1988; Hammond et al., 1975), so can predict judgements well (Hammond, 1955), is widely understood and is useful as a cognitive aid (Brehmer & Brehmer, 1988; Hammond et al., 1975; Stewart, 1988), is mathematically simpler than other models (Hammond et al., 1975; Stewart, 1988), and can describe non-linear processes (Stewart,

1988). Alternative models are not sought because in most studies the non-linear component is negligible, and the linear component can adequately explain agreement or achievement (Stewart, 1988). Indeed, as Hammond et al. (1975) state, “the social judgment theorist places less emphasis on mathematical precision in cognitive modeling and more emphasis on empirically demonstrating the usefulness of a given model with regard to a given problem” (p. 284).

There is reluctance in abandoning the regression model. Doherty and Brehmer (1997) recently take the fact that Hoffman (1960) argued that regression models provided at least some level of description (i.e., in his analogy with the chemical level of minerals) of the judgment process, to imply that regression models should not be discarded. They continue that “*all scientific models are paramorphic representations. All models of judgment are paramorphic representations*” (Doherty & Brehmer, 1997, p. 546). Finally, concerning the combination rule, they argue that:

The conception of human judgment emerging from regression studies of human judgment can be refuted only by evidence that shows that judgment is something other than a matter of combining pieces of information that are weighted according to their importance. So far, such evidence has failed to materialize (p. 547).

In sum, social judgement theorists have tended to consider the regression model as an isomorphic description of human judgment processes despite that the fact that its characterisation of the human judgement process is incompatible with the theory and empirical evidence showing that humans have limited cognitive capacity and that they may select strategies that are appropriate for the structure and demands of the task. The regression model may also be considered to be difficult for non-researchers to understand and apply. Although social judgement theory is not synonymous with the use of regression models, researchers using JA have rarely considered alternative models of the judgement process. Researchers studying judgement behaviour outside the framework of social judgement theory have however, explored the descriptive validity of other types of model.

2.4. Alternative Models and Methods

2.4.1. Alternative static, structural models. The regression model is a static, structural mathematical model. Some researchers have proposed alternative static, structural, mathematical models that unlike the regression model are non-linear and non-compensatory. For instance, Einhorn (1970, 1971) developed two models that approximated conjunctive and disjunctive processes (Coombs, 1964; Dawes, 1964). In

the conjunctive model, all cue values must pass a specific threshold or cut-off point before a judgment is made at a specific level, thus cue sums are not important. A high judgement is made if all cue values are high. In the disjunctive model, the cue values of only one cue need to pass a cut-off point before a judgment is made at a specific level. A high judgement is made if only one cue value is high. Einhorn (1970) compared the predictive validity of the conjunctive and disjunctive models with the linear regression model, in a judgement task where four university faculty ranked 20 hypothetical applicants for graduate school on the basis of three cues. He found that predictions from the disjunctive model correlated more highly with two of his participants' judgements, than predictions from a multiple linear regression model or the conjunctive model.⁴⁶ The conjunctive model better predicted the judgements of one participant and the three models failed to predict the judgements of the fourth participant. These findings indicate individual differences in processes. In another study, Einhorn (1971) compared the validity of these models as a function of the type of judgment task performed (i.e., job preference and graduate selection) and the number of cues presented (i.e., 2, 4 and 6). In sum, all models fitted quite well (even after double cross validation).⁴⁷ For most participants, the conjunctive model performed best over all of the cue conditions on the job preference task. Participants' self-reports were also compatible with the conjunctive model. The results were less clear for the graduate selection task, although the disjunctive model fared better than in the previous task.

Another static, structural mathematical model is the scatter model. Brannick and Brannick (1989) proposed a version of this model. In a choice task, their model, in addition to taking into account the weighted sum of the cue values, also takes into account the dispersion of cue values for each alternative. Thus, the pattern of cue values is considered to be more influential in making a judgement than solely the weighted sum of the values. Over two policy capturing studies, Brannick and Brannick (1989) reported that most participants were better described by a non-linear, non-compensatory strategy than a linear one, although the scatter model did not do much better than the other non-linear models with which it was compared. Other researchers have also found that for at least some, if not all, of the individuals in their samples, non-linear, non-compensatory models provided a better fit to judgment data than linear, compensatory models such as the regression model (e.g., Ganzach, 1995; Lukasiak-Goszczyńska, 1977; Park, 1978).

⁴⁶ Einhorn was one of the four participants, and he used a disjunctive strategy.

As stated, the above alternative models are all non-compensatory.⁴⁸ Shepard (1967) stated that people use few cues and do not integrate information, and are non-linear. Cooksey (1996a) however, points out that these models are not as parsimonious as the multiple linear regression model and so do not cross-validate well.⁴⁹ Indeed, some studies have not found empirical evidence to support the superior descriptive and predictive validity of Einhorn's (1970) conjunctive and disjunctive models over the linear model (e.g., Goldberg, 1971; Ogilvie & Schmitt, 1979). Nevertheless, these alternative mathematical models are also considered difficult for participants to interpret in studies aiming to improve judgment through cognitive feedback of policies (Dhmi & Harries, 2001). Stewart (1988) states that:

experienced judgment analysts regard nonadditive models with suspicion and have not used them extensively. Additive models explain most of the systematic variance in many types of judgements. They are adequate for most applications, and the descriptions of judgment provided by additive models are easily understood. Furthermore, the procedures for fitting additive models are well developed and widely available (p. 67).

He describes the search for nonadditive models as a "fishing expedition" (Stewart, 1988, p. 67). As such, these models have attracted relatively little attention from researchers using JA, and will not be considered further in the research presented in this thesis.

2.4.2. Alternative process-tracing methods. Regression analysis involves inferring information use from the judgements made over a set of cases. Process-tracing on the other hand, involves either elicitation of self-reported descriptions of information use either by think-aloud (e.g., Timmermans, 1993) or written techniques (e.g., Gigerenzer & Hoffrage, 1995), or identification of the information to which people attend by study of eye movement (e.g., Russo & Doshier, 1983), information selection or reaction time (e.g., Payne et al., 1993), while the person is performing the task. The resulting process models provide a step-by-step description of predecisional behaviour such as information search, and cue use, that may be presented in terms of a tree

⁴⁷ In double cross validation, after the model is used to make predictions on a new sample, it is then used to make predictions on the original sample.

⁴⁸ Two other well known non-compensatory models are Tversky's (1972) elimination by aspects model, and the lexicographic model. The latter is a process model. The cues are ordered in terms of importance and the options are compared on the most important cue first. If this is sufficient in differentiating between the two options, then select the option with the cue value of interest (e.g., high aptitude). If the options are equal on the first cue, then go to the second cue and so forth. In Tversky's (1972) model, all options are eliminated if they don't have a particular cue value (aspect). Cue values or aspects are chosen according a probability that is proportional to its weight. This process continues until only one option remains.

⁴⁹ Note however, that mathematical complexity does not equate cognitive complexity (Einhorn, 1971).

diagram or computer program, and that are easy to understand (Payne, Braunstein, & Carroll, 1978; Benbenishty, 1992). These models describe how judgements are formed over time, from when the cues are presented to when the judgment is made. Process-tracing techniques have proved a popular alternative to regression analysis in the study of human J/DM (see Juslin & Montgomery, 1999), and they are endorsed by many researchers (e.g., Ericsson & Simon, 1993; Montgomery & Svenson, 1989; Payne et al., 1978).⁵⁰ Payne et al. (1988, 1990, 1993) used process-tracing techniques (and simulations) and found that people switched to simple, non-compensatory judgement strategies under conditions of time pressure. Billings and Marcus (1983) found that process-tracing techniques were better able to detect the use of non-linear and non-compensatory strategies than the static, structural modelling approach.

It has been pointed out that some researchers consider process models as isomorphic (Benbenishty, 1992; Doherty & Brehmer, 1997; Einhorn et al., 1979). Libby and Lewis (1982) however, warn that “The greater level of detail provided by the resulting models should not be interpreted as indicating that they represent mental processes” (p. 280). Protocol data may merely highlight what is in short-term memory, and this may be an incomplete account of the process. Interpreting verbal protocol data may be difficult and subjective, and is time consuming. Protocol analysis is also costly in terms of time and effort for both the participant and the researcher. Thus, researchers focus on either modelling only one participant (Einhorn et al., 1979) or only particular tasks (Billings & Marcus, 1983). The process models may also be criticised for involving artificial methods to assess what information is searched for, and for being vulnerable to the limitations of think aloud methods (e.g., socially desirable responses and difficulty in retrieving information from memory). Verbal reports and judgements may not be perfectly correlated (Brehmer & Kuylenstierna, 1978; Brehmer, Kuylenstierna, & Liljergren, 1974). These concerns raise doubts about the reliability and validity of the description of judgment behaviour provided by process-tracing techniques (Nisbett & Wilson, 1977). Finally, tests of the fit of the model are weak as often they do not require prediction of protocols or choices, but simply that the models conform to the utterances on which they were based. Also, the resulting models are not compared against other models (but for an exception see Einhorn et al., 1979).

Einhorn et al. (1979) have argued for a multi-method approach. The fact that on the surface regression models and process models do not look alike does not necessarily

⁵⁰ Process-tracing is a popular approach in studying the process of problem solving (e.g., Newell & Simon, 1972).

mean that they are presenting a dissimilar view of human judgement. Researchers should not think the choice between the use of regression modelling and process-tracing is either or. Rather, both approaches offer complimentary views of human judgement at different levels of description, with the former focusing on a higher level of generality. Process models provide data on information search and regression models provide data on the combination rule. The complimentary strengths and weaknesses of both approaches implies that they should be used in conjunction with one another.

Brehmer and Brehmer (1988) concluded that structural models were “sufficient” for the aims of SJT (i.e., explaining and improving achievement and agreement) (p. 105). They argue that “Attempts at developing process models...have not led to better explanations of achievement or agreement, because they do not account for more of the variance than do structural models. For the purposes of SJT, regression models are therefore more useful than process models” (Brehmer & Brehmer, 1988, p. 105). In view of the criticisms outlined above, process-tracing techniques will not be used in the research conducted in the present thesis.

In sum, although researchers have explored alternative static, structural models and process models, these have not proved very popular for a number of reasons. Recently, Gigerenzer and Goldstein (1996) have proposed the use of simple process models, which they call fast and frugal, and which, like regression models, are formed on the basis of the structural relationships between the cues and judgment. Thus, they are not reliant on verbal protocols or artificial methods for data collection.

2.5. Simple Heuristics⁵¹

2.5.1. Origins and overview. The term simple heuristics refers specifically to fast and frugal heuristics. The inspiration for these heuristics came from Brunswik’s (1943, 1952, 1955b, 1956, 1957) ideas on the adaptive nature of human cognition, and the ideas on satisficing and bounded rationality expressed by Herbert Simon (1947, 1955, 1956, 1959, 1982, 1987, 1990, 1991). In his critique of the rational choice model espoused by economics, Simon (1956) argued that organisms satisfice, rather than optimise (subjective) expected utility, when making choices. People are boundedly rational as they must perform under conditions of limited time, information and cognitive abilities (Simon, 1987, 1990). Moreover, people satisfice, so that they have an expectation or aspiration level of a reasonable solution for a task and they cease to

⁵¹ Originally they were called algorithms (Gigerenzer & Goldstein, 1996), and now they are referred to as heuristics (Gigerenzer et al., 1999b).

search for solutions as soon as one is found that meets their aspiration level (Simon, 1956, 1990). Simon (1956) warned that “we should be skeptical in postulating for humans, or other organisms, elaborate mechanisms for choosing among diverse needs” (p. 137). Like Brunswik, Simon (1956, 1990) believed that organisms are adapted to the structure of their environments.⁵² “Human rational behavior is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor” (Simon, 1990, p. 7). Therefore, models of human J/DM should be compatible with evidence of limited cognitive abilities in attention, memory and computational power, and with the demands of the task such as a finite amount of time and resources to search for information. The models should also be adapted to the structure of the task in which they must function in order to perform well.

The program of research conducted by Gigerenzer and his colleagues aims to develop precisely specified step-by-step process models of human J/DM and demonstrate how they are matched to the structure of the environment and the demands of the task in which they function (Gigerenzer et al., 1999b). Furthermore, it examines how learning and evolution can explain this match (Gigerenzer et al., 1999b).⁵³ As the magistrates’ remand decision making task is unlikely to be one they have evolutionarily adapted to, the concept of evolution will not be discussed in this thesis. The fast and frugal heuristics that have been developed comprise basic inter-related features such as an information search rule, stop rule and a decision rule. For example, search through cues may be internal (based on memory) or external (e.g., based on literature), and may be random, ordered according to their validities, or based on the memory of the last cue used. Search may be stopped as soon as the first cue that favours an alternative in a choice task is found, for example. Finally, a decision can be made on only one cue, thus there is no need to weight or combine cues. The heuristics are considered to be fast and frugal because they do not search for all of the available and relevant information and they do not require much computation because they base a decision on one or few cues.

Fast and frugal heuristics may be classified according to the type of task they can perform (i.e., two-alternative choice tasks, estimation or classification), by the content of the task (e.g., adaptive tasks such as mate choice), or by the rules for information search, stopping and decision making that they embody (i.e., ignorance-based decision making, one-reason decision making, elimination heuristics or satisficing heuristics) (Todd & Gigerenzer, 1999). The heuristics are domain-specific because they

⁵² Others have made similar points (e.g., Anderson, 1990; Shepard, 1990).

work in a category of task environments in which they are ecologically rational (i.e., accurate). Gigerenzer and Todd (1999) draw the analogy between simple heuristics and a Swiss army knife. Of course, the idea that all sorts of heuristics would be needed for all sorts of tasks seems unrealisable. The fact that fast and frugal heuristics are robust, however, means that they can adapt well to new environments. Thus, simple heuristics are neither too specific, nor too general.

2.5.2. The fast and frugal heuristics. To date, a number of fast and frugal heuristics have been developed. The first, and perhaps the most well known and researched is called Take The Best, which embodies another simpler heuristic, namely the recognition heuristic (Gigerenzer & Goldstein, 1996; Goldstein & Gigerenzer, 1998 unpublished manuscript cited in Goldstein & Gigerenzer, 1999).⁵⁴ Both these heuristics were designed to make choices in a two alternative choice task, where the cues (information) about the alternatives are binary, and knowledge of, and about, the alternatives is from memory, rather than given. These two heuristics are illustrated in Figure 2.4.⁵⁵

An individual may have limited knowledge in terms of not knowing the alternatives in the reference class, not knowing the cue values, or both, to varying degrees. The first step in the choice process involves the recognition heuristic. This is considered the simplest of all the heuristics developed to date. It is called ignorance based decision making as it relies on a lack of knowledge of the alternatives, and only on recognition memory. Thus, the recognition heuristic would not work if every alternative were recognised (Goldstein & Gigerenzer, 1999). In Brunswikian terms, recognition is a predictor of the distal variable. The recognition heuristic is domain specific, in that it only works in environments where recognition is correlated with the criterion.⁵⁶ This correlation may either be genetically coded or learned through experience. Recognition validity is the proportion of correct inferences across all pairs where one object is recognised and the other is not. Search is limited to recognition memory, and is stopped as soon as recognition of both alternatives is examined, and the

⁵³ To this end, they study J/DM in natural domains such as mate and food choice (e.g., Davis & Todd, 1999; Todd & Miller, 1999).

⁵⁴ Originally, the recognition heuristic was simply referred to as the first step in the Take the Best heuristic (Gigerenzer & Goldstein, 1996), and only later was it considered a separate heuristic (Goldstein & Gigerenzer, 1999).

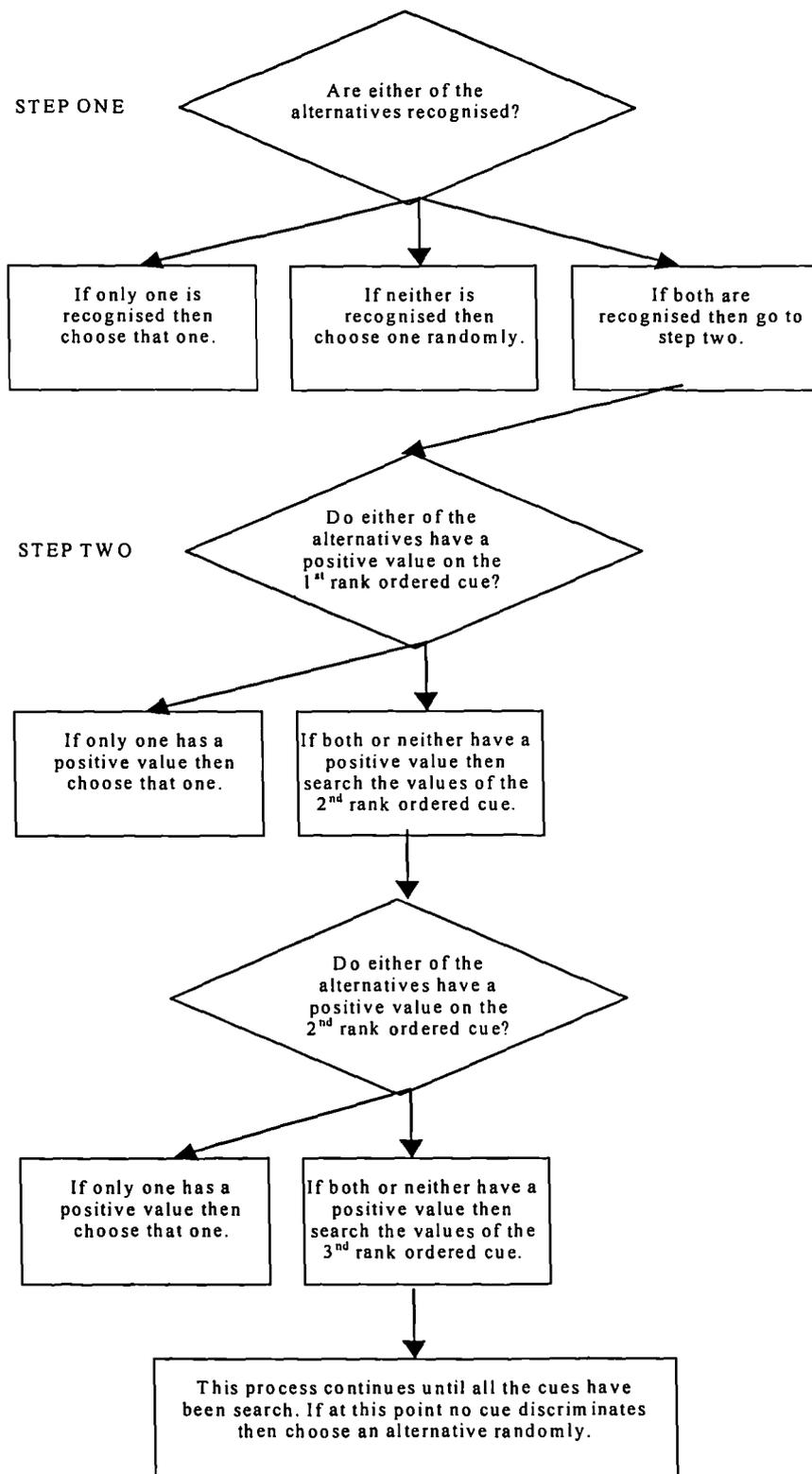
⁵⁵ In an earlier version (Gigerenzer et al., 1991) search was terminated if one alternative had a positive value and the other a negative value on the cue. This was more complex and empirical evidence supports the current discrimination rule (Hoffrage, 1994 unpublished doctoral dissertation cited in Gigerenzer & Goldstein, 1996).

⁵⁶ In many situations, the criterion may be accessible only through cues (as depicted in the lens model). For instance, people can predict a profitable company from its regular advertising campaigns.

decision is based on recognition alone. Recognition is a powerful advertising tool. It can be seen in Figure 2.4 that according to the recognition heuristic, if one of the two alternatives is recognised it is chosen. If neither alternative is recognised one is chosen at random. However, if both alternatives are recognised, the process continues to the second step, namely a search through the cue values.

Search through cues is ordered.⁵⁷ The cues are ordered according to their ecological validities. The Take The Best heuristic retrieves, from memory, the values of the first rank ordered cue for the two alternatives. If the cue discriminates (i.e., for a binary cue, it has a positive value for one alternative and a negative or unknown value for the other), then the search for values of other cues is stopped and the alternative with the positive cue value is chosen. If not, or if one alternative has a negative value and the value of the other alternative is unknown, the search process continues. If after all of the cues have been searched and no cue discriminates, an alternative is chosen randomly. The ecological validity of a cue is defined in terms of the proportion of correct inferences for that cue alone, when one alternative has a positive value and the other does not. However, an ecologically valid cue may not be useful if it does not discriminate between a pair of alternatives. The discrimination rate of a cue is the relative frequency with which the cue discriminates between any two alternatives from the reference class. This is a function of the distribution of the cue values and the number of alternatives (see Gigerenzer & Goldstein, 1996 for details of the computation). Cues with higher ecological validities are better able to correctly predict the criterion, and cues with higher discrimination rates are more likely to be used for making a choice.

⁵⁷ This fact makes Take The Best a variant of a lexicographic strategy.



**Figure 2.4. The Take The Best heuristic embodying the recognition heuristic
(adapted from Gigerenzer & Goldstein, 1996)**

Therefore, in the Take The Best heuristic, search is limited and is stopped either when only one of the alternatives is recognised, or when a cue discriminates between alternatives, cues are not weighted but are ordered (according to their weights), and cue values are substituted rather than integrated. In this sense, this heuristic does not use all of the available information, it is non-compensatory because the choice is based on the first discriminating cue and no other cues can override this, and is also non-linear. The amount of information searched depends on the task (i.e., pair of alternatives), and so the heuristic is flexible in its depiction of cue use. The stopping rule has a “*positive bias*” because search is not stopped if one alternative has a negative value and the other has an unknown value, but it is stopped if one alternative has a positive value and the other has an unknown value (Gigerenzer & Goldstein, 1999, p. 91). In research on hypothesis testing and causal reasoning, there is evidence that people use various types of positive biases (e.g., Klayman & Ha, 1987; Mandel & Lehman, 1998). The ecological validity of a cue is not computed in an optimal way, like beta weights are in multiple linear regression, for example (Martignon & Hoffrage, 1999). Finally, there are simpler variants of Take The Best, namely Take The Last and Minimalist (Gigerenzer & Goldstein, 1996). In the latter, cues are not searched in order of their validities but are searched randomly, and so no knowledge or computation of validities and discrimination rates is required. In the former, the cue that discriminated between the alternatives in the previous trial is searched first, and if this does not discriminate in the present trial, then the cue that discriminated the time before last is searched, and so forth. On the first trial cues are searched randomly. Unlike Take The Best which needs to know the cue validities, both these heuristics only need to know the direction in which the cue points.

At the time when the research presented in this thesis was conducted, the only published fast and frugal heuristics were those reviewed above for choice tasks. During the writing of this thesis two more heuristics have been developed and published, namely Categorisation by Elimination (Berretty, Todd, & Martignon, 1999) and QuickEst (Hertwig, Hoffrage, & Martignon, 1999), for categorisation and estimation tasks, respectively. The former will be considered in more detail in Chapter 6 of the thesis, and suffice it to say that the latter is a relative of Take The Best that estimates quantities.

2.5.3. Tests of the descriptive and predictive validity of fast and frugal heuristics. The heuristics have been largely tested through computer simulation and mathematical analysis, although a handful of behavioural studies have now been

published. Together, the studies have yielded a consistent body of findings to support the notion that these simple heuristics are descriptively and predictively valid.

The two alternative choice task typically used to describe how the recognition heuristic and the Take The Best heuristic work, involves predicting which of a pair of German cities has the highest population. In this task, it is assumed that an individual has knowledge of the alternatives (i.e., pairs of all German cities with a population of over 100,000), and has knowledge about the alternatives or the cue values of nine binary cues (e.g., whether or not a city is the national capital, or has a soccer team). Indeed, many of the studies require participants to work on tasks concerning a geographical topic, where the correct answers are recorded in an almanac.

Support for the recognition heuristic has come from studies which have shown, for example, that German students performed better than American students when predicting which of pairs of American cities had the highest population, because the former relied on the recognition heuristic (Goldstein & Gigerenzer, 1999). Similar results have been found by Ayton and Önkal (1997 unpublished manuscript cited in Goldstein & Gigerenzer, 1999) when they asked Turkish and English students to predict which of pairs of English soccer teams would win a cup match. The less-is-more effect is an interesting phenomenon to emerge from studies. Here, as knowledge increases from an intermediate state of knowledge of a domain, the accuracy of prediction decreases. For example, American students were better at predicting which of pairs of German cities had the greater population than at predicting this criterion for American cities (Gigerenzer & Goldstein, 1998). This effect has been demonstrated between groups of people, within-groups across domains, and within-groups over time (Goldstein & Gigerenzer, 1999). In a field experiment involving stock market investment, the recognition heuristic was pitted against five more complex models for stock selection (e.g., mutual funds), and in six out of eight tests it outperformed these models in terms of returns (Borges, Goldstein, Ortmann, & Gigerenzer, 1999). Research has also shown that people relied on the recognition heuristic to make choices, despite being given contrary information about a recognised alternative (Goldstein & Gigerenzer, 1999). Recognition was a good predictor in the above studies because there was a correlation between recognition of cities and city population (Goldstein & Gigerenzer, 1998), and the same probably holds true for soccer teams and profitable companies.

Gigerenzer and Goldstein (1996, 1999) compared Take The Best with several linear, compensatory models, such as multiple linear regression, Franklin's rule (a

differentially weighted linear model) and Dawes' rule (a unit-weighted linear model).⁵⁸ Dawes' rule was described earlier. Franklin's rule picks up on the differential weights attached to cues but not on the dependencies between cues, which are included in multiple linear regression.⁵⁹ In their study, Gigerenzer and Goldstein (1996, 1999) simulated individuals performing the German cities choice task under different conditions of knowledge of the cue values. The frugality and speed of Take The Best was measured by the amount of information (cue values) searched for. On average, it searched for 5.9 cue values (not cues) whereas the integration models integrated values of all nine cues. As the number of objects recognised increased, the number of cue values searched increased, and as the percentage of cue values known increased, the number of cue values searched decreased. (Note that the recognition principle was just one more cue in Take The Best, and in multiple linear regression, missing values due to limited knowledge were replaced by averages.) In terms of the number of correct choices, it was found that when there was a lack of knowledge, Take The Best performed equal to, or better than, the integration models. When there was complete knowledge, multiple linear regression outperformed all of the other models, although Take The Best was not far behind. On average, over the different conditions of knowledge, the performance of Take The Best (i.e., 64.5% accuracy) was good compared to multiple linear regression (i.e., 65.7% accuracy), Franklin's rule (i.e., 62.3% accuracy) and Dawes' rule (i.e., 62.1% accuracy). The variants of Take The Best (i.e. Minimalist and Take The Last) searched for less cue values on average even though they did not lose much in terms of accuracy, and they actually outperformed Dawes' rule and Franklin's rule. However, in this study the models were only compared in terms of their ability to correctly predict the choices on the set of data used to form the models, thus testing their descriptive validity. Gigerenzer and Goldstein (1996, 1999) did not compare the predictive validity of the models (i.e., their ability to correctly predict the choices on a new data set).

Gigerenzer, Czerlinski and Martignon (1999a, see also Czerlinski et al., 1999) studied both the descriptive and predictive validity of different models. The data was divided randomly into a modelling set (which they refer to as the training set) and a set for cross-validation. This procedure was repeated 1,000 times. All alternatives were

⁵⁸ The other models compared were tallying and weighted tallying.

⁵⁹ In a letter, Benjamin Franklin (1772/1987) described his process of making a decision, which he called "*Moral or prudential Algebra*" (p. 878). He divides a piece of paper into two columns, one labelled "pro" and the other labelled "con". Then, over a few days, he makes a list of "Motives" for and against the "Measure", and estimates the respective importance of these reasons, and finally he finds "where the

recognised by the simulations so the recognition heuristic did not operate in Take The Best. Take The Best, Minimalist, Dawes' rule and multiple linear regression were compared on a range of task domains such as predicting city population, homelessness, house prices, amount of rainfall and school drop out rates, which also ranged in the number of alternatives and cues. It was found that on average, across the 20 tasks, multiple linear regression used six cues, as did Dawes' rule, while Take The Best used 2.4 cues, and Minimalist used 2.1 cues. In terms of accuracy, Take The Best (i.e., 75% accuracy) was not far behind multiple linear regression (i.e., 77% accuracy) on the modelling set, and was more accurate on the cross-validation set (i.e., 71% accuracy for Take The Best and 68% for multiple linear regression). All models showed reduced fit on the cross-validation set, but the fit of multiple linear regression fell more than the other models. Take The Best is very robust (i.e., generalises well to a new data set) because it uses only a few of the highly valid cues, which remain highly valid across samples of the population. Multiple linear regression on the other hand, estimates a number of parameters equal to (or more than) the number of cues, and it takes into account the inter-cue correlations, thus it suffers from overfitting the peculiarities of the modelling set, especially when the modelling set is small.

Simulation studies comparing the QuickEst heuristic with multiple linear regression have also demonstrated a similar pattern of results relating to the number of cues searched and the accuracy of inferences in modelling and cross-validation conditions (Hertwig et al., 1999). Similarly, the Categorisation by Elimination was tested against Dawes' rule and Franklin's rule, amongst other models on tasks such as categorisation of intentional actions, wine, flowers and mushrooms (Berretty et al., 1999). It was found to be more frugal, and equally as accurate, as the more complex models.⁶⁰

The studies using simulations were, in Brunswikian terms, modelling the environment. In doing so, Gigerenzer and his colleagues argue that an adapted individual would pick up and exploit the structure of the environment and so would perform quite well using a cognitively simple process. In addition to the studies presented in this thesis, there are a few others that have investigated the ability of fast and frugal models to describe and predict human judgement data (Dhmi & Harries, 2001; Rieskamp & Hoffrage, 1999; Slegers, Brake, & Doherty, 2000). The study by

balance lies" by adding up the weights in the two columns (p. 878). This is the earliest use of the linear model in decision making.

Dhami and Harries (2001) will be discussed in detail in Chapter 6, suffice it to say that it also found support for the validity of fast and frugal heuristics as models of human judgement.

Rieskamp and Hoffrage (1999) studied eight strategies including Franklin's rule, Dawes' rule, and LEX, which they say is a general version of Take The Best.⁶¹ Student participants were required to choose which of four companies (out of a population of 70 companies) was the one with the highest annual profit, both under conditions of low and high time pressure for each choice. First, a process-tracing approach was used where the task was presented on a computerised information board. It was found that under high time pressure, individuals searched for less information, searched for the most important cues, spent less time looking at information, and demonstrated a cue-wise rather than alternative-wise information search pattern. Although these results indicated that participants were using one of the non-compensatory strategies, the results did not distinguish LEX from the other non-compensatory strategies. Indeed, different strategies may make the same prediction. Therefore, a choice set was specifically selected which distinguished between the strategies, so that different models made different predictions. Participants performed this task. The models were developed on the environment, and their ability to correctly predict the choices of participants was compared. All models performed better than chance level (i.e., 25%), and there were individual differences in terms of the models that best predicted participants' choices. For some participants two or more models were equally good at predicting their choices. LEX and a compensatory strategy called Weighted Pros both correctly predicted 66% of participants' choices. Nevertheless, overall, participants switched from Weighted Pros which fit 21% of participants, to LEX which fit 23% of participants, under conditions of low and high time pressure, respectively.⁶² In addition, the process-tracing data for each participant was compatible with the best fit strategy for that individual.

Although Rieskamp and Hoffrage's (1999) study generalised the application of Take The Best to conditions of information from givens, their findings are limited to judgements made under time pressure, and their study involved novices. By contrast, most SJT research is conducted on people who are at least familiar, if not experienced

⁶⁰ The fast and frugal heuristics have also been compared against Bayesian networks (e.g., Gigerenzer et al., 1999a; Martignon & Laskey, 1999), and found to do equally well on cross-validation, but this will not be discussed here.

⁶¹ The other strategies studied were Good Features, Weighted Pros, Lex-Semi, Elimination By Aspects and Lex-ADD (Rieskamp & Hoffrage, 1999).

with the task, and so they would have a developed policy that can be captured (Brehmer & Brehmer, 1988; Cooksey, 1996a). Recently, Slegers et al. (2000) asked participants who were familiar with the domain of baseball, to make a binary prediction followed by a subjective probability of which team would win 150 randomly selected games, based on five cues. There were no time limits. Four of the cues were polytomous cues and one was binary, and although one of the aims of their study was to extend the Take The Best heuristic to polytomous cues, it is evident that there were considerable difficulties in doing so.⁶³ Slegers et al. (2000) called their variant of Take The Best, “ 7 ± 2 ” (p. 106). In comparison with a logistic regression model, which correctly predicted 87% of the outcomes in modelling the environment, the 7 ± 2 model provided a fit (which they call hit rate) of 84%.⁶⁴ On average, the participants predicted the outcome of the games with 81% accuracy. Both models of the environment did equally well when predicting the participants’ choices (i.e. 84%), and both models did equally well in fitting the participants’ choices (i.e. 87%).⁶⁵ There were individual differences, however. Finally, although the 7 ± 2 model was good at making binary predictions, it was very poor at predicting participants’ subjective probability judgements. This suggests that fast and frugal models may not be valid descriptions of tasks requiring probability judgements.

Although behavioural studies are necessary to prove the validity of fast and frugal heuristics, simulations and mathematical analysis has proved fruitful in delineating the conditions under which particular strategies will be more valid, thus providing predictions for future behavioural studies. Previous research suggests that there are number of conditions under which multiple linear regression or Dawes’ rule will do better. Multiple linear regression will outperform Dawes’ rule when there is a high number of objects per cue (Einhorn & Hogarth, 1975; Schmidt, 1971). Dawes’ rule is expected to do as equally well as multiple linear regression when the data is only low to moderately linearly predictable (i.e., as measured by the R^2), and when cues are inter-correlated (Einhorn & Hogarth, 1975). Czerlinski et al. (1999) however, found that although Take The Best performs better than multiple linear regression when there were

⁶² Weighted Pros indicated use of a simple strategy as only a subset of the cues were integrated (Rieskamp & Hoffrage, 1999).

⁶³ A logistic regression model of game outcomes was computed for each cue separately. The cues were dummy coded. The predicted probability of a target team (selected randomly) winning was then used to group the individual values of a cue. These grouped values were then treated in the model as a separate binary cue. These cues were ranked according to the median predicted probabilities of their individual cue values. A value of the cue above the median indicated that the cue discriminated between the teams. Note that this binary choice also has associated with it a continuous judgment, namely the sum of the predicted probabilities of the individual values of the cue.

⁶⁴ As a simpler alternative called the “median-split” model, Slegers et al. (2000) divided each polytomous cue according to split at the median value. This model provided a fit of 81% to the environment.

fewer alternatives per cue, there was no effect of the size of the R^2 , and the inter-cue correlations. Martignon and Hoffrage (1999) found that Take The Best performs well when the environment is structured in specific ways. For instance, if cue weights are non-compensatory in an environment, then the performance of Take The Best will be equal to a differentially weighted linear model (e.g., Franklin's rule and multiple linear regression) with a non-compensatory set of weights.⁶⁶ Indeed, three of the 20 data sets studied by Czerlinski et al. (1999) had non-compensatory cue weights. In Dawes' rule, the cue weights are equal and so it does not perform as well. In environments with a few number of cues and a great number of alternatives, Take The Best is more accurate than Dawes' rule, because the latter model cannot compensate for errors in the few cues by integrating other cues. When all valid cues are available or information is abundant, Dawes' rule and Franklin's rule outperform Take The Best.⁶⁷ The QuickEst heuristic is designed to perform well in an environment where objects are distributed according to a J-shape, so that many alternatives have a small criterion value and a few have a high value on the criterion (Hertwig et al., 1999). The concept of flat maxima refers to the finding that many different cue weights and combinations can account equally well for the data (von Winterfeldt & Edwards, 1986). Martignon and Hoffrage (1999) therefore, have highlighted some conditions under which this phenomena will occur.

2.5.4. Criticisms of past research on fast and frugal heuristics. For various reasons, the concept of simple, fast and frugal heuristics has received a relatively hostile response from judgment and decision making researchers (see commentaries in reply to a *Behavioral and Brain Sciences* article by Todd and Gigerenzer, 2000). It is clear that this program of research critically evaluates the longstanding traditions or "status quo" in many fields of psychological enquiry, such as J/DM, learning, categorisation, and evolutionary psychology. Below, a number of the methodological concerns with the studies using fast and frugal heuristics will be considered (Dhami & Harries, 2001; Harries & Dhami, 2000), and in Chapter 6 some of the criticisms of the theoretical implications of these heuristics will be discussed.

First, the dependent variables used in different models are not always comparable. Gigerenzer and Goldstein (1996), for example, compared a multiple regression model that utilises a continuous measure of judgment with a fast and frugal heuristic that uses a binary measure of judgment. They could have used a logistic

⁶⁵ The median-split model managed to predict 80% of participants' choices.

⁶⁶ The cue weights in a linear model are non-compensatory if each weight is larger than the sum of all the successive weights. An example of a set of non-compensatory weights is 1, 1/2, 1/4, 1/8, 1/16.

regression model, as used by Slegers et al. (2000) on a similar task. Second, the cues used are not always comparable. For example, Slegers et al. (2000) created continuous and binary cues for the logistic regression model and categorical cues for the fast and frugal heuristic.

Third, in contrast to standard practice (see Cooksey, 1996a; Tabachnick & Fidell, 1996), most of the findings reported are based on regression models that retain non-significant cue weights. This procedure depicts the regression models as complex (viz. multiple cues are identified as being used). This contrasts with the literature showing that, on average, three cues are usually statistically significant (Brehmer, 1994; Slovic & Lichtenstein, 1971). Gigerenzer and his colleagues also did not report how many cue weights were statistically significant (Czerlinski et al., 1999; Gigerenzer & Goldstein, 1996, 1999; Gigerenzer et al., 1999a).

Fourth, Slegers et al. (2000) used a non-flexible fast and frugal heuristic that was forced to use the same one cue, which is not clearly identified in the paper, at a particular level for each choice. In fact, the ecological validities of the cues were estimated via logistic regression analysis. Despite their claims, this renders their 7 ± 2 model psychologically implausible.

Fifth, the process of computing cue validities in Gigerenzer and Goldstein's (1996) Take The Best also involves a cognitively complex learning strategy. With a binary cue and two alternatives, computation of the ecological validity of the cue takes account of data in all four cells. By contrast, there is considerable evidence from studies of covariation and causation, to suggest that people are selective and may use simple learning strategies (e.g., Nisbett & Ross, 1980). In an attempt to counteract this criticism, it is argued that "The result of the preprocessing phase are intuitions about which cues are the most important to predict a criterion, which can be obtained by individual learning or other forms of adaptation to environments, such as cultural transmission" (Gigerenzer, Martignon, Hoffrage, Rieskamp, Czerlinski, & Goldstein, in press, p. 2). It is unclear to what extent "intuitions" involve computation of precise validities. In addition, the fact that in a choice task, all the alternatives may not be immediately available, and the parameters of the population to which they belong may not be known, makes it difficult to consider how cue validities are computed. Unfortunately, relatively little research has been conducted on how simple heuristics are learned.

⁶⁷ A preliminary finding shows that at the fitting stage, multiple linear regression performs better than Take The Best in environments characterised by scarce information (Martignon & Hoffrage, 1999).

Sixth, with the exception of Hertwig et al. (1999), Gigerenzer and his colleagues, and Slegers et al. (2000) evaluate the models solely in terms of global accuracy. In many applied domains such as the legal domain however, global accuracy is not the first concern: the two types of errors (type I and type II) are differentially weighted (Hammond, 1996a). The trade off between both types of error when making remand decisions was discussed in Chapter 1.

Seventh, although accuracy may be an appropriate criteria by which to evaluate the prescriptive utility of fast and frugal heuristics in environmental domains such as the German cities task, in social domains decision makers have to achieve other goals and so there may be other criteria that are more appropriate. Tetlock (1985) refers to goals such as accountability, transparency and fairness. In the legal domain, the compatibility of different models with the requirements of due process is important in considering the prescriptive value of a model.

Finally, the research conducted to date demonstrates that simple heuristics can describe the environment well (via modelling the environment), and that human judgment data can be described well by such heuristics (via modelling the individual). Whether people actually use fast and frugal heuristics to achieve in their environments has not yet been tested. This would require a full lens model analysis as advocated by Brunswik (1952) and depicted in Figure 2.1. Unfortunately, the inaccessibility of an outcome criterion in the legal domain means that this important issue was not examined by the research presented in this thesis. The studies by Rieskamp and Hoffrage (1999) and Slegers et al. (2000) only investigated the descriptive validity of fast and frugal heuristics. They did not assess how such heuristics perform when predicting individuals' decisions on a new set of data.

Although not a criticism, it should be pointed out that the use of simple heuristics is not a new discovery in the field of AI, where computer scientists modelling the environment have been using Classification and Regression Trees (CART) for the past 15 years (Breiman, Friedman, Olshen, & Stone, 1984; Dutton & Conroy, 1996). The Take The Best heuristic proposed by Gigerenzer and Goldstein (1996) for example, is like a simple classification tree (Martignon & Hoffrage, 1999). Williams (1993) used CART when modelling bail decisions in the American criminal justice system.

In sum, simple, fast and frugal heuristics provide a psychologically plausible alternative to the regression model, as descriptions of human judgement. There is evidence to suggest that people use these simple, non-linear, non-compensatory strategies. Gigerenzer and Goldstein (1996) remarked that fast and frugal heuristics

could be used as an alternative to the regression model in research based on Brunswik's (1952) lens model. "In a one-reason decision making lens, the first discriminating cue that passes through inhibits any other rays passing through and determines judgment" (p. 665). Indeed, through his reference to the work of Hull and Frenkel-Brunswik, Brunswik (1956) himself had earlier considered a notion of non-compensatory cue use. Therefore, in the research presented in this thesis, a non-linear, non-compensatory fast and frugal heuristic will be compared with two linear, compensatory models, in terms of their ability to describe and predict English magistrates' remand decision making policies.

2.6. Summary and More Research Questions

SJT represents a Brunswikian approach to the study of human J/DM. Social judgement theorists attempt to study the process of vicarious functioning, namely how people cope with the imperfect cause-effect relations between multiple cues and a criterion, and the redundancy among cues, in order to predict a criterion. Following Brunswik, they use correlational statistics, and mostly regression analysis, to describe both the process of vicarious functioning at the individual level, and the probabilistic nature of the environment to which the individual must adapt.

Researchers have employed the established techniques of JA or policy capturing. In addition to studying the accuracy of an individual's decisions, social judgement theorists have also tended to study inter-individual agreement in decisions and policies, intra-individual consistency in decisions and self-insight into decision making policies. The findings of this body of research however, are varied, and subject to numerous methodological criticisms.

As Brehmer (1994) notes, the multiple linear regression model has proved to be a good fit to judgement data, leading social judgement theorists to generally conclude that the judgement process is characterised by a linear, compensatory integration of multiple, differentially weighted cues. In these static, structural models the same cues are used in the same way on each case. However, other researchers have found evidence that non-linear and non-compensatory models describe judgement data well, especially under specific task conditions. Recently, Gigerenzer and his colleagues have found that simple process models called fast and frugal heuristics that are non-linear, non-compensatory and can use different cues on different cases, describe both the task environment and the individual as equally well, and sometimes better than regression models. However, there are some methodological concerns with these studies.

Fast and frugal heuristics are easier to understand and are psychologically more plausible than regression models because they are more compatible with peoples' cognitive limitations and flexible use of information. Furthermore, the fact that humans adapt to their environments means that they employ appropriate judgment strategies given the informational structure and demands of the task. This implies that researchers must similarly choose models of judgement. However, social judgement theorists have not compared regression models to alternative models. The pervasive use of regression models by social judgment theorists is surprising as neither Brunswik nor Hammond ruled out the use of other models. SJT is not synonymous with the use of regression models and fast and frugal heuristics present a viable alternative. The research presented in this thesis aims to integrate the use of fast and frugal heuristics with SJT, in investigating English magistrates' remand decision making. In doing so, it aims to overcome some of the methodological limitations of past SJT research and research on simple heuristics.

In chapter 1, the main aims of the research presented in this thesis were listed, and the specific questions that arose from a review of English magistrates' remand decision making. Below are specific questions that have emerged from the review of SJT and simple heuristics that will be pursued in the research presented in this thesis:

Decision maker related questions:

(a) What is the relative validity of fast and frugal heuristics and regression models, in describing and predicting magistrates' remand decisions? Are magistrates basing their decisions on many cues integrated in a linear, compensatory way or are they using one cue in a non-compensatory way?

(b) How consistent are individual magistrates in their remand decisions?

(c) What are the similarities and differences among different magistrates' remand decision making policies?

(d) What is the concordance between individual magistrates' self-reported policies and their policies as inferred from their behaviour (captured by a model)?

(e) How confident are individual magistrates in their remand decisions?

Decision task related questions:

(a) What is the prescriptive utility of fast and frugal heuristics for magistrates' remand decision making?

(b) What are the formal properties of the remand decision making task? What cues are available, what are their values, distributions, and inter-correlations?

(c) Do magistrates' remand decision making policies differ under conditions where they are presented with representative and unrepresentative cases?

In the next three chapters, three empirical studies are presented that aim to answer the research questions proposed above and in Chapter 1.

3. STUDY ONE¹

3.1. Introduction

3.1.1. Background to present study. Although magistrates' remand decision making is guided by the Bail Act 1976, they are afforded considerable discretion. First, even when an exception to the right to bail applies, magistrates can nevertheless decide to grant bail at their discretion. Second, although the law explicitly refers to information that magistrates could use, it is silent on exactly what information magistrates should use and how that information should be weighted and integrated, when making remand decisions. Third, magistrates have discretion as to what conditions they attach to bail.

Criminological research has reported that when making remand decisions, magistrates use both legal cues, as explicitly referred to in the Bail Act 1976, and extra-legal cues related to the defendant or the principle of crime control. They rely on the nature and seriousness of the offence the defendant is charged with, the defendant's previous convictions, past bail record and the strength of his or her community ties (Doherty & East, 1985; Jones, 1985; Hucklesby, 1996; Morgan & Henderson, 1998). Magistrates also rely on the defendant's race (Fitzgerald, 1993; Hood, 1992; Walker, 1989), defendant's gender (Doherty & East, 1985; Eaton, 1987; Hucklesby, 1996; Jones, 1985; Morgan & Henderson, 1998), the police remand decision (Hucklesby, 1997a; Morgan, 1994; Morgan & Henderson, 1998), and the prosecution request (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996; 1997a; Morgan & Henderson, 1998; Zander, 1979). However, the reliability and validity of these findings is questionable because researchers do not control for the inter-correlations that may exist between the variables. They also do not control for the information presented to magistrates, which means that they do not know exactly what information was available to magistrates at the time the decision was made. Finally, these studies differentiate a decision to bail (unconditional and conditional) from a decision to remand in custody. Although this distinction reflects the tone of the Bail Act 1976, it is clear that imposing conditions or remanding a defendant in custody are punitive measures, which can be distinguished from releasing a defendant unconditionally. It may be reasonable to assume that cue use would reflect this distinction.

According to the Bail Act 1976, before a defendant is remanded in custody, magistrates should consider whether conditions could be attached to bail instead.

¹ The main findings presented in this chapter are in press (Dhami & Ayton) in the *Journal of Behavioral Decision Making*.

Criminological research has shown that the nature of the conditions imposed is limited to around eight types including reporting to the police station, residing at a specified address or hostel, abiding curfew, not contacting specific people or entering a specific area, and producing a surety (Block, 1990; Raine & Willson, 1994, 1995b). Although there is no general pattern in the use of such conditions, the most commonly imposed is residence (Morgan & Henderson, 1998; Raine & Willson, 1994, 1995b). Furthermore, magistrates attach more than one condition on average (East & Doherty, 1984; Morgan & Henderson, 1998; Raine & Willson, 1994, 1995b; Zander, 1979). Although conditional bail is a relatively common decision made by magistrates, relatively little research has been conducted on the nature and number of conditions attached.

Criminologists have also found variations in the bail and custody rates among courts that cannot be fully explained by the differences in the cases presented (Jones, 1985; Home Office, 1987; Hucklesby, 1996, 1997a; Morgan & Henderson, 1998; Raine & Willson, 1994, 1995b). This suggests that there is disagreement among magistrates working in different courts. In addition, some research prior to the introduction of the Bail Act 1976 reported that the remand decision making practices of urban and rural courts were markedly different, with the former being more punitive, for example (Bottomley, 1970). The above studies are based on an analysis of decisions made on real cases, which are considered to be similar. The fact that the cases are not exactly the same means that magistrates may be attending to cues that do distinguish between cases, and which may explain the apparent disagreement. Finally, no research has investigated the extent of disagreement among magistrates working within the same court.

It is generally believed that lay and stipendiary magistrates differ in their remand decision making (e.g., Sanders, 2000; Winfield, 1974). The little evidence that exists reveals that lay magistrates are more lenient when making remand decisions (Hucklesby, 1997b), that stipendiary magistrates seek out more information from the court before making their decisions (e.g., Burrows, 1994), and they are more likely to disagree with the prosecution request in remand cases (Hucklesby, 1997b). These findings may however, be partly due to the fact that stipendiary magistrates deal with more serious and complicated cases. Some studies have failed to find a significant difference in the remand decisions made by the two types of magistrate (Doherty & East, 1985; King, 1971). The fact that lay magistrates work on a sporadic basis means that they may be more inconsistent than stipendiary magistrates who work on a full-time basis, although this has not been investigated. The differences in the performance of lay and stipendiary magistrates has not been adequately studied. Indeed, most of the above

criminological studies do not differentiate between the two type of magistrates (with the exception of Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1997b).

Magistrates do not know how useful different information is in predicting whether a defendant if bailed unconditionally will abscond, offend or interfere with witnesses. In the English system, there is no formal procedure for providing magistrates with outcome feedback. These characteristics of the magistrates' remand decision making task, may prevent them from learning. Therefore, it is likely that there may not be any differences in the performance of more and less experienced magistrates.

All of the past research on magistrates' remand decision making has been conducted by criminologists. To date, there is no psychological research on the topic. Social judgement theory represents a popular psychological approach to the study of human J/DM in both theoretical and applied contexts (Hammond et al., 1975). Researchers have however, conducted very few studies of judgement in the legal domain (with the exceptions of Senisbaugh & Allgeier, 1996; York, 1992). Social judgement theorists use the method of JA to study psychological issues concerning what information people use and how they use it when making judgements, intra-individual consistency in judgements, differences in judgements between people, and peoples' insight into their judgement policies (Cooksey, 1996a, 1996b; Stewart, 1988). Reviews of the emergent research have concluded that judgements are the result of a few differentially weighted cues combined in a linear, additive (compensatory) way; that people are often inconsistent in their decisions; there are inter-individual differences or disagreement among their judgment policies for the same task; and they lack insight into their own judgment policies (Brehmer, 1994; Brehmer & Brehmer, 1988; Cooksey, 1996a; Libby & Lewis, 1982; Hammond et al., 1975; Slovic & Lichtenstein, 1971). In addition, research on post-decisional confidence has revealed that despite their inaccuracy people are highly confident in their judgement abilities (Zakay, 1997).

However, there are numerous exceptions to these findings, and for many reasons, these findings may lack internal and external validity. First, social judgement theorists' understanding of the judgement process has been dominated by their traditional use of the multiple linear regression model. They have rarely studied the descriptive and predictive validity of other non-linear and/or non-compensatory models. Their use of the regression model has been criticised on the grounds that it is not psychologically plausible, flexible and adaptive (Dhimi & Harries, 2001). Recently, "fast and frugal" models, which are simple process models that often represent non-compensatory behaviour, have been proposed as alternatives to the regression model

(Gigerenzer & Goldstein, 1996; Gigerenzer et al., 1999b). In what have mostly been simulation studies, it has been found that fast and frugal heuristics are as relatively equally good as multiple linear regression models when predicting an outcome criterion on the data used to form the models, and are better when predicting an outcome criterion on a new set of data. In addition, these heuristics use markedly less information than the multiple linear regression models. However, most studies only compared the models with regard to their overall fit and did not analyse their relative proneness to making type I and type II errors. In some studies the measures of the dependent variable (i.e., judgements) were not the same across the models (Czerlinski et al., 1999; Gigerenzer & Goldstein, 1996, 1999; Gigerenzer et al., 1999a) and in one study the measures of the independent variables (i.e., cues) were not the same across the models (Slegers et al., 2000). Although there are now a handful of studies comparing these models on behavioral data (Dhimi & Harries, 2001; Rieskamp & Hoffrage, 1999; Slegers et al., 2000), at the time the research presented in this thesis was conducted there were none, and this was the first to do so.

Second, social judgement theorists rarely cross-validate or test the generalisability of their models. Third, there are many problems associated with how cue use is defined and measured when using regression models (Dawes & Corrigan, 1974) and when using inter-correlated cues (Darlington, 1968), leading to cue use being depicted as more cognitively complex and less plausible under certain task conditions. Fourth, the lack of correspondence between an individual's judgement policy as captured by the regression model and his or her self-reported policy, which researchers interpret as a lack of insight, may be explained by other factors. These include the fact that the regression model may not be a true description of an individual's policy, and that the method used to capture self-reported policies may be inadequate in yielding a true description (e.g., Nisbett & Wilson, 1977; Reilly & Doherty, 1989, 1992). Thus, it may be more meaningful to compare an individual's private policy as captured by a model against his or her self-reported public statement of policy. Finally, although one of the aims of SJT research is to improve judgement, researchers rarely elicit peoples' confidence in their decisions. According to Zakay (1997), post-decisional confidence may be an indicator of willingness to change judgement behaviour.

3.1.2. Rationale for present study. One rationale for the first empirical study presented in this thesis was to examine the validity of the concerns raised by criminologists regarding the cues magistrates use, the conditions they attach to bail and the disagreement they demonstrate when making remand decisions. Another rationale

was to extend our understanding of magistrates' remand decision making to the psychological issues typically investigated by social judgement theorists, namely information processing, intra-individual inconsistency in decisions, concordance between explicit and implicit judgment policies, and post-decisional confidence.

In a similar vein to the past criminological research reviewed above, the present study investigated the remand decisions made by magistrates sitting in the adult magistrates' court where defendants are aged 18 and over.²

3.1.3. Aims of present study. The main aims of the present study were to:

- (a) Examine the distribution of the remand decisions made by individual magistrates on a set of hypothetical cases.
- (b) Identify the number and type of conditions individual magistrates impose.
- (c) Measure individual magistrates' consistency in making remand decisions using a test-retest situation.
- (d) Examine individual magistrates' frequency of disagreement from the modal remand decisions made by magistrates on the same cases.
- (e) Measure individual magistrates' post-decisional confidence.
- (f) Investigate how individual magistrates make remand decisions, in terms of the cues they use and how they weight and combine these cues to form a decision, by modelling their decision making policies using a compensatory integration model and a non-compensatory fast and frugal heuristic.
- (g) Demonstrate the concordance between individual magistrates' explicit, publicly stated decision making policies and their implicit, private policies as captured by the model that best describes and predicts their decisions.
- (h) Identify the similarities and differences between lay and stipendiary magistrates on (a) to (g).
- (i) Investigate the relationship between magistrates' experience on the bench and their performance on (a) to (g).
- (j) Examine the similarities and differences between magistrates from metropolitan and provincial courts on (a) to (g).

Based on the review of the past research presented above, and in Chapters 1 and 2, a number of hypotheses are formulated. It is hypothesised that magistrates will attach more than one condition to bail on average, with residence as the most frequently imposed condition. It is hypothesised that magistrates will show some degree of

inconsistency in their decisions; that they will demonstrate disagreement from the modal response on at least some cases; and that their post-decisional confidence will be high. It is also hypothesised that consistency will be the upper bound for the fit of a model; and that a non-compensatory fast and frugal heuristic will demonstrate greater descriptive and predictive validity than a linear compensatory model. It is hypothesised that magistrates will use few cues; that at least some will use “extra-legal” cues, which magistrates will not report as being important. With regard to lay and stipendiary differences, it is hypothesised that the former will be less punitive, and more inconsistent, and stipendiary magistrates will use more cues. It is hypothesised that post-decisional confidence will increase with experience. It is hypothesised that magistrates in metropolitan courts will be more punitive than those in provincial courts.

3.2. Method

3.2.1. Design. Magistrates from a random sample of courts throughout the English criminal justice system individually completed a bail decision making task followed by a ranking task. The former consisted of 41 hypothetical cases, comprising an orthogonal combination of nine cues. Magistrates made remand decisions and provided post-decisional confidence ratings on these cases. Twenty-seven of the cases were used to capture magistrates’ decision making policies, 7 cases were used to cross-validate the models, and 7 cases, which were duplicated from the set of 27, were used to measure test-retest consistency of magistrates’ decisions. The ranking task was used to capture magistrates’ self-reported (i.e., public) policies. Here, magistrates ranked the nine cues in order of the importance they had on their decisions.

3.2.2. Participants. Two hundred and seventy booklets were distributed by mail to practising magistrates sitting in a random sample of 51 courts in England and Wales. The sampling frame was obtained from *Shaw's 1996/97 directory of courts in the United Kingdom* (Morris, 1996). Eighty-one magistrates from 44 courts, fully completed and returned the materials within the time limit. The 30% response rate is high for a postal survey involving participants from a "closed group".

The sample of magistrates who participated are considered to be representative of the magistracy in the English system. Of those who chose to reveal their demographic characteristics, 70 were lay magistrates and nine were stipendiary magistrates. Magistrates' mean years of experience on the bench was 13.30 ($SD = 8.17$,

² The criminological literature reviewed in this thesis deals with remand decisions made in the adult magistrates court. It is evident that remand decisions made in these courts are not completely comparable

$N = 79$). Forty-six magistrates sat in courts located in metropolitan areas and 32 sat in courts located in provincial areas.³

3.2.3. Construction of Bail Decision Making Task.

Identification and selection of cues. In the present study, nine cues were manipulated in the hypothetical cases. These were treated as the predictors in the models of magistrates' decision making policies. Eleven cues were held constant and used to provide background information to the cases. All of the cues were identified on the basis of a task analysis which involved: (a) a review of the law on bail; (b) a review of the literature on remand decision making; (c) an analysis of a bail decision making training package for lay magistrates; (d) observations of 35 bail hearings in both lay and stipendiary magistrates' courtrooms in two courts; and (e) semi-structured individual interviews with six lay magistrates, one stipendiary magistrate and two clerks to the justices. Table 3.1 presents the cues identified on the basis of this task analysis.

Details of the reviews of the law on bail and of the literature were provided above and in Chapter 1, but for a summary see columns three and four in Table 3.1. The "Bail Risk Exercise" was produced by the Magistrates' Association (Miles & Thomson, 1992). This training involves two sessions, together lasting 2 and a 1/2 hours. In the first session, magistrates learn about the key features of the law on bail, which includes a list of the information that they should search for and consider. In the second session, magistrates are presented with three hypothetical cases on which they must make a remand decision. Two of the cases were relatively short and the other was more detailed. Although this training package was produced by the Magistrates' Association, it is common for training to be organised by the clerks' to the justices of individual courts. An examination of a training package developed and used by a clerk to the justices in an inner London court revealed no differences in the content of the hypothetical cases used by the Magistrates' Association. Therefore, the package developed by the Magistrates' Association is considered representative of the training materials used in individual courts. The fifth column in Table 3.1 presents the cues that were identified on the basis of an analysis of this training package.

The observations were conducted in one week in November 1996 at a court located in the West Midlands and one week in May 1997 at a London court. Data was gathered on the nature of the verbal and non-verbal information available to magistrates

with the decisions made by magistrates in the youth courts (see e.g., Cavadino & Gibson, 1993).

³ Courts were classified as metropolitan or provincial according to the list of cities and towns provided by the internet site: http://dir.yahoo.com/Regional/Countries/United_Kingdom/England/Cities_and_Towns.

during bail hearings and the information provided in the courtsheet. The cues that were identified via the observational analysis are presented in the sixth column of Table 3.1.

The order of the proceedings and the source of the information was also noted because it would be used to help make the cases realistic. Although there are no statutory rules of procedure governing remand proceedings in magistrates' courts, it was found that in the two courts, the proceedings generally began with the case number being called out by the clerk. At which point magistrates turned to their courtsheet, and the defendant entered the witness box. The clerk then asked the defendant to verify his or her name, address and date of birth, and then announced the offence the defendant was charged with and the defendant's plea. Adjournments were then requested by the court, the prosecution or the defence, for a number of reasons. Then, if the defence was applying for bail, it put forward its request and reasons. This was followed by the prosecution's remand request and reasons. Finally, the magistrates made their remand decision. It should be noted that in the large majority of cases the information provided was scant. Rarely did the magistrates consult with the clerk on matters pertaining to the law and rarely did they address the defendant directly. Magistrates were often faced with a caseload of over 30 cases in a morning session. The pace of the bail hearings was also timed from when the defendant entered the courtroom to when the decision was announced. It was found that in one session magistrates made their decisions in on average 3.23 minutes ($SD = 1.54$, $N = 20$).

The experience of the lay and stipendiary magistrates who were interviewed ranged from 6 to 25 years. The interviews were conducted in the interviewees' respective courts. They lasted from 30 minutes to 2 hours. Interviewees were told that the information provided would be used to develop a set of hypothetical cases that may be heard in the courtroom, and which require a remand decision to be made. Confidentiality was assured. Written records of the interviews were taken during the interview as interviewees were not comfortable with tape-recording. Interviewees were first asked to list the information that is available and that they consider important for making a remand decision. The findings are presented in final column of Table 3.1, where an "X" denotes the identification of a cue. They were then presented with a hypothetical case (see Appendix C) and asked to comment on its content validity, and how it could be improved. Three of the interviewees (two lay magistrates and one stipendiary) said that they would need more information before they could make a remand decision, and the others said that there was sufficient information on which to base a decision. All of the interviewees said that the case was realistic.

Looking at Table 3.1 it is clear that the task analysis yielded a long list of cues that may be available to magistrates in the courtroom when they make their remand decisions. Many of the cues that were frequently identified have been studied in the past by criminologists. These cues were therefore, selected to be manipulated and studied in the present study, thus enabling comparison with past research. The nine cues and their values are listed in the first two columns of Table 3.2. Although some of these cues may not always be available to magistrates in the courtroom as mentioned earlier, their inclusion in the present study will provide evidence of their use when they are available.

Eleven of the other frequently identified cues were used to provide background information to the cases. These cues were therefore held constant. They are: how the defendant came to court, the number of charges against the defendant, the defendant's plea, whether the defendant was present in court, the defendant's legal representation, circumstances of the adjournment, length of the adjournment, who requested the adjournment, the number of previous adjournments and bail applications, defence application for bail, and the availability of a surety. See Appendix D for the background information provided to the cases in the present study.

Construction of cases. The aim was to examine the effects of each cue on the decisions independently of the effects of other cues. This can be achieved at either the design stage using an orthogonal design or the analysis stage using partial correlations, for example. Correlation based analysis such as hierarchical logistic regression requires a large case:cue ratio to establish stable beta weights (Tabachnick & Fidell, 1996), implying that in the present study at least 122 cases would be needed to study the nine cues. A pilot study on 20 postgraduate law students from City University, revealed that participants would be willing to complete a maximum number of about 40 cases.⁴ Magistrates are also unlikely to complete a time consuming task. The low response rate in other SJT studies was partly explained by the time consuming nature of the task (e.g., Sensibaugh & Allgeier, 1996). Therefore, inter-cue correlations were eliminated at the design stage. The fact that little is known about the inter-cue correlations in the courtroom during bail hearings means that for now, little can be said about how this may affect the representativeness of the cases (Brunswik, 1956). Indeed, orthogonal designs are common in research using JA (Dhami et al., in preparation).

⁴ These students were presented with 48 hypothetical cases similar to the one used in the interviews during the task analysis and subsequently the study. They were asked to make remand decisions on them. All of the students stated that they knew what a remand decision was. They were told that the main aim of the pilot was to ascertain the optimum number of cases that should be presented to magistrates, and so they should stop completing the task when they felt bored or tired.

A complete combination of the cue values would have yielded an unmanageable number of cases (i.e., $2 \times 3 \times 2 \times 3 \times 3 \times 3 \times 6 \times 2 \times 2 = 7,776$). Therefore, a fractional factorial design was used. The cues were combined using the orthogonal design option in SPSS version 7.5 for windows to elicit the smallest subset of possible cases whilst simultaneously retaining the orthogonality of the cues. This yielded a set of 27 cases (i.e., the modelling set) and created a main effects design. In similar circumstances other studies have taken advantage of techniques that reduce the number of cases selected without comprising the orthogonality of the cues (e.g., Brown & Allgeier, 1996; Rothert, 1982; Wigton, Poses, Collings, & Cebul, 1990). The values of the nine cues and the distribution of their values in the modelling set are shown in Table 3.2. In addition, the program was used to select a further seven cases (i.e., the holdout set) that would be used to validate the models fitted on the modelling set. Finally, seven cases were randomly selected from the modelling set and duplicated (although the names of the defendants were changed) to measure test-retest consistency.⁵ Altogether that makes 41 cases - about the maximum that had been established respondents would be prepared to complete. The cases in the modelling set, holdout set and duplicate set are presented in Appendix D, with the cue values as coded in Table 3.2.

⁵ A change in the name did not alter the race or gender of the defendant.

Table 3.1. Results of task analysis for identification of cues and their values

Cues identified during task analysis						
Cues	Values*	Law on bail	Literature on remand	Bail training package	Observations and courtsheet	Interviews
Gender	Male		X	X	X	
	Female					
Age	18-20 (young offender)		X	X	X	X
	21+					
Race	White		X	X	X	
	Other (e.g., Asian, black)					
Defendant in court?	Yes			X	X	X
	No					
Defence solicitor?	Yes		X		X	
	No					
Prosecution	CPS				X	

Other						
Seriousness of offence	Summary	X	X	X	X	X
Either-way						
Indictable						
Category of offence	Victimless (e.g., prostitution)	X	X	X	X	X
	Against property					
	Against person					
Number of offences	Continuous	X			X	
Time, location, cost of offence		X			X	
Victim	Unknown	X			X	X
	Known					
Co-defendants?	Yes	X			X	
	No					
Plea	No plea	X			X	X
	Not guilty					
	Guilty					
Prosecution case	Weak	X			X	X
	Strong					
Sentence if convicted	Non-custodial	X			X	X

	Custody			
Previous convictions	None	X	X	X
	Yes, dissimilar			
	Yes, similar			
How come to court?	Summons			X
	Arrest			
Police remand decision:	Unconditional bail	X		X
	Conditional bail			
	Remand in custody			
Adjournment requested by whom?	Court		X	X
	Prosecution			
	Defence			
Reason for adjournment	Trial	X		X
	Sentence			
	Appeal			
Length of adjournment	Continuous	X	X	X
Number of previous adjournments (bail applications)	Continuous		X	X
Bail record	None	X	X	X
	Yes, good			

sentence	No				
	Yes				
Prosecution request	Don't oppose bail	X	X	X	X
	Ask for conditions				
	Oppose bail				
Defence request	Unconditional bail	X		X	X
	Suggest conditions				
	Not applied for bail				
Previous court remand decision	Unconditional bail	X	X	X	X
	Conditional bail				
	Remand in custody				
Need more information	No			X	
	Yes				
Bail information sheet	Yes		X		
	No				

Note: *The values are ordered so that a punitive decision is more likely to result with values in descending order.

Table 3.2. Cues, their values and distributions in modelling set

Cue*	Values**	Distribution
Gender	(1) male	18
	(2) female	9
Race	(1) white	9
	(2) <i>Asian</i>	9
	(3) <i>black</i>	9
Age	(1) 18-20	18
	(2) 21+	9
Offence	(1) summary	9
	(2) <i>triable either-way</i>	9
	(3) <i>indictable</i>	9
Police remand decision (polbail)	(1) unconditional bail	9
	(2) <i>surety</i>	9
	(3) <i>remand in custody</i>	9
Prosecution request (proseq)	(1) don't oppose bail	9
	(2) <i>conditional bail</i>	9
	(3) <i>oppose bail</i>	9

Previous convictions and bail record (pcbr)	(1) none-none	6
	(2) none-yes, good	6
	(3) <i>yes, dissimilar-yes, good</i>	6
	(4) <i>yes, similar-yes, good</i>	3
	(5) <i>yes, dissimilar-yes, poor</i>	3
	(6) <i>yes, similar-yes, poor</i>	3
Strength of prosecution case (proscase)	(1) strong	18
	(2) weak	9
Strength of community ties (comties)	(1) strong	18
	(2) weak	9

Note: *Based upon the interviews conducted during the task analysis with seven magistrates, the age cue was made categorical rather than continuous. In the English criminal justice system, defendants under 21 years who are remanded in custody are sent to young offenders' prisons, while those aged over 21 are sent to adult prisons. Specific ages were chosen randomly to fall in the two age bands. Summary offences are mostly minor offences which are tried only in the magistrates' court, indictable offences are mostly serious offences which are tried only in the crown court in front of a judge and jury and triable either-way offences may be tried in either court. The specific offences chosen to represent each of these categories of offences were selected on the basis of their commonality as indicated by the 1995 recorded crime figures in England and Wales, which were the most recent at the time of design (Home Office, 1996b). A poor bail record may be defined as that where the defendant has absconded, offended or interfered with witnesses whilst on bail in the past. The prosecution case against the defendant may be strong where details of witnesses and/or forensic evidence are presented at the time of the bail hearing. Finally, a defendant may be considered to have weak community ties if he or she is unemployed, does not have a fixed address or any family ties. **Polytomous cues were dichotomised before analysis, so the non-italicised and italicised values indicate the two values for each cue. For each cue the non-italicised value was coded as 0 and the italicised value was coded as 1 for analysis. The order of values for the gender cue are arbitrary. However, for the other cues, the values are ordered so that a punitive decision is more likely to result with values in descending order.

As can be seen in Table 3.2, the cue values were equally distributed among the set of 27 cases for the tripartite cues. The unequal distributions of the dichotomous cues namely gender, age, proscase and comties, and the pcbr cue which had six levels, reflected their general real world distributions, as established by the courtroom observations conducted during the task analysis. For example, there were more males than females in the set of 27 cases.

The cues were placed in the order as shown in Table 3.2 and were in the same order in each case for ease of reading. Despite the lack of procedural rules for bail hearings, the courtroom observations suggested that there was a general order for most of the cues that are being studied here. For example, as cases aren't always heard in the order they are presented on the courtsheet, magistrates generally see the defendant's gender and race upon his or her entrance into the courtroom when a case is called, before they learn of the offence he or she is charged with which is on the courtsheet. Although the inter-cue correlations may not be representative (Brunswik, 1955b, 1956), the construct and face validity of the task were assessed by two magistrates. They compared the hypothetical cases to those presented in court and concluded that they were plausible. See Appendix D for a copy of a hypothetical case used in the study.

The cases were presented in a random order to eliminate any order effects due to unfamiliarity with the task and shifts in attention.⁶ The holdout cases were randomly intermixed with the cases in the modelling set. The duplicate cases were placed at the end to restrict the probability of two identical cases being presented one after another.

Participants were instructed to respond to the hypothetical cases by firstly choosing a remand decision. The decision options were: unconditional bail, conditional bail (with the conditions specified) or remand in custody. Participants were then asked to indicate how certain they were that they had made the appropriate decision, based on the information provided, on an 11-point scale. Zero on the scale represented "absolutely uncertain" and 10 represented "absolutely certain". Studies of confidence usually ask participants if they made the correct decision, however this is not suitable for the present study as accuracy cannot be measured. Post-decisional confidence ratings were requested for each decision individually rather than for the set of decisions overall because cases differed in terms of the information provided (i.e., on the cue values) and magistrates may feel more confident deciding on one case than on another.

⁶ Although analysis will be conducted at the individual level, comparisons will be conducted over individuals too and so it is appropriate to randomise the cases.

3.2.4. Ranking Task. A direct ranking task was used to capture magistrates' explicit remand decision making policies. Participants were asked to rank order the nine cues according to the relative importance they attached to them when making remand decisions on the hypothetical cases presented in the bail decision making task. A rank order of one indicated the most important cue. This ranking method is simpler than the rating methods that are commonly used in JA studies (see Cook & Stewart, 1975).

3.2.5. Procedure. The bail decision making task was followed by the ranking task in a booklet format. The booklet also contained instructions that listed the nine cues and described the two tasks. Participants were instructed to complete the tasks individually, to complete them in the order presented, not to spend too much time on each case, and not to return to cases which had been completed. Participants were also asked to specify what further information, if any, they would have liked in order to make decisions in the bail decision making task. Participants' demographic details, namely type of magistrate, location of court and number of years of experience on the bench were also requested. The extent of magistrates' experience in making remand decisions was not requested as their sporadic work pattern may prevent accurate recall.

A handful of booklets were sent to each court, addressed to the court manager, who was informed of the study and asked to distribute them to magistrates in their courthouse. Magistrates' names and addresses are not made public. The Magistrates' Association had advised me to gain access to magistrates in individual courts via their managers (Bracey, personal communication, 1997). A covering letter was included in the booklet for magistrates that introduced the study, guaranteed respondents anonymity and requested volunteers to participate in the study. Magistrates were provided with a stamped, self-addressed envelope, and told to return the completed materials with three weeks.

3.3. Analysis and Results⁷

3.3.1. Remand decisions made. Magistrates made from 2 to 23 unconditional bail decisions ($M = 12.07$, $SD = 4.86$), 2 to 25 conditional bail decisions ($M = 12.09$, $SD = 4.20$) and 0 to 9 remand in custody decisions ($M = 2.84$, $SD = 2.52$), on cases in the modelling set.

Contrary to the prediction, there was no significant difference between lay and stipendiary magistrates in terms of the decision made on the 27 cases ($U = 301.00$, 1-tailed $p > 0.025$). The median was conditional bail for both groups ($N = 9$, $N = 70$). As

⁷ Note that the level of significance for 2-tailed tests was 0.05, and 0.025 for 1-tailed tests.

predicted, there was a significant difference in the median decision made on the 27 cases between magistrates located in metropolitan and provincial courts ($U = 530.00$, 1-tailed $p < 0.025$). The median decision was unconditional bail for provincial courts ($N = 32$) and conditional bail for metropolitan courts ($N = 46$). There was a significant Kendall's tau-b correlation of -0.19 between magistrates' years of experience on the bench and the median decision they made over the 27 cases (2-tailed $p < 0.05$, $N = 79$).

3.3.2. Conditions attached to bail. For each magistrate, the mean number of conditions imposed in the modelling set was calculated. Across the whole sample, the grand mean number of conditions imposed in cases where defendants were granted conditional bail in the modelling set was 1.58 ($SD = 0.34$, $N = 81$). The grand mean number of conditions imposed by lay magistrates was 1.54 ($SD = 0.30$, $N = 70$) and by stipendiary magistrates was 1.87 ($SD = 0.50$, $N = 9$). Magistrates located in metropolitan courts imposed a significantly greater grand mean number of conditions ($M = 1.65$, $SD = 0.36$) than did magistrates from provincial courts ($M = 1.48$, $SD = 0.29$) ($t[76] = 2.25$, 1-tailed $p < 0.025$). There was no significant correlation between magistrates' experience on the bench and the mean number of conditions they imposed ($r = -0.14$, 2-tailed $p > 0.05$, $N = 79$). Across the whole sample, a total of 1,527 conditions were imposed in the modelling set. Figure 3.1 illustrates the nature of the conditions imposed in the cases granted conditional bail.

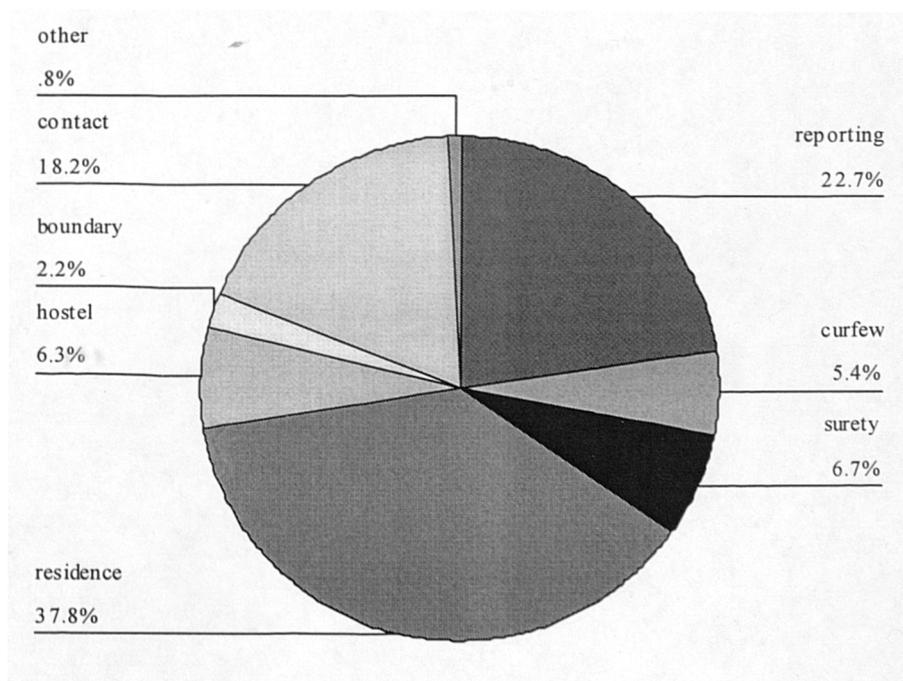


Figure 3.1. Nature of conditions attached to bail by whole sample on modelling set

3.3.3. Intra-magistrate consistency. Each magistrate's consistency in making remand decisions was measured by computing a Cohen's Kappa value which corrects for chance. The decisions made on the set of seven duplicate cases were compared with those made on their original counterparts in the modelling set. The Kappa value ranges from 0 (indicating that agreement or consistency is no better than chance) to 1 (indicating perfect agreement or consistency). For the whole sample, Kappa ranged from 0 to 1 ($M = 0.69$, $SD = 0.28$). Fleiss (1981) suggests that a value of 0.40 to 0.60 is "fair", 0.60 to 0.75 is "good" and a value above 0.75 is "excellent". The value of Kappa was below 0.40 for 12 magistrates, it was "fair" for 18 magistrates, "good" for 20 magistrates, and "excellent" for 31 (perfect for 29) magistrates.

The consistency of lay and stipendiary magistrates was also compared. For the 70 lay magistrates, Kappa ranged from 0 to 1 ($M = 0.68$, $SD = 0.28$). For the 9 stipendiary magistrates, Kappa ranged from 0.09 to 1 ($M = 0.74$, $SD = 0.31$). There was no significant difference in the Kappa value of magistrates located in metropolitan and provincial courts ($t[76] = 0.61$, 2-tailed $p > 0.05$). There was no significant correlation between the magistrates' Kappa value or consistency and their experience on the bench ($r = 0.11$, 2-tailed $p > 0.05$, $N = 79$).

3.3.4. Disagreement among magistrates. Two or more magistrates responded from 19 of the courts, and it was found that magistrates from within these courts made different decisions on some of the 27 cases.

In the present study, disagreement was defined by whether different magistrates made the same decision on the same case, the percentage of magistrates who disagreed with the modal response on each case was calculated. There was some disagreement among magistrates as to the decision to be made on each of the 27 cases in the modelling set. This figure ranged from 4.90% to 50.00% of magistrates ($M = 31.40\%$, $SD = 14.43$). A Kendall's tau-b correlation was computed to examine the relationship between the extent of disagreement shown on a case and the modal decision on that case. A nonsignificant correlation of 0.25 was found (2-tailed $p > 0.05$, $N = 27$).

Magistrates disagreed with the modal response on from 4 to 25 cases ($M = 14.95$, $SD = 4.80$). Lay magistrates disagreed from the modal response on from 4 to 25 cases ($M = 14.96$, $SD = 4.90$) and stipendiary magistrates disagreed on from 7 to 22 cases ($M = 14.89$, $SD = 4.94$). Magistrates from metropolitan courts disagreed significantly more often from the modal response ($M = 16.17$, $SD = 4.82$) than did magistrates from provincial courts ($M = 13.31$, $SD = 4.42$) ($t[76] = 2.67$, 2-tailed $p < 0.05$). There was a significant Pearson's correlation of -0.31 between the number of

cases on which magistrates disagreed from the modal response and their experience on the bench (2-tailed $p < 0.05$, $N = 79$).

There was no significant correlation between the number of cases magistrates disagreed with the modal response and their consistency in decisions as measured by Cohen's Kappa ($r = -0.08$, 2-tailed $p > 0.05$, $N = 81$).

3.3.5. Magistrates' post-decisional confidence. For each magistrate, a Kendall's tau-b correlation was computed to examine the relationship between the decisions made on the cases in the modelling set and the confidence ratings provided for these decisions. For the whole sample, the correlations ranged from -0.68 to 0.51 ($M = -0.23$, $SD = 0.25$). The correlation was statistically significant for 29 magistrates, and it was negative for 27 of these magistrates (2-tailed $p < 0.05$, $N = 27$, $n = 75$).⁸

Mean post-decisional confidence ratings in decisions made over the cases in the modelling set were then calculated for each magistrate. For the whole sample, these ranged from 6.22 to 10 ($M = 8.31$, $SD = 0.96$). For the lay magistrates, mean post-decisional confidence ratings ranged from 6.22 to 10 ($M = 8.27$, $SD = 0.94$). The stipendiary magistrates' mean post-decisional confidence ratings ranged from 7.22 to 10 ($M = 8.87$, $SD = 0.95$). Contrary to the prediction, there was no significant difference in the grand mean post-decisional confidence ratings of magistrates located in metropolitan and provincial courts ($t[74] = 0.19$, 2-tailed $p > 0.05$).⁹ There was also no significant correlation between magistrates' mean post-decisional confidence ratings and their experience on the bench ($r = 0.10$, 1-tailed $p > 0.025$, $N = 79$).

In order to examine the relationship between magistrates' mean post-decisional confidence ratings and their consistency in decisions (as measured by Cohen's Kappa), a Pearson's correlation was computed between these two variables. No statistically significant correlation was found ($r = 0.00$, 2-tailed $p > 0.05$, $N = 81$). There was also no significant correlation between magistrates' mean post-decisional confidence ratings and their extent of disagreement as measured by the number of cases each magistrate disagreed from the modal response ($r = -0.09$, 2-tailed $p > 0.05$, $N = 81$).

3.3.6. Modelling magistrates' remand decision making policies. The polytomous cues were dichotomised for ease of analysis and for each cue, all non-italicised values were coded as 0 and italicised values were coded as 1 (see notes to Table 3.2). The dichotomisation was based on the findings of the interviews conducted

⁸ Here, n refers to the number of correlations computed, while N refers to the size of the sample on which the correlation was computed.

⁹ A Levene's test for homogeneity of variance was significant ($p < 0.05$) and so a t -test for unequal variances was used.

for the task analysis, and so should reflect how magistrates may simplify the information presented in the courtroom. The inter-cue correlations remained zero. The three decision options were also simplified into a binary decision, where unconditional bail represented a non-punitive decision and conditional bail or remand in custody together represented a punitive decision. Analysis of the frequency of the decisions made by each magistrate on the modelling set revealed that magistrates made a relatively equal number of punitive and non-punitive decisions. The remand decision making policy of each magistrate was modelled on the set of 27 cases.

Although the aim was to compare the ability of a non-compensatory fast and frugal heuristic with a regression model such as logistic regression, this was not possible because of the low case to cue ratio (i.e., 3:1). Instead, two of the other models used by Gigerenzer and his colleagues, namely Franklin's rule and Dawes' rule were used in the present study. These models were discussed in detail in Chapter 2. Suffice it to say that both models provide characterisations of judgment behaviour similar to that provided by a regression model in that they involve a linear, compensatory integration of multiple cues. Moreover, although both models do not weight the cues optimally in the way the least squares method does in a regression model for example, studies have demonstrated that both models are excellent approximations to regression models in terms of descriptive and predictive validity (e.g., Claudy, 1972; Czerlinksi et al., 1999; Dawes & Corrigan, 1974; Dorans & Drasgow, 1978; Einhorn & Hogarth, 1975; Gigerenzer et al., 1999a; Gigerenzer & Goldstein, 1996; Schmidt, 1971, 1972).

At the time this study was conducted the only fast and frugal heuristics published were for binary choice tasks (see Gigerenzer & Goldstein, 1996). There were none for categorisation tasks like the remand decision making task studied here. For the research presented in this thesis, a new fast and frugal heuristic for binary categorisation tasks, called the Matching Heuristic, was developed.¹⁰ This model bears all the hallmarks of a fast and frugal heuristic. It has a precisely specified step-by-step process that comprises principles for information search, stop, and decision making. It is fast and frugal because it does not search for all of the available and relevant information and does not require much computation because it bases a decision on one cue alone.

The procedure for modelling magistrates' remand decision making policies using each of the three models (Franklin's rule, Dawes' rule and the Matching Heuristic) will be described below. All of the models were developed so that they aimed to predict a

¹⁰ This model was first presented in a poster at the annual meeting of the Society for Judgment and Decision Making, 1998, November 21-23, Dallas, Texas.

punitive decision and only predicted a non-punitive decision by default. This is the procedure followed by the law on bail. Then, the results of the three models' ability to describe and predict magistrates' decisions made on the modelling set, followed by the holdout set, will be presented. The model that proved the best on average across magistrates was accepted as the description of magistrates' remand decision making policies.

Franklin's rule.¹¹ In this model each cue was weighted according to its influence on the decision. Then, for each case, this model multiplied the cue values by their weights and then summed them. (Where a case is made up of binary cues, the cues can be coded 0 and 1 and so the sum is the sum of the weights alone for all cues taking a value of 1 in the case.) If the sum was equal or greater than the threshold value then a punitive decision was predicted. If not, then a non-punitive decision was predicted.

In order to compute a cue weight, the proportions of the values on a cue that were treated punitively in the set of 27 cases were calculated separately. The greater proportion was taken as the weight for the whole cue. For example, if the proportion of males treated punitively was greater than the proportion of females treated punitively, then the former proportion would have been the weight for the gender cue. (See step 1 below.) Cue weights could alternatively have been calculated using methods such as the likelihood ratio, phi coefficient and chi square. These methods take into account all of the information (i.e., number of males treated punitively or non-punitively and number of females treated punitively or non-punitively). The method used in the present study also does this because column totals for each cue are the same for all cues as each magistrate made a specific number of punitive and non-punitive decisions.¹²

The threshold value was calculated by first taking the sum of the cue weights for each of the 27 cases, then totalling these 27 sums, and then dividing the total by the number of cases (i.e., 27). Hence, the threshold value was defined as the mean of the sums across the cases in the modelling set. This is a reasonable method for calculating the threshold value because each magistrate made roughly an equal number of punitive and non-punitive decisions.

¹¹ When Gigerenzer and Goldstein (1996) used Franklin's rule for a two alternative choice task, the model calculated a sum for each alternative, and the alternative with the highest sum was chosen. The same was true for Dawes' rule. Thus, there was no need for a threshold. I would like to thank Laura Martignon and Torsten Morhbach for their advice on how to make these models amenable for a categorisation task such as that studied here.

¹² Although the weights could be optimised through various techniques and the goodness of fit could be recalculated, the model would overfit the data and so would do worse at generalising to the holdout set.

Step 1: Calculation of cue weight for gender cue as used by hypothetical magistrate is $14/18 = 0.78$ versus $3/9 = 0.33$. Therefore weight of gender is 0.78.

	Treated non- punitively	Treated punitively	
Gender cue			Total
Male	4	14	18
Female	6	3	9
Total	10	17	27

To provide a different example taken from the modelling set, magistrate-1's remand decision making policy as described by Franklin's rule is used to predict this magistrates' decision on case three. In this case the defendant was male, Asian, aged 18, charged with a triable-either way offence, the prosecution requested conditions be attached to bail, he had no previous convictions and a good bail record, the prosecution case was strong, he had strong community ties, and the police bailed him with a surety. The weights attached to the cues were as follows: $\text{gender}(0)(0.72) + \text{race}(1)(0.67) + \text{age}(0)(0.67) + \text{offence}(1)(0.78) + \text{prosreq}(1)(0.72) + \text{pcbr}(0)(0.73) + \text{proscase}(0)(0.78) + \text{comties}(0)(0.67) + \text{polbail}(1)(0.67)$

The sum is 2.84, which is less than the 3.52 threshold value calculated for this magistrate. Thus, in this case, Franklin's rule would incorrectly predict that magistrate-1 made a non-punitive decision.

Dawes' rule. For each case, this model counted how many cues pointed in a positive direction, and if the unit sum of these was greater than or equal to the threshold value, it predicted a punitive decision. If not, it predicted a non-punitive decision.

The positive direction of a cue was defined as the value of that cue with the greatest proportion that had been treated punitively in the set of 27 cases. For example, if the proportion of males in the set of 27 cases treated punitively was greater than the proportion females treated punitively, then the value male on the gender cue would point in a positive direction. The value of a cue that pointed in a positive direction was then given a weight of 1, while the any other value was given a weight of 0. The threshold was determined as in Franklin's rule, namely by taking the mean of the sums across the cases in the modelling set.

As an example, on case three, magistrate-1's Dawes' rule sums to 4, which is less than the 5.89 threshold value calculated for this magistrate. Thus, Dawes' rule would also incorrectly predict that magistrate-1 made a non-punitive decision.

Matching Heuristic. This heuristic searched through K of the available cues in rank order of importance, looking for a critical value on each cue that indicated a punitive decision. If a critical value was found the heuristic stopped searching and predicted a punitive decision. Otherwise, the heuristic searched through the value of the next rank ordered cue. The heuristic continued this procedure until K cues had been searched. If by this time no critical value had been found the heuristic predicted a non-punitive decision. For illustrative purposes, Figure 3.2 shows the remand decision making process by a Matching Heuristic where $K = 2$.

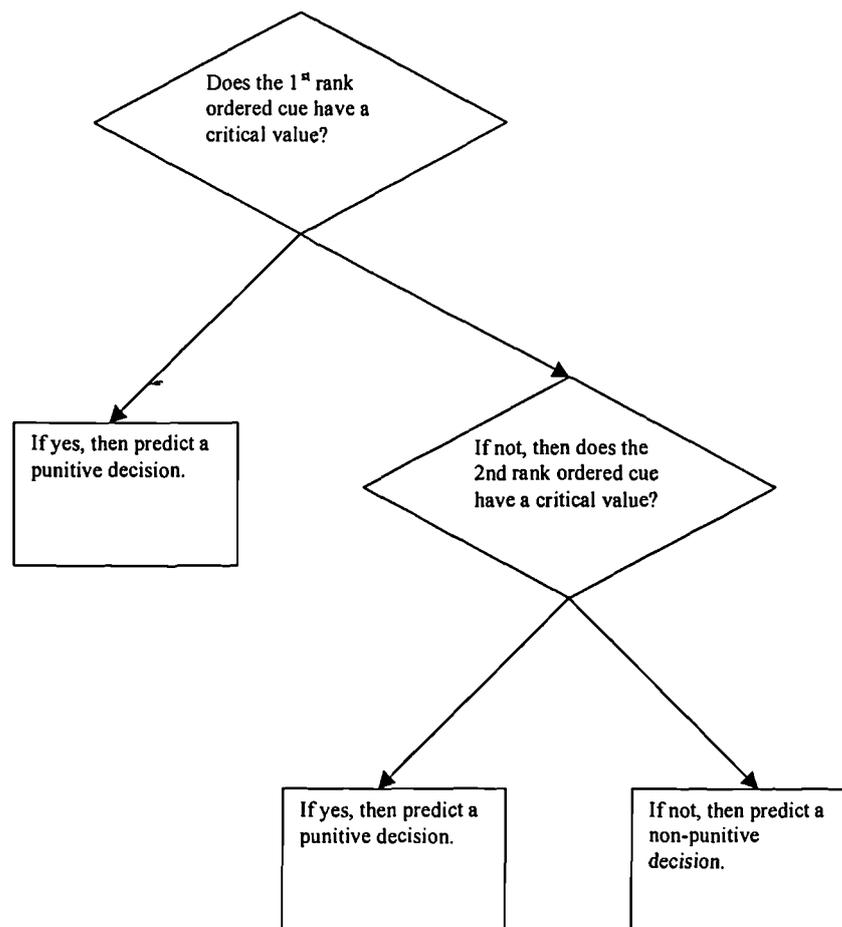


Figure 3.2. Flowchart of Matching Heuristic ($K = 2$)

Where $K > 1$, the performance of the Matching Heuristic is not equivalent to a linear model because once the cues are ranked, the first cue is checked as to whether it attains a critical value. If it does not, the second cue is checked, and so forth. This process cannot be rendered by a linear model. Any linear model would assign fixed coefficients to the cues and take the product of the coefficient multiplied by the cue value, independent of what this value is (Martignon, personal communication, 1999). Once a decision is made on the basis of a cue that attains a critical value, the values of other cues cannot alter it. Binary cues are related to the judgements in a linear way, however, polytomous cues are related to the judgements in a non-linear when the critical cue value is a midrange value.

The following three steps describe how the critical values on the cues, the rank ordering of cues and K are determined for each magistrate. First, a critical value was defined as the value on a cue that was most frequently treated punitively in the set of 27 cases. For example, for magistrate-1, the critical value for the gender cue was male because this magistrate made a punitive decision on more male defendants than female defendants. (See step 1 below.) Therefore, despite no explicit inclusion of base rates, the critical value was affected by the fact that there were actually more males than females in the modelling set. If the absolute frequencies of the number of cases treated punitively were equal among the values of a cue, then the value with the lowest absolute frequency treated non-punitively was chosen. The lowest absolute frequency in this situation would result in choosing the cue value with the highest ratio of punitive to not non-punitive decisions. Note that where the cue is polytomous, the values with the lowest frequency treated non-punitively are only checked for the values with the equal frequencies treated punitively. Where the absolute frequencies of the number of cases treated non-punitively were also equal, a critical cue value was chosen randomly.

Step 1: The critical cue value for gender cue as used by hypothetical magistrate is male.

Gender cue	Treated non- punitively	Treated punitively	Total
	Male	4	
Female	6	3	9
Total	10	17	27

Second, a cue utilisation validity was calculated for each cue and was defined as the proportion of cases with the critical value that were treated punitively in the modelling set. For magistrate-1, for example, the validity of the gender cue was defined as the proportion of male defendants who were treated punitively. See step 2 below. The validities were then used to rank order the nine cues, where the first rank was assigned to the largest validity. This rank order indicated the order in which the heuristic searched through the cues. Cues with a tied rank order were placed in the order they were presented in the judgment task.

Step 2: Calculation of cue utilisation validity of gender cue as used by hypothetical magistrate is $14/18 = 0.78$.

	Treated non- punitively	Treated punitively	
Gender cue			Total
Male	4	14	18
Female	6	3	9
Total	10	17	27

Finally, in order to choose the maximum number of cues for the heuristic to search (K), the overall fit of the heuristic with all nine possible maxima was systematically tested on the modelling set.¹³ The heuristic with the best overall fit in terms of percentage of correct predictions was chosen as the heuristic of the magistrates' remand decision making policy and where two or more heuristics had the same fit, the more parsimonious heuristic (i.e., searching the fewest cues) was chosen. Parsimony is the hallmark of the fast and frugal approach, which emphasises simplicity. As Figure 3.3 illustrates, a heuristic that looked at only 1 cue was the best overall fit for magistrate-1. The Matching Heuristic stated that this magistrate only used the offence cue to make a decision; where a serious offence (triable-either way or indictable) predicted a punitive decision and a summary offence predicted a non-punitive decision.

¹³ The procedure of obtaining the maximum number of cues searched is similar to that used for CART known as "growing" and "pruning" trees (see Breiman et al., 1984).

Thus, for case three, magistrate-1's Matching Heuristic would only search for information regarding the offence and would correctly predict a punitive decision.

A Matching Heuristic which searched through 1 cue only (out of a possible 9 cues) ($K = 1$) proved to be the best overall fit for 75.30% of the sample. $K = 2$ for 21% of magistrates and $K = 3$ for the remaining 3.70% of magistrates.

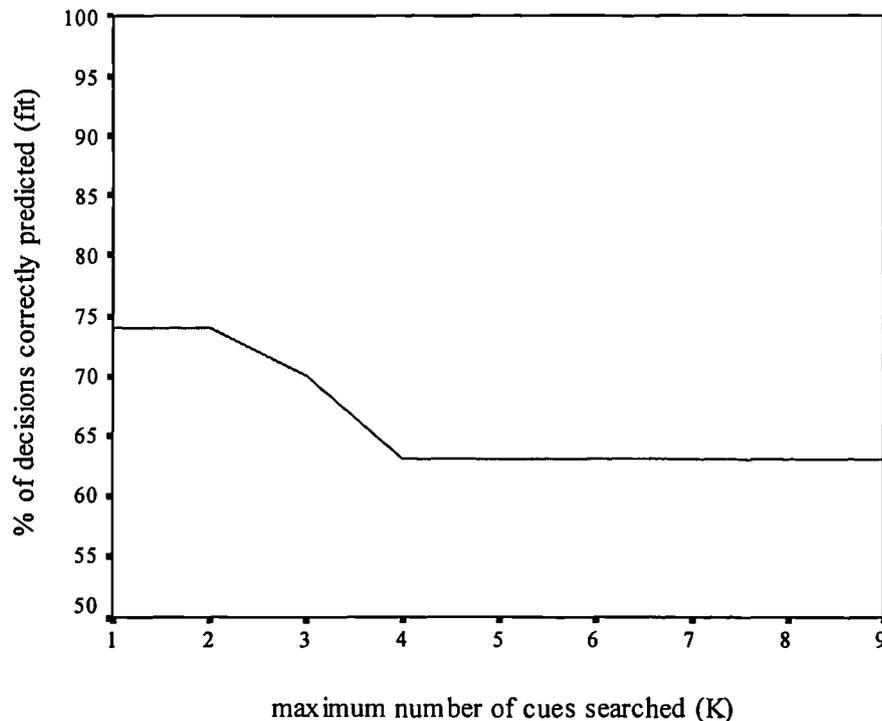


Figure 3.3. Overall fit of Matching Heuristic on modelling set as a function of the number of cues searched for magistrate-1

Comparison of models. In the Matching Heuristic, the critical cue value refers to the positive direction of a cue as used in Dawes' rule, and the cue utilisation validity refers to the unit weights in Dawes' rule and the cue weights in Franklin's rule. The three models differ in their calculation of these. Although in the hypothetical example given above, all models arrived at the same conclusion, namely that for the gender cue, males should be treated more punitively than females, there are situations in which the models would arrive at different conclusions. For instance, in a situation where the number of males and females treated non-punitively and punitively by the hypothetical magistrate are reversed, Franklin's rule would weight the gender cue based on the proportion of females treated punitively. Dawes' rule would conclude that females point in a positive direction and so are given a weight of 1. However, in the Matching Heuristic the critical cue value would remain male and the cue utilisation validity would

be based on the proportion of males treated punitively. It is also clear, that the Matching Heuristic does not take account of all of the information in the 2 x 2 table, when calculating the cue utilisation validities.

The Matching Heuristic is a disjunctive rule. It is non-compensatory. Franklin's rule and Dawes' rule are linear models that integrate the cues in a compensatory way. Franklin's rule weights cues differentially, the Matching Heuristic searches cues in order of their utilisation validities, and Dawes' rule looks at the direction in which the cue points.

3.3.7. Describing and predicting magistrates' remand decisions. In the present study, the fit of a model is defined in terms of its ability to correctly describe (predict on the modelling set) or predict (predict on the holdout set) the individual magistrates' remand decisions. Fit is measured in terms of the percentage of decisions correctly predicted by the models. Although they did not use the term fit, Gigerenzer and his colleagues used this method for measuring the validity of their models (see Gigerenzer et al., 1999b). Other studies have measured the descriptive and predictive validity of a model by correlating the model's predictions with the individual's decisions (e.g., Einhorn, 1970). This will not be done here.

Each of the three models was used to make a prediction firstly on the 27 cases in the modelling set used to develop the models and then on the set of seven holdout cases used to validate the models. Magistrates made a relatively equal number of punitive and non-punitive decisions, and the binary nature of the decision to be described and predicted, implies that any valid model should be expected to perform better than chance (i.e., predict more than 50% of decisions).

Figure 3.4 provides an illustration of the percentage of magistrates for whom each of the three models proved the best fit overall decisions (i.e., bail unconditionally, conditionally and remand in custody) on the cases in the modelling set and the holdout set, respectively. It can be seen that for 38.27% of magistrates Franklin's rule was the best fit on the modelling set, compared to the 9.87% of magistrates for whom Dawes' rule was the best fit, and the 32.10% of magistrates for whom the Matching Heuristic was the best fit. The best fit model on the holdout set was the Matching Heuristic for 33.33% of magistrates, compared to the 14.81% of magistrates for whom Dawes' rule and the 19.75% of magistrates for whom Franklin's rule was the best fit. For 57 magistrates, the best fit model on the holdout set was different from that on the modelling set.

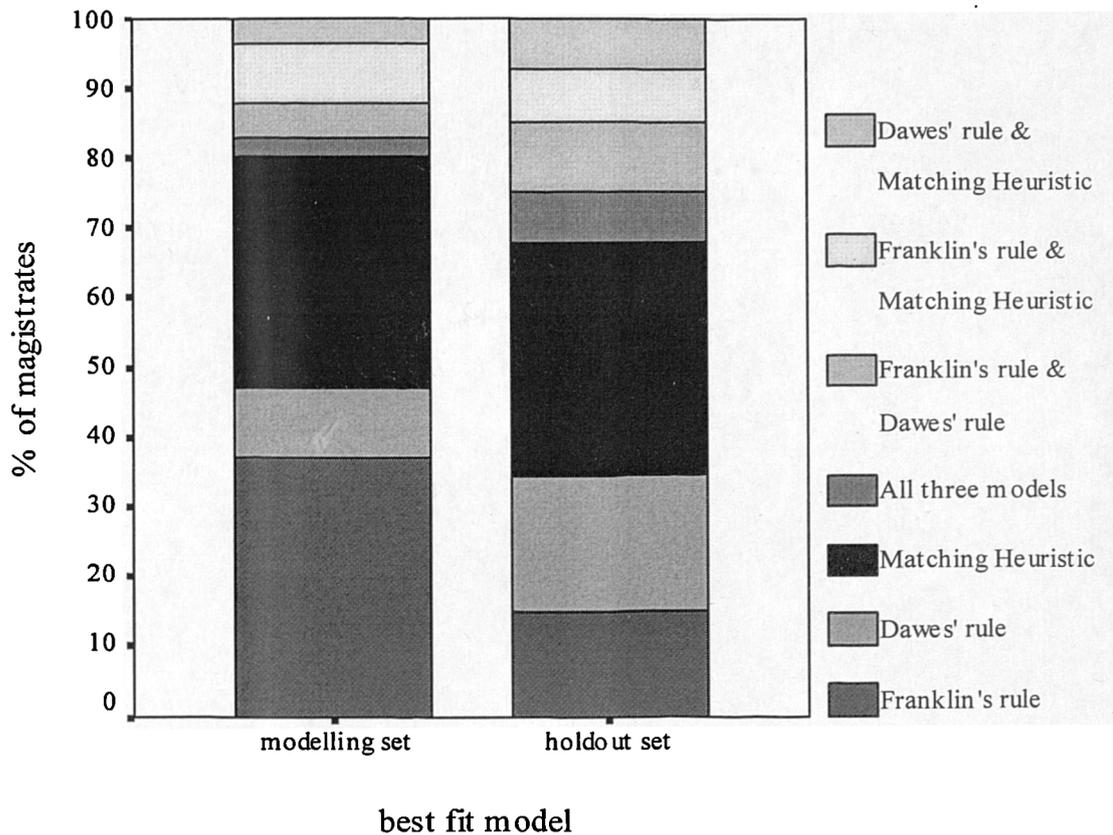


Figure 3.4. Percentage of magistrates for whom each model provided the best overall fit on modelling set and holdout set

Figure 3.5 presents the results of the average overall fit of the models across the sample (note that the boxplot shows the median). As predicted, a repeated-measures analysis of variance revealed that there were significant differences in the mean fit of the models across magistrates on the modelling set ($F[2,80] = 7.73, p < 0.05$).¹⁴ Although a paired samples t -test indicated that there was no significant difference in the mean fit of the Matching Heuristic ($M = 73.98\%$, $SD = 8.61$) and Franklin's rule ($M = 73.57\%$, $SD = 9.20$) ($t[80] = 0.27$, 1-tailed $p > 0.025$), the mean overall fit of the Matching Heuristic was however significantly greater than that of Dawes' rule ($M = 69.36\%$, $SD = 7.43$) ($t[80] = 4.06$, 1-tailed $p < 0.025$). The mean overall fit of Franklin's rule was also significantly greater than that of Dawes' rule ($t[80] = -3.44$, 1-tailed $p < 0.025$). Contrary to the prediction, according to the analysis of variance there were no significant differences in the mean fit of the models across magistrates on the holdout set ($F[2,80] = 2.64, p > 0.05$). However, a paired samples t -test revealed that the

Matching Heuristic provided a significantly greater mean fit ($M = 65.61\%$, $SD = 22.22$) than Franklin's rule ($M = 59.26\%$, $SD = 17.22$) ($t[80] = 2.05$, 1-tailed $p < 0.025$). The mean fit of Dawes' rule was 62.96% ($SD = 14.60$).

As the Matching Heuristic did better on average across magistrates on both the modelling set and the holdout set, it was considered that this model best captured magistrates' remand decision making policies.

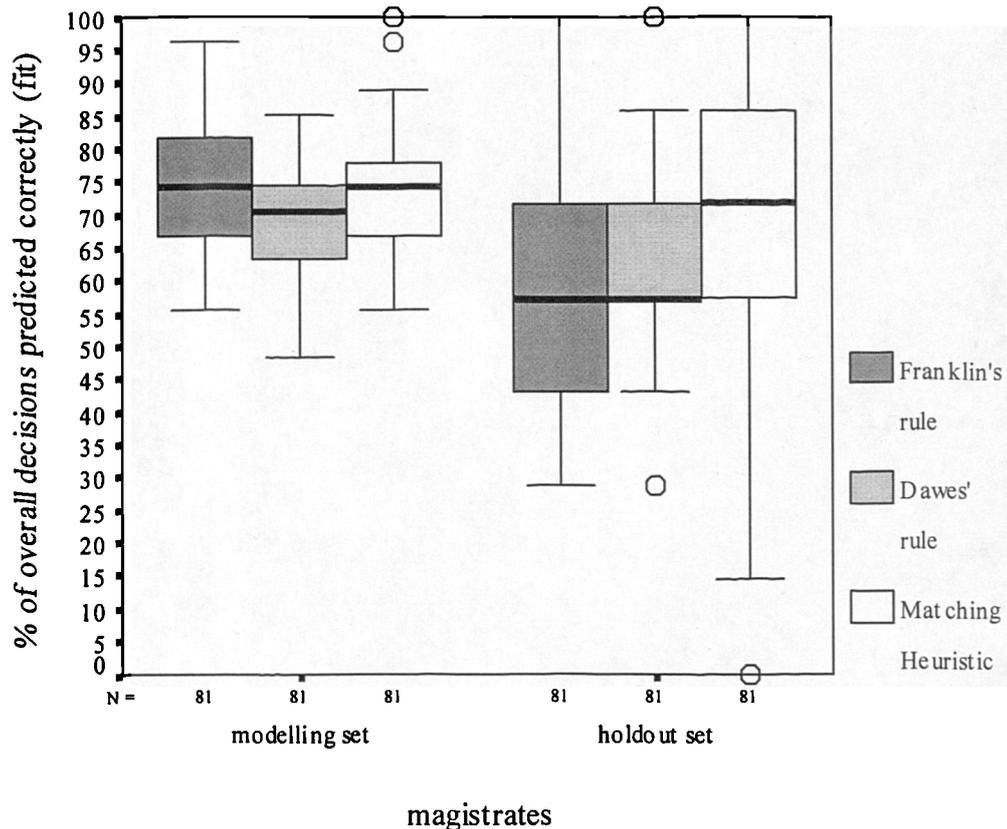


Figure 3.5. Overall fit of Franklin's rule, Dawes' rule and Matching Heuristic on modelling set and holdout set

When comparing the fit of the models on the non-punitive decisions alone, it was found that there were significant differences among their mean fit across magistrates on the modelling set ($F[2,80] = 55.88$, $p < 0.05$).¹⁵ Franklin's rule ($M = 78.82\%$, $SD = 13.89$) provided a significantly greater mean fit than either the Matching Heuristic ($M = 59.05\%$, $SD = 16.56$) ($t[80] = -8.26$, $p < 0.05$), or Dawes' rule ($M =$

¹⁴ Mauchly's test of sphericity was statistically significant ($p < 0.05$), indicating a heterogeneity of covariance and so the Greenhouse-Geisser correction was used, and the degrees of freedom are rounded off.

¹⁵ The Greenhouse-Geisser correction was used.

59.90%, $SD = 13.49$) ($t[80] = -10.11, p < 0.05$). There were also significant differences in the mean fit of the models on the non-punitive decisions across magistrates on the holdout set ($F[2,73] = 30.17, p < 0.05$). Here, Dawes' rule ($M = 88.87\%$, $SD = 19.87$) provided a significantly greater fit than either the Matching Heuristic ($M = 50.50\%$, $SD = 40.37$) ($t[73] = -8.09, p < 0.05$), or Franklin's rule ($M = 65.33\%$, $SD = 35.80$) ($t[74] = 5.32, p < 0.05$).

Regarding the fit of the models solely on the punitive decisions, it was found that there were significant differences among their the mean fit across magistrates on the modelling set ($F[2,80] = 5.46, p < 0.05$).¹⁶ The Matching Heuristic ($M = 82.86\%$, $SD = 14.53$) provided a significantly greater mean fit than either Franklin's rule ($M = 75.76\%$, $SD = 15.00$) ($t[80] = 2.68, p < 0.05$), or Dawes' rule ($M = 78.53\%$, $SD = 10.70$) ($t[80] = 2.18, p < 0.05$). There were also significant differences in the mean fit of the models on the punitive decisions across magistrates on the holdout set ($F[2,80] = 13.27, p < 0.05$).¹⁷ Once again, the Matching Heuristic ($M = 71.61\%$, $SD = 25.79$) provided a significantly greater fit than Franklin's rule ($M = 60.53\%$, $SD = 24.54$) ($t[80] = -3.01, p < 0.05$), or Dawes' rule ($M = 55.75\%$, $SD = 15.34$) ($t[80] = 5.35, p < 0.05$).

Table 3.3 presents the overall fit of the three models on the modelling and holdout sets for lay and stipendiary magistrates, respectively. Table 3.4 presents the overall fit of the three models on the modelling and holdout sets for magistrates from metropolitan and provincial courts, respectively.

An independent samples *t*-test revealed that the Matching Heuristic provided a significantly better overall fit on the modelling set for magistrates from metropolitan courts than for magistrates from provincial courts ($t[76] = 2.27, 2$ -tailed $p < 0.05$). There was however, no significant difference between the two groups in the overall fit of Franklin's rule ($t[76] = 0.49, 2$ -tailed $p > 0.05$) and Dawes' rule ($t[76] = 0.14, 2$ -tailed $p > 0.05$). The overall fit of the Matching Heuristic on the holdout set was also significantly greater for magistrates located in metropolitan courts than for magistrates located in provincial courts ($t[76] = 3.05, 2$ -tailed $p < 0.05$). Once again, there was however, no significant difference between the two groups in the overall fit of Franklin's rule ($t[76] = 0.28, 2$ -tailed $p > 0.05$) and Dawes' rule ($t[76] = 0.63, 2$ -tailed $p > 0.05$).

¹⁶ The Greenhouse-Geisser correction was used.

¹⁷ The Greenhouse-Geisser correction was used.

Model	% fit on modelling set				% fit on holdout set			
	Lay (<i>N</i> = 70)		Stipendiary (<i>N</i> = 9)		Lay (<i>N</i> = 70)		Stipendiary (<i>N</i> = 9)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Franklin's rule	73.44	8.80	74.90	12.39	58.98	16.84	60.32	22.33
Dawes' rule	69.15	7.74	69.96	5.38	62.86	15.27	66.67	7.15
Matching								
Heuristic	73.81	9.04	74.90	5.79	64.90	22.51	66.67	20.20

Table 3.3. Overall fit of Franklin's rule, Dawes' rule and Matching Heuristic on modelling set and holdout set for lay and stipendiary magistrates

Model	% fit on modelling set				% fit on holdout set			
	Metropolitan (<i>N</i> = 46)		Provincial (<i>N</i> = 32)		Metropolitan (<i>N</i> = 46)		Provincial (<i>N</i> = 32)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Franklin's rule	73.27	9.90	74.31	8.25	59.63	18.39	58.48	16.37
Dawes' rule	69.56	13.70	69.33	6.93	63.66	13.70	61.61	14.71
Matching								
Heuristic	75.85	8.58	71.41	8.37	71.12	16.35	56.25	26.65

Table 3.4. Overall fit of Franklin's rule, Dawes' rule and Matching Heuristic on modelling set and holdout set for magistrates in metropolitan and provincial courts

There was a significant Pearson's correlation of -0.34 between the overall fit of the Matching Heuristic on the modelling set and magistrates' experience (2-tailed $p < 0.05$, $N = 79$). However, no significant correlation was found between magistrates' experience and the overall fit of Franklin's rule ($r = -0.06$, 2-tailed $p > 0.05$, $N = 79$) and between experience and the overall fit of Dawes' rule ($r = -0.06$, 2-tailed $p > 0.05$, $N =$

79), on the modelling set. There were no significant correlations between magistrates' experience and the overall fit of any of the three models on the holdout set (2-tailed $p > 0.05$).

As predicted, there was a significant correlation between the overall fit of the Matching Heuristic on the modelling set and intra-magistrate consistency as measured by Cohen's Kappa ($r = -0.23$, 1-tailed $p < 0.025$, $N = 81$). There was however, no significant correlation between intra-magistrate consistency and the overall fit on the holdout set ($r = 0.05$, 1-tailed $p > 0.025$, $N = 81$). There was no statistically significant correlation between the overall fit on the cases in the modelling set for Franklin's rule and intra-magistrate consistency, and for Dawes' rule and intra-magistrate consistency (1-tailed $p > 0.025$).

There was a significant correlation between disagreement, as measured by the number of cases in the modelling set each magistrate disagreed from the modal response, and the overall fit of the Matching Heuristic on the modelling set ($r = 0.74$, 2-tailed $p < 0.05$, $N = 81$). There was also a significant correlation between disagreement and the overall fit of the Matching Heuristic on the holdout set ($r = 0.45$, 2-tailed $p < 0.05$, $N = 81$).

3.3.8. Cue use. The Matching Heuristic was used to elicit magistrates' cue use when making remand decisions. Cue use is defined broadly as the number of cues searched (including the cue on which the decision is based) and so this number may vary from case to case where $K > 1$. The mean number of cues used over the cases in the modelling set was calculated for each magistrate. Across magistrates, the mean number of cues used ranged from 1 to 1.67 ($M = 1.10$, $SD = 0.18$).

The grand mean number of cues used in the Matching Heuristic was 1.04 ($SD = 0.19$) for lay magistrates and 1.07 ($SD = 0.15$) for stipendiary magistrates. The correlation between magistrates' experience and the mean number of cues used was -0.17 (2-tailed $p > 0.05$, $N = 79$). There was no significant difference in the grand mean number of cues used between magistrates located in metropolitan and provincial courts ($t[76] = 1.13$, 2-tailed $p > 0.05$).

Across the whole sample, it was found that magistrates differed in terms of the cues they used to make their remand decisions. Figure 3.6 illustrates the percentage of magistrates in the whole sample who used each cue according to the Matching Heuristic.

When comparing the cue use of lay and stipendiary magistrates, it was found that none of the stipendiary magistrates used *pcbr*, *proscase*, and *polbail*. A greater

proportion of lay magistrates used gender, offence, prosreq, and comties, than stipendiary magistrates. A greater proportion of stipendiary magistrates used race and age, than lay magistrates. It is important to note however, that these proportions are based on very small samples, and so should not be taken to be conclusive.

A Chi-Square test showed that the use of offence was non-independent of the location of court ($\chi^2[1, N = 78] = 4.91, 2\text{-tailed } p < 0.05$). Magistrates in metropolitan courts were more likely to use offence than were magistrates in provincial courts. Gender was independent of the location of court ($\chi^2[1, N = 78] = 2.71, 2\text{-tailed } p > 0.05$), as was prosreq ($\chi^2[1, N = 78] = 2.71, 2\text{-tailed } p > 0.05$), pcbr ($\chi^2[1, N = 78] = 0.93, 2\text{-tailed } p > 0.05$), and polbail ($\chi^2[1, N = 78] = 2.71, 2\text{-tailed } p > 0.05$). The expected frequencies in the cells were below 5 for race, age, proscase and comties, therefore, a Chi-Square analysis was abandoned for these variables.

Finally, for each cue, a Spearman's rank order correlation was computed between its use and magistrates' experience. The only significant correlation was that between the use of polbail and experience ($\rho = -0.23, 2\text{-tailed } p < 0.05, N = 79$).

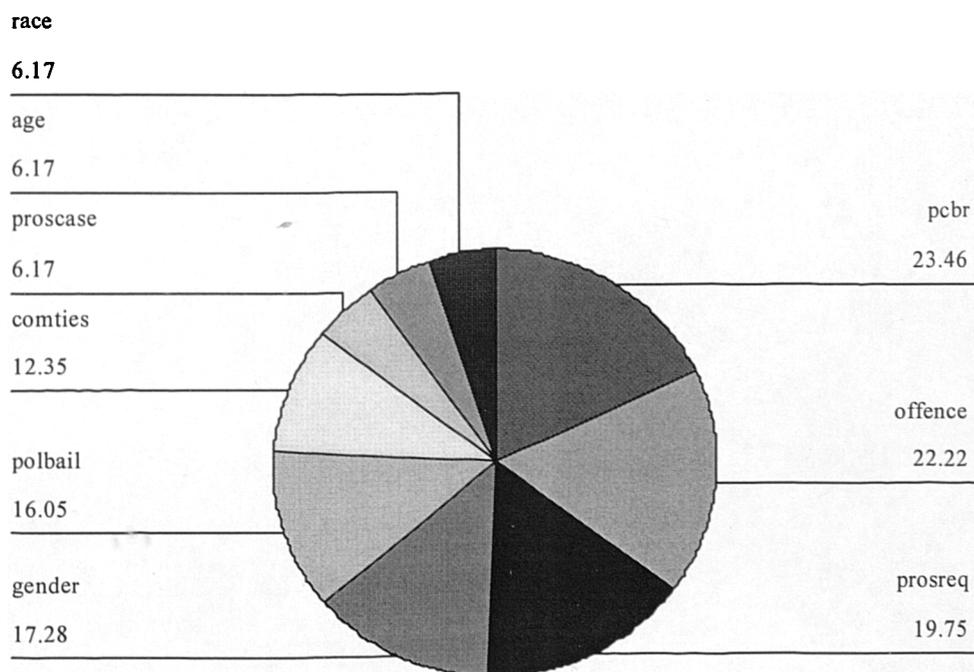


Figure 3.6. Nature of the cues used by magistrates according to Matching Heuristic

Across the whole sample, analysis of the critical value on the cues used revealed that for 7 of the 9 cues, those magistrates using the cues, used them in the same

direction. Here, the legal cues were used in the direction expected, and the “extra-legal” cues were used in the direction reported by previous research. However, 4 of the 5 magistrates who used the race cue made a punitive decision when the race of the defendant was described as white. Seven of the 10 magistrates who used the strength of community ties cue made a punitive decision when the defendant was described as having weak ties.

3.3.9. Requests for further information. A total of 144 requests were made by magistrates for more information in response to the question of what further information they would have liked in the set of hypothetical cases which would help them to make their remand decisions. Figure 3.7 illustrates the type of further information requested by magistrates. The “offence” category includes requests for information about the time of the alleged offence. The “current bail” category includes requests for information on the availability of bail hostels, and the “defendant” category includes requests for information on the defendant’s lifestyle. The “other” category includes requests for information regarding the defendant's bail record and court related factors such as the clerk's advice.

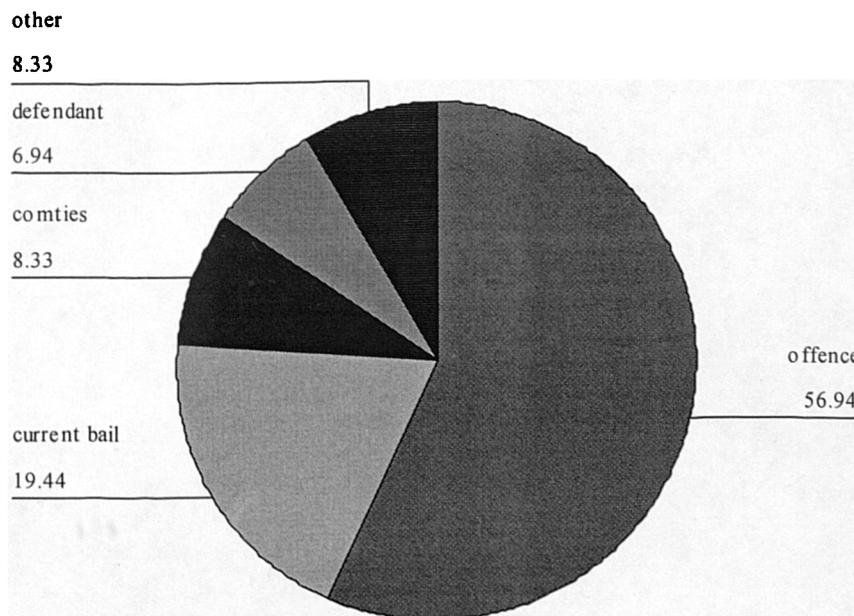


Figure 3.7. Magistrates’ requests for further information

3.3.10. Comparison between policies according to Matching Heuristic and magistrates' explicit statements of policy. Although according to the Matching

Heuristic none of the magistrates used all of the cues, the aim was to assess magistrates' explicit consideration of cue importance for each of the nine cues. Therefore, the rank ordering of the nine cues as described by the Matching Heuristic were compared with the rank ordering of cues explicitly provided by magistrates in the ranking task. Any tied ranks in explicit policies were converted into sequential unique values. Kendall's tau-b correlations were computed between each magistrates' implicit and explicit rank order of cues. As expected, the correlations were low. They ranged from -0.39 to 0.67 ($M = 0.09$, $SD = 0.22$). Only one was statistically significant (1-tailed $p < 0.025$, $N = 9$, $n = 81$).

For the lay magistrates, these correlations ranged from -0.39 to 0.56 ($M = 0.08$, $SD = 0.22$), and for the stipendiary magistrates these correlations ranged from -0.22 to 0.67 ($M = 0.13$, $SD = 0.27$). In order to examine the relation between the degree of concordance between magistrates' implicit and explicit policies and their experience on the bench, a Pearson's correlation was computed between concordance and experience. No statistically significant correlation was found ($r = 0.10$, 2-tailed $p > 0.05$, $N = 78$). There was no significant difference in the concordance of implicit and explicit policies between magistrates located in metropolitan and provincial courts ($t[75] = 0.91$, 2-tailed $p > 0.05$).

There was no statistically significant correlation between concordance and intra-magistrate consistency as measured by Cohen's Kappa ($r = 0.06$, 2-tailed $p > 0.05$, $N = 80$), and between concordance and disagreement as measured by the number of cases in the modelling set which each magistrate disagreed with the modal response ($r = -0.08$, 2-tailed $p > 0.05$, $N = 81$).

It was thought that greater correspondence between public and private policies may be found if the rank order of only the actually cues used by each magistrate, according to his or her Matching Heuristic (i.e., the maximum number of cues searched by the Matching Heuristic [K] which ranged from 1 to 3 cues, out of 9) was compared with magistrates' explicit rank order of importance of these cues in the ranking task. There was no correspondence between these two variables for the majority of magistrates. Of the 61 magistrates for whom $K = 1$, only 13 reported that cue as being most important. Of the remaining magistrates for whom $K = 2$ or 3, two magistrates reported one of the cues as being similarly important in their explicit policies.

For an indication of the cues that were ranked differently in magistrates' implicit and explicit policies, the median rank order of each cue in both types of policies was calculated, across magistrates. Figure 3.8 illustrates the concordance between

magistrates' implicit and explicit rank ordering of cues summarised across all magistrates. Note that the rank order of importance was reversed for ease of illustration, so a rank order of nine represents the most important cue. As predicted, the legal cues are ranked as more important in magistrates' explicit policies than as indicated by their implicit policies captured by the Matching Heuristic. Furthermore, although the extra-legal cues are ranked as important in magistrates' implicit policies, they explicitly report that these cues are not important in their remand decision making.

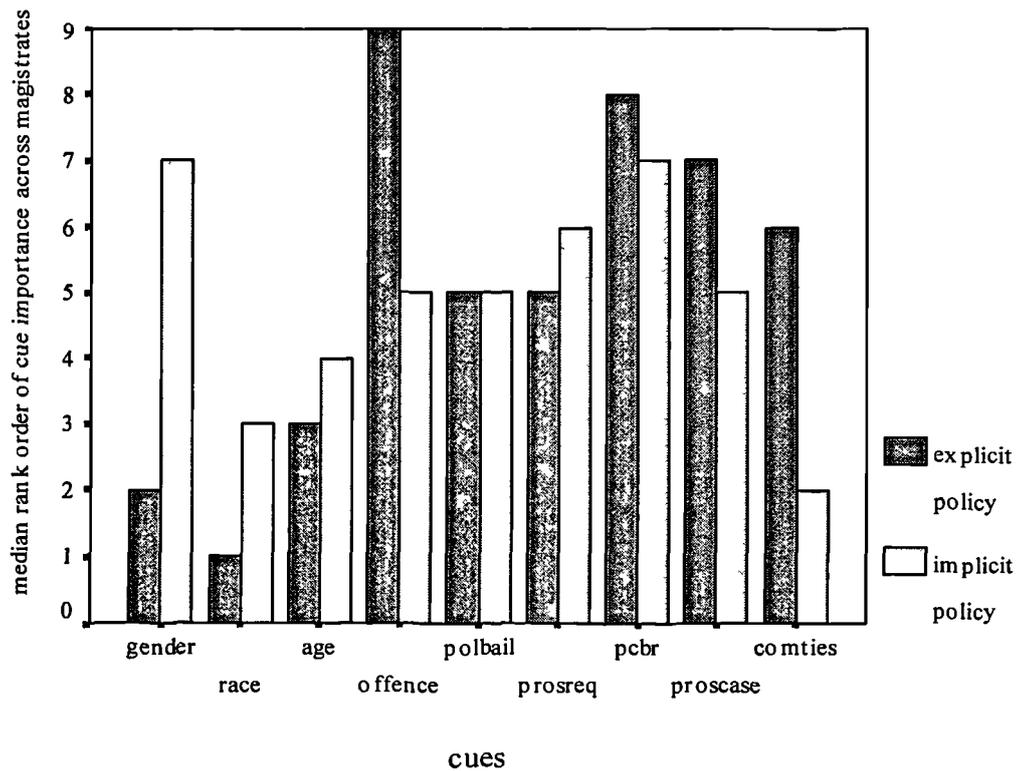


Figure 3.8. Comparison between magistrates' implicit and explicit remand decision making policies

3.4. Discussion

The present study was the first psychological investigation into English magistrates' remand decision making. Furthermore, it was the first behavioural test of the descriptive and predictive validity of a fast and frugal heuristic for categorisation tasks.

3.4.1. Summary of main findings. On average, the distribution of magistrates' unconditional bail, conditional bail and remand in custody decisions reflected the real world distribution of the remand decisions made in the English criminal justice system (Home Office, 1999a). All magistrates exhibited high levels of post-decisional

confidence in their decisions. However, many magistrates also demonstrated some degree of inconsistency in their decisions, and all magistrates demonstrated disagreement from the modal response on at least some of the cases presented. On average, magistrates attached more than one condition to bail, the most popular being residence. Although there were individual differences, on average, magistrates' remand decision making policies were better described and predicted by a fast and frugal heuristic, called the Matching Heuristic than by either Franklin's rule and Dawes' rule. According to the Matching Heuristic, most magistrates used one cue (out of a possible nine). While most magistrates used legal cues, some used defendant and crime control related cues, and most cues were used in the expected direction. However, magistrates tended not to report these "extra-legal" cues as being important in their decision making. Finally, there were few differences in the performance of lay and stipendiary magistrates, and more and less experienced magistrates. Greater differences emerged between magistrates from metropolitan and provincial courts. The above findings will be discussed in more detail in the remainder of this chapter.

3.4.2. Discussion of main findings. As predicted, the overall fit of the models on the modelling set was related to magistrates' consistency in their decisions. As hypothesised, the fast and frugal heuristic proved more descriptively and predictively valid than the two linear, compensatory models. In the Matching Heuristic, all available information is not searched, cues are not weighted in an optimal way, cues are not integrated, and a decision is based on only one cue. It is thus non-compensatory. In addition, the remand decision making policies for around a third of the magistrates whose Matching Heuristic models contained more than one cue, can be considered non-linear. The present study differed from other SJT studies because it tested the use of alternative models as descriptions of judgment behaviour. The fit of the Matching Heuristic was similar to the R^2 found in past SJT studies (e.g., Ullman & Doherty, 1984) and better than some studies (e.g., Sensibaugh & Allgeier, 1996).

Most studies testing the relative validity of different models find individual differences (e.g., Einhorn, 1970; Rieskamp & Hoffrage, 1999). Although the difference in the fit of the Matching Heuristic for lay and stipendiary magistrates could not be tested statistically, the Matching Heuristic proved a significantly better fit for magistrates located in metropolitan courts. Magistrates in such courts often face a heavier caseload than those working in provincial courts, and so they may be more likely to be "fast and frugal". The fit of the Matching Heuristic was also found to decrease significantly as the magistrates' experience increased. The idea that

magistrates' policies may become more complex as they become more experienced is compatible with some past research on expert judgement (e.g., Greer, Kenneth, & Lynn, 1989), but incompatible with the large body of evidence showing that experts search and use less information (see Camerer & Johnson, 1991).

The past behavioural studies of simple heuristics have demonstrated that novices use such judgment strategies under time pressure (Rieskamp & Hoffrage, 1999), and that individuals familiar with a domain use them in the absence of time pressure (Slegers et al., 2000). The present study extends support for the use of fast and frugal heuristics to experienced individuals working in the legal domain. People often use non-compensatory strategies under conditions of time pressure (e.g., Payne et al., 1988, 1990, 1993). The fact that in the courtroom magistrates are faced with a heavy caseload, that may lead to implicit feelings of time pressure, thus requiring them to make decisions rapidly, suggests that simple heuristics may prove even better descriptors and predictors of magistrates' remand decisions in the courtroom. This however, needs to be investigated.

Not only did the Matching Heuristic prove superior in its overall descriptive and predictive validity, it also proved better than either Franklin's rule and Dawes' rule with regard to only the punitive decisions. However, the other models provided a better fit to the non-punitive decisions. These findings suggest that being fast and frugal would lead to more type I errors or false positives. This is compatible with the crime control, rather than due process conception of ideal practice in the criminal justice system (Packer, 1968). Although, the present study did not examine accuracy, it is likely that models will differ in their ability to minimise type I and type II errors. Most of the past studies on simple heuristics have not compared the fit of the models in terms of their relative ability in reducing these two errors (e.g., Czerlinski et al., 1999; Gigerenzer et al., 1999a; Gigerenzer & Goldstein, 1996). In many domains such as the legal domain these two errors are not weighted equally, and so this should be an important consideration when considering the prescriptive utility of a particular model.

According to the Matching Heuristic, most magistrates only used one cue. This is compatible with past SJT studies using regression models which have typically shown that few cues are used (Brehmer, 1994). Indeed, some studies have reported that only one cue is statistically significant in the regression models (e.g., Deshpande & Schoderbek, 1993). By controlling the information available to magistrates and using an orthogonal design, the present study examined the influence of each cue upon magistrates' remand decisions independently of the effects of other cues. In doing so,

the present study has to some extent, confirmed criminologists' claims that, at least some magistrates, are influenced by defendant and crime control related cues (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996, 1997a; Jones, 1985; Morgan, 1994; Morgan & Henderson, 1998; Zander, 1979). At first sight, the findings of the present study may seem discrepant with the findings of some studies detailed in Chapter 1. For example, in Chapter 1, it was stated that Hucklesby (1996) reported that magistrates agreed with the prosecution request 95% of the time, and in the present study it is reported that 19.75% of magistrates used the prosecution request cue. The criminologists' studies involved aggregated data from magistrates located in a relatively small sample of courts in England and Wales, and the results they reported are consistent with the results reported here for a small sample of individual magistrates from a much larger sample of courts.

There were however, a couple of findings relating to cue use that differed somewhat from those reported by criminologists. First, there was evidence in the present study that a few magistrates relied on the defendant's age when making their remand decisions. Past studies have not found this (Brown & Hullin, 1993; Doherty & East, 1985; Morgan & Henderson, 1998). Second, only a small minority of magistrates used the race cue and they mostly used it in the opposite direction to that reported by criminologists. Although this is compatible with some past research (Brown & Hullin, 1993; Voakes & Fowler, 1989). One possible explanation is that magistrates were sensitive to the research aims and so consciously avoided using this cue. A letter received from the chairman of a bench of magistrates during the design stage of the study stated "it worries me that you are bringing race into it. What does the colour of a defendant's skin have to do with...the bail decision...? I do hope you are not trying to prove that whites are given bail more frequently."

Interestingly, although magistrates were provided with information regarding a defendant's community ties, only a handful of magistrates used this cue, and most used it in the direction expected. Past observational studies have concluded that BISs, which provide community ties information to the court, have an affect on magistrates' decisions (e.g., Lloyd, 1992; Stone, 1988). The present study suggests that the effect of these schemes may not be as widespread as has previously been thought. Future research employing an experimental approach may yield more reliable and valid results on this issue.

In the present study, cue use was defined broadly as both the information magistrates searched through and the information that influenced their decision. This is

compatible with evidence showing that people report “using” cues they have searched, or attended to, but which have not necessarily influenced their decisions (Shepard, 1967). In addition, the present study examined how cues are used when making a punitive (i.e., conditional bail or remand in custody) versus non-punitive (i.e., unconditional bail) decision. This separation is considered more useful if policy-makers are interested in reducing the punishing nature of magistrates’ pre-trial decisions.

There were some aspects of cue use however, that were not examined in the present study, despite their importance as highlighted in Chapter 1. First the fact that individual values of cues were combined for ease of analysis, precluded an investigation of how magistrates treat Asian defendants in comparison to defendants of other ethnic groups. In retrospect, this probably would not have been fruitful in light of the fact that some magistrates were aware of this aim of the research. Second, the use of a fractional factorial design meant that only the main effects of the cues could be studied. How magistrates treat rare cases, such as females charged with serious offences, could not be examined. It may also be argued that the main effects design prevented magistrates from displaying configural cue use. This may not be a serious limitation, however. Previous research suggests that, though people may claim to use configural cues, incorporating such terms into models of judgment policies adds little, if anything, to their descriptive validity (e.g., Summers et al., 1970; Wiggins & Hoffman, 1968). Furthermore, in the interviews conducted with magistrates for the task analysis, they did not report anything to suggest configural cue use. Nevertheless, this issue remains to be studied.

Some, but certainly not all, magistrates used the legal cues explicitly referred to in the Bail Act 1976, namely previous convictions and bail record, seriousness of offence, strength of community ties, and strength of prosecution case. The use of cues such as gender, age, race, prosecution request and police remand decision, together with the requests for further information, reveal how magistrates interpret the catch-all clause, any factors that “appear to be relevant”, contained in the Bail Act 1976. Perhaps not surprisingly, factors which are considered to be both socially and professionally undesirable for making a remand decision such as defendant and crime control related cues, were ranked lower in magistrates’ explicit statements of policies, than in the Matching Heuristic models describing their behavior. Self-reported policies tend to indicate greater agreement (Chaput de Saintonge & Hattersley, 1985). Statements made by magistrates and court managers during the data collection phase of the study confirms cue use as depicted by the Matching Heuristic. For example, a clerk to the justices stated that “the physical appearance and the presence of the defendant...do

make a difference”. Furthermore, contrary to their Matching Heuristic models, which contained few cues, magistrates reported all of the cues as being important in their decision making.

The present study distinguished between what magistrates publicly state they do and what they actually do. Konecni and Ebbesen (1984) suggest that these should also be distinguished from what legal decision makers privately think they do, which refers to the concept of self-insight. In fact, there was a discrepancy in the publicly stated and privately used policy of magistrates who used the legal cues as contained in the Bail Act 1976. In line with most of the past JA research on self-insight (e.g., Ullman & Doherty, 1984), this suggests that magistrates may lack insight into their decision making policies. Nevertheless, future research could investigate magistrates’ insight into their policies by using policy recognition methods like those advocated by Reilly and Doherty (1989, 1992). This would also be a useful technique for further investigating the descriptive validity of the fast and frugal heuristics, as people may better recognise their fast and frugal policy, than their policy as captured by a regression model. Self-insight is important if magistrates are required to justify or alter their decision making policies.

As a punitive decision, conditional bail is a popular alternative to a remand in custody. Although the Bail Act 1976 affords magistrates discretion as to the number and type of conditions they attach to bail, there does seem to be a pattern. Similar to the past criminological research (Morgan, 1994; Morgan & Henderson, 1998; Raine & Willson, 1994, 1995b), magistrates in the present study attached more than one condition and this was often residence. In theory, residence is imposed to prevent absconding. Although on the surface this suggests that magistrates consider reducing the risk of absconding as more important than the risk of offending or interfering with witnesses/obstructing justice, this may not be true. Rather, it may be that magistrates prefer to remand in custody defendants who show a high risk of doing the latter two. Conditions such as surety and bail hostel usually divert defendants from a remand in custody because magistrates assume they will reduce the likelihood of a defendant absconding or offending. However, in line with past research (Morgan, 1989; Raine & Willson, 1994, 1995b; Zander, 1979), the present study found that little use was made of these two conditions. It may be that magistrates are aware of the lack of bail hostel places currently available, and so they tend not to use this condition. Some conditions such as boundary and curfew may seem particularly punishing to a defendant, and criminologists have complained of magistrates punishing the defendant (e.g., Block,

1990; Raine & Willson, 1994, 1995b). There was little evidence however, of a widespread use of these conditions. Finally, some past research has investigated the affect of case characteristics on the number and type of conditions imposed, and on agreement in the conditions imposed (Raine & Willson, 1994, 1995b), however a thorough investigation is lacking. This may be an avenue for future psychological research.

Unlike most JA studies, the present study did not use correlations to measure disagreement. The consensus based approach used here is less cumbersome and is more sensitive to the extent of disagreement that may be elicited by “easy” or “hard” cases. In their study on legal decision making, Sensibaugh and Allgeier (1996) found that their nine judges, making dichotomous decisions, disagreed on a third of the cases. The fact that every case elicited disagreement from the modal response in some magistrates in the present study, is probably a function of the greater size of the sample and the greater number of decision categories (i.e., three). In support of the criminologists’ claims (e.g., Home Office, 1987; Hucklesby, 1996), it was found that different magistrates disagree as to the decisions to be made on the same cases. Unlike the criminological studies, the present study can safely say that this disagreement is not due to any differences in the nature of the cases presented, as they were identical for all magistrates.

Furthermore, in the present study, magistrates from the same court made different decisions on some of the same cases. This finding cannot be explained by the differences in the “court culture”, that criminologists often refer to when explaining disagreement (Hucklesby, 1997a). Rather, social judgment theorists’ research in the domain of interpersonal conflict suggests that disagreement may be explained by the differences in the systematic and non-systematic differences in cue use, namely the actual cues used and intra-individual inconsistencies (Brehmer, 1976; Mumpower & Stewart, 1996). Indeed, as discussed in Chapter 1, different magistrates may not use the same information, and individual magistrates may use information differently on two separate occasions because they do not know the objective usefulness of the cues and they have no adequate way of learning this information from outcome feedback. In the present study, there were individual differences in the cues used by magistrates, and in magistrates’ consistency in their decisions. In the present study, consistency and disagreement were not related. Future research should study disagreement in magistrates’ decisions from the perspective of the interpersonal conflict paradigm. If it is true that cue use and inconsistencies account for disagreement among magistrates, then simple cognitive feedback techniques could be used to reduce disagreement

(Hammond & Brehmer, 1973). People can learn to predict others' behaviour (Hammond, 1972; Hammond et al., 1966b).

The present study also extended our understanding of magistrates' remand decision making to include a measure of their individual consistency in their decisions and their post-decisional confidence. The findings regarding consistency are compatible with past studies (e.g., Kline & Sulsky, 1995; see Zakay, 1997). In most studies, the duplicate cases are presented at the end, and so it is not known to what extent boredom and fatigue explain the inconsistency. The fact that the majority of magistrates demonstrated some degree of inconsistency on the simple test-retest measure used in the present study was nevertheless surprising. Consistency may be affected by the "easiness" of cases, although the cases were not considered on this dimension in the present study. Future research could investigate how consistency increases or declines as a function of the characteristics of the case. This could be helpful in determining which cases may need more effort in deciding upon.

The extent of intra-magistrate inconsistency and disagreement among magistrates found in the present study is surprising considering that magistrates were performing a structured judgment task, where they were presented with the same information, but unsurprising in the light of other JA studies. It is likely that there will be greater inconsistency and disagreement in the courtroom, where there are no rules of procedure, a lack of information, time pressure, and an erratic work pattern. These hypotheses however, need to be tested.

All magistrates regardless of type, experience and location of court, were on average highly confident in their decisions. Confidence is related to the task and research indicates that confidence increases with the use of a non-compensatory strategy (Zakay, 1985). There is also evidence that groups are more confident than individuals (e.g., Snizek & Henry, 1989). In the present study, it was also found that post-decisional confidence declined as magistrates made more punitive decisions. This may reflect the extremity and significance of the decision for the defendant (Allwood & Grahag, 1999). Nevertheless, explanations for this decline in confidence should be investigated. It also suggests that magistrates may require more training and guidance concerning when to remand a defendant in custody. The high level of post-decisional confidence demonstrated by magistrates is difficult to interpret because it may reflect their need to gain public support rather than their actual confidence in their decisions (Allwood & Grahag, 1999). To date, little research has been conducted into such an interpretation. Finally, although much of the research on confidence comments on how

it relates to accuracy, this cannot be done in the present study as the cases were hypothetical.

In the present study, there was no significant correlation between consistency and post-decisional confidence, or between disagreement and post-decisional confidence. A high level of post-decisional confidence is arguably inappropriate where magistrates were in disagreement with one another and where they were inconsistent. Despite the absence of an outcome criterion, the extent of inconsistency and disagreement found indicates that magistrates are likely to make errors, for example, releasing a defendant who would abscond. In the same way that reliability is a pre-requisite for the validity of a psychometric test, consistency (whether it be within an individual or between individuals as defined by the measure of disagreement in the present study) is a pre-requisite for accuracy with respect to an individual's decisions. Brehmer (1994) points out that disagreement in judgement policies is acceptable if different people are using different means to the same end. However, disagreement in the end is not acceptable.

Unlike most of the past criminological research, the practices of lay and stipendiary magistrates was compared in the present study. Contrary to the findings reported by Hucklesby (1997b), the present study found that there was no difference between the two types of magistrates in terms of the remand decisions made. There were very tiny mean differences on the other issues investigated. The general pattern was that stipendiary magistrates attached more conditions to bail, were more consistent, disagreed from the modal response on fewer cases, showed greater post-decisional confidence, used more cues, and showed greater correspondence between explicit and implicit policies, than lay magistrates. Although these differences seem compatible with what we know of the training of stipendiary magistrates, and the findings of other studies (e.g., Sanders, 2000; Hedderman & Moxon, 1992), the small sample of stipendiary magistrates precluded computation of any statistical tests of significance on these differences. The lack of great differences in the present study may be explained by the fact that both types of magistrates were presented with identical cases, whereas the observed differences reported in past studies may be due to the fact that stipendiary magistrates deal with more serious and complicated cases.

In terms of the differences in the practices of more and less experienced magistrates, it was found that less experienced magistrates made significantly more punitive decisions, and disagreed more often from the modal response. Therefore, it seems as though novices are opting for a less risky option for the general public, and

their disagreement is compatible with their lack of experience with the task.

Unfortunately, it is unclear how the above findings generalise to practice in the courtroom, because it is common for less experienced magistrates to sit on the bench and make decisions with more experienced magistrates. However, there was no significant relationship between experience and factors such as the grand mean number of conditions attached to bail, consistency, post-decisional confidence, the concordance between explicit and implicit policies, the mean number of cues used, and the type of cues used. While some of these findings are compatible with past research showing no differences between expert-novice judgement (e.g., Ettenson, Shanteau, Krogstad, 1987), it is incompatible with past research reporting differences (e.g., Ashton, 1974; Einhorn, 1974; Shanteau, 1992). As Brehmer (1980) points out, few differences may emerge between more and less experienced individuals because the task does not allow them to learn. Indeed, in the magistrates' remand decision making task, it is not clear what is the relevant information, and magistrates do not have any formal outcome feedback enabling them to learn the predictive validities of the cues.

In line with past criminological research (Bottomley, 1970), magistrates from metropolitan courts in the present study made significantly more punitive decisions than magistrates from provincial courts, and they attached a greater number of conditions to bail. In addition, they disagreed significantly more often from the modal response. There were however, no significant differences between magistrates from metropolitan and provincial courts in terms of consistency, post-decisional confidence, the mean number of cues used, the type of cues used, and the concordance between explicit and implicit policies. Criminologists have tended to explain the differences in the remand decision making practices of metropolitan and provincial courts in terms of differences in the characteristics of the cases presented (Bottomley, 1970). This explanation does not hold here as all magistrates were presented with the same cases.

In the present study, the courts were randomly sampled and so the findings may be considered to generalise to the magistracy as a whole. Past criminological research has aggregated the decisions made by different magistrates which may hide differences. Indeed, there were individual differences among magistrates on all of the issues investigated in the present study. The idiographic approach proposed by SJT (Hammond et al., 1975) is useful because it helped identify the characteristics of magistrates who require different types of training, rather than providing blanket training, and so is also cost efficient.

3.4.3. Limitations of present study. Some of the specific limitations of the present study have already been discussed above, and further research was proposed. More generally, the present study may be considered to be limited by the nature of the judgement task used to collect the data, and by the nature with which magistrates' decisions were analysed.

In past studies on fast and frugal heuristics, researchers have precisely defined a reference class, and randomly sampled stimuli from that population (e.g., Gigerenzer & Goldstein, 1996). The internal and external validity of the findings of the present study may be threatened by the fact that magistrates made remand decisions on hypothetical cases constructed through a systematic, fractional factorial design (Ebbesen & Konecni, 1980). The judgement task presented to magistrates may not have been representative in terms of the number of cues manipulated, the distribution of the cue values, and the inter-cue correlations (Brunswik, 1955b, 1956). The simple heuristics approach is couched in the belief that psychological processes are adapted to the structure and demands of the task in which they function (Brunswik, 1952; Simon, 1956). There is empirical evidence to support this (e.g., Hammond et al., 1987; Payne et al., 1993). Although there is some evidence to suggest that judgement policies captured using unrepresentative stimuli differ from those captured using representative stimuli (see Ebbesen & Konecni, 1980), there is also evidence to suggest that there is no difference (see Brehmer & Brehmer, 1988). Unfortunately, little is known about the formal properties of the magistrates' remand decision making task, and so it is difficult to assess the degree to which the cases used in the present study were unrepresentative. The task analysis conducted for the study only focused on identifying the cues available to magistrates and their values. Research should be directed at detailing the nature of other formal properties of the task.

Although the hypothetical cases are rather scant in terms of the information provided, this is not considered to be a limitation as past criminological research has revealed that in the courtroom, magistrates are often presented with very few details. Hucklesby (1996) for example, found that in only a third of her sample of 1,524 cases did magistrates have any other information than that provided on the courtsheet. Another feature of the bail decision making task presented to magistrates was that the cues were presented in the same order on each case. In fact, there are no statutory rules of procedure for bail hearings in the magistrates' courts, so information may be presented in any order (Lydiate, 1987). This is not a limitation of the present study, as the cues that were manipulated tend to be presented in a specific order, as revealed by

the observations conducted in the task analysis. Finally, past research has pointed out that information on some cues may be unavailable on some cases. In the present study, there was no missing data on any of the cases. Therefore, it is unclear how magistrates would react in cases with missing information. The Bail Act 1976 stipulates that magistrates should temporarily remand defendants in custody in a situation where there is insufficient information on which to base an informed decision. Burrows (1994) found that stipendiary magistrates do adhere to this.

In the present study, the remand decisions made by individual lay magistrates were investigated. Although this is compatible with the idiographic approach espoused by SJT, often however, lay magistrates make decisions as a bench of two or three. Past research on fast and frugal heuristics has also focused solely on individual decision making. It is unclear how the use of fast and frugal heuristics generalises to decisions made by benches of magistrates. There is some empirical evidence to suggest that people use less cognitive effort, as indicated for example, by the number of cues they use, when under conditions of shared responsibility (Weldon & Gargano, 1985). Thus, it is likely that the bench may also be fast and frugal. However, this issue needs to be investigated.

The second study to be presented in the following chapter aimed to overcome some of the possible limitations of the present study.

4. STUDY TWO

4.1. Introduction

4.1.1. Background to present study. According to Brunswik (1956) the stimuli presented to participants in psychological studies should be representative in terms of cue number, values, inter-correlations, distributions and ecological validities, of the stimuli that they may encounter when confronted with the task outside the laboratory. This is because cognitive processes are adapted to the environments in which they function. Indeed, there is empirical evidence from the multiple cue probability learning paradigm showing that people can learn and respond to the structure of the task (see Klayman, 1988). There is also research demonstrating that the cognitive strategies which people use to perform a judgment task are suited to the demands of the task (e.g., Hammond et al., 1987; Payne et al., 1993). Brunswik (1955b, 1956) argued that the popular systematic design of research destroys the natural informational structure of the task. For example, in a factorial design few cues are used, inter-correlations are eliminated, and distributions of cue values are rectangular. Consequently, stimuli designed in a systematic way do not leave room for vicarious functioning (i.e., substitution of redundant cues), and so the findings may not generalise beyond the experiment (Brunswik, 1952, 1956). When researching vicarious functioning, Brunswik (1955b) argued that the experimenter “must resist the temptation...to interfere” with the environment (p. 198). He proposed that a representative design could be achieved by either probability or non-probability sampling of real stimuli from the environment (Brunswik, 1944, 1955b). Although SJT recognises the importance of representative design, Dhami et al. (in preparation) found that few studies using JA actually presented stimuli to participants with concern for its representativeness. Often, researchers compromised representativeness in order to collect and analyse data with practical ease. Moreover, this may threaten the internal and external validity of JA studies as some studies have found that participants demonstrate different patterns of judgement behaviour when faced with representative and unrepresentative stimuli (e.g., Ebbesen & Konecni, 1980).

There were a number of features of the design of study one that were adopted for their practical advantages, which may render the decision making task presented to magistrates as unrepresentative of the task they face in the courtroom. This may threaten the validity of the findings. First, although magistrates based their remand decisions on one cue, as captured by the fast and frugal Matching Heuristic, only nine cues were

studied. The task analysis had revealed that in fact a large variety of cues may be available to magistrates in the courtroom, and so in real life, they may attend to other cues. Second, information on the cues was available in each of the cases presented whereas past criminological research has documented the lack of information available in some cases (Burrows, 1994; Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996; Morgan, 1994; Morgan & Henderson, 1998; Zander, 1979). In particular, legal cues such as those referred to in the Bail Act 1976 have been found to be unavailable. Information is particularly sparse in those cases where the defence applies for bail and the prosecution do not object (e.g., Hucklesby, 1996). Third, although the distributions of the multi-categorical cues in study one were generally representative of the real world distributions of these cues, this was not true for the dichotomous cues. Fourth, any inter-correlations that may exist among the cues were eliminated in the cases. In fact, although past criminological research is based on real cases, there has not been any detailed report of the inter-correlations among the legal and extra-legal cues.

Another way in which study one differed from the past criminological research is that whereas the latter has based its analyses on decisions made by benches of magistrates, study one involved analyses of decisions made by individual magistrates. A study of decisions made by individual magistrates is suitable for stipendiary magistrates who normally work alone, and it may be considered suitable for lay magistrates too, who in theory, are allowed to make remand decisions alone. Nevertheless, in practice they often make remand decisions as a bench of two or three, and so a study of decisions made by individual lay magistrates may be considered inappropriate.

Past criminological studies have analysed the decisions made by benches at the level of the courts in which those benches sit. Critics may consider this court level of analysis as insensitive, and it may be argued that analysis should be conducted at the level of the bench. This however, is not feasible for two reasons. First, benches do not exist as stable groups because the same magistrates do not always sit together when making remand decisions. Rather, magistrates are constantly rotated so that at each sitting, they work with different magistrates. This is supposed to prevent groupthink (Skyrme, 1979). Second, often when a bench does make remand decisions, these may be too few to provide sufficient data for meaningful analysis. For instance, the observations during the task analysis revealed that one bench made 30 decisions. In study one, a comparison of cue use across individual courts was precluded by the fact that only a handful of magistrates were selected to participate from the courts that were

sampled. Instead, the cue use of magistrates from metropolitan and provincial courts was compared. It could be argued however, that the aggregation of magistrates from different metropolitan and provincial courts masked some real differences on factors such as the number and identity of cues used, and so it may be more meaningful to compare individual courts, as criminologists have done.

Past criminological research has revealed that magistrates make their remand decisions rapidly, within a few minutes (e.g., Doherty & East, 1985; Zander, 1979), which may be partly explained the fact that they are often faced with a heavy caseload, thus leading to implicit time pressure. The relationship between caseload and time pressure however, has not been examined. Past research has also not compared the time taken to make punitive and non-punitive remand decisions. According to the Bail Act 1976, defendants have a right to bail except in certain circumstances, where magistrates must decide whether conditional bail or a remand in custody is appropriate before deciding to grant unconditional bail. In this sense, it would be hypothesised that unconditional bail decisions would take longer to make than conditional bail or remand in custody decisions. Finally, one of the arguments in favour of the use of fast and frugal heuristics of human judgement rather than regression models, is that the former are more psychologically plausible, especially under certain task constraints such as time pressure (e.g., Rieskamp & Hoffrage, 1999). Although the Matching Heuristic proved descriptively and predictively valid for magistrates in study one, they were not explicitly placed under a condition of time pressure when completing the bail decision making task. It may be reasonable to hypothesise that the Matching Heuristic would prove an even better descriptor and predictor of magistrates' remand decisions when tested under the conditions of implicit time pressure faced in the courtroom.

The Bail Act 1976 affords magistrates considerable discretion as to how they make their remand decisions, and study one explored how magistrates exercised their discretion. Some features of the law however, seem to afford little discretion. For example, the Bail Act 1976 states that one of the eight grounds for denying bail to defendants accused or convicted of imprisonable offences such as theft, is if there has not been enough time to obtain sufficient information to inform a decision (part 1, Schedule 1, paragraphs 3 to 7 of the Bail Act 1976). Although the Act does not define the term "sufficient information", it would be interesting to investigate whether magistrates adhere to the law in cases where information is unavailable on legal and extra-legal cues.

In order to investigate the issues reviewed above, real cases will be sampled in the present study. Researchers using JA have used real cases either by sampling past cases from records (e.g., York, 1992) or present cases that are studied via observations (e.g., Gifford, 1994). In their studies, criminologists have collected data on decisions made on real cases from a number of sources such as courtroom observations (Doherty & East, 1985; East & Doherty, 1984; Eaton, 1987; Hucklesby, 1996, 1997a; Morgan, 1994; Zander, 1979), analyses of court registers (Brown & Hullin, 1993; Hood, 1992; Hucklesby, 1996, 1997a; Raine & Willson, 1994, 1995b) or criminal statistics (Jones, 1985). Each of these methods of data collection has its advantages and limitations. For instance, courtroom observations can be time consuming and cumbersome. The courtroom observations conducted for the task analysis in study one also indicated that observations are often limited to verbal and non-verbal information presented to magistrates in the courtroom. Therefore, researchers may not have access to the written information that is sometimes presented. For instance, although the prosecution may verbally state that the defendant has a previous conviction, the nature and seriousness of the conviction is likely to be made available to magistrates solely in written form. This is a limitation of Zander's (1979) study, where the student observers were observing from the public gallery. It is also a limitation of other criminological studies (e.g., Doherty & East, 1985; East & Doherty, 1984; Eaton, 1987; Hucklesby, 1996, 1997a; Morgan, 1994). Although Hucklesby (1996) collected data via courtroom observations, she buttressed this data with information from court registers.¹ The data collected from court registers and criminal statistics may however also be limited. This is because information may be missing or not recorded. Indeed, information may be included in the registers and statistics that may not have been made available to magistrates during the court hearing. This is also a limitation of other criminological studies (Brown & Hullin, 1993; Hood, 1992; Morgan, 1994; Raine & Willson, 1994, 1995b). Therefore, in the present study it was decided that data should be collected using courtroom observations where access is also gained to any written information available to magistrates.

4.1.2. Rationale for present study. One rationale for the second study presented in this thesis was to discover if the descriptive and predictive validity of the Matching Heuristic found in study one would generalise to remand decisions made by benches of magistrates on real cases. Another rationale was to conduct a more detailed and updated analysis since that provided by past criminological research, on the amount

¹ Hucklesby (1996) also conducted questionnaire and interview surveys of magistrates as well as other court participants.

of information available to magistrates during bail hearings, the inter-correlations that may exist among this information, the time taken for magistrates to make their remand decisions, and the similarities and differences in practices of individual courts. Finally, the present study was conducted to examine magistrates' adherence to another feature of the Bail Act 1976, namely that which states what decision magistrates should make when there is "insufficient" information.

4.1.3. Aims of present study. The main aims were to:

- (a) Identify the cues on which information is often unavailable in the courtroom during remand hearings.
- (b) Measure the inter-correlations among cues presented in the courtroom.
- (c) Examine the caseload and time taken to make remand decisions.
- (d) Compare the relative descriptive and predictive validity of two versions of the Matching Heuristic – one that grants bail when there is unavailable information on the last cue searched and one that either attaches conditions to bail or remands the defendant in custody in this situation.
- (e) Test the relative descriptive and predictive validity of the Matching Heuristic with Franklin's Rule and Dawes' Rule.
- (f) Examine magistrates' self-reported importance of cues with their cue use as captured by their model.
- (g) Compare the remand decision making practices of individual courts.

It is hypothesised that more punitive decisions will have taken longer to decide, and a greater caseload will be associated with more rapid decision making. A version of the Matching Heuristic where a punitive decision is made when information on the last cue searched is missing, is hypothesised to provide a better fit than a version where a non-punitive decision is made in this situation. Based on the findings of study one, it is hypothesised the Matching Heuristic will provide a better fit to judgement data than either Franklin's rule or Dawes' rule. It is also hypothesised that magistrates in a metropolitan court will make more punitive decisions, and attach more conditions to bail, than magistrates from a provincial court. It is hypothesised that magistrates will report extra-legal cues as being less important than legal cues.

4.2. Method

4.2.1. Gaining access and observation period. When conducting an observational study in the courtroom, data may be gathered without a need to gain official access because magistrates work in open court where the general public are

allowed to observe their decision making from the public gallery. However, this precludes access to any written information that may be made available to magistrates. Therefore, clerks to the justices in four adult magistrates' courts were contacted by letter. Two of the courts were located in the outer London area and two in the inner London area. The letter listed the aims of the study and explained the need to gain full access to all information available to magistrates. These clerks to the justices were selected because they had participated in the task analysis in study one and they had indicated that they would be willing to participate in further research.

One clerk did not reply and one stated that he was busy because the court Inspectorate would be evaluating the court during the planned period of the study. Two clerks agreed to allow full access to their courts, the magistrates and the court records. One court was in outer London (hereafter referred to as court A) and the other was in inner London (hereafter referred to as court B). Both courts had a number of courtrooms and observations were conducted in the courtrooms that dealt with bail hearings, as indicated by the clerks. There was one courtroom in court A that dealt with remand cases and two courtrooms in court B.²

Observations were made over a four month period from November 1997 to February 1998. Remand cases are usually dealt with in the morning court sessions and so observations were conducted in both courts from two to three mornings per week. On arriving at court, the observers went to the court ushers room to obtain a courtsheet which listed all of the cases appearing on that morning. A list of the magistrates sitting on the bench was also obtained. The duty solicitor working in court on that morning was also identified. Finally, where written information was provided to the magistrates, the observers asked either the court usher or the clerk for access to that information at the end of the morning observation session or during court breaks.

4.2.2. The observers. The observations were carried out by myself (observer 1) and a final year Psychology undergraduate student at City University (observer 2).³ Two observers were seen as being more preferable than one because although one observer may be consistent in conducting the observations, the observations may nevertheless be idiosyncratic. There were practical benefits as twice as much data can be collected in the same time by two observers.

² In court B, the remand cases were dealt with simultaneously in both courtrooms and so the observer chose to sit in the courtroom which had the greater number of remand cases scheduled on that morning. Sometimes, when proceedings were delayed in a courtroom or when magistrates retired for a break or to discuss matters, or when another type of case (not remand) was being dealt with, the observer asked the clerk how long he or she anticipated this to last, and then moved to the other courtroom to observe remand cases for that duration.

It was considered that court personnel and security would find it easier to become familiar with only one, rather than both observers attending court alternately. Thus, each observer was allocated to a court for the full duration of the data collection phase of the study. Observer 2 sat in court A and I (observer 1) conducted observations in court B because this required more organisation due to the need to switch between the two courtrooms dealing with remand cases.

In order to minimise observer effects, both observers assumed roles of other court participants. Observer 1 sat in the defence benches and observer 2 sat in the press bench. These assumed roles were compatible with both observers' outward appearances in terms of dress, and so magistrates were unlikely to have found anyone looking "out-of-place" in the courtroom. Moreover, throughout the duration of the observational study, it became clear from talking to the court ushers, that magistrates were largely unaware that they were being studied.

4.2.3. Observational coding scheme. Observational data was recorded using a structured observational coding scheme that was developed specifically for the present study. Development of the coding scheme was informed by the task analysis conducted for study one (see the Method section in Chapter 3). In particular, the information gleaned from the 35 observations was useful. In addition, a coding scheme used by Hood (1992, Appendix 1), for abstracting information from court records in a study on sentencing in the magistrates' court, was used as a guide for developing the coding scheme used in the present study.

The scheme was piloted by both observers on 15 bail hearings observed over a one week period in October 1997, in an outer London court that did not participate in the data collection phase of the present study. This pilot test resulted in some variables being excluded, others added, codes of variables being altered and variables being reorganised to facilitate rapid recording of data. Moreover, the pilot test enabled observers to familiarise themselves with the coding scheme and the task of observation.

A copy of the coding scheme is provided in Appendix E. The scheme was divided into five sections. The scheme enabled recording of verbal, non-verbal and written information available to magistrates during the bail hearing which will be listed below, their remand decision (including the conditions attached to bail), information about characteristics of the bench making the decisions such as its lay and stipendiary component, its gender make-up and its visible ethnic make-up. In addition, the identities of the individual magistrates making up the bench were noted so that at some later

³ I am very grateful to Michelle Gates who helped me collect the data for the present study.

point, the court clerk could provide information regarding their years of experience on the bench. The coding scheme also allowed collection of other information such as whether the magistrates sought information from the court (i.e., the defendant, prosecution and defence), whether they sought help from the clerk, how the decision was communicated to the defendant, and whether reasons for the decision were given in open court.

Altogether, there were 25 information variables or cues that could be considered by magistrates when making their remand decisions, and that can be referred to as predictors when modelling magistrates' remand decision making policies. These cues are listed in the first column of Table 4.1. The cues can be divided into those referring to the personal characteristics of the defendant, the offence the defendant is charged with (e.g., whether there was an identifiable victim involved), the defendant's previous record (e.g., whether he or she has any previous convictions) and the remand hearing (e.g., whether the defendant is legally represented).

4.2.4. Timing remand decisions. In addition to the information gathered using the coding scheme, the observers also recorded the duration of bail hearings using a stop watch. These were standard stop watches provided by the university. Timing began as soon as the case was called by the court clerk. At this point, magistrates usually turn to the case number on their courtsheet for information about the case and then to the defendant as he or she enters the courtroom.

The method of time keeping used in the present study excluded the time taken by magistrates when they retired from the courtroom to discuss the case in more detail. It was clear from interviews with magistrates in the task analysis for study one that when magistrates retire in the backroom, they may discuss matters unrelated to the case and they may take a "tea-break." Thus, including this time would not yield a reliable or valid measure of the time taken to make a decision.

Table 4.1. Observed cues, their values and distributions in courts A and B

Cues	Values*	Distribution in frequency (%)	
		Court A (<i>N</i> = 159)	Court B (<i>N</i> = 183)
Is defendant present in court? (defcourt)	(1) Yes	128 (80.50)	171 (93.44)
	(2) No	31 (19.50)	12 (6.56)
Age of defendant (agedef)	(1) Young offender	28 (17.61)	28 (15.30)
	(2) Adult offender	131 (82.39)	155 (84.70)
Gender of defendant (sexdef)	(1) Male	143 (89.93)	164 (89.62)
	(2) Female	16 (10.06)	19 (10.38)
Race of defendant (racedef)	(1) White	109 (68.55)	66 (36.07)
	(1) Ethnic minority Unavailable	19 (11.95) 31 (19.50)	105 (57.38) 12 (6.56)
Is defendant represented by defence (defrep)	(1) No	37 (23.27)	17 (9.29)
	(2) Yes	121 (76.10)	166 (90.71)
	Unavailable	1 (0.63)	--
Prosecution	(1) Crown prosecution service	159 (100)	180 (98.36)

(pros)	(2) Other	--	3 (1.64)
Seriousness of offence (soffence)	(1) Summary	45 (28.30)	40 (21.86)
	(2) Triable-eitherway/ indictable	113 (71.07)	143 (78.14)
	Unavailable	1 (0.63)	--
Category of offence (coffence)	(1) Against person	39 (24.53)	74 (40.44)
	(2) Against property	72 (45.28)	54 (29.51)
	(3) Other	47 (29.56)	55 (30.05)
	Unavailable	1 (0.63)	--
Number of offences (noffence)	(1) 1	80 (50.31)	83 (45.36)
	(2) 2+	78 (49.06)	100 (54.64)
	Unavailable	1 (0.63)	--
Victim (victim)	(1) No victim	60 (37.74)	58 (31.69)
	(2) Victim	98 (61.64)	125 (68.31)
	Unavailable	1 (0.63)	--
Is defendant solely involved in offence? (sole)	(1) Yes	124 (77.99)	135 (73.77)
	(2) No	35 (22.01)	48 (26.23)
Plea (plea)	(1) Guilty	44 (27.67)	22 (12.02)
	(2) Not guilty	33 (20.75)	51 (27.87)
	(3) No plea	82 (51.57)	110 (60.11)
Previous convictions	(1) None	7 (4.40)	15 (8.20)

(prevconv)	(2) Yes, similar	27 (16.98)	24 (13.11)
	(3) Yes, dissimilar	8 (5.03)	8 (4.37)
	Unavailable	117 (73.58)	136 (74.32)
Circumstances of adjournment (circums)	(1) Trial	120 (75.47)	149 (81.41)
	(2) Other	39 (24.52)	34 (18.58)
Adjournment requested by whom? (adjreq)	(1) Defence	68 (42.77)	63 (34.43)
	(2) Prosecution	32 (20.13)	33 (18.03)
	(3) Court	59 (37.11)	87 (47.54)
Length of adjournment requested (lenadj)	(1) 1 week	1 (0.63)	1 (0.55)
	(2) 2 weeks	--	4 (2.19)
	(3) 3 weeks	36 (22.64)	21 (11.48)
	(4) 4 weeks	--	--
	(5) 5 weeks	122 (76.73)	150 (81.97)
	(6) 6 weeks	--	1 (0.55)
	Unavailable	--	6 (3.28)
Number of previous adjournments (nprevadj)	(1) 0-1	70 (44.03)	109 (59.56)
	(2) 2+	71 (44.65)	68 (37.16)
	Unavailable	18 (11.32)	6 (3.28)
Prosecution request (proseq)	(1) Don't oppose bail	125 (78.62)	149 (81.42)
	(2) Ask for conditions/oppose bail	34 (21.38)	34 (18.58)

Defence request (defreq)	(1) Unconditional bail	23 (14.47)	21 (11.48)
	(2) Conditional bail	20 (12.58)	33 (18.03)
	(3) No application for bail	116 (72.96)	128 (69.95)
	Unavailable	--	1 (0.55)
Previous court remand decision (prevdec)	(1) None/ unconditional bail	100 (62.89)	106 (57.92)
	(2) Conditional bail/remand in custody	55 (34.59)	74 (40.44)
	Unavailable	4 (2.52)	3 (1.64)
Police remand decision (polbail)	(1) Unconditional bail	33 (20.75)	29 (15.85)
	(2) Conditional bail/remand in custody	25 (15.72)	18 (9.84)
	Unavailable	101 (63.52)	136 (74.32)
Bail record (bailrec)	(1) None/good	14 (8.81)	8 (4.37)
	(2) Poor	20 (12.58)	30 (16.39)
	Unavailable	125 (78.62)	145 (79.23)
Strength of prosecution case (proscase)	(1) Strong	98 (61.64)	75 (40.98)
	(2) Weak	--	18 (9.84)
	Unavailable	61 (38.36)	90 (49.18)
Maximum penalty (maxpen)	(1) Custodial	153 (96.23)	173 (94.54)
	(2) Non-custodial	3 (1.89)	8 (4.37)
	Unavailable	3 (1.89)	2 (1.09)
Strength of community ties	(1) Strong	153 (96.23)	163 (89.07)

(comities)	(2) Weak	5 (3.14)	16 (8.74)
	Unavailable	1 (0.63)	4 (2.19)

Note: Some of the cues were simplified for ease of analysis and their simplified form is presented in this table. Their original values can be found in the coding scheme in Appendix E. Unavailable information refers to cases where the information was not made available to magistrates, and so should not be confused with the idea that observers failed to record the data.

4.2.5. Inter-observer reliability. The reliability of the observations was also assessed. It is impossible to evaluate intra-observer reliability because the same cases would not be presented twice. Although it is not uncommon for more than one remand decision to be made on a defendant's case as it progresses, it is likely that different information is available to magistrates on each reappearance, and so the case is not considered identical.

It was however, feasible to assess inter-observer reliability. This measures the extent to which the two observers made the same observations when observing the same case. This is particularly valuable when observations are conducted over a long period of time. Inter-observer reliability was assessed over a two week period in the middle of the data collection phase of the present study. Both observers made observations on two days in court A in one week and two days in court B in the other week. (Both made observations from the press bench in court A and the defence benches in court B.) Altogether 26 cases were observed (i.e., 8 in court A and 18 in court B). Inter-observer reliability was measured for a subset (i.e., 11) of the variables contained in the coding scheme, plus the timing of the remand decision. The 11 variables were: observed race of magistrates, *racedef*, *sole*, *circums*, *prosreq*, *defreq*, *comties*, *bailrec*, *victim*, whether the bench sought information from the court, and whether the bench sought help from the clerk. While piloting the coding scheme it was evident that these variables may be particularly prone to subjectivity in observation.

Inter-observer reliability was computed on the variables as they were originally coded as shown in Appendix E. Bakeman and Gottman (1986) recommend using Cohen's Kappa as a measure of reliability.⁴ This corrects for chance agreement. For the observed race of magistrates, Kappa = 1, indicating perfect agreement in the observations made by the two observers. Both were coding the race of magistrates based on visible race. For *racedef* however, Kappa = 0.38. This was because observer 1 was coding the race of defendants by their names while observer 2 based the coding on visible race. The latter method was deemed more reliable and so observer 1's previous observations were re-coded (this was not difficult as observer 1 had also noted the visible race of the defendant). There was poor inter-observer agreement for *victim* (Kappa = -0.44). Observer 2 coded an offence against a shop or business as one where a victim was involved while observer 1 only coded a victim if a named person was

⁴ Fleiss (1981) has proposed some rules of thumb when interpreting the value of Kappa. A value of 0.40 to 0.60 is "fair agreement", 0.60 to 0.75 is "good agreement" and a value of 0.75 or above is "excellent agreement".

involved. Due to the fact that crimes against businesses are often viewed as victimless crimes (Nelken, 1994), observer 1's coding method was adopted and observer 2's past observations were re-coded appropriately. This was not difficult because the courtsheets contained information regarding the victim. There was perfect agreement for the observations of sole (Kappa = 1) and for prosreq (Kappa = 1). Kappa = 0.86 for circums, Kappa = 0.85 defreq, and Kappa = 0.86 for bailrec, thus indicating excellent agreement on these variables. Agreement for observed comties was considered separately for the defendant's employment (Kappa = 0.37), marital status (Kappa = 0.78), children (Kappa = 1), and residence (Kappa = 0.24). The poor agreement found on the latter was due to observer 1 not listing the address on the courtsheet as a fixed address, while observer 2 did. A court clerk confirmed that magistrates consider this to be a fixed address, and so observer 1's past observations were re-coded appropriately. Finally, agreement was good for observations of whether the bench sought information from the court (Kappa = 0.72) and it was excellent for observations of whether the bench sought help from the clerk (Kappa = 0.78).

The inter-observer reliability of the recorded duration of the remand decisions was also assessed. There was a significant Pearson's correlation of 0.98 (1-tailed $p < 0.025$, $N = 26$) between the duration of the remand decision as recorded by observer 1 and as recorded by observer 2.

4.2.6. Follow-up questionnaire. After the observational study was complete, the magistrates who had been observed were individually sent a one page questionnaire. The questionnaire asked them to list the information that they regarded as important when making their remand decisions. A covering letter was included. This told magistrates that an observational study had been conducted in their courtrooms as approved by the court clerk, and that the study investigated cue use in remand decision making. The letter asked if they could provide further information on this matter. The questionnaires were sent via the internal mail system of both courts.

4.3. Analysis and Results⁵

4.3.1. Unavailable information. In court A, 159 remand decisions were observed and in court B, 183 remand decisions were observed. It is evident from the third and fourth columns of Table 4.1 that in some cases information was unavailable to magistrates on 16 of the 25 cues. In particular, details of any previous convictions were unavailable in three quarters of the cases in both courts. Magistrates had no knowledge

⁵ Note that the level of significance for 2-tailed tests was 0.05 and 0.025 for 1-tailed tests.

of the police remand decision in two thirds of the cases in court A, and in three quarters of the cases in court B. In both courts, magistrates were not presented with any information regarding the defendant's bail record in fourth fifths of the cases. There was no indication of the strength of the prosecution evidence against the defendant in a little over a third of the cases in court A, and in nearly half of the cases in court B. Finally, in a minority of cases in both courts, magistrates did not have any information regarding the maximum sentence that the defendant may face if convicted, the strength of the defendant's community ties, the number of previous adjournments in the case and the previous court remand decision. In fact, in one case in court A, no details of the offence (its seriousness, nature and number) and the victim were available to magistrates. This was probably due to the fact that the case was not listed on their courtsheet, and magistrates rely heavily on the courtsheet for such information about the case.

4.3.2. Inter-cue correlations. The inter-correlations among the 25 cues were computed separately for court A and B. The inter-correlations among the 20 binary cues were measured using the phi coefficient. Kendall's tau-b was then used to measure the correlations among these cues and the two ordinal cues. Finally, multiple linear regression was used to measure the correlations among the above cues and the three nominal cues that were dummy coded for analysis. Only first order correlations were examined and this procedure yielded a 25 x 25 correlation matrix for each court. Only 73 of the coefficients in court A and 58 in court B were statistically significant (2-tailed $p < 0.05$). These correlations are listed in Appendix F. In court A, the inter-cue correlations ranged from -0.95 to 0.71 ($M = 0.16$, $SD = 0.27$) and in court B, the inter-cue correlations ranged from -0.91 to 0.83 ($M = 0.07$, $SD = 0.26$). Therefore, the cues studied may be considered relatively independent.

4.3.3. The decision makers. In court A, the decisions were made by 25 lay benches, comprising a combination of 55 lay magistrates. In court B, the decisions were made by 32 lay benches, comprising a combination of 55 lay magistrates, and one stipendiary bench (the stipendiary magistrate made 26 of the observed decisions). In court A, all of the benches comprised a combination of white males and females. In court B, there were 25 benches comprising all white magistrates, two benches were made up of white and Asian magistrates, two benches comprised white and black magistrates, and three benches were made up of white, Asian and black magistrates.⁶ In terms of the gender composition of the benches, in court A, all 25 benches comprised a combination of males and female. In court B, 26 benches were made up of a mix of

⁶ These figures refer to magistrates' visible race.

males and females, and there were three all male and three all female benches. Finally, an independent samples *t*-test revealed no significant differences in the experience of lay magistrates sitting in court A ($M = 10.14$, $SD = 7.75$) and in court B ($M = 9.52$, $SD = 7.26$) ($t[107] = -0.43$, 2-tailed $p > 0.05$).⁷

4.3.4. Remand decisions made. In court A, magistrates granted unconditional bail in 59.12% of the 159 observed decisions. They attached conditions to bail in 18.24% of cases, and remanded the defendant in custody in 22.64% of cases. In court B, 45.90% of the 183 cases were granted unconditional bail. Conditions were attached to bail in 30.10% of cases, and 24.00% of cases were remanded in custody. A Chi-Square analysis revealed that the type of decision made was non-independent of court ($\chi^2[2, N = 342] = 7.76$, 1-tailed $p < 0.025$).

4.3.5. Conditions attached to bail. Of the cases granted conditional bail, magistrates in court A attached 1.96 conditions on average. One condition was attached in 28.57% of cases, two were attached in 46.43% of cases, and three conditions were attached in 25.00% of cases. In court B, magistrates attached 2.02 conditions on average. One condition was attached in 40.00% of cases, two were attached in 30.91% of cases, three were attached in 20.00% of cases, four were attached in 7.27% of cases and six were attached in one case. An independent samples *t*-test revealed no significant differences in the mean number of conditions imposed by the two courts ($t[81] = -0.23$, 1-tailed $p > 0.025$).

Magistrates in both courts attached a small variety of conditions to bail. Figures 4.1a and 4.1b show how often each type of condition was attached to bail in cases granted conditional bail by courts A and B, respectively. (For ease of comparison the conditions are placed in the same order in both pies.) The “other” category of bail conditions included conditions such as a driving ban.

⁷ This excludes the stipendiary magistrate who had worked as a full-time stipendiary for one year. Stipendiary magistrates have usually worked on a part-time basis for two years, before attaining full-time status.

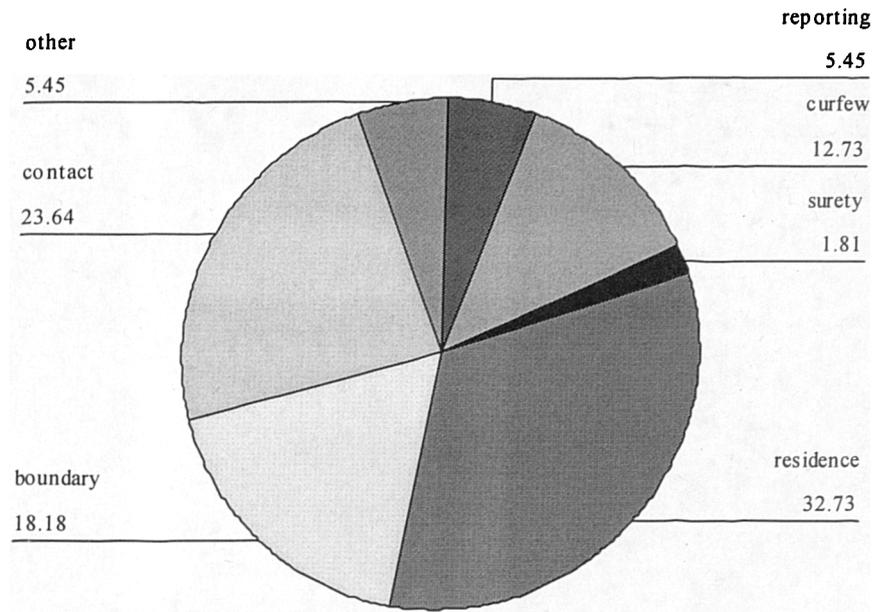


Figure 4.1a. Percentage of cases granted conditional bail in which each type of condition was imposed by court A

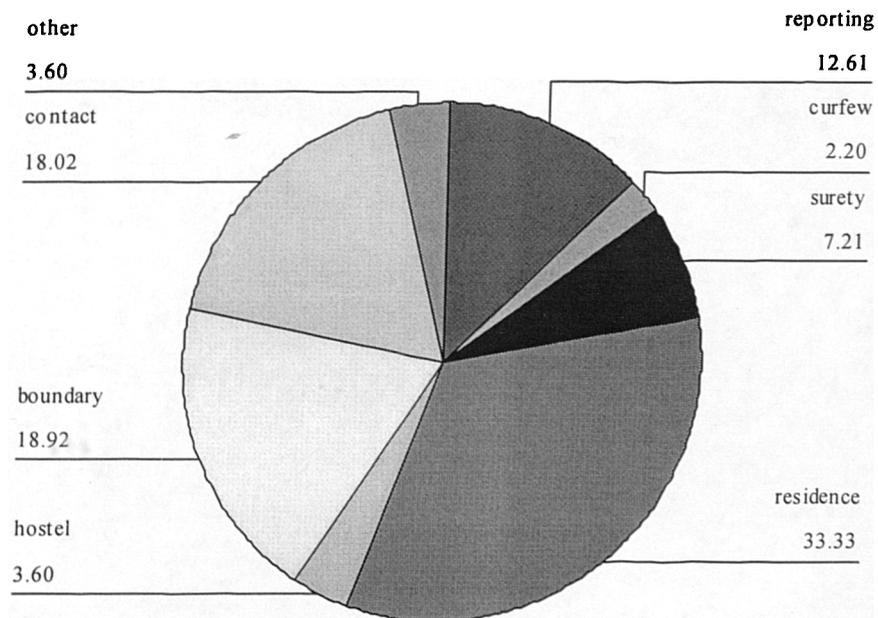


Figure 4.1b. Percentage of cases granted conditional bail in which each type of condition was imposed by court B

4.3.6. Duration of remand decisions. Magistrates retired to the backroom in 22.22% ($N = 135$) of the cases observed in court A, and in 24.59% ($N = 183$) of the cases observed in court B. A Chi-Square analysis revealed that the number of cases in which magistrates retired and the court were independent ($\chi^2[1, N = 318] = 0.24$, 2-tailed $p > 0.05$). The time taken to reach a decision in court A ranged from 50 seconds to 27 minutes ($M = 6.67$, $SD = 5.98$, $N = 131$).⁸ In court B, the duration of decisions ranged from 1 minute to 62 minutes ($M = 9.54$, $SD = 8.39$, $N = 183$). There was a significant difference between the two courts in terms of the duration of the decisions made ($t[312] = -3.54$, 2-tailed $p < 0.05$).⁹ A paired samples t -test revealed that in court A, the mean time taken to make a remand decision was significantly longer for the cases in which magistrates retired ($M = 12.77$, $SD = 8.07$) than cases in which magistrates did not retire ($M = 4.65$, $SD = 3.37$) ($t[25] = 4.97$, 2-tailed $p < 0.05$).¹⁰ The cases in which magistrates retired in court B also took significantly longer to decide on ($M = 16.87$, $SD = 12.19$) than the cases in which magistrates did not retire ($M = 7.11$, $SD = 5.44$) ($t[44] = 5.39$, 2-tailed $p < 0.05$).

There was a significant Kendall's tau-b correlation of 0.25 between the remand decision made and the time taken to make the decision in court A (1-tailed $p < 0.025$, $N = 131$). In court B, the correlation between these two variables was 0.27 (1-tailed $p < 0.025$, $N = 182$). Finally, there was no significant correlation between the caseload on the days observed and the mean duration of decisions made on those days, for court A ($r = -0.61$, 1-tailed $p > 0.025$, $N = 25$), and for court B ($r = 0.09$, 1-tailed $p > 0.025$, $N = 32$).¹¹

4.3.7. Development of Franklin's rule, Dawes' rule and the Matching Heuristic. The three models were constructed for court A and court B, separately. A detailed description of how Franklin's rule, Dawes' rule and the Matching Heuristic are constructed was provided in study one (see the Analysis and Results section of Chapter 3), and so those details will not be reiterated here. There are some details of the modelling procedure however, that do differ, and these will be discussed below.

The total number of bail hearings observed in each court were divided into a "holdout set" of 60 randomly selected cases and a "modelling set" consisting of the

⁸ The duration was not recorded in 28 of the cases observed in court A because observer 2 forgot to take the stop watch to court.

⁹ A Levene's test for homogeneity of variance was significant ($p < 0.05$) and so the t -test based on unequal variances was used.

¹⁰ A paired samples t -test was used because benches of magistrates retired during some cases and in other cases they reached a decision without retiring. The two groups of cases could therefore not be considered independent.

¹¹ Caseload was determined from the list of cases on the courtsheets.

remaining cases (i.e., the modelling set in court A = 99 cases, and in court B the modelling set = 123 cases). The models were constructed on the modelling set, and were then used to predict magistrates' decisions made on the holdout set. This procedure thus provided a measure of the relative descriptive and predictive validity of the three models, respectively. In order to avoid selecting a peculiar sample of cases for either the holdout or modelling set, and rather than only testing the models once, the cases were divided up 10 times and so the models were tested 10 times. Each time, a new set of 60 cases was randomly selected from the total number of cases observed in each court, thus leaving a new modelling set of cases too. Therefore, the models were compared by analysing their mean fits across the 10 tests.

As in study one, the remand decision was simplified into a binary decision, where conditional bail and remand in custody together represented a punitive decision and unconditional bail represented a non-punitive decision. The 25 cues shown in Table 4.1 were also simplified for ease of analysis. (The simplified values are shown in the second column of Table 4.1 and the original values are shown in the coding scheme in Appendix E.) These simplifications were based on the results of the task analysis conducted for study one. As in study one, the three models were constructed so that they aimed to predict a punitive decision and would only predict a non-punitive decision by default, because this is the procedure followed by the legislation and guidelines governing remand decision making.

4.3.8. The Matching Heuristic and insufficient information. Before comparing the mean fit of the three models however, magistrates' compliance with the Bail Act 1976's statement that in cases where there is insufficient information, a defendant should be remanded in custody (until sufficient information is gathered), was examined using the Matching Heuristic. Does a Matching Heuristic that makes a punitive decision when the critical value of the last cue being searched is unavailable on a case (hereafter referred to as unavailable = punitive) prove a better descriptor and predictor of magistrates' remand decisions, than a version of the Matching Heuristic that makes a non-punitive decision in this situation (hereafter referred to as unavailable = non-punitive)? Figure 4.2 illustrates the Matching Heuristic (unavailable = punitive).

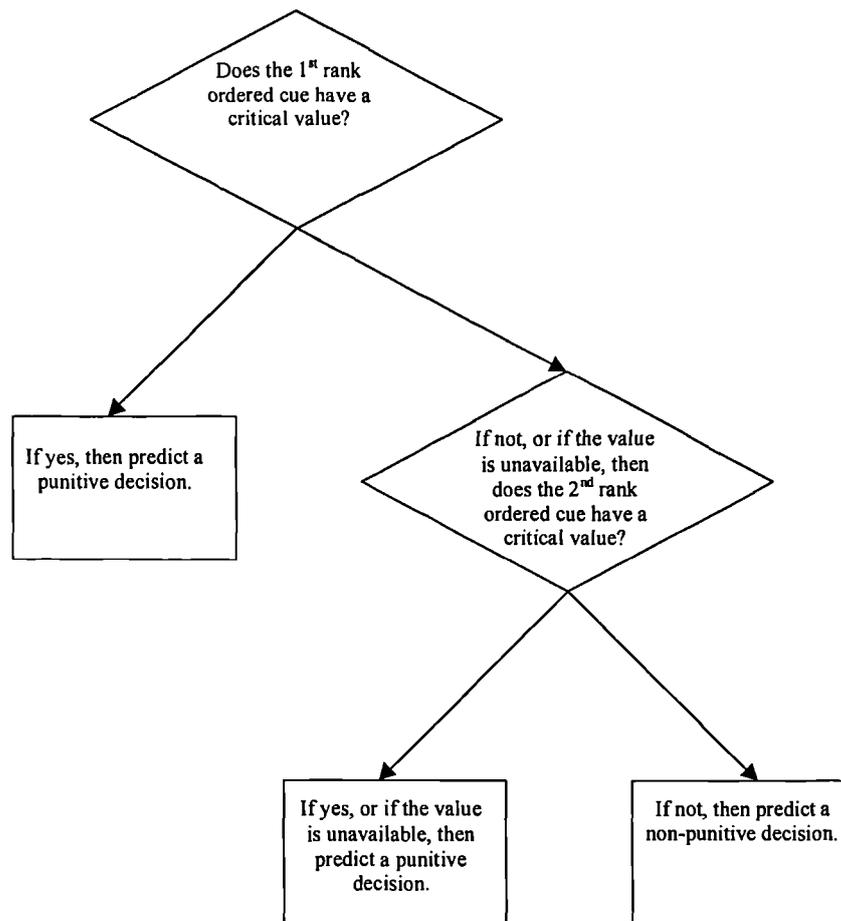


Figure 4.2. Matching Heuristic that makes a punitive decision when there is insufficient information ($K = 2$)

Tables 4.2a and 4.2b present the results of the mean fit of the two versions of the Matching Heuristic on the modelling and holdout sets for courts A and B, respectively. Tests of significance were not computed because there were only 10 data points for each version. It can be seen that for court A, there was no difference between the two versions of the Matching Heuristic in terms of mean fit overall decisions (i.e., unconditional bail, conditional bail and remand in custody) on the modelling set over the 10 tests. An analysis of the mean overall fit on the holdout set however, indicates that the Matching Heuristic (unavailable = non-punitive) correctly predicted slightly more decisions. Therefore, this version was chosen to be tested against Franklin's rule and Dawes' rule for court A. In court B, the Matching Heuristic (unavailable = punitive) provided the best mean overall fit on both the modelling and holdout sets, and so this version was chosen to be tested against Franklin's rule and Dawes' rule for court B.

	Unavailable = punitive <i>M (SD)</i> for 10 tests	Unavailable = non-punitive <i>M (SD)</i> for 10 tests
Modelling set:		
Maximum cues searched (<i>K</i>)	2.90 cues (0.57)	3.00 cues (0.67)
Cues used	2.27 cues (0.44)	2.37 cues (0.53)
Overall fit	95.38% (2.50)	95.38% (1.56)
Fit on non-punitive decisions	93.49% (3.19)	92.52% (2.18)
Fit on punitive decisions	97.85% (4.17)	99.46% (1.71)
Holdout set:		
Cues used	2.34 cues (0.36)	2.35 cues (0.45)
Overall fit	90.76% (10.07)	91.77% (3.59)
Fit on non-punitive decisions	85.48% (16.65)	88.97% (5.07)
Fit on punitive decisions	98.81% (2.06)	95.22% (8.15)

Table 4.2a. Mean fit and cues used by two versions of Matching Heuristic for insufficient information in court A

	Unavailable = punitive <i>M (SD)</i> for 10 tests	Unavailable = non-punitive <i>M (SD)</i> for 10 tests
Modelling set:		
Maximum cues searched (<i>K</i>)	2.90 cues (0.57)	2.80 cues (0.42)
Cues used	2.29 cues (0.50)	2.03 cues (0.43)
Overall fit	95.87% (1.83)	91.63% (12.76)
Fit on non-punitive decisions	95.11% (2.67)	86.12% (28.86)
Fit on punitive decisions	96.54% (2.77)	95.50% (1.53)
Holdout set:		
Cues used	2.28 cues (0.32)	1.91 cues (0.29)
Overall fit	86.59% (18.12)	85.38% (22.12)
Fit on non-punitive decisions	84.59% (29.27)	77.89% (37.08)
Fit on punitive decisions	88.49% (22.29)	92.94% (8.82)

Table 4.2b. Mean fit and cues used by two versions of Matching Heuristic for insufficient information in court B

4.3.9. Relative descriptive and predictive validity of Franklin’s rule, Dawes’ rule and the Matching Heuristic. The Matching Heuristic provided a better fit than the other two models, for both courts on each of the 10 tests on the modelling set, and it provided the best fit for 7 out of 10 tests on the holdout set. Figures 4.3a and 4.3b show the mean overall fit of the three models over the 10 tests for court A and B, respectively. (Note that the boxplots show the median.) Tests of significance were not computed because there were only 10 data points for each model. For both courts, it can be seen that all three models have a reduced mean overall fit on the holdout set compared to the modelling set. This is because the models fit the idiosyncrasies of the cases in the modelling set, which are not in the holdout set. As would be expected, the shrinkage is greater for Franklin’s rule, followed by Dawes’ rule, and is least for the Matching Heuristic.

For court A, the Matching Heuristic (unavailable = non-punitive) correctly predicted on average 95.38% ($SD = 1.56$) of the overall decisions on the modelling set over the 10 tests. This was greater than the performance of either Dawes’ rule ($M =$

84.75%, $SD = 2.49$) or Franklin's rule ($M = 89.13\%$, $SD = 3.23$) on the modelling set. On average, the Matching Heuristic was also better able to correctly predict overall decisions on the holdout set ($M = 91.77\%$, $SD = 3.59$) than either Dawes' rule ($M = 84.75\%$, $SD = 2.49$) or Franklin's rule ($M = 80.38\%$, $SD = 3.06$).

For court B, the Matching Heuristic (unavailable = punitive) achieved a mean overall fit of 95.87% ($SD = 1.83$) over the 10 tests on the modelling set, compared to a mean overall fit of 77.61% ($SD = 2.90$) for Dawes' rule and 82.29% ($SD = 3.80$) for Franklin's rule. On the holdout set, the Matching Heuristic achieved a mean overall fit of 85.59% ($SD = 18.12$), which was greater than either Dawes' rule ($M = 70\%$, $SD = 3.87$) or Franklin's rule ($M = 73.41\%$, $SD = 4.88$). Thus, for both courts, the Matching Heuristic demonstrated greater descriptive and predictive validity than either Franklin's rule or Dawes' rule.

When comparing the fit of the models on the non-punitive decisions alone, it was found that for court A, the Matching Heuristic ($M = 92.52\%$, $SD = 2.18$) provided a better fit than either Franklin's rule ($M = 86.41\%$, $SD = 5.16$) or Dawes' rule ($M = 81.95\%$, $SD = 4.50$). In fact, the Matching Heuristic ($M = 99.46\%$, $SD = 1.71$) also did better than Franklin's rule ($M = 93.48\%$, $SD = 4.25$) and Dawes' rule ($M = 89.06\%$, $SD = 4.82$) at fitting the punitive decisions. The same pattern emerged for court B. The Matching Heuristic ($M = 95.12\%$, $SD = 2.67$), fitted the non-punitive decisions better than did either Franklin's rule ($M = 87.34\%$, $SD = 2.15$) or Dawes' rule ($M = 80.30\%$, $SD = 7.13$), and the Matching Heuristic ($M = 96.54\%$, $SD = 2.77$) also fitted the punitive decisions better than did Franklin's rule ($M = 78.34\%$, $SD = 6.67$) or Dawes' rule ($M = 75.45\%$, $SD = 6.27$).

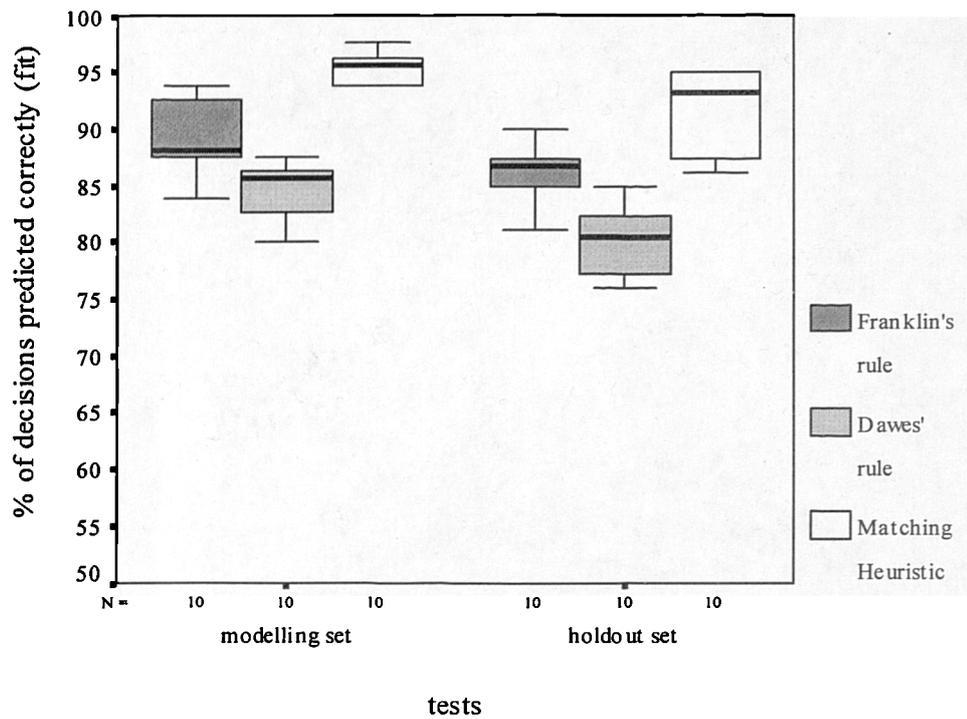


Figure 4.3a. Overall fit of Franklin's rule, Dawes' rule and Matching Heuristic on modelling set and holdout set for court A

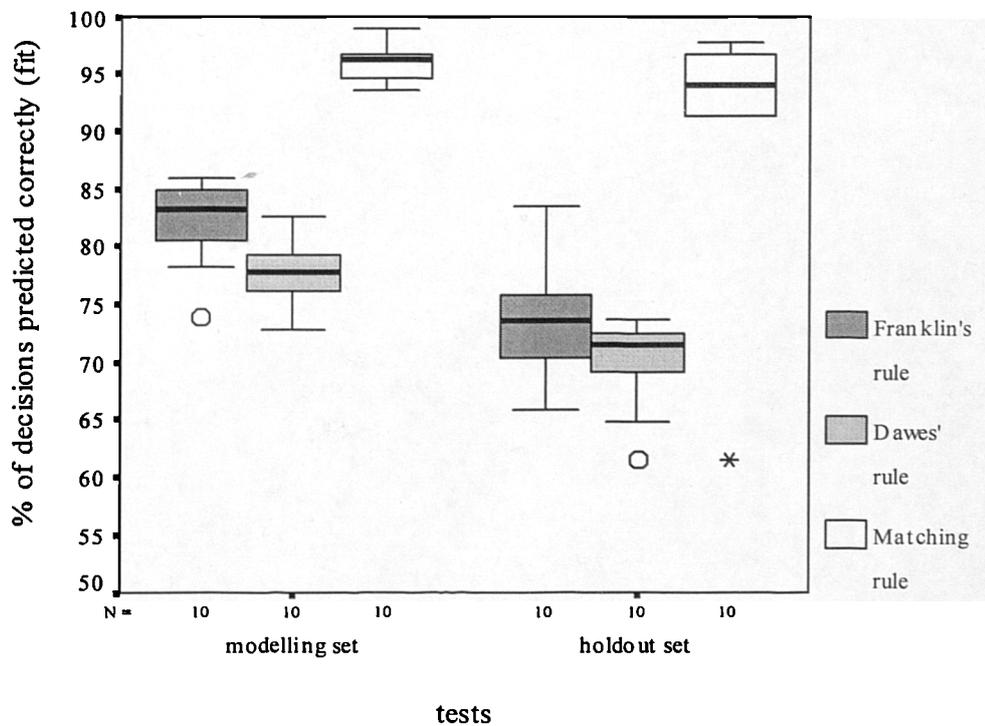


Figure 4.3b. Overall fit of Franklin's rule, Dawes' rule and Matching Heuristic on modelling set and holdout set for court B

4.3.10. Cue use. The maximum number of cues searched (K), the number of cues used, and the rank order of cues differed across the 10 tests of the Matching Heuristic. (The rank order of cues is affected by the properties of the modelling data set, which changed over each test.) The test of the Matching Heuristic where K was close to the mean K over the 10 tests, and that yielded a fit closest to the mean overall fit on the training set was selected to illustrate cue usage. Alternatively, a Matching Heuristic that yielded a fit close to the mean overall fit on the holdout set could have been chosen, one that had the highest overall fit on the holdout or modelling set could have been chosen, or one could have been chosen randomly. Figures 4.4a and 4.4b illustrate the Matching Heuristic models for courts A and B, respectively.

For court A, the Matching Heuristic (unavailable = non-punitive) on test two was chosen. Here, $K = 3$ and the following cues: *prosreq*, *prevdec* and *polbail*, were searched and used in that order. The mean overall fit on the modelling set was 96.25% ($M = 93.75\%$ fit for non-punitive decisions and $M = 100\%$ fit for punitive decisions). The mean number of cues used was 2.40. On the holdout set, the mean overall fit was 94.94% ($M = 91.84\%$ fit for the non-punitive decisions and $M = 100\%$ fit for the punitive decisions), and the mean number of cues used was 2.42. Information on *prosreq* was available on all of the 159 cases in court A, but it was unavailable on *prevdec* for 4 cases and *polbail* for 101 cases. As can be seen in Appendix F, the three cues in Figure 4.4.a were statistically significantly correlated with each other and with cues not included in the model, to varying degrees. The mean size of the correlation was however, only 0.31.

For court B, the Matching Heuristic (unavailable = punitive) on test eight was chosen. Here, $K = 3$ and the following cues: *prevconv*, *polbail* and *prevdec* were searched and used in that order. The mean overall fit on the modelling set was 95.65% ($M = 95\%$ fit for non-punitive decisions and $M = 96.15\%$ fit for punitive decisions). The mean number of cues used was 2.68. On the holdout set, the mean overall fit was 92.31% ($M = 90.24\%$ for non-punitive decisions and $M = 94\%$ for punitive decisions), and the mean number of cues used was 2.32. Information on *prevconv* was unavailable for 136 of the 183 cases in court B, information on *polbail* was unavailable for 136 cases, and on *prevdec* information was unavailable for three cases. There were no statistically significant inter-correlations among the three cues in Figure 4.4b. However, two of the cues were correlated significantly correlated with other cues not included in the model, to varying degrees. The mean size of the correlation was however, only 0.18.

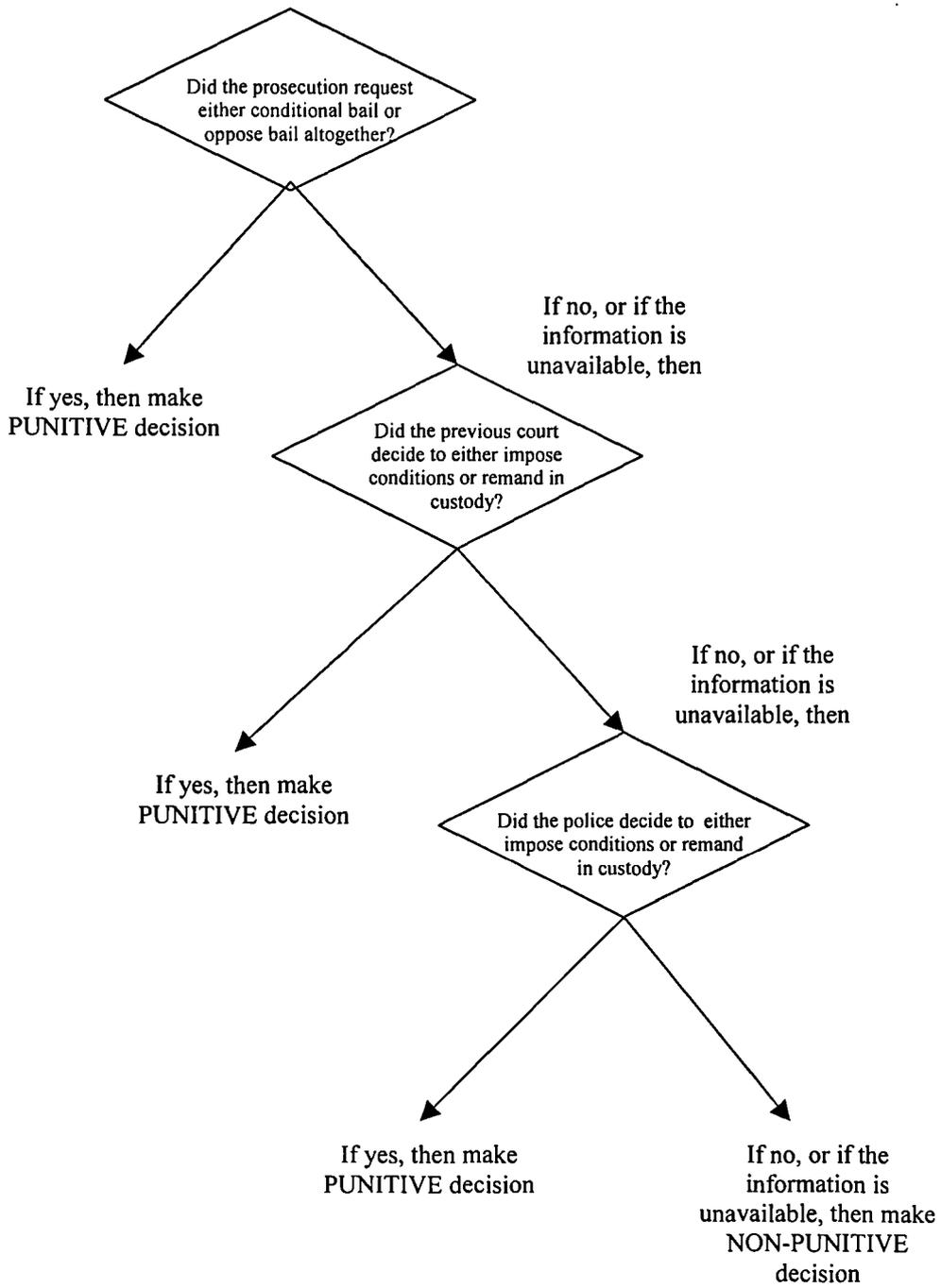


Figure 4.4a. Matching Heuristic for court A

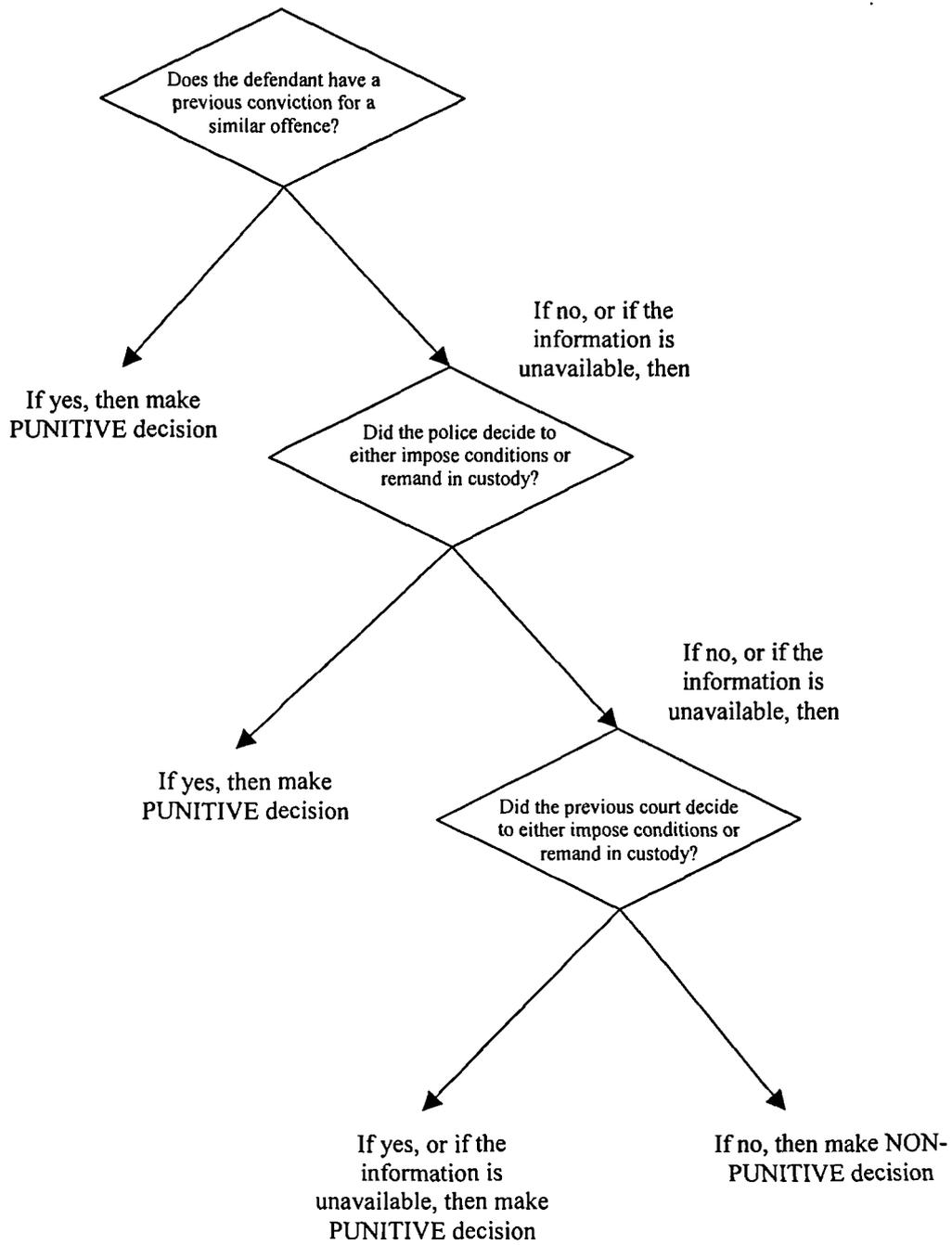


Figure 4.4b. Matching Heuristic for court B

4.3.11. Self-reported cue importance. For court A, 50.91% of magistrates returned the follow-up questionnaires, and for court B, 44.64% of magistrates did so. For four questionnaires however, the identity and thus the location of the magistrates (i.e., court A or court B) were unknown. These were therefore excluded from analysis. Figure 4.5 illustrates the categories of information which magistrates reported as being important in their remand decision making. It can be seen that magistrates in both courts reported cues explicitly referred to in the Bail Act 1976 as being important. However, in the “defendant” category, one magistrate in court B said that the defendant’s “lifestyle” was important, and two magistrates in court A said that the defendant’s age was important. In the “bail position” category, two magistrates in court A said that the prosecution request was important, and two said that the previous court decision was important. No magistrates from court B reported the latter cue as important. However, nine magistrates from court B reported that the previous convictions were important. Finally, no magistrates in either court reported the police remand decision as being important, despite this cue being used according to the Matching Heuristic.

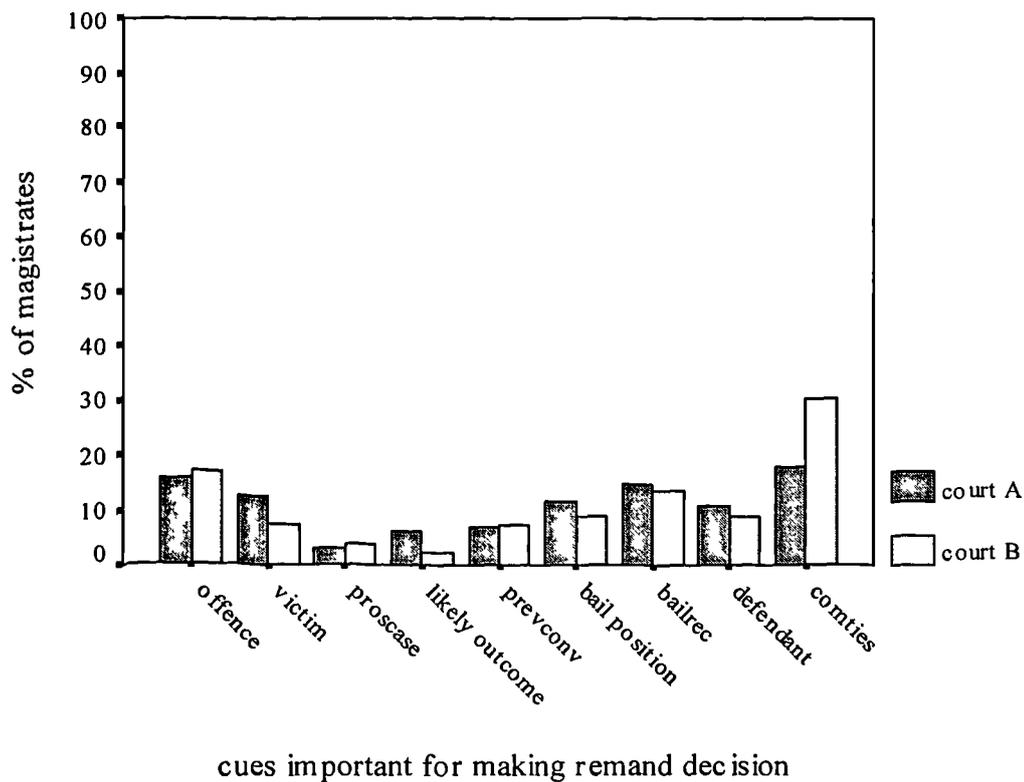


Figure 4.5. Self-reported importance of cues in remand decision making by courts A and B

4.3.12. Other findings. It was observed that magistrates sought information from the court (i.e., the defendant, prosecution or defence) in 59.24% of cases in court A, and in 69.95% of the cases in court B. Seeking information from the court was non-independent of court ($\chi^2[1, N = 340] = 4.26$, 2-tailed $p < 0.05$). The defendant was generally asked to verify his or her name and address. Magistrates tended to ask the prosecution or the defence for details of the case and for their reasons for requesting an adjournment. They also asked the defence for details of the defendant's community ties. It was also observed that magistrates sought help from the clerk in 46.54% of cases in court A, and in 35.52% of cases in court B. Seeking help from the clerk was non-independent of court ($\chi^2[1, N = 342] = 4.28$, 2-tailed $p < 0.05$). Generally, magistrates asked the clerk for details of the law, jurisdiction, and dates of the next hearing.

In court A, the decision was communicated to the defendant verbally in 50.00% of cases and was communicated both verbally and via a bail sheet in 29.75% of cases. In 20.25% of cases, the decision was not read out in open court. In all of these cases the defendant was not present. In court B, in one case the decision was not communicated to the defendant in any observable manner. In 65.57% of cases the decision was communicated both verbally and via a bail sheet, and in 27.32% of cases it was only communicated verbally. Finally, the decision was not read out in open court in 6.57% of cases and the defendant was not present in these cases. The expected frequencies in the cells were below 5 for race, age, proscase and comties, therefore, a Chi-Square analysis was not conducted. The reasons for the decision were given in open court in 19.62% of cases in court A and in 13.11% of cases in court B. The giving of reasons was independent of court ($\chi^2[1, N = 341] = 4.65$, 2-tailed $p < 0.05$). The reasons were mostly those listed on the bail form (see Appendix A).

4.4. Discussion

4.4.1. Summary of main findings. Courts A and B may be considered to be representative of provincial and metropolitan courts, respectively. The metropolitan court made more conditional bail and remand in custody decisions. There was no significant difference between the two courts in terms of the number of conditions attached to bail. Both courts most frequently imposed residence as a condition of bail. In both courts, information was often unavailable to magistrates on cues such as the defendant's previous convictions and bail record, the police remand decision, and the strength of the prosecution evidence against the defendant. The inter-correlations among the cues available to magistrates were generally small. The decisions made in court B

took significantly longer than those made in court A. There was no relationship between caseload and duration of decision making in either court. For court A, a version of the Matching Heuristic that made a non-punitive decision when there was insufficient information, proved a better fit to the judgement data, than a version that made a punitive decision. However, the reverse was true for court B. For both courts, the Matching Heuristic provided a better fit to the data in the modelling and holdout sets than did either Franklin's rule or Dawes' rule. According to the Matching Heuristic models, both courts used three cues. However, magistrates did not tend to report these cues as important for their remand decisions. The above findings will be discussed in more detail in the remainder of this chapter.

4.4.2. Discussion of main findings. The high inter-observer reliability advances the validity of the observations. In an improvement over past criminological studies using observations (e.g., Doherty & East, 1985; East & Doherty, 1984; Eaton, 1987; Hucklesby, 1996, 1997a; Morgan, 1994; Zander, 1979), the observers here had access to written information available to magistrates. Unlike most JA studies, the present study attempted to employ a fully representative design, as Brunswik (1956) had originally conceived of it. However, whereas Brunswik had advocated the use of random or probability sampling of stimuli from a defined population, the present study used time sampling. This is a form of non-probability sampling, and so precludes statistical generalisations. In their review of the design of past JA studies, Dhami et al. (in preparation) found that the few studies that use representative design also use this form of sampling.

In study one, it was not possible to model magistrates' policies using a logistic regression model because of the low case:cue ratio. Although the ratio was slightly higher in the present study, a logistic regression analysis could not be conducted because of the large amount of missing data on some cues. In a regression analysis, cases with missing values are excluded from analysis thus reducing the data set, and ultimately the case:cue ratio. Of course, missing values may be replaced with averages (Tabachnick & Fidell, 1996). However, this distorts the data set.

In the present study, not only did the Matching Heuristic do better at fitting the overall decisions for both the lay magistrates (and the one stipendiary magistrate) observed in both courts, it also proved better at fitting the non-punitive and punitive decisions separately. As in study one, it did better at fitting the punitive decisions. Therefore, the superior descriptive and predictive validity of the Matching Heuristic reported in study one, which involved remand decisions made by individual magistrates

on hypothetical cases, can be generalised to remand decisions made by benches of magistrates on real cases.

In fact, all three models fit the data quite well. The Matching Heuristic correctly predicted around 95% of decisions on the modelling set in both courts, and the reduced fit on the holdout set remained relatively high. This is remarkable performance for such a simple model, especially if one considers that the data may contain some inconsistencies that could not be predicted. The fit of the Matching Heuristic was greater than the R^2 commonly demonstrated by JA studies using regression models (e.g., Kline & Sulsky, 1995; Westenberg et al., 1998). It was also greater than the fit of other fast and frugal heuristics studied using simulations (Czerlinski et al., 1999; Gigerenzer et al., 1999a; Gigerenzer & Goldstein, 1996) and behavioural data (Rieskamp & Hoffrage, 1999; Slegers et al., 2000).

One possible explanation for the high fit of the Matching Heuristic in the present study concerns the task. It has been found that as task complexity increases, or as the number of alternatives and cues increase, people switch to simple non-compensatory strategies that search few cues (e.g., Billings & Marcus, 1983; Johnson & Meyer, 1984; Shields, 1983; Timmermans, 1993).

Other possible explanations for the high fit of the Matching Heuristic in the present study concern the decision makers. First, if consistency is the upper bound for the fit of a model (Hammond et al., 1975), then it may be magistrates were more consistent, although the consistency of decisions could not be measured using a test-retest situation in the present study. Others have found that groups are more consistent than individuals (e.g., Ogilvie & Schmitt, 1979). Second, group decision making where there is shared responsibility is particularly simple, as has been suggested by the phenomena of social and cognitive loafing, for example (e.g., Janis, 1982; Janis & Mann, 1977; Petty, Harkins, & Williams, 1980; Weldon & Gargano, 1985).

Future research on fast and frugal heuristics should investigate other conditions under which these heuristics work well. Such studies could be guided by the predictions of Hammond's (1996a) cognitive continuum theory, which states that people adopt a particular mode of cognition depending upon the characteristics of the task.

In the present study, the Matching Heuristic was successfully applied to polytomous cues, without the complexity and difficulty encountered by Slegers et al. (2000). In the Matching Heuristic, the continuous cues were grouped into discrete categories, and once the critical value on a cue was identified, the other values were

simply discarded. It is unlikely that people can store how they react to every value of a cue in their short-term memory.

According to the representative examples used to illustrate the Matching Heuristic, both courts based their remand decisions on three cues. The number of cues used is greater than the one cue used by the majority of magistrates in study one. This difference may be explained by the fact that there were also more cues available to magistrates in the present study, and because the unavailability of information on some cases meant that magistrates had to search for more information. For both courts, two of these cues were the same, although they were used in a different order. With the exception of the previous convictions cue that is referred to in the Bail Act, used by court B, both courts relied on crime control related cues. The use of cues such as the defendant's previous convictions, the police remand decision, and the prosecution request, supports the findings of cue use reported in study one and the past criminological research (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996, 1997a; Jones, 1985; Morgan, 1994; Morgan & Henderson, 1998; Zander, 1979). There was however, little evidence for the use of cues such as offence, gender, and community ties, in the present study. Reliance on the decision of the previous bench may partly be explained by the fact that it implies the defendant has already made a fully argued bail application. A defendant is only allowed two of these, and any further applications are heard at the court's discretion. Magistrates' reliance on the previous benches' decision may also be explained by the idea that the court wants to maintain consistency (Bottoms & McClean, 1976). On the other hand, reliance on this cue implies that there would be little gained in an appeal against a decision made by magistrates. Indeed, past criminological research has reported that defendants and their solicitors perceive this to be the case (e.g., King, 1971). Finally, as in study one, magistrates tended not to report the cues they used as being important for their remand decisions, in the follow-up questionnaire.

The findings of the present study support the findings of past criminological research reporting the lack of information available to magistrates when they make their remand decisions (Burrows, 1994; East & Doherty, 1984; Hucklesby, 1996; Zander, 1979). The fact that details of the defendant's previous convictions and bail record, and the strength of the prosecution case were often unavailable to magistrates, means that they could not abide by the requirements of the Bail Act 1976. On the other hand, this also implies that some of the concerns criminologists raise about magistrates' reliance

on the police remand decision (Hucklesby, 1997a; Jones, 1985; Morgan, 1994; Morgan & Henderson, 1998) may not be so widespread.

The fact that there were few sizeable correlations among the cues available to magistrates suggests that they could not infer the values of cues that were unavailable on a particular case. For both courts, the average size of the correlation among the cues included in their Matching Heuristic models was small, as was the average size of the correlation among these cues and others not included in the model. The fact that there were few correlations among the cues implies that both the present study and the past criminological research based on real cases can consider the cues as generally independent predictors of magistrates' remand decisions. An examination of the correlation matrices of courts A and B in Appendix F revealed that few of the cues investigated in study one, were inter-correlated. There were however, quite substantial positive correlations between the prosecution request and the police remand decision, between the police remand decision and the defendant's previous convictions and bail record. Nevertheless, there may be little loss in external validity if future research on magistrates' remand decisions employs an orthogonal design.

Interestingly, details of the strength of a defendant's community ties were available to magistrates for the large majority of cases in both courts A and B, although neither of these courts had a BIS operating. Similar to Hucklesby (1996) however, most of this information was regarding the defendant's residence. In spite of the availability of information pertaining to community ties, the Matching Heuristic reveals that neither court based its decisions on this cue. This is compatible with the findings of study one, which revealed that few magistrates used this cue. Therefore, the effectiveness of BISs should be investigated.

The present study also examined magistrates' adherence to the Bail Act 1976's stipulation that magistrates should react punitively when there is "insufficient" information on which to base a remand decision. For each court, a Matching Heuristic that either reacted non-punitively if there was missing information on the last cue searched or reacted punitively, was developed and tested. An analysis of the availability of the cues used by court A indicates that the values of the first two cues searched do not meet the critical value for the majority of cases, and that around two thirds of the cases had information unavailable on the last cue searched (i.e., police remand decision). Therefore, in making a non-punitive decision in such circumstances, court A, unlike court B, held a presumption of innocence. However, although the law does not specify what should be considered insufficient information, the definition of insufficient

information used in the present study was quite narrow. The law could be more specific, and future research could investigate what magistrates consider to be insufficient information. Policy initiatives such as BISs have been developed in the past to counteract the problem of insufficient information on the defendant's community ties. In addition to the findings relating to the availability of particular information, magistrates' perceptions of insufficient information may be useful for developing new BIS type initiatives.

Contrary to the past criminological research which reports that lay magistrates are not probing and do not seek information from the court (Burrows, 1994; East & Doherty, 1984; Hucklesby, 1996; Morgan, 1994; Zander, 1979), the present study found that magistrates in both courts A and B sought information from the court in over half of the cases. However, the details of the amount of information sought and its source were not recorded because of the rapidity of the bail hearings. Past research has reported that additional information is usually of limited breadth (Hucklesby, 1996), and the rapidity of bail hearings observed in the present study suggests this may be the case here.

Past criminological research has reported that magistrates make their remand decisions within a couple of minutes (Doherty & East, 1985; Zander, 1979). However, in Zander's (1979) study, the observers merely estimated the time taken to discuss the issue of bail or custody, and in their study, Doherty and East (1985) did not provide sufficient details of how they timed the decisions. In the present study, the observers began timing as soon as the case number was called out. It was found that compared to past research, magistrates took on average longer to make their decisions. Magistrates in court B took significantly more time to make their decisions. There were some differences in the characteristics of the cases presented in both courts. Future research could investigate how this may explain the rapidity with which decisions are made. The cases in which magistrates retired took significantly longer in both courts. An analysis of the characteristics of the cases, and magistrates' reasons for retiring, may be useful for further developing magistrates' training. In both courts, magistrates took significantly longer when making a more punitive decision. This is contrary to the prediction that they should take more time making a less punitive decision as the Bail Act 1976 requires that magistrates bail only after they have considered whether an exception to the right to bail applies. However, the cases were not divided into those in which an exception applies or not, and so it may be that they do take less time to decide in the latter. Thus, perhaps magistrates are going onto search through more cues to

justify their punitive decisions. Finally, surprisingly, there was no significant correlation between caseload and the mean duration of the decisions, for either court. In experimental studies, time pressure has been operationalised in numerous ways. For example, participants are instructed that another task awaits after completion of the first task, that only a fixed amount of time can be spent on each case, or by providing a high information load relative to the time available (see Maule & Edland, 1997). Although not as explicit, the situation in the courtroom is not too dissimilar from the first two procedures. It is however, different from the third procedure, as in the courtroom there may be little information on some cases, thus enabling quick decisions to be made.

The findings of the present study were similar to study one regarding the number of conditions attached to bail, and the types of conditions imposed. Residence was imposed most frequently, and there was relatively little use of surety and bail hostels. There was however, slightly more indication of the use of punishing conditions such as curfew and boundary. The distribution of remand decisions made in court A differed from that made in court B, and does not reflect the distribution made over magistrates' courts in England and Wales (Home Office, 1999a). Court A was less likely than other courts to grant conditional bail. Court A was located in a suburb outside London whereas court B was located in London. Similar to past criminological research (Bottomley, 1970) and the findings of study one, the metropolitan court reacted more punitively than the provincial court.

Although there were no great differences in the gender make-up and experience of magistrates studied in court A and B, the courts differed markedly in terms of the ethnic make-up of the magistrates. There were more ethnic minority magistrates in the metropolitan court, and defendants from ethnic minority groups are more likely to appear in these courts, thus, somewhat counteracting the criticism that magistrates are unrepresentative of the community they serve and the defendants who appear before them (e.g., Darbyshire, 1997b).

The observations in the present study also revealed that in many cases, the decisions were communicated to the defendant verbally. Although this is common (e.g., Raine & Willson, 1994), this may be ineffective as past research suggests that defendants, particularly those new to the criminal justice system, may be in a state of shock and may not understand what is happening to them (e.g., Brink & Stone, 1988). Unfortunately, due to the rapidity of the bail hearings the observers did not record the reasons given for denying bail and the magistrates' exceptions to the right to bail. It was also not observed if written forms were given to defendants outside the courtroom.

In conclusion, the findings of study two not only confirm the main findings of study one, but also extend our understanding of magistrates' remand decisions to issues such as magistrates' reaction to insufficient information, and to the formal properties of the remand decision making task. Although Brunswik (1956) was convinced of the theoretical importance of representative design for obtaining externally valid findings, the findings of the present study generally confirm the findings of study one, which employed a systematic design. Similarly, in his first representatively designed study, Brunswik (1944) himself found that his results merely confirmed those of earlier studies using systematic design. Nevertheless, Brunswik (1944) argued that a "check-up" of this kind is necessary (p. 37). Moreover, as Konecni and Ebbesen (1987) point out, one of the advantages of an externally valid method is that legal decision makers and policy makers will be less skeptical of the findings. Few studies have investigated the relative effects of representative and systematic design on the judgement policies captured (see Dhimi et al., in preparation), and while the issue remains unresolved, it would be wrong to conclude, based on the present study, that design does not matter. One reason for this is that there were few observed inter-cue correlations among the cues in the courtroom, and so the orthogonal design of the cases in study one may not have been as unrepresentative as may have been first thought. Despite this, it is clear that while data was collected within three weeks and with minimal effort on the part of the researcher in study one, it took four months to collect and with a lot more effort and expense in the present study. A representatively designed study by Gifford (1994) took 10 years to complete. However, as Doherty and Kurz (1996) argue "Nobody said science should be easy" (p. 127).

Nevertheless, the third, and final, study to be presented in the following chapter aimed to investigate the effectiveness of the BIS policy initiative, using individual magistrates and systematically designed cases. Both studies one and two indicate that these schemes may not be as effective as has been reported in the past (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; HM Inspectorate of Probation, 1993; Lloyd, 1992; Mair, 1988; Pearce & Smith, 1976; Stone, 1988).

5. STUDY THREE

5.1. Introduction

5.1.1. Background to present study. According to the Bail Act 1976, magistrates should make a punitive decision if they believe that the defendant may abscond. It is believed that the likelihood of a defendant absconding can be predicted by the degree and nature of his or her community ties, for example, by whether or not the defendant has a fixed address, a spouse or dependants, or a job or educational commitment (Home Office, 1974, 1988). There is some evidence from past criminological research showing that magistrates may attend to information about the defendant's community ties. For instance, defendants living outside the geographical area in which the court was situated (Hucklesby, 1996), and those with no fixed abode were found to be significantly more likely to be remanded in custody than their counterparts living in the area and with a fixed address (Doherty & East, 1985; Hucklesby, 1996; Morgan & Henderson, 1998). Eaton (1987) observed that magistrates were more likely to bail defendants who had traditional family ties and employment. However, there was little evidence of the use of information pertaining to community ties in study one, where, according to the Matching Heuristic, only 12.35% of magistrates used this cue. Furthermore, in study two, neither court A nor court B used the community ties cue according to the Matching Heuristic. In fact, this cue was unrelated to any of the other cues in court A, and for court B it was related to a small degree to the previous court remand decision (i.e., $\phi = 0.16$, $N = 176$; $p < 0.05$).

In order to judge the likelihood of a defendant absconding based on his or her community ties, this information needs to be available to the court at the time of the bail hearing. In the courtroom, information may be made available to magistrates from a variety of sources. The courtsheet which lists the cases to be heard on a particular day, contains written information such as the defendant's personal details, the nature and seriousness of the offence, the maximum sentence if convicted, the defendant's plea, the number of previous adjournments, and the previous court decision if any. Information on the courtsheet may be supplemented with further information provided by the prosecution, the defence and the defendant. However, study two and past criminological research (Burrows, 1994; Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996; Morgan & Henderson, 1998; Zander, 1979) have documented the lack of information available to magistrates in the courtroom. In fact, the situation has changed little since before the introduction of the Bail Act 1976 (Bottomley, 1970; King, 1971;

Simon & Weatheritt, 1974; Zander, 1967, 1971). For example, King (1971) found that information about the defendant's community ties was available in only a third of the cases, and that this was scant. More recently, Hucklesby (1996) observed that the information on the courtsheet was the only information available, in two thirds of the cases, and that information about the defendant's community ties usually concerned residence. Similarly, although most of the cases observed in study two had information on community ties available, it was mostly concerning residence. Morgan and Henderson (1998) found that magistrates were aware of the paucity of the information presented to them. However, in line with past research (Burrows, 1994; Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996; Morgan, 1994; Zander, 1979), study two revealed that magistrates do not always seek information from the court.

The availability of information is important, first because as shown in study two, the size of the inter-cue correlations among cues is on average relatively low. The lack of redundancy means that magistrates must have access to a wide range of cues in order to make just and defensible decisions. Second, the Bail Act 1976 states that insufficient information is a ground for a remand in custody (until further information has been gathered). Empirical research conducted in the field of J/DM has shown that missing information leads to negative decisions (e.g., Jagacinski, 1994; Johnson & Levin, 1985). In study two, according to the Matching Heuristic, magistrates in one court made a punitive decision where the information was unavailable on the last cue searched.

The fact that information pertaining to community ties may be unavailable when magistrates make their remand decisions, led criminologists and policy makers to conclude that in such cases magistrates may be unnecessarily remanding defendants in custody. Therefore, a policy initiative was introduced in 1987 to overcome the problem of insufficient information regarding community ties (Home Office, 1988; Stone, 1988). BISs were introduced in both magistrates' courts and prisons. In courts, BISs target defendants awaiting their first appearance, who are likely to be remanded in custody by magistrates because the police earlier remanded them in custody. In prisons, BISs target defendants awaiting their second appearance after having been remanded in custody by magistrates. Probation officers interview defendants, gathering information on their community ties. This is then verified (if possible) via telephones and visits, and recorded on a bail information sheet. A copy of a bail information sheet is presented in Appendix B. They only provide positive information because BISs aim to divert defendants from custody. Copies of the sheet are then given to the defence representative (or the defendant if he or she is not legally represented) and the

prosecution. The sheet does not contain any recommendation regarding bail. It should be noted that the probation officers have much discretion when operating a BIS, for example, in terms of the cases selected, the content of interviews and the information collected, verified and presented.

BISs originated in America (Ares et al., 1963). The American schemes were slightly different from the English schemes in that the strength of a defendant's community ties were scored on an objective scale, and a recommendation for bail was explicitly made. Ares et al. (1963) evaluated the first American scheme by randomly assigning defendants either to an experimental group, for whom a recommendation was conveyed to the court, or to a control group, for whom the recommendation was suppressed. It was found that 60% of the experimental group were bailed compared to only 14% of the control group. BISs were originally introduced in the English system in the mid 1970s and after a short period they ceased to continue operating, although this was not because they were viewed as ineffective (Pearce & Smith, 1976; Godson & Mitchell, 1991). Extraordinarily, although no quantitative evaluation of the first English scheme was attempted, it was concluded to be similarly effective (Pearce & Smith, 1976). Since then however, numerous statistical evaluations have been conducted, most of which were funded by the Home Office or the probation service, who are responsible for such schemes (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; HM Inspectorate of Probation, 1993; Lloyd, 1992; Mair, 1988; Stone, 1988).

It has been reported that the BISs were effective because magistrates bailed (unconditionally and conditionally) more defendants for whom the scheme intervened and remanded in custody more defendants for whom there was no such intervention (Fiddes & Lloyd, 1990; HM Inspectorate of Probation, 1993; Lloyd, 1992; Mair, 1988; Stone, 1988). However, there were individual differences among courts (HM Inspectorate of Probation, 1993; Lloyd, 1992; Stone, 1988). It has also been found that the use of a bail hostel as a condition of bail was large (Burrows, 1994; Stone, 1988). In addition, the rate of bail breaches (e.g., offending on bail, absconding and breaching bail conditions) was no greater among defendants bailed after intervention of the scheme than among defendants who were otherwise bailed (Lloyd, 1992; Stone, 1988). Finally, it has been argued that BISs affect the prosecution request, making a request for a remand in custody is less likely, and that BISs affect the defence request, making an application for bail more likely (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; Lloyd, 1992; Stone, 1998). Thus, BISs affect magistrates' decisions indirectly.

However, the reliability and validity of the findings of these evaluations may be limited for a number of reasons. Unlike the study by Ares et al. (1963) the English studies lack experimental control. Cases were not randomly assigned to the BIS and no BIS groups. This means that differences in the characteristics of the cases (e.g., seriousness of the offence), or differences in the probation officers' reasons for selecting the cases, between the BIS and no BIS groups, may account for differences in the bail and custody rates between the two groups. The independent variable, namely the BIS, may also vary among cases. Indeed, studies have revealed that the type and amount of information provided by the BIS varied among cases and courts (Lloyd, 1992; Stone, 1988), and in some cases the information provided was sparse (HM Inspectorate of Probation, 1993; Lloyd, 1992). Furthermore, magistrates may receive information pertaining to the community ties of defendants for whom bail information was not provided. For instance, in study two neither of the courts had a BIS in operation, and yet in only one case in court A and four cases in court B was information pertaining to the strength of the defendant's community ties unavailable to magistrates. Of course, this does not imply that in those cases where information was provided, that it was of great depth. Defence solicitors often provide information regarding community ties to the court (Hucklesby, 1996; Mair, 1988). Morgan and Henderson (1998) found that BISs also provided negative information about defendants, implying that a BIS group may be disadvantaged and so the scheme would appear less successful in diverting defendants from custody. Finally, evaluations of the prison based schemes also lack control over whether information was actually supplied to the prosecution, defence or the court, after it was sent to the probation officer in the courthouse (e.g., Lloyd, 1992; Mair, 1988). All of the evaluations suffered from problems associated with missing data, and so the no BIS cases may have been charged with more serious offences thus being less likely to obtain bail. By aggregating data over courts, studies may have over-reported the effectiveness of BISs on magistrates' remand decisions. The past evaluations may lack objectivity because they were conducted and funded by those who may have a vested interest in the continuation of the schemes, especially in the face of a lack of alternatives. Finally, the fact that BISs have been reported to also affect the prosecution and defence requests (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; Lloyd, 1992; Stone, 1988) means that their direct impact on magistrates' remand decisions is unclear in the above studies which do not disentangle these variables.

5.1.2. Rationale for present study. One rationale for the third and final study presented in this thesis was to measure the affect of BISs on the punitiveness of

magistrates' remand decisions, using a more rigorous method than that employed by past research. Another rationale was to extend our understanding of the affect of BISs to other aspects of magistrates' remand decision making such as their consistency, agreement, post-decisional confidence, decision making policy, and concordance between implicit and explicit policies.

5.1.3. Aims of present study. The main aims of the study were to assess the affects of BISs on:

- (a) Magistrates' remand decisions.
- (b) The number and nature of the conditions attached to bail.
- (c) Magistrates' consistency in their decisions using a test-retest situation.
- (d) Magistrates' frequency of disagreement from the modal remand decisions made by magistrates on the same cases.
- (e) Magistrates' post-decisional confidence.
- (f) Magistrates' remand decision making policies, in terms of the cues they use and how they weight and combine these cues to form a decision.
- (g) The concordance between magistrates' explicit, publicly stated decision making policies and their implicit, private policies as captured by the model that best describes and predicts their decisions.

Based upon the review of the past research on BISs, a number of predictions can be made. It is hypothesised that magistrates in the BIS group will bail more defendants than magistrates in the no BIS group. Magistrates in the BIS group will also attach more conditions to bail, and more frequently impose bail hostel as a condition of bail, than magistrates in the no BIS group. The positive community ties information provided to the BIS group should be used in the same direction by magistrates, therefore it is likely that magistrates in the BIS group will demonstrate greater consistency in their decisions than magistrates in the no BIS group, and magistrates in the BIS group will also show less disagreement among themselves than magistrates in the no BIS group. The fact that magistrates in the BIS group have more "relevant" information available to them would imply that they would report feeling more confident in their decisions than magistrates in the no BIS group. Based on the findings of the first two studies presented in this thesis, it is hypothesised that the Matching Heuristic will provide a better fit to magistrates' remand decisions in both groups on the modelling and the holdout sets than either Franklin's rule and Dawes' rule.

5.2. Method

5.2.1. Design. Magistrates were randomly allocated to either the BIS (experimental) group or the no BIS (control) group. Magistrates individually made bail decisions and provided post-decisional confidence ratings on a set of hypothetical cases, comprising an orthogonal combination of nine cues. They then ranked the cues in order of the importance they attached to them when making their decisions. The hypothetical cases presented to both groups of magistrates were identical except for one piece of information. On all of the cases, the BIS group was presented with positive information about the defendants' community ties. The nature and amount of such information was representative of that provided by a BIS. The information about the defendants' community ties that was presented to the no BIS group was representative of the nature and amount of information provided in a court where a BIS does not operate.

5.2.2. Participants. Court managers in 70 randomly selected adult magistrates' courts in England and Wales were each mailed six booklets. The sampling frame was obtained from *Shaw's 1997/98 directory of courts in the United Kingdom* (Morris, 1997). Thirty-five courts were randomly assigned to the BIS group and 35 to the no BIS group. A total of 210 booklets were sent to courts in each group. Court managers were informed of the study and asked to distribute the booklets to magistrates sitting in their courts. Altogether, 132 magistrates, representing a 31.43% response rate, fully completed and returned the materials within the specified limit.

In the BIS group, there were 77 magistrates from 35 courts, and in the no BIS group there were 55 magistrates from 31 courts. Of those who provided their demographic details, in the BIS group, 73 were lay magistrates and three were stipendiary magistrates. In the no BIS group, there were 50 lay magistrates and three stipendiary magistrates.¹ Magistrates in the BIS group reported having been on the bench from 2 to 35 years ($M = 15.58$, $SD = 8.11$), and magistrates in the no BIS group reported being on the bench from 10 months to 30 years ($M = 14.32$, $SD = 7.98$). There was no significant difference in the experience, in terms of numbers of years on the bench, between the two groups ($t[130] = 0.88$, 2-tailed $p > 0.05$). Sixty-two magistrates in the BIS group sat in courts located in metropolitan areas and 12 sat in provincial courts, whereas 37 magistrates in the no BIS group sat in metropolitan courts and 18 sat in provincial courts.² Group and location of the court were non-independent ($\chi^2 = 4.82$

¹ A chi-square test could not be conducted to see if group and type of magistrate were independent because the expected frequency was less than the minimum of 5 for two of the cells.

² Courts were classified as metropolitan or provincial using the list of cities and towns provided by: http://dir.yahoo.com/Regional/Countries/United_Kingdom/England/Cities_and_Towns.

[1, $N = 129$] $p < 0.05$). Twenty-eight magistrates in the BIS group stated that BISs operated in their courts, and 22 magistrates said so in the no BIS group. Group and operation of a BIS in court were independent ($\chi^2 = 0.18$ [1, $N = 125$] $p > 0.05$).

5.2.3. Construction of hypothetical cases. The design and procedure for constructing the hypothetical cases mirrored that of study one and to avoid repetition only new features of the design will be detailed here. In the present study, nine cues were manipulated in the cases and nine were held constant. The constant cues were: how the defendant came to court, the number of charges against the defendant, the defendant's plea, the defence representation, the circumstances of adjournment, whether the defendant was present in court, the length of the adjournment, who requested the adjournment, the number of previous adjournments and bail applications. These were used to provide background information to the hypothetical cases. See Appendix G for a copy of the background information.

The nine cues that were manipulated are shown in the first column of Table 5.1. The cues were the same as those used in study one, with the addition of the defence request cue. Past research on BISs has argued that this cue interacts with the BIS when affecting magistrates' remand decisions (e.g., Fiddes & Lloyd, 1990). Note that whereas the community ties cue was manipulated across the 27 cases in the modelling set in study one, in the present study, it was an additional cue that was manipulated across the two groups, and not across the cases. This will be discussed in more detail later.

A full factorial combination of the cues would yield an unmanageable number of cases (i.e., $2 \times 2 \times 3 \times 3 \times 3 \times 6 \times 2 \times 3 \times 3 = 11,664$). Therefore, a fractional factorial design was employed. The orthogonal design option in SPSS version 7.5 for windows yielded a set of 27 cases, which would be used to model the magistrates' remand decision making policies (modelling set). In addition, seven holdout cases were constructed outside this main effects design. These cases would be used to test the predictive validity of the models (holdout set). Finally, seven cases were randomly selected from the modelling set and duplicated (although the names of the defendants were changed) to measure test-retest consistency. This made a total of 41 cases. The values of the nine cues and the distribution of their values across the cases in the modelling set are shown in Table 5.1. The cue values were equally distributed amongst the cases for the tertiary cues, and were distributed according to approximate real world distributions for the other cues. The cues were placed in the order shown in Table 5.1, and were in the same order in each case. See Appendix G for the hypothetical cases, with the cue values as coded in Table 5.1.

Except for information regarding the defendant's community ties, the cases were identical for both groups. In the BIS group, the additional community ties information was representative of the nature of information presented by a BIS, while in the no BIS group this information was representative of a courtroom where a BIS does not operate. In order to discover the nature of information that should be included in the BIS group, semi-structured individual interviews were conducted over the telephone with four probation officers. One of the probation officers worked in a court based scheme, two worked in prison based schemes, and one worked in the headquarters of the probation service. The probation officers were asked what type of information is collected, on which defendants, by whom, for whom, and in what format? The standardised forms used to gather and disseminate the information collected by BISs were also analysed. See Appendix B for copies of bail information sheets. It was found that a probation officer may gather information on a wide variety of factors including a defendant's addictions, language, psychiatric and medical status. However, commonly BISs provide information on (a) a defendant's residential status, and the availability of a bail hostel place; (b) a defendant's participation in employment or education; (c) the nature of a defendant's personal ties such as being married and having children; and (d) the availability of a surety. One or more of these elements were added to each case.

In order to discover the nature of information that should be included in the no BIS group, the observational data collected in study two was used as a reference because neither court had a BIS in operation. It was found that 96.23% of defendants in court A and 89.07% of defendants in court B had strong community ties. Over the 342 cases observed in both courts, information about the defendants' residence was available in 96.78% of cases. Information about the defendants' children was presented in 9.06% of cases, and information pertaining to the defendants' spouses was presented in 10.82% of cases. Information regarding the defendants' employment or educational status was available in 12.87% of cases. In a minority of these cases the information presented was of a negative nature. Therefore, the proportion and nature of the information collected from the observational data were represented in the set of 27 cases. For example, in two out of the 27 cases, defendants were described as being married because only 8% of the defendants observed in study two were married.

Table 5.1. Cues, their values and distributions in modelling set

Cue*	Values**	Distribution
Gender	(1) male	18
	(2) female	9
Race	(1) white	9
	(2) <i>Asian</i>	9
	(3) <i>black</i>	9
Age	(1) 18-20	18
	(2) 21+	9
Offence	(1) summary	9
	(2) <i>triable either-way</i>	9
	(3) <i>indictable</i>	9
Previous convictions and bail record (pcbr)	(1) none-none	6
	(2) none-good	6
	(3) <i>yes, dissimilar-good</i>	6
	(4) <i>yes, similar-good</i>	3
	(5) <i>yes, dissimilar-poor</i>	3
	(6) <i>yes, similar-poor</i>	3

Police remand decision (polbail)	(1) unconditional bail	9
	(2) <i>surety</i>	9
	(3) <i>remand in custody</i>	9
Prosecution request (proseq)	(1) don't oppose bail	9
	(2) <i>conditional bail</i>	9
	(3) <i>oppose bail</i>	9
Strength of prosecution case (proscase)	(1) strong	18
	(2) weak	9
Defence request (defreq)	(1) apply for unconditional bail	9
	(2) <i>suggest conditions</i>	9
	(3) <i>don't apply for bail</i>	9

Note: *Specific ages were chosen randomly to fall in the two age bands. The specific offences chosen to represent each of these categories of offences were selected on the basis of their commonality as indicated by the 1996 recorded crime figures in England and Wales, which were the most recent at the time of design (Home Office, 1997). A poor bail record may be defined as that where the defendant has absconded, offended or interfered with witnesses whilst on bail in the past. The prosecution case against the defendant may be strong where details of witnesses and/or forensic evidence are presented at the time of the bail hearing. **Polytomous cues were dichotomised before analysis, so the non-italicised and italicised values indicate the two values for each cue. For each cue the non-italicised value was coded as 0 and the italicised value was coded as 1 for analysis. The order of values for the gender cue are arbitrary. However, for the other cues, the values are ordered so that a punitive decision is more likely to result with values in descending order.

Measurement of responses. Participants were asked to respond to the hypothetical cases by firstly choosing a bail decision. The options were: unconditional bail, conditional bail (with the conditions specified) or remand in custody.

Participants were then asked to indicate how certain they were that they had made the appropriate decision based upon the information provided, on an 11-point scale from 0 to 10. Zero represented “absolutely uncertain” and ten represented “absolutely certain”.

Finally, in order to highlight magistrates’ explicit remand decision making policies, participants were asked to rank the nine cues and the additional community ties cue according to the relative importance attached to them when magistrates made their remand decisions. A rank order of one indicated the most important cue.

5.2.4. Procedure. The 41 cases were placed in a booklet. The holdout cases were randomly intermixed with the cases in the modelling set. The duplicate cases were placed at the end. The ranking task followed the hypothetical cases.

The booklet also contained instructions that listed the nine cues and described the tasks. Background information common to all cases was provided. Participants were instructed to complete the tasks individually, not to spend too much time on each case, and not to return to cases that had already been completed. Participants were also asked to specify what further information, if any, they would have liked in order to make their remand decisions in the bail decision making task. Participants’ demographic details, namely, type of magistrate, years of experience on the bench, location of court, and operation of BIS in their court, were also requested.

Although the booklets were sent to the court manager, a covering letter was included for magistrates, which introduced the study, guaranteed respondents anonymity, and asked for volunteers to participate in the study. The four week time limit for completion and return was highlighted and a stamped, self-addressed envelope was provided.

5.3. Analysis and Results³

5.3.1. Effects of BISs on remand decisions made. There was no significant difference between the two courts in terms of the likelihood of them making punitive decisions ($t[130] = -0.66$, 1-tailed $p > 0.013$). The difference between the two courts in terms of the likelihood of them making remand in custody decision was only marginally significant ($t[130] = -2.49$, 1-tailed $p = 0.014$). Note that a 2 arcsinus transformation

³ Note that the level of significance for 2-tailed tests was 0.05 and 0.025 for 1-tailed tests.

was first performed on the proportions, and to guard against a type I error a Bonferroni correction was applied to the p value. Table 5.2 shows the means and standard deviations for the within-subjects and between-subjects variables.

Decision	Group*	M (SD)
Unconditional bail	BIS	13.73 (5.21)
	No BIS	13.20 (4.24)
	Total	13.51 (4.82)
Conditional bail	BIS	10.94 (4.69)
	No BIS	10.60 (4.76)
	Total	10.80 (4.32)
Remand in custody	BIS	2.34 (2.00)
	No BIS	3.38 (2.83)
	Total	2.77 (2.43)

Note: * $N = 77$ for BIS group, $N = 55$ for no BIS group and $N = 132$ for total.

Table 5.2. Mean proportions of unconditional bail, conditional bail and remand in custody decisions made by BIS group and no BIS group

5.3.2. Effects of BISs on conditions attached to bail. For each magistrate the mean number of conditions attached to bail for cases in the modelling set was calculated. Contrary to the prediction, an independent samples t -test revealed no significant differences in the grand mean number of conditions attached to bail by the BIS group ($M = 1.65$, $SD = 0.52$) and no BIS group ($M = 1.54$, $SD = 0.37$) ($t[129] = 1.42$, 1-tailed $p > 0.025$).⁴ Figure 5.1 provides a comparison between the two groups in terms of the percentage of each type of condition imposed in the cases granted conditional bail. As predicted, magistrates in the BIS group imposed a significantly greater mean number of conditions of surety ($M = 3.05$, $SD = 4.30$), and bail hostel $M = 0.78$, $SD = 0.60$) than did magistrates in the no BIS group (For surety, $M = 0.84$, $SD = 1.62$ and for bail hostel, $M = 0.15$, $SD = 0.52$) ($t[102] = -4.11$, 1-tailed $p < 0.003$, $t[125] = -6.38$, 1-tailed $p < 0.003$).⁵ There were no significant differences between the two

⁴ A Levene's test for equality of variances was significant ($p < 0.05$) and so the t -test based on separate variances was used.

⁵ The t -test based on separate variances was used. To guard against a type I error a Bonferroni correction was applied to the p value.

groups in terms of the mean number of the other types of conditions attached to bail ($p > 0.025$).

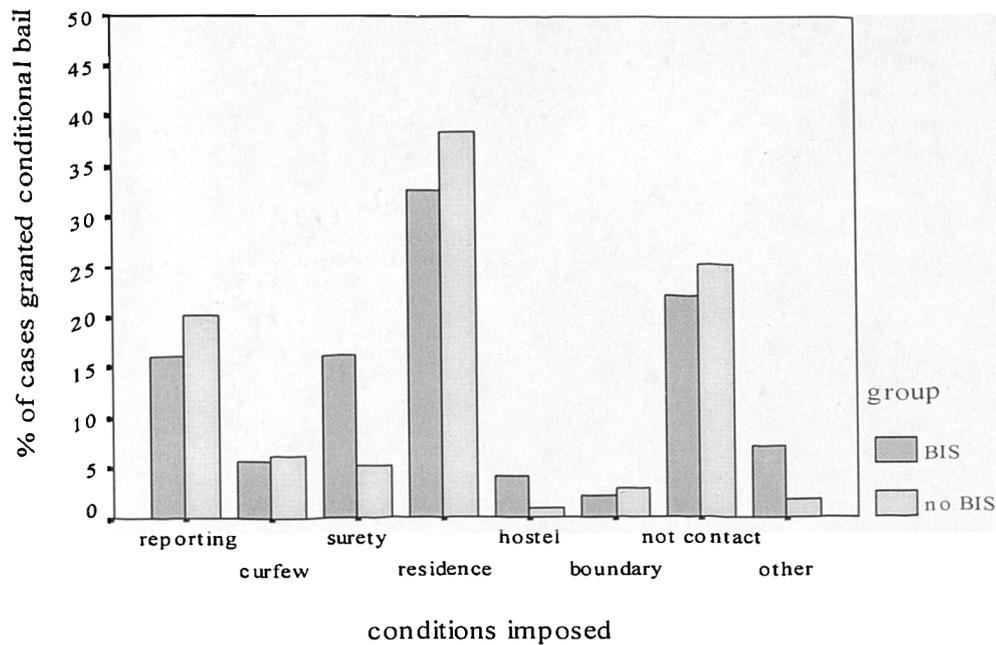


Figure 5.1. Conditions imposed in cases granted conditional bail by BIS group and no BIS group on modelling set

5.3.3. Effects of BISs on intra-magistrate consistency. Each magistrate’s consistency in making remand decisions was measured by computing a Cohen’s Kappa value which corrects for chance. The decisions made on the seven duplicate cases were compared with those made on their original counterparts in the modelling set. The Kappa value ranges from 0 (indicating that agreement or consistency is no better than chance) to 1 (indicating perfect consistency). Fleiss (1981) suggests that a value of 0.40 to 0.60 is “fair”, 0.60 to 0.75 is “good” and a value above 0.75 is “excellent”.

In the BIS group, 15 magistrates had a Kappa value of less than 0.40, 17 had a Kappa value of 0.40 to 0.60, 16 had a Kappa value of 0.60 to 0.75, and 29 magistrates had a Kappa value above 0.75 (this includes 16 magistrates for whom Kappa = 1). In the no BIS group, 12 magistrates had a Kappa value of less than 0.40, 19 had a Kappa value of 0.40 to 0.60, 7 had a Kappa value of 0.60 to 0.75, and 17 magistrates had a Kappa value above 0.75 (this includes 9 magistrates for whom Kappa = 1). Contrary to the prediction, there was no significant difference between the BIS group ($M = 0.63, SD = 0.28$) and the no BIS group ($M = 0.60, SD = 0.26$) in terms of the mean Kappa value ($t[130] = 0.50, 1\text{-tailed } p > 0.025$).

5.3.4. Effects of BISs on disagreement among magistrates. The percentage of magistrates who disagreed with the modal response on each case was calculated. There was some disagreement among magistrates in both groups as to the decision to be made on each of the 27 cases in the modelling set. Contrary to the prediction, there was however, no significant difference between the BIS group ($M = 28.36\%$, $SD = 14.85$) and the no BIS group ($M = 27.58\%$, $SD = 16.12$) in terms of the mean percentage of magistrates disagreeing with the modal response across the cases in the modelling set ($t[52] = 0.18$, 1-tailed $p > 0.025$).

There was also no significant difference between magistrates in the BIS group ($M = 7.57$, $SD = 2.76$) and the no BIS group ($M = 7.47$, $SD = 3.52$) regarding the mean number of cases in the modelling set on which they disagreed from the modal response ($t[130] = 0.18$, 1-tailed $p > 0.025$). A Kendall's tau-b correlation was computed to examine the relationship between the extent of disagreement from the modal response and the modal decision made, over the set of 27 cases. Although a nonsignificant correlation of 0.28 was found for the no BIS group (2-tailed $p > 0.05$, $N = 27$), there was a significant correlation of 0.45 for the BIS group (2-tailed $p < 0.05$, $N = 27$).

5.3.5. Effects of BISs on magistrates' post-decisional confidence. Kendall's tau-b correlations were computed to examine the relationship between each magistrates' post-decisional confidence ratings and his or her remand decisions made over the set of 27 cases. The mean correlation for the BIS group was -0.16 ($SD = 0.27$). There were 16 statistically significant correlations, and 15 were negative (1-tailed $p < 0.025$, $n = 27$, $N = 74$). For the no BIS group, the mean correlation was -0.18 ($SD = 0.25$). There were 11 significant correlations, and 10 were negative (1-tailed $p < 0.025$, $n = 27$, $N = 55$).

Each magistrates' mean post-decisional confidence ratings in the decisions made on the 27 cases was calculated. As predicted, magistrates in the BIS group reported significantly higher post-decisional confidence ($M = 8.54$, $SD = 0.91$) than magistrates in the no BIS group ($M = 8.20$, $SD = 0.94$) ($t[130] = 2.05$, 1-tailed $p < 0.025$), although the effect size is very small.

5.3.6. Effects of BISs on magistrates' remand decision making policies. As in study one and study two, each magistrates' remand decision making policy was captured using Franklin's rule, Dawes' rule and the Matching Heuristic. The modelling procedures were the same as those used in study one, and so will not be detailed here. Suffice it to say, the remand decision making policy of each magistrate was modelled on the set of 27 cases. The polytomous cues were dichotomised for ease of analysis and for each cue, all non-italicised values were coded as 0 and italicised values were coded

as 1 (see notes to Table 5.1). The inter-cue correlations remained zero. The three decision options were also simplified into a binary decision, where unconditional bail represented a non-punitive decision and conditional bail or remand in custody together represented a punitive decision. Analysis of the frequency of the decisions made by each magistrate on the modelling set revealed that magistrates made a relatively equal number of punitive and non-punitive decisions. All of the models were developed so that they aimed to predict a punitive decision and only predicted a non-punitive decision by default. Each of the three models was used to make a prediction firstly on the set of 27 cases used to develop the models to test descriptive validity, and then on the set of seven holdout cases used to validate the models to test predictive validity.

A Matching Heuristic which searched through 1 cue only (out of a possible 9 cues) ($K = 1$) proved to be the best overall fit for 81.80% of the BIS group and 90.90% of the no BIS group. $K = 2$ for the remainder of magistrates in the BIS and no BIS groups. Figure 5.2 presents the model or models that proved the best fit overall decisions (i.e., punitive and non punitive) on the cases in the modelling and holdout sets for magistrates in the BIS and no BIS groups.

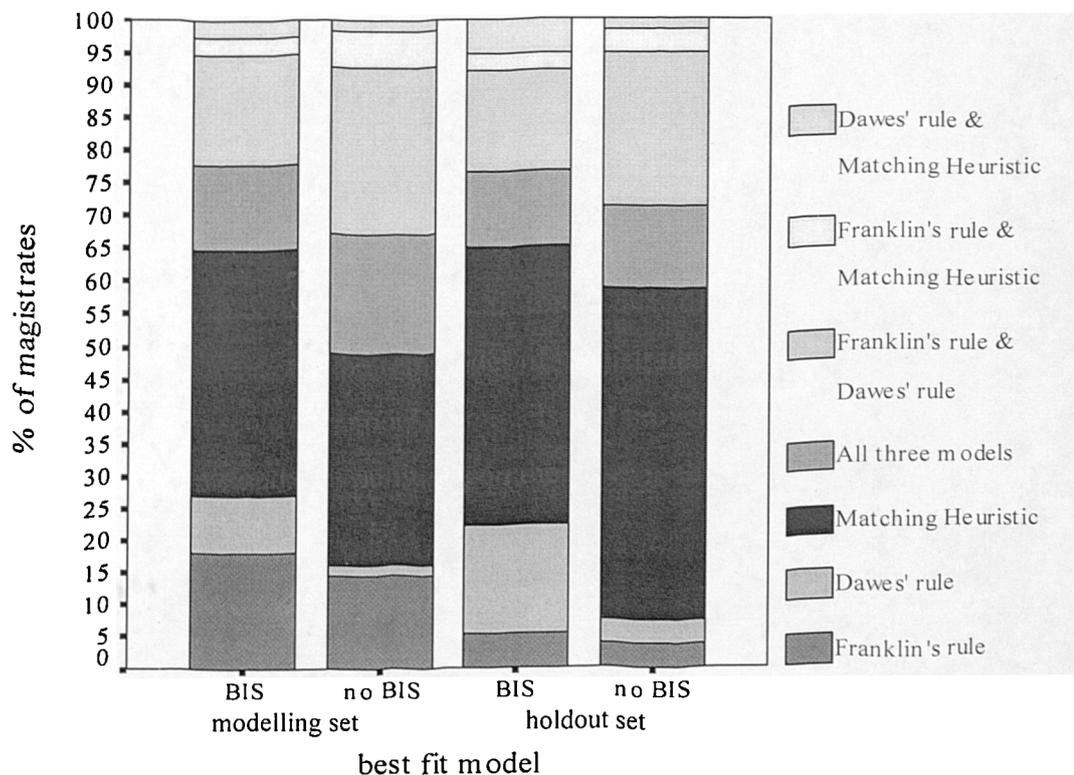


Figure 5.2 Best overall fit model for magistrates in BIS group and no BIS group on modelling set and holdout set

Figure 5.3 presents the results of the average overall fit of the three models across the magistrates in the BIS and no BIS groups on the modelling and holdout sets. To examine the difference in the fit of the three models on both the modelling and holdout sets, and the differences in fit between the BIS and no BIS groups, a mixed analysis of variance was conducted with two within-subjects variables and one between-subjects variable. Model was a within-subjects variable and had three levels (i.e., Franklin's rule, Dawes' rule and the Matching Heuristic). Set was the other within-subjects variable and had two levels (i.e., modelling set and holdout set). Group was the between-subjects variable and had two levels (i.e., BIS group and no BIS group). As predicted, there was a significant main effect of model ($F[1,164] = 6.11, p < 0.05$).⁶ There was however, no significant main effect of set ($F[1,130] = 0.73, p > 0.05$), and no significant main effect of group ($F[1,130] = 1.12, p > 0.05$).⁷ The interaction between group and model was non-significant ($F[1,164] = 0.40, p > 0.05$). The interaction between model and set was non-significant ($F[1,170] = 2.51, p > 0.025$). The interaction between set and group was also non-significant ($p > 0.025$). The three way interaction was also non-significant ($F[1,170] = 0.31, p > 0.05$). Table 5.3 shows the means and standard deviations for the within-subjects variables and the between-subjects variable. A paired samples *t*-test revealed that for the BIS group, the Matching Heuristic provided a significantly greater mean overall fit on the modelling set than Dawes' rule ($t[76] = -2.97, 1\text{-tailed } p < 0.025$). For the BIS group, the Matching Heuristic also provided a significantly greater mean overall fit on the holdout set than Franklin's rule ($t[76] = -2.30, 1\text{-tailed } p < 0.025$). For the no BIS group, the differences in the mean overall fit of the Matching Heuristic and the other two models on the modelling and holdout sets were not statistically significant ($1\text{-tailed } p > 0.025$).

⁶ Mauchly's test of sphericity was statistically significant ($p < 0.05$), indicating a heterogeneity of covariance and so the Greenhouse-Geisser correction was used, and the degrees of freedom are rounded off.

⁷ The Greenhouse-Geisser correction was used.

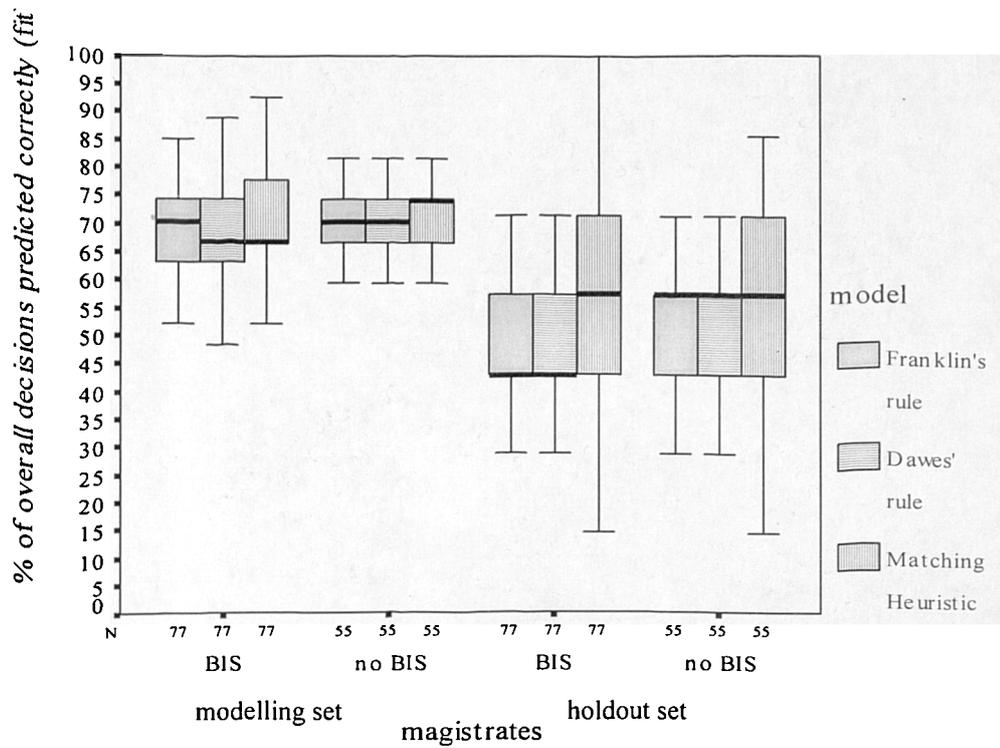


Figure 5.3 Overall fit of Franklin's rule, Dawes' rule and Matching Heuristic on modelling set and holdout set for BIS group and no BIS group

When comparing the fit of the models for both groups on only the non-punitive decisions on the modelling set, a mixed analysis of variance was conducted with model as the within-subjects variables and group as the between-subjects variable. The main effect for model was significant ($F[2,159] = 64.25, p < 0.05$), the main effect for group was not ($F[2,159] = 0.06, p > 0.05$), and neither was the interaction ($F[1,130] = 3.43, p > 0.05$).⁸ Franklin's rule ($M = 74.24, SD = 13.51$) provided a significantly greater mean fit to the non-punitive decisions than either Dawes' rule ($M = 71.47, SD = 14.17$) ($t[131] = 7.26, 2\text{-tailed } p < 0.05$) or the Matching Heuristic ($M = 53.84, SD = 14.68$) ($t[131] = 9.48, 2\text{-tailed } p < 0.05$). On the holdout set, the main effect for model was significant ($F[2,170] = 53.15, p < 0.05$), the main effect for group was not ($F[2,170] = 1.22, 2\text{-tailed } p > 0.05$), and neither was the interaction ($F[1,130] = 1.77, p > 0.05$).⁹ Here, Franklin's rule ($M = 64.23, SD = 31.33$) provided a significantly greater mean fit than the Matching Heuristic ($M = 36.72, SD = 32.64$) ($t[131] = 7.89, 2\text{-tailed } p < 0.05$), as did Dawes' rule ($M = 64.18, SD = 34.90$) ($t[131] = 7.29, 2\text{-tailed } p < 0.05$).

⁸ The Greenhouse-Geisser correction was used.

⁹ The Greenhouse-Geisser correction was used.

	% fit on modelling set			% fit on holdout set		
	BIS group	No BIS group	Total	BIS group	No BIS group	Total
	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
	(<i>SD</i>)	(<i>SD</i>)	(<i>SD</i>)	(<i>SD</i>)	(<i>SD</i>)	(<i>SD</i>)
	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>
Franklin's rule	68.40 (8.49) 77	71.38 (7.66) 55	69.64 (8.26) 132	48.24 (17.66) 77	49.87 (19.42) 55	48.92 (18.35) 132
Dawes' rule	66.71 (8.74) 77	70.6397 (7.19) 55	68.35 (8.33) 132	49.91 (19.20) 77	49.87 (21.27) 55	49.89 (20.01) 132
Matching Heuristic	70.91 (10.06) 77	71.62 (8.86) 55	71.20 (9.55) 132	55.18 (19.64) 77	54.92 (19.51) 55	55.07 (19.52) 132

Table 5.3. Means and standard deviations of overall fit of models on modelling set and holdout set for BIS group and no BIS group

When considering the fit on only the punitive decisions on the modelling set, once again, there was a significant main effect of model ($F[1,163] = 29.30, p < 0.05$), but not for group ($F[1,163] = 0.05, p > 0.05$), or for the interaction between group and model ($F[1,130] = 0.03, p > 0.05$).¹⁰ Here, the Matching Heuristic ($M = 81.16, SD = 15.68$) provided a significantly greater mean fit than either Franklin's rule ($M = 70.25, SD = 12.41$) ($t[131] = -5.53, 2$ -tailed $p < 0.05$) or Dawes' rule ($M = 69.96, SD = 12.52$) ($t[131] = -5.88, 2$ -tailed $p < 0.05$). A similar pattern emerged on the holdout set. The main effect for model was significant ($F[1,158] = 50.49, p < 0.05$), but there was no significant main effect for group ($F[1,158] = 1.22, p > 0.05$), or the interaction ($F[1,130] = 1.22, p > 0.05$).¹¹ The Matching Heuristic ($M = 63.16, SD = 32.79$) provided a significantly greater mean fit than either Franklin's rule ($M = 36.43, SD =$

¹⁰ The Greenhouse-Geisser correction was used.

24.15) ($t[131] = -7.87$, 2-tailed $p < 0.05$) or Dawes' rule ($M = 38.44$, $SD = 25.83$) ($t[131] = -6.73$, 2-tailed $p < 0.05$).

There was no significant correlation between the overall fit of the Matching Heuristic on the modelling set and intra-magistrate consistency as measured by Cohen's Kappa ($r = -0.13$, 1-tailed $p > 0.025$) for the BIS group, but there was a significant correlation for the no BIS group ($r = -0.30$, 1-tailed $p < 0.025$). For the BIS group, there was a significant correlation between the fit of the Matching Heuristic on the holdout set and intra-magistrate consistency ($r = -0.31$, 1-tailed $p < 0.025$), while no significant correlation was found for the no BIS group ($r = -0.23$, 1-tailed $p > 0.025$).

5.3.7. Effects of BISs on cue use. The Matching Heuristic was used to elicit magistrates' cue use when making remand decisions. Cue use is defined broadly as the number of cues searched (including the cue on which the decision is based) and so this number may vary from case to case where $K > 1$. The mean number of cues used over the cases in the modelling set was calculated for each magistrate. There was no significant difference between the BIS group ($M = 1.07$, $SD = 0.15$) and no BIS group ($M = 1.04$, $SD = 0.12$) in terms of the grand mean number of cues used ($t[129] = 1.50$, 2-tailed $p > 0.05$).

Magistrates in both groups varied regarding the cues they used to make their remand decisions. Figure 5.4 illustrates the percentage of magistrates in both groups who used each cue according to the Matching Heuristic. A Chi-Square test showed that the use of gender was non-independent of the group ($\chi^2[1, N = 132] = 7.70$, 2-tailed $p < 0.006$). The use of age was independent of the group ($\chi^2[1, N = 132] = 0.33$, 2-tailed $p > 0.006$), as was the use of offence ($\chi^2[1, N = 132] = 2.17$, 2-tailed $p > 0.006$), polbail ($\chi^2[1, N = 132] = 0.01$, 2-tailed $p > 0.006$), and pcbr ($\chi^2[1, N = 132] = 0.60$, 2-tailed $p > 0.006$). To guard against a type I error a Bonferroni correction was applied to the p values. The expected frequencies in some of the cells were below 5 for race, proscase, prosreq and defreq, therefore, a Chi-Square analysis was abandoned for these variables. Analysis of the critical value on the cues used by magistrates in each group revealed that magistrates in both groups used the polbail, pcbr, proscase, prosreq and defreq cues in the same direction. There were some differences between the BIS group and no BIS group regarding the direction of use of the age, gender, race and offence cues. However, these differences were relatively small.

¹¹ The Greenhouse-Geisser correction was used.

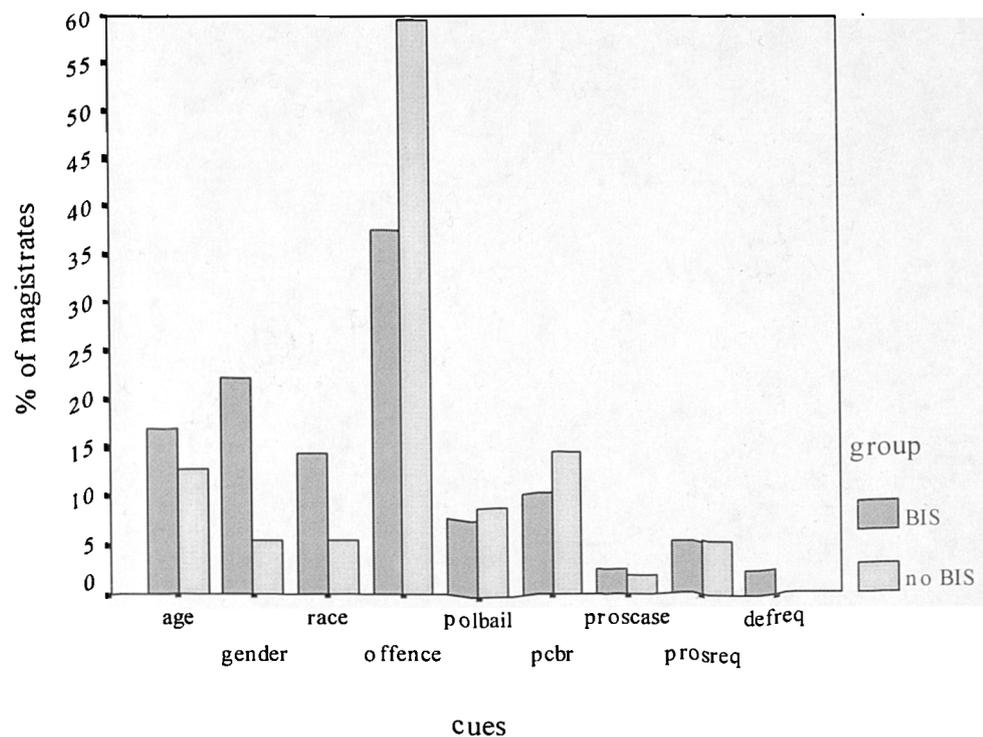


Figure 5.4. Percentage of magistrates in BIS group and no BIS group who used each cue according to Matching Heuristic

5.3.8. Effects of BISs on self-reported policies. In order to compare the explicit policies of magistrates in the BIS group and the no BIS group, the median rank order of each cue in both types of policies was computed across magistrates. Any tied ranks in explicit policies were converted into sequential unique values. Figure 5.5 provides a comparison of the explicit policies of the BIS and no BIS groups. Note that the rank order of importance was reversed for ease of illustration, so a rank order of nine represents the most important cue. Mann-Whitney *U* tests were conducted to see if there were significant differences between the BIS and no BIS groups regarding magistrates' self-reported rank order of cue importance. There were no significant differences between the groups in terms of the mean ranks for any of the cues (2-tailed $p > 0.05$).

For magistrates in each group, the rank ordering of the nine cues as described by the Matching Heuristic was compared with the rank ordering of cues explicitly provided by magistrates in the ranking task. Kendall's tau-b correlations were computed between each magistrates' implicit and explicit rank order of cues. As expected, the correlations were low. For the BIS group, the correlations ranged from -0.56 to 0.67 ($M = 0.12$, $SD = 0.27$) and for the no BIS group they ranged from -0.34 to 0.61 ($M = 0.16$, $SD = 0.20$). There were only two statistically significant correlations for the BIS group (1-tailed $p <$

0.025, $N = 9$, $n = 76$) and one for the no BIS group (1-tailed $p < 0.025$, $N = 9$, $n = 55$). There was no significant difference in the mean correlation between the two groups ($t[129] = 0.95$, 1-tailed $p < 0.025$).

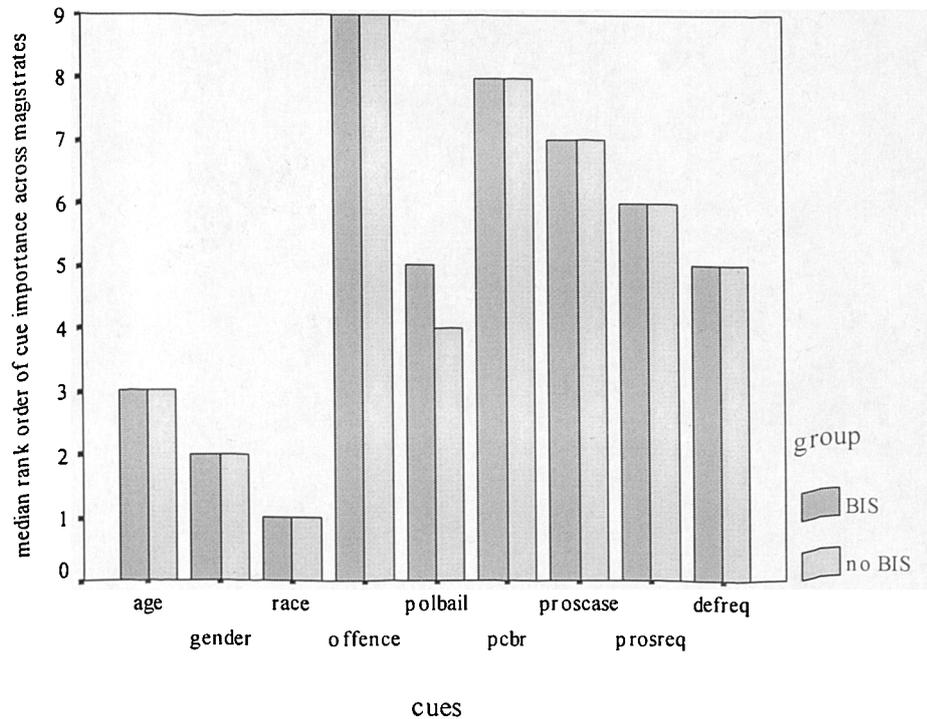


Figure 5.5. Explicit rank order of cue importance reported by BIS group and no BIS group

A Mann-Whitney U test was conducted to see if there was a significant difference between the two groups' rank ordering of community ties. There was no significant difference ($U = 1904.50$, 2-tailed $p > 0.05$). The median rank order of importance attached to the community ties cue was 4 for both groups.

Figures 5.6a and 5.6b illustrate the concordance between magistrates' implicit and explicit rank ordering of cues summarised across for the BIS and no BIS groups, respectively. For both groups, it is evident that the legal cues are ranked as more important in magistrates' explicit policies than as indicated by their implicit policies captured by the Matching Heuristic. Furthermore, although the extra-legal cues are ranked as important in magistrates' implicit policies, they explicitly report that these cues are not important in their remand decision making.

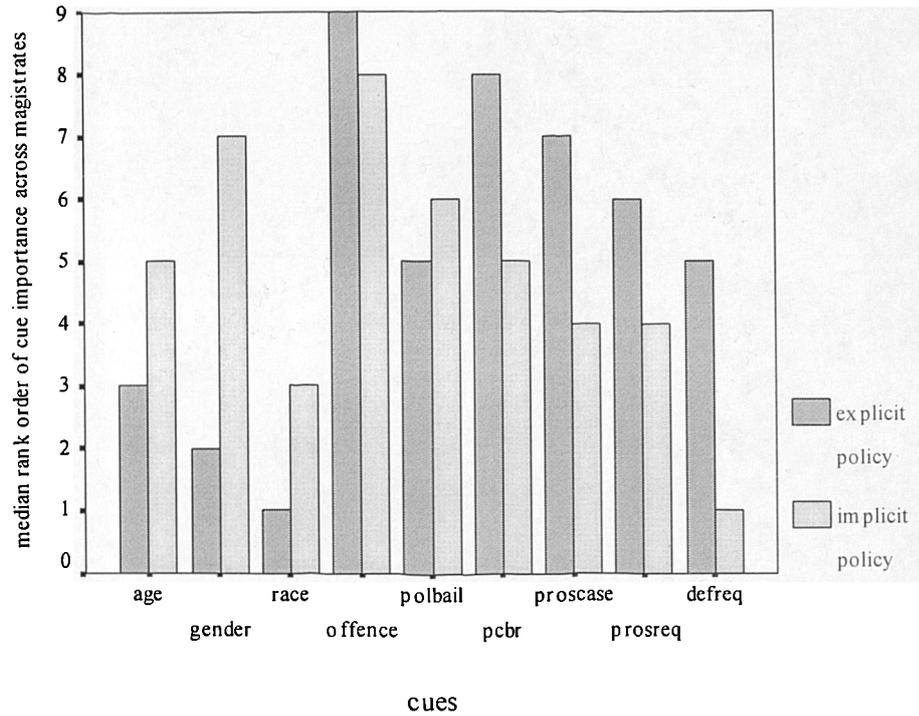


Figure 5.6a. Comparison between implicit and explicit remand decision making policies of BIS group

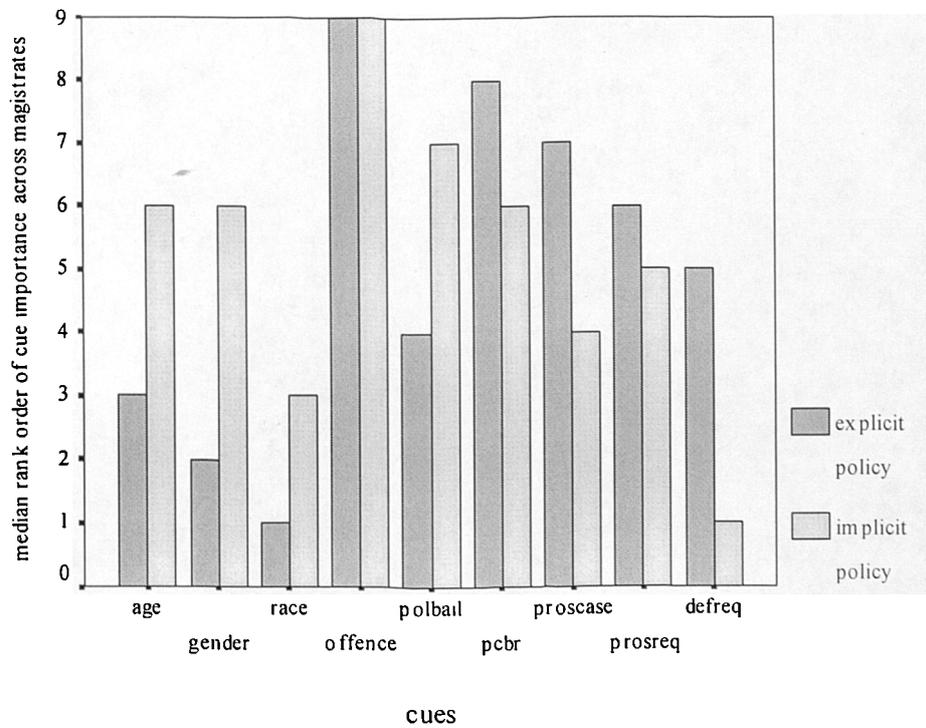


Figure 5.6b. Comparison between implicit and explicit remand decision making policies of no BIS group

5.4. Discussion

5.4.1. Summary of main findings. No significant differences were found between magistrates in the BIS group and no BIS group with regard to the median decision made and the grand mean number of conditions imposed. There was also no difference between the groups in terms of their mean intra-individual consistency; mean number of cases on which they disagreed from the modal response; mean number of cues used; nature of the cues used; their explicit policies; and the concordance between their implicit and explicit policies. In addition, the Matching Heuristic captured the policies of magistrates in both groups as equally well as Franklin's rule and Dawes' rule. However, magistrates in the BIS group demonstrated significantly higher mean post-decisional confidence than did magistrates in the no BIS group.

5.4.2. Discussion of main findings. Contrary to the prediction that model fit is related to consistency, in the present study it was found there was either no relationship between intra-individual consistency and overall model fit, or there was a negative relationship. No explanation can be offered for this, although the lack of an association between fit and consistency has been observed in other studies (e.g., Dhimi & Harries, 2001). Regardless of group, the pattern of findings concerning intra-individual consistency, disagreement among magistrates, post-decisional confidence, and concordance between implicit and explicit policies, found in the present study, was generally compatible with those reported in study one. Therefore, these findings will not be discussed further here. Rather, the discussion will focus on the effectiveness of the BIS initiative.

The present study does not suffer from the problems of missing information and the demand characteristics involved in "action" research, that were faced by past studies. The present study was the first to investigate the affect of BISs on magistrates remand decisions using a controlled experimental design, and so methodologically it is more rigorous than past research on this topic. It could be argued however, that a balanced experimental design should also include a condition in which magistrates are presented with negative information about the defendant's community ties, and a condition in which information about community ties is entirely absent. This design was considered and rejected for a number of reasons. First, the present study aimed to test the effect of BISs, and these generally do not provide negative information. Second, study two revealed that community ties information was often provided in courts where a BIS does not operate. Finally, information gathered during the design phase of study

one suggested that magistrates would be unwilling to participate in a study which they considered unrealistic.

The frequency with which magistrates in both groups granted unconditional bail, conditional bail and remanded defendants in custody was representative of the remand decisions made in the English system (Home Office, 1999a). As predicted, magistrates in the BIS group imposed significantly more conditions of surety and bail hostel than magistrates in the no BIS group, although the use of bail hostel was not as large as reported by Burrows (1994) or Stone (1988). It is believed that strong community ties reduce the likelihood of a defendant absconding (e.g., Home Office, 1988), and the rationale for imposing conditions such as surety, residence and reporting is that they prevent absconding. However, there was no difference between the BIS group and no BIS group regarding the decisions made, which is contrary to all of the past research attesting to the effectiveness of BISs (Fiddes & Lloyd, 1990; HM Inspectorate of Probation, 1993; Lloyd, 1992; Mair, 1988; Pearce & Smith, 1976; Stone, 1988), although compatible with the variations among courts reported in some studies (Godson & Mitchell, 1991; Lloyd, 1992; Stone, 1988).

There are several possible explanations for this finding. The first relates to the amount and nature of information presented in the no BIS group relative to that presented in the BIS group. The amount and nature of the community ties information presented to magistrates in the BIS group was designed to be representative of that provided in a court with a BIS in operation, and the amount and nature of the community ties information presented to magistrates in the no BIS group was representative of that available to magistrates in the two courts observed in study two. There were no BISs in either of these courts. It can be seen that information pertaining to residence is available in most cases in the no BIS group, and that this is often positive, thus lessening the comparative effect of BISs. Criminological studies have also reported that such information is often available to the court (Hucklesby, 1996). Information pertaining to residence is contained in the courtsheet, and as Hucklesby (1996) observed, defence solicitors tend to present community ties information to the court. Past studies evaluating BISs have tended to ignore the fact that positive community ties information may be available to magistrates sitting in courts where a BIS is not in operation.

Second, the information pertaining to community ties presented to the BIS group may be considered somewhat meagre and vague. On returning the questionnaires, some magistrates commented on the hypothetical cases and the bail decision making task.

One lay magistrate in the BIS group asked “How fixed is the fixed address?... The defendant may be married, as stated, but is the marriage still intact...?” However, study two and criminological research (Burrows, 1994; Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996; Morgan & Henderson, 1998; Zander, 1979) have revealed that information presented in the courtroom is usually sparse, and that magistrates often do not request further information.

A third explanation concerns the composition of the magistrates in the BIS group. The magistrates in the BIS group and no BIS group were similar in terms of type, experience, and operation of BIS in their courts. However, a significantly greater number of magistrates in the BIS group were from metropolitan courts. Studies one and two, and some criminological research (Bottomley, 1970) have demonstrated that magistrates located in metropolitan courts are more punitive than magistrates in provincial courts. Therefore, this difference in the composition of the two groups may account for the lack of effectiveness of BISs observed in the present study.

A fourth possible explanation is that the present study lacked the social dimension in which BISs operate. The probation service provides the completed bail information sheet to the prosecution and defence rather than directly to the court (although for an exception see Morgan and Henderson, 1998), and it has been suggested that BISs work indirectly through the prosecution request or defence request (Fiddes & Lloyd, 1990; Godson & Mitchell, 1991; Lloyd, 1992; Stone, 1998). In the present study, the BIS was independent of the prosecution and defence requests. There is evidence from studies one and two, and past criminological research (Doherty & East, 1985; East & Doherty, 1984; Hucklesby, 1996; 1997a; Morgan & Henderson, 1998; Zander, 1979), showing that magistrates are influenced by the prosecution request. A relatively equal proportion of magistrates in both groups used the prosecution cue according to the Matching Heuristic.

Finally, the findings may be explained by the fact that magistrates do not base their remand decisions on the risk of a defendant absconding. Information pertaining to community ties is aimed to help magistrates assess the likelihood of the defendant absconding if released on bail, however, this is only one of the risk judgements that magistrates must make before making a decision. The Bail Act 1976 also requires magistrates to judge the likelihood of a defendant offending while on bail, and interfering with witnesses/obstructing justice. The strength of a defendant’s community ties are not viewed as pertinent to judging these latter two risks (Home Office, 1974), and the Bail Act 1976 does not provide guidance as to whether the three risks are to be

weighed equally or differentially, and what is considered a high risk. Very little research has investigated magistrates' bail risk judgments (Morgan & Henderson, 1998). Future development of BIS type initiatives should target the aims of magistrates' decisions.

It is clear that the lack of effectiveness of BISs demonstrated in the present study is compatible with the findings of study one and two, which show that magistrates do not use this information when it is available. Magistrates in both groups in the present study also did not explicitly report community ties information to be particularly important to their decisions. This is not surprising considering that magistrates do not know the predictive validity of this information. The future need and effectiveness of BISs may rest on the results of research that can provide empirical support for the theoretical argument regarding the importance of the strength of the defendant's community ties to the remand decision.

BISs have been reported to be effective in the American system (e.g., Ares et al., 1963). However, some major differences between BISs in the American and English systems are that in the former, the BIS provides an objective score pertaining to the strength of the defendant's community ties on a fixed scale (see Appendix B), a recommendation for bail is explicitly made, and the information is presented directly to the court. In the English system, Stone (1998) states that a reason for not submitting the information directly to magistrates is that the information "does not form a recommendation for bail nor does it give a complete picture of the defendant...[and] it could leave the false impression that the Probation Service had taken an overall view on bail" (p. 12). The question of how these differences in the operation of BISs impact on their effectiveness remains to be investigated. If these differences do result in the desired effect of leading magistrates to remand fewer defendants in custody, then changes must be made to the current operation of BISs in the English system.

In the present study, although magistrates in the two groups did not differ significantly in the decisions they made, magistrates in the BIS group demonstrated significantly greater confidence in their decisions, than did magistrates in the no BIS group. Research in the field of J/DM has reported that confidence increases with the amount of available information (e.g., Russo & Schoemaker, 1989). Unlike some of the past studies (Lloyd, 1992; Stone, 1988), the present study did not investigate the effectiveness of BISs in leading magistrates to release the "right" defendants on bail as the cases were hypothetical. Although the relationship between confidence and accuracy cannot be examined here, a lay magistrate wrote commenting that "You ask also the certainty of the decision, if magistrates start feeling confident that they are getting

things right, then the opposite is usually true.” As stated earlier, high confidence may hinder changes in policies.

After a recent examination of magistrates’ remand decision making in England and Wales, Morgan and Henderson (1998) concluded that more BISs should be established to overcome the problem of a lack of information. BISs are a cost to the public purse, and the results of the present study indicate that the future investment in the BISs initiative needs to be reconsidered. The present study also suggests that future evaluations need to be carefully designed to test the cause-effect relationships which policy makers believe exist between such initiatives and magistrates’ decision making. Finally, the present study draws attention to the effectiveness of other policy initiatives designed to affect magistrates’ remand decisions such as bail hostels (White, 1978; Prat & Bray, 1985; Watson, 1994), and electronic tagging (Mair & Mortimer, 1996; Moritmer & Mair, 1997).

6. THE WAY AHEAD FOR MAGISTRATES, REMAND DECISIONS, SOCIAL JUDGEMENT THEORY AND SIMPLE HEURISTICS¹

The research presented in this thesis employed the technique of JA and the simple heuristics approach, within the framework of SJT, to investigate English magistrates' remand decision making. Both the decisions made by individual magistrates on hypothetical cases, and the decisions made by benches on real cases, were examined. In the two studies using hypothetical cases, it was found that the fast and frugal, non-compensatory Matching Heuristic was better at describing and predicting magistrates' decisions than either of two linear, compensatory integration models. These findings support previous research reviewed in Chapter 2 attesting to the validity of simple heuristics. According to the Matching Heuristic, all magistrates based their decisions on one cue, and most magistrates only searched through cue of the cues presented. While some magistrates used legal cues, others used defendant and crime control related cues, and cues were mostly used in the expected direction, thus supporting the claims of past criminological research reviewed in Chapter 1. Magistrates did not report these "extra-legal" cues as being very important in their decision making. This is compatible with the findings past SJT research reviewed in Chapter 2, although social judgements theorists would call this a demonstration of a lack of "insight" in judgment policies.

When granting conditional bail, magistrates typically imposed more than one condition on average, and this was most frequently one of residence. These findings confirm those of criminological research reviewed in Chapter 1. Contrary to past research presented in Chapter 1, BISs did not have a significant effect on magistrates' decisions or on the grand mean number of conditions they imposed, although they did lead to significantly greater post-decisional confidence. Some magistrates were consistent in the decisions they made, however, the majority demonstrated some degree of inconsistency in a simple test-retest situation. Furthermore, all magistrates demonstrated disagreement from the modal response on at least some of the cases presented. Despite this, all magistrates were also highly confident in the decisions they made. These findings have extended our understanding of magistrates remand decision making, and are compatible with many other SJT studies investigating J/DM in other domains, as presented in Chapter 2. Finally, there were few differences in the

¹ The main findings of study one and two have been presented at various national and international conferences, which are listed in Appendix H. Study one is in press (Dhami & Ayton), and the other two

performance of lay and stipendiary magistrates, and more and less experienced magistrates. There were however, some differences in the performance of magistrates from metropolitan and provincial courts.

The findings of the study using real cases confirmed the main findings of the two studies using hypothetical cases. In addition, the formal properties of the remand decision making task were identified. For instance, it was revealed that the inter-correlations among the cues available to magistrates were generally small. Some of the cues that the Bail Act 1976 explicitly stipulates magistrates should consider were often unavailable to magistrates. Although there was no relationship between caseload and duration of decision making, magistrates took on average between 6.5 to 10 minutes, which was longer than that reported by criminological research reviewed in Chapter 1.

The findings and the limitations of the three studies presented in this thesis were discussed in detail in Chapters 3 to 5, and so I shall take the opportunity to discuss more general aspects of magistrates' remand decision making, social judgement theory and simple heuristics in this chapter. The chapter is organised into five sections. In the first section, I consider a possible limitation of the research with regard to the manner in which the Matching Heuristic was tested. Then, I examine the generality of the findings both to the English magistracy and beyond the English system. In the second section, I discuss the implications of the findings for the principles of due process, and list possible ways in which magistrates' remand decision making performance could be improved. This includes a statement of the further research that could be conducted, which is in addition to the possibilities for further research noted in Chapters 3 to 5. In the third section, I compare the simple heuristics approach with the heuristics and biases approach, which has dominated much J/DM research. Following this, I discuss the criteria by which models can be chosen and further describe the Matching Heuristic. I then highlight the implication of the findings of the present research for Brunswik's (1952) lens model and SJT. I present the main conclusions in the final section.

6.1. Limitations and Generalisability of Present Research

6.1.1. Was the test of the Matching Heuristic limited? Some critics may consider the fact that the Matching Heuristic was not compared against the regression model, as a limitation of the present research. Afterall, social judgement theorists use the regression model, and not simpler linear models such as Franklin's rule and Dawes' rule. The regression model is considered a benchmark model when fitting data, and

are currently in preparation for publication.

some SJT studies have reported that it can provide a very good fit to judgement data, so that over 80% of the variance in judgements is accounted for (e.g., Gonzalez et al., 1998; Kirwan et al., 1983; Kline & Sulsky, 1995). In studies one and three, the use of the regression model was precluded by the small case:cue ratio, and in study two it was impeded by the large amounts of missing (unavailable) data on some of the cues. However, there are several reasons why the inability to compare the Matching Heuristic against the regression model is not necessarily a limitation.

First, Dawes and Corrigan (1974) demonstrated the phenomenon of flat maximum, where many different sets of weights can provide an equally good fit to data. When models are cross-validated it has been found that non-optimal unit or equal weights can sometimes fit data better than the benchmark (e.g., Claudy, 1972; Dawes & Corrigan, 1974; Dorans & Drasgow, 1978; Einhorn & Hogarth, 1975; Schmidt, 1971, 1972). In fact, fast and frugal heuristics may outperform the benchmark (Czerlinski et al., 1999; Gigerenzer et al., 1999a). Second, there are many SJT studies that have found the regression model to be a poor fit to some individuals' judgement data (e.g., Al-Tabtabai, 1998; Sensibaugh & Allgeier, 1996; Westenberg et al., 1998; Zedeck & Kafry, 1977), thus not ruling out this possibility for magistrates' remand decision making. Third, in their study, Slegers et al. (2000) found that a fast and frugal heuristic fitted their participants' choices as equally well as a logistic regression model.

Finally, and perhaps most importantly, since the present research was conducted, I have also tested the relative descriptive and predictive validity of the Matching Heuristic against a logistic regression model that contained only statistically significant cues (Dhami & Harries, 2001). Thirty-six English doctors made decisions whether or not to prescribe lipid lowering drugs on a set of 130 hypothetical cases, based on 12 binary and polytomous cues. Their individual decision making policies were modelled on 100 of the cases (as the other 30 were duplicates used for a measure of test-retest consistency). It was found that although the logistic regression model only contained a few cues on average, doctors used significantly fewer cues according to the Matching Heuristic. The Matching Heuristic also indicated greater disagreement among doctors' policies. Across the doctors, the logistic regression model (with only significant weights) provided a mean fit of 73.97% compared to a mean fit of 74.13% provided by the Matching Heuristic. There was no statistically significant difference in the mean fit of both models. There was also no difference in the degree of self-insight suggested by both models. In this sense, the findings of the present research are not considered to be

especially limited due to the inability to compare the Matching Heuristic with a regression model.

6.1.2. What is the generality of the findings? The present research investigated the remand decision making practices of 213 individual magistrates and 58 benches comprising a combination of 111 magistrates, from a total of 112 adult magistrates' courts in the English criminal justice system. By contrast, criminological research has tended to involve a small sample of courts, and researchers have not reported how the courts and magistrates were sampled (Brown & Hullin, 1993; Doherty & East, 1985; East & Doherty, 1984; Eaton 1987; Hucklesby, 1996, 1997b; Morgan, 1994; Morgan & Henderson, 1998). The courts participating the present research were randomly sampled from the directory of courts in England and Wales (Morris, 1996, 1997). The demographic make-up of the magistrates who participated with regard to their type, experience, and location of court, can be considered representative of the magistracy as a whole (Darbyshire, 1997b; Lord Chancellor's Department, 1999b). Therefore, the findings of the present research may be generalised to the English magistracy.

The extent to which the findings concerning magistrates' inconsistency, disagreement, use of a fast and frugal heuristic and extra-legal cues, and high post-decisional confidence generalise to magistrates' performance on other decision making tasks such as the decision to convict and sentence, is unclear. These decisions are made less frequently and are considered to be more complex in terms of the amount of information presented, their duration and the legislation on which they hinge. Nevertheless, the picture painted by past research on these other decisions is not too dissimilar from that presented here (e.g., Hood, 1992; McKnight, 1981).

Whether the findings of the present research can tell us anything about how remand decisions are made in other criminal justice systems is also unclear. The magistracy and the remand decision making task are not exclusive to the English system. For instance, magistrates work in the American, Australian, and Canadian systems, and psychological and criminological research has been conducted on remand decision making in other justice systems including the American (e.g., Ebbesen & Konecni, 1975, Goldkamp & Gottfredson, 1985; Goldkamp, Gottfredson, Jones, & Weiland, 1995; Williams, 1993), Australian (e.g., Sarre, King, & Bamford, 1999), and Scottish systems (e.g., Paterson & Whittaker, 1994, 1995). However, some of the characteristics of the remand decision makers and the remand decision making task are peculiar to the English system. For example, In the Scottish system, remand decisions are made by sheriffs, who differ from English magistrates with regard to their legal

training. In the American system, the decision refers to a continuous decision about how much money the defendant should put forward in order to be released on bail, rather than a categorical decision. In this sense, it may not be safe to generalise the findings of research from one jurisdiction to others because although the decisions may be common to different systems, the legal rules and procedures, and the characteristics of the individuals trained to apply them are often peculiar to a particular jurisdiction. However, it is also the case that the findings of the past research conducted in other systems converge with the findings of the present research. For instance, Paterson and Whittaker (1994, 1995) found evidence of disagreement among three Scottish courts and reliance on crime control cues. Goldkamp and Gottfredson (1979) found that information pertaining to community ties did not have a great influence on decisions made in the American system. Ebbesen and Konecni (1975) used regression models to capture the policies of five San Diego judges. It was found that judges used few cues when making decisions and that they mainly followed the prosecution request. Finally, Williams (1993) found that a CART model, which conveyed a relatively simple process, could predict the decisions of American courts very well.

From another perspective, the generality of the findings of the present research can be discussed with regard to the findings of past SJT studies. Although there are exceptions, as pointed out in Chapter 2, many past SJT studies involving experienced decision makers in other decision making domains such as medicine (see e.g., Wigton, 1988; 1996), education (see e.g., Cooksey, 1988; Heald, 1991), social work (see e.g., Dalglish, 1988) and accounting (see e.g., Libby & Lewis, 1982; Waller, 1988), have reported findings similar to those demonstrated here, with regard to intra-individual consistency, disagreement among decision makers, the number of cues used, concordance between self-reported cue use and modelled cue use.

6.2. Challenging and Changing the System

6.2.1. Assessing the quality of decisions. Legal decisions, such as the remand decision, are regularly criticised by organisations supporting victims, groups representing defendants and professional agencies such as the CPS. Criticism is directed both at existing legal rules and procedures and the individuals who are formally trained and entrusted to apply them. The motivation for such scrutiny lies in the belief that crime and order are socially constructed and so can be reconstructed, and the realisation that decisions have consequences for both the public purse and the lives of the public. However, until now, psychologists in general and J/DM researchers in particular, had

not empirically assessed the quality of English magistrates' remand decisions (Dhami, 1999a, 1999b).

As in past criminological research, the present research revealed that the current practice of magistrates' remand decision making is far from ideal practice. Due process principles have been suggested as ways to regulate the remand decision and so constitute ideal practice (e.g., Galligan, 1987; King, 1981; Packer, 1968). Indeed, our notion of justice is synonymous with due process (Packer, 1968). Packer (1968) states that the due process model "...resembles a factory that has to devote a substantial part of its input to quality control" (p. 165). Due process principles require that all court participants follow procedural guidelines. Magistrates adjudicate the formal adversarial process followed by the prosecution and defence, who present arguments, based on carefully gathered facts. Magistrates must assess the weight of these arguments and integrate them. In addition, the defendant should be presumed innocent, receive equitable treatment, and should have an opportunity to appeal against the decision. Together, these principles strive to reduce a type I error or a false positive. However, the present research suggests that due process principles are violated by the lack of consistency in decisions; the extent of disagreement in decisions; the use of a simple, fast and frugal, non-compensatory decision making strategy; the use of "extra-legal" cues related to the defendants personal characteristics, the prosecution request, police remand decision, and the previous benches' decision; making a punitive decision when there is insufficient information; and making decisions rapidly. In fact, crime control principles are predominant in the remand process not only in practice, but also in theory viz., the law on bail (e.g., King, 1981; Hucklesby, 1993; Packer, 1968), thus implying that the law requires reform. Finally, although accuracy is not the main criteria by which to judge the quality of legal decisions, researchers in other domains have used inconsistency and disagreement as an indication of incorrect decisions (e.g., Libby & Lewis, 1982; Lidz, Mulvey, Apperson, Evanczink, et al., 1992), as can be done here.

Interestingly, the findings of the present research contradict how magistrates and their managers believe the remand decision is made. For example, a lay magistrate stated that "the decisions of Magistrates are indeed complex each case is an 'individual case'". Another lay magistrate claimed that "the situation...depends on an enormous weight of balancing information, together with our experience and training." The chairman of the council stated "we are trained to question, and to assess carefully the evidence we are given." A clerk to the justices commenting on the hypothetical cases said that "reference is made to defendant's gender, race and age, none of which, save in

some of the most exceptional circumstances, are going to be appropriate to a decision as to bail.” In Konecni and Ebbesen’s (1984) terms, these quotes highlight the “mythology of legal decision making” (p. 5). Certainly, the reality of magistrates’ remand decision making 25 years after the introduction of the Bail Act 1976 is not dissimilar from that prior to the Act. Zander’s (1967) conclusion that “the present system governing the determination of bail applications requires reform” (p. 142) still holds.

6.2.2. Improving remand decision making. Unlike criminologists, it is not common for psychologists researching legal decision making to also strive to change the system. For example, after a decade of research on various legal decisions made in the American system, Ebbesen and Konecni (1984) state that “Changes in the system’s structure, accountability, and incentives are too complicated to ponder here, and it is, frankly, unrealistic to do so, given the system’s entrenched vested interests. The best one can hope for is a greater acceptance of...systematic and continuous data-collection on decision making” (p. 17). This defeatist viewpoint is convenient. Fortunately, it is not shared by social judgement theorists. For instance, Hammond et al. (1975) state that “Social judgment theorists firmly believe that *all* students of human judgment should engage in research that will help provide better social policies and thereby increase our chances for a decent life on earth” (p. 306).

What should be changed? While some critics have questioned the philosophy of remand decision making altogether (e.g., Ashworth 1994), others have pointed to more practical changes. Criminologists have tended to focus on fallibilities in the decision makers, namely the magistrates. The fact that both lay and stipendiary magistrates are required to have “sound judgement” according to the organisations that recruit and appoint them (Lord Chancellor’s Department, 1999a, 1999d) has to some extent led to a belief that only particular people can “do the job”. Therefore, if these people are not performing well, they should be replaced (e.g., Brown, 1991; Darbyshire, 1997a, 1997b; Narey, 1997). In this vein, King (1971) had earlier concluded that:

the solution to the bail problem is not simply a matter of more representation and more information. Of far greater importance is the attitude of magistrates and judges, and the preconceptions that they bring to their courts...the experience of the 1967 Criminal Justice Act has shown that reforms in this field depend not upon the letter of the law, but upon those administering the law (p. 94).

More recently, it has been proposed that a more representative lay magistracy should be appointed, through a more open recruitment procedure (e.g., Darbyshire, 1997b; King & May, 1985). The future of the magistracy is currently being discussed in a report

commissioned by the Home Office (Sanders, 2000).² Early indications are that there will be proposals to professionalise the lay bench. Lay magistrates could either be required to sit with stipendiary magistrates or they could be replaced altogether by stipendiaries. Despite their difference in qualifications and training, however, the present research revealed that there were few differences in the performance of lay and stipendiary magistrates. It may be that differences only arise when magistrates are presented with difficult cases that hinge on complicated legislation. The cases presented in study one were not classified on this dimension. It has also been proposed, and to some extent accepted, that the justices' clerks could take over some of the magistrates' duties (Narey, 1997). Darbyshire (1997b, 1999) however, warns that court clerks lack the relevant training and appropriate guidance, and that they may face a conflict of interests. In sum, criminologists have focused on the decision makers and excluded an in depth analysis of the characteristics of the remand decision making task that magistrates are expected to perform.

As humans, both lay and stipendiary magistrates have limited cognitive abilities, with regard to attention, memory and information processing, for example. Therefore replacing one human with another may not be sufficient to change performance. Empirical evidence demonstrates that performance is contingent on both human cognitive limitations and task constraints (see Payne et al., 1993). This was recognised by Brunswik (1952) and Simon (1956), and influenced the view espoused by SJT (Hammond et al., 1975) and the simple heuristics approach (Gigerenzer & Todd, 1999). In practice, magistrates' remand decision making may be affected by the law, the order of information presentation, the availability and quality of information, opportunities to learn from the task, time pressure, and their work pattern. Although none of the studies presented in this thesis systematically tested the effects of characteristics of the remand decision making task on magistrates' performance, research in other domains reviewed in Chapter 2 (e.g., Jagacinski, 1994; Hammond et al., 1987; Hogarth & Einhorn, 1992; Payne et al., 1993), suggests that these will have predictable effects. Nevertheless, future research should examine the effects of these task characteristics on magistrates' remand decision making.

It is clear that interventions should focus on both the characteristics of the remand decision making task and on the magistrates themselves. Some of the possible changes that can be made to improve the system are discussed here. First, the lack of improvement in magistrates' performance after the Bail Act 1976 was introduced, may

² This report has not yet been published.

be accounted for by the fact the guidelines contained in the Act do not differ much from earlier guidelines such as those contained in the Criminal Justice Act 1967 (reproduced in Simon & Weatheritt, 1974). The law is vague and ill-defined, thus affording magistrates considerable discretion when judging bail risks and making bail decisions. For instance, magistrates can exercise discretion as to the cues they use, how they weight and integrate them, what they perceive to be insufficient information, and what they consider to be a substantial risk of breaching bail. In an attempt to reduce inconsistency, disagreement and use of extra-legal cues, efforts could be made to reduce discretion. The Judicial Studies Board has developed and issued a card “for easy reference” that provides a summary of the law of bail, in order to structure magistrates’ remand decision making (Judicial Studies Board, 1996). This does not however, reduce or even guide the discretion afforded by the Bail Act 1976. Others have proposed that guidelines be developed to reduce discretion, thereby increasing accountability, and increasing the feelings of procedural fairness (Galligan, 1987). There has been some success in the introduction of guidelines in the American system (e.g., Goldkamp et al., 1995). However, guidelines are restrictive and may become immutable (Galligan, 1987). Therefore, the law should be altered directly. The Bail Act 1976 could be better specified. The catch-all category could be unpacked into its component parts and the Act could incorporate a weighting scheme for the information that is informed by at least some objective measures of the relative predictive validities of the factors.

This leads to the second possible improvement, namely the determination of the important cues, and their objective predictive validities. The magistrates’ remand decision, is for the most part, based on an assessment of the risk that a defendant poses in absconding, offending, interfering with witnesses/obstructing justice. Magistrates must strike a balance between protecting the public and the defendant. The judgement of risk is multidimensional and bail risks may be separated into the cues that predict failure to surrender, offending while on bail, or interfering with witnesses/obstructing justice. Risk can refer to the estimated probability of one of these occurring, or more generally, can refer to the possibility that one of these will occur (Hansson, 1989). Recently, Morgan and Henderson (1998) asked magistrates and other court officials from one English court to list the information they would need to judge the three types of bail risks. Then, via written descriptions of real cases, participants were asked to identify the most relevant cues for judging bail risks. It was revealed that participants judged if any one risk was likely, when they made their remand decisions. Although more information was identified as being relevant for judging the risk of offending

while on bail, many of the same cues were viewed as necessary for judging all three types of risks.³ The study however, failed to yield sufficient information regarding the cues deemed relevant for judging the risk of interfering with witnesses/obstructing justice, and it did not distinguish between the factors that were perceived to determine a high risk and a low risk. Further research is needed on how magistrates' judge bail risks.

Before the introduction of the Bail Act 1976, researchers considered the factors that may affect the risk of absconding, offending, and interfering with witnesses/obstructing justice (Home Office, 1974; King, 1971; Simon & Weatheritt, 1974). They stressed the direction in which cues pointed, and the differential importance of the cues. The Bail Act 1976 is explicit as to some of the factors that should be considered. According to Sprack (1992), the possible reasons for the inclusion of these factors are that a defendant accused of a serious offence is more likely to abscond to avoid facing a lengthy prison sentence if convicted. The nature of the offence may indicate whether it is one that is likely to be repeated (e.g., shop lifting). Serious offences are relatively less likely to be repeated. A defendant will have more to lose by absconding if he or she has strong community ties, so a person with dependants, permanent employment and a fixed address is considered less likely to abscond. A defendant's character refers to his or her criminal record and may reveal that he or she is untrustworthy, and any previous convictions may suggest that he or she is likely to receive a custodial sentence if convicted because of breaching a suspended sentence, for example. A defendant's bail record shows whether he or she has been reliable in the past and if so, whether he or she may be trusted again. An argument for bail will be stronger if the prosecution case is weak, and a defendant is less likely to abscond if he or she believes the charge will not be proven. Furthermore, this gives the court an indication that the defendant is innocent and so it would be an injustice if he or she was remanded in custody.

Unfortunately, however, all of this is conjecture. The predictive validity of the cues explicitly referred to in the Bail Act 1976 have not been empirically or statistically tested. In order to obtain statistical evidence, an outcome criterion is needed. In chapter 1, it was suggested that formal, objective outcome feedback could help magistrates to develop an appropriate policy. However, as was pointed out, obtaining an outcome measure is difficult, if not impossible, in the legal domain. Indeed, the lack of an

³ Morgan and Henderson (1998) found that the relevant cues for judging the risk of failing to surrender were: likely sentence if convicted, current offence and the harm inflicted, housing situation, family ties, criminal record (related to likely sentence), bail record, employment status, and substance abuse. These

outcome criterion necessitated a single-systems design to be adopted in the studies presented in this thesis. Nevertheless, some headway has been made on the determination of the predictive validities of cues in the American (e.g., Goldkamp & Gottfredson, 1985; Nussbaum, Lang, Chan, & Riviere, 1994) and Australian systems (e.g., Weatherburn, Quinn, & Rich, 1987). In the English system to date, few studies have been conducted on this matter, and there are no plans to launch an official program of research to do so (Research and Statistics Directorate, personal communication, 2000). Brown (1998) reported that the nature of the offence, the length of time on bail, and the defendant's previous convictions were associated with offending on bail.⁴ Morgan and Henderson (1998) found that in addition to these factors, the defendant's bail record and community ties were related to offending on bail. Gender was not related to offending on bail.⁵ Further research is needed before these findings are considered conclusive.

When attempting to discover the cues that predict bail risks, researchers can learn from the studies that have investigated the predictors of dangerousness (see Monahan, 1982; Monahan & Steadman, 1994). First, a wide range of cues should be selected for study on theoretical grounds, including situational, dispositional and historical cues. Second, defendants should be grouped according to important demographic factors rather than lumped together. Third, the risk behaviours should also be separated into meaningful subtypes to make prediction more sensitive. For example, the cues predicting the commission of violent offences on bail may be different from those predicting the commission of property offences on bail. Fourth, the difficulty in reliably measuring offending while on bail and interfering with witnesses/obstructing justice using official records can be somewhat overcome by using self-report techniques. Such techniques have proved successful in revealing hidden crimes (Maguire, 1994). Fifth, the problem posed by the fact that high bail risks are likely to be remanded in custody where their opportunity to abscond is limited for example, can be dealt with by discovering how these defendants differ from those who are bailed. Thus, defendants remanded in custody can be matched with a sample who were bailed, and the extent to which the cues predicting bail risks in the bailed sample can be generalised to the custody sample. The fact that magistrates are inconsistent and show disagreement suggests that this matching procedure may not be too difficult.

cues, plus the defendant's community or criminal ties were also considered as the most relevant for judging the risk of offending while on bail.

⁴ Brown (1998) analysed offending on police bail and court bail together.

Future research needs to be directed at measuring cue validities. In the meantime, cues could be weighted equally. As noted above, past research, as well as the present research, have shown that unit or equal weighted models fair well against differentially weighted models. Dawes and Corrigan (1974) concluded that “The whole trick is to decide what variables to look at and then to know how to add” (p. 105).

Third, if the relevant cues (and their weights) could be collected and a decision rule could be formulated, it is conceivable that magistrates could be replaced by an automated system. There is a considerable literature attesting to the efficacy of actuarial prediction (e.g., Dawes, 1971; Dawes, Faust, & Meehl, 1989; Meehl, 1954; Sawyer, 1966). As Goldberg (1970) pointed out, such models eliminate the random error in people’s judgements which arise through “boredom, fatigue, illness, situational and interpersonal distraction” (p. 423). Actuarial models are already in place in other aspects of the criminal justice system (e.g., Copas, Marshall, & Tarling, 1996; Ditchfield, 1997). However, there is also great resistance to statistical prediction (e.g., Kleinmuntz, 1990; Meehl, 1986), which not only reduces discretion, but also is a form of generalised decision making. In a recent discussion of the future development of the magistrates’ remand decision making task, the Law Commission (1999) recommended that discretion should be allowed, and generalised decision making should be proscribed.

Fourth, magistrates’ cognitive processing limitations could be overcome by providing them with a cognitive aid that helps them implement the law. Cognitive aids have been recommended in other judgment domains such as psychiatry (Erdman, 1988), and are not a new concept in the legal domain (e.g., Larsen, Yelon, & Irving, 1997).

Fifth, just and defensible decisions can only be made when there is sufficient information, and so the availability of information should be addressed. In the past, the BIS policy initiative was developed to counteract the problem of insufficient information pertaining to a defendant’s community ties. However, as study three revealed, this did not affect magistrates’ decisions. Any new initiative needs to first consider just how “unavailable” the information is, and its relevance to the decision.

Sixth, magistrates’ consistency and disagreement could be improved by providing them with cognitive feedback of their own and other magistrates’ bail decision making policies, respectively. The efficacy of cognitive feedback using the regression model has been widely demonstrated (see e.g., Doherty & Balzer, 1988; Hammond & Brehmer, 1973). Research needs to be conducted on the effectiveness of

⁵ Morgan and Henderson’s (1998) study however, was an example of “action research” where the changes were made to the bail practices of the courts they were studying during the period of the study.

fast and frugal heuristics as cognitive feedback devices. Note that in the single systems design only cognitive information can be provided, and information about the task cannot be conveyed. However, in a domain where the objectively correct decision is difficult to reliably determine, feedback of one's own policy may result in consistent use of an inaccurate policy, and feedback of one individual's policy to others, may result in the use of an "agreed" upon, but inaccurate policy.

Seventh, statutory rules of procedure for bail hearings could be introduced in order to improve consistency. Lydiate (1987) proposes that the clerk can structure the proceedings and gathering of information by magistrates.

Finally, the fact that the remand decision arises as a result of a need for an adjournment in a case because magistrates are busy, means that efforts could be made to reduce magistrates' caseloads and so reduce delays. To this end, several initiatives have already been introduced such as delegating greater powers to the court clerk in extending police bail and enlarging court bail, for example (Magistrates' Association, 1993 cited in Whittaker et al., 1997). Whittaker et al. (1997) found that the reasons for adjournments included the need to gather further information such as a pre-sentence report in 17% of their sample of cases. In 6% the case was remitted to another court (e.g., to be heard with other charges), and in 5% of cases there were other reasons for an adjournment request (e.g., an interpreter was required). These delays could be avoided. However, as Whittaker et al (1997) also point out, approximately half of the delays were considered to be unavoidable because for example, the case was proceeding to trial.

Any attempts to improve magistrates' decision making need to take into consideration a number of factors. First, the interdependency and interrelatedness of the criminal justice agencies such as the police, CPS, courts, legal representatives and the probation service, amongst whom magistrates operate, should be taken into account. These agencies may have goals that compete with those of the magistracy (Pullinger, 1985). Second, the criminal justice system does not operate in a vacuum. It is greatly influenced by the political, economic and social climate of the time (Hucklesby, 1997a; Jones, 1988; Robertshaw, 1983). The psychological research presented in this thesis was conducted from a cognitive perspective. There is also a social psychological dimension which is important (see Konecni & Ebbesen, 1987; Konecni & Ebbesen, 1988; Saks & Hastie, 1978). Finally, magistrates may be reluctant to change, and their resistance may be indicated by their high degree of post-decisional confidence in their abilities. In fact, as I experienced, magistrates and their managers can be quite resistant to research into their decision making.

Nevertheless, an awareness of the magnitude and significance of the magistrates' remand decision as discussed in Chapter 1, highlights the urgency with which practice needs to be improved. The remand prison population in 1998 represents a continuing rise since 1995, and a general increase over the past decade (Home Office, 1999b). It is projected to increase (Home Office, 2000c). In addition, there are historical changes to the English system that affect the magistracy, which have recently either been implemented or have been proposed. First, on 2nd October 2000, the Human Rights Act 1998 required that legal policy and practice in the English criminal justice system comply with the European Convention on Human Rights (Law Commission, 1999; Uglow et al., 1998). Article 5 of the Convention, which guarantees the right to "liberty and security of person" save certain exceptions, is particularly pertinent of the remand decision. The Law Commission (1999) recently completed a consultation paper in which it identified aspects of the Bail Act 1976 that are incompatible with Convention rights, either in theory or in practice. Some of the present research was included in the Commission's report. The Commission recommended that some parts of the Act be repealed or amended and that guidance and training be given to magistrates, so that they can apply the law appropriately. However, the Commission did not discuss factors, other than the law, that may affect application of the law and consequently lead to remand decisions violating Convention rights in practice. Second, the Government has recently publicised plans in its Criminal Justice (Mode of Trial) (No. 2) Bill, to reduce jury trials, thereby increasing trials in magistrates' courts (Home Office, 2000a). This proposal places great faith in magistrates' judgement abilities.

6.3. Theoretical Implications and Integration

At the outset of Chapter 2, it was stated that the field of J/DM includes many theoretical and methodological approaches (for overviews see Cooksey, 1996a; Doherty, 1993; Goldstein & Hogarth, 1997; Hammond et al., 1980; Slovic & Lichtenstein, 1971). Although some of these are complementary, there has been little integration among approaches, despite calls for a union (e.g., Anderson, 1974; Hammond et al., 1980; Hastie, 1991). The research presented in this thesis has made an attempt to integrate the simple heuristics approach with SJT. As discussed in Chapter 2, SJT appeared as a coherent framework for J/DM research in the mid 1970s. At the same time, Tversky and Kahneman (1974) introduced the heuristics and biases approach, which has since proved very popular among researchers. To date, research employing the heuristic and biases approach and SJT have been conducted in parallel, with no

meeting of the two (Hammond, 1990). Although the heuristics and biases approach and the simple heuristics approach both emphasise the psychological reality of heuristic processing, they differ in some important ways which may preclude their integration (Gigerenzer, 1991b, 1996; Gigerenzer & Todd, 1999; Kahneman & Tversky, 1996).

6.3.1. Simple heuristics and the heuristics and biases approach. The heuristics and biases approach borrowed its ideal vision of human behaviour from economics. According to Edwards (1954), “economic man is assumed to know not only what all the courses of action open to him are, but also what the outcome of any action will be....[He] is infinitely sensitive...He can weakly order the states into which he can get, and he makes his choices so as to maximize something” (p. 381, word in brackets added). It was argued that in order to choose so as to achieve the highest (in some cases, subjective) expected utility, behaviour should follow axioms such as transitivity and independence (von Neumann & Morgenstern, 1947; Savage, 1954). Formal computations involving probability theory, for example, were viewed as roots to axiomatic behaviour.⁶ Kahneman et al. (1982) tested whether descriptively, people used these formal roots to axiomatic behaviour. Their experimental method involved a between-subjects design where participants, were presented with systematically selected concrete hypothetical problems that could be either correctly solved using probability theory or could be incorrectly solved by using one of three heuristic strategies, namely representativeness, availability and anchor-and-adjust. Lopes (1991) classified this method as a test of strong inference.⁷ It was found that rather than using probability theory to conform to axioms, people rely on informal “rules of thumb” when making decisions. Moreover, it was demonstrated that these heuristics sometimes lead to systematic cognitive biases. For example, the reliance on availability can explain the concept of illusory correlation (Tversky & Kahneman, 1974). Changes to behaviour were therefore prescribed, so that people were required to abandon heuristic processing in favour of learning to use formal computations in order to conform to utility theory (Bell, Raiffa, & Tversky, 1988).

The simple heuristics approach and the heuristics and biases approach differ with regard to how the heuristics are specified, the method by which heuristic processing is determined, their view of heuristic processing, and their prescriptions for

⁶ However, not everyone agrees as to what probability theory to apply, the norms are content and context blind, and they make unrealistic demands of cognitive processing (e.g., Chase, Hertwig, & Gigerenzer, 1998; Einhorn & Hogarth, 1981).

⁷ It has been found that violations of rational norms may not occur when stimuli presented to participants are representatively sampled (e.g., Gigerenzer et al., 1991; Juslin, 1994; Sedlemeier, Hertwig, & Gigerenzer, 1998).

behavioural change. Kahneman et al. (1982) proposed a small number of cognitive heuristics namely, representativeness, availability, and anchoring-and-adjustment.⁸ These were only verbally described. For instance, the anchor-and-adjust heuristic was described as follows:

In many situations, people make estimates by starting from an initial value that is adjusted to yield the final answer. The initial value, or starting point, may be suggested by the formulation of the problem, or it may be the result of a partial computation.... We call this phenomenon anchoring (Tversky & Kahneman, 1974, p. 1131).

Furthermore, in their statement of how people use the representative heuristic to solve the probability that a person has a particular occupation, Tversky and Kahneman (1974) stated that “In the representativeness heuristic, the probability that Steve is a librarian, for example, is assessed by the degree to which he is representative of, or similar to, the stereotype of a librarian” (p. 1124). Psychological processes such as information search, stopping and decision making, are not clearly defined in these heuristics. This is in contrast to the fast and frugal heuristics whose processes are clearly specified step-by-step. In this sense, Kahneman et al.’s (1982) heuristics are not amenable to mathematical analysis or analysis by simulations, in the way the fast and frugal heuristics are. This has also meant that Kahneman et al.’s (1982) heuristics face the danger of seemingly being able to account for all sorts of behaviour (Gigerenzer & Todd, 1999).

Whereas researchers in the heuristics and biases approach use systematic design (Lopes, 1991), researchers in the simple heuristics approach strive for a representative design. They aim to randomly sample real stimuli from a defined population to which they can then generalise. They use a within-subjects design, and investigate the fit or accuracy of a heuristic, rather than its internal coherence. Access to an outcome criterion enables assessment of the accuracy of heuristic processing.

In the heuristics and biases approach, the value of heuristic processing is judged in terms of coherence criteria, namely the normative benchmarks that underlie probability and classical decision theory. Tversky and Kahneman (1974) concluded that “In general, these heuristics are quite useful, but sometimes they lead to severe and systematic errors” (p. 1124). When discussing the use of the representativeness heuristic, they pointed to peoples’ “insensitivity” to prior probabilities and their

⁸ In fact, Gigerenzer and Goldstein (1999) point out there has been some confusion over whether their recognition heuristic is actually the availability heuristic. This is not the case because the latter model refers to recall, not recognition.

“misconceptions” of random events, for example (p. 1125). They concluded by emphasising that “several of the severe errors of judgment reported earlier occurred despite the fact that subjects were encouraged to be accurate and were rewarded for the correct answers” (p. 1130). When referring to the use of the representativeness heuristic they stated that “What is surprising is the failure of people to infer from lifelong experience such fundamental statistical rules as regression toward the mean...” (p. 1130). Lopes (1991) argues that this depicts heuristic processing as negative, people as cognitively lazy, and has led to a pessimistic view of human abilities. Gigerenzer and Goldstein (1996) pointed out that some fast and frugal heuristics may violate axioms such as transitivity.⁹ The simple heuristics approach however, uses correspondence rather than coherence criteria to judge the value of a heuristic. The correspondence view was espoused by the likes of Brunswik (1952), Hammond (1986, 1990), and Simon (1956), and refers to the match between the structure of the environment and the heuristic. The closer the correspondence between the two, the more likely the heuristic will yield accurate responses. Unlike the heuristics and biases approach, the simple heuristics approach therefore also investigates the adaptive nature of heuristic processing, and simple heuristics are viewed in a positive light (Gigerenzer & Todd, 1999).

Finally, whereas the heuristics and biases approach prescribes behaviour which is normatively rational, the simple heuristics approach prescribes ecologically rational behaviour. Bell et al. (1988) note that when discussing prescriptive issues researchers may focus one of the following two questions: how should “idealized, rational, super-intelligent” people behave? How should real people change to improve their performance? (p. 16). The heuristics and biases approach focuses on the former, while the simple heuristics approach focuses on the latter. Unlike the heuristics and biases approach, which prescribes abandoning heuristic processing, the simple heuristics approach recognises the adaptive value (i.e., through the accuracy) of fast and frugal heuristics, and at least implicitly, prescribes their use.

6.3.2. Choosing a model. The research presented in this thesis compared the relative descriptive and predictive validity of three different models. The evidence supports past research reviewed in Chapter 2, demonstrating that the unit weighted model performs relatively well compared to a differentially weighted model, and that fast and frugal heuristics can outperform these two models. When choosing among models of human J/DM, it is standard practice to choose the one that provides the best

⁹ Lexicographic strategies, for example, have been considered irrational (e.g., Keeney & Raiffa, 1976).

fit to the judgement data, as was done in the present research. Whereas in the present research, the Matching Heuristic outperformed the other two models when modelling magistrates' remand decisions, in their study, Dhimi and Harries (2001) found that the fit of the Matching Heuristic was not significantly different from the logistic regression model. This is a demonstration of the phenomenon of flat maximum, where different sets of weights (von Winterfeldt & Edwards, 1986) or different strategies (Gigerenzer & Goldstein, 1999) yield the same performance. This phenomena has also been observed in other studies (e.g., Dawes & Corrigan, 1974; Gigerenzer & Goldstein, 1996).

Hammond et al. (1975) recognised that different models can achieve the same fit, although they advocated the use of the multiple linear regression model. Einhorn (1970) stated that "different models may be equally powerful with respect to describing the process. It therefore seems that accurately describing the process is at least necessary although not sufficient for describing the underlying cognitive process" (p. 222). Goldberg (1968) stated that the linear model is adequate if the aim is simply to reproduce or predict judgements. For Hoffman (1960), models were only required to test hypotheses about the judgement process. Therefore, he argued that "It is not required of models that they bear any semblance of some 'actual' state of affairs, either within the organism or elsewhere" (p. 124). Recently, Dhimi and Harries (in press) have suggested alternative criteria for choosing between models. These are psychological plausibility, flexibility and adaptability, and ease of understanding. In addition, social judgement theorists' use of the regression model has often been based on the fact that the analytic tools are readily available and simple to use (Cooksey, 1996a; Stewart, 1988), which may be considered another criterion.

Psychological criteria. Fast and frugal heuristics in general, and the Matching Heuristic in particular, meet these criteria. First, as Payne et al. (1993) have pointed out, people chose strategies depending on the cognitive effort required. They argue that "strategy selection is the result of a compromise between the desire to make the most accurate decision and the desire to minimise effort" (p. 114). Simple heuristics meet this compromise.

Second, simple heuristics are non-optimal in their development and implementation. Although Gigerenzer and Goldstein (1996) assumed that an optimal learning strategy is involved in the development of the Take The Best heuristic, the Matching Heuristic does not. It is more compatible, than earlier fast and frugal heuristics and integration models such as Franklin's rule, Dawes' rule and multiple linear regression, with evidence that people are selective and use frequencies when they

learn relations between cues and an outcome. The Matching Heuristic uses frequencies when determining the critical cue value. It is claimed that this is a natural form of processing (Cosmides & Tooby, 1996; Gigerenzer & Hoffrage, 1995). The way in which the Matching Heuristic defines the critical cue values and the cue utilisation validities is compatible with research showing how people learn about and judge causation and covariation from direct experience (Nisbett & Ross, 1980). Evidence suggests that when people learn about the relations between cues and an outcome, they look at only a subsection of the available information. (For example, see Steps 1 and 2 of the Matching Heuristic in the method section of Chapter 3.) Furthermore, the definition of the critical cue value indicates a type of positive bias, and there is evidence to suggest that people behave in this way (e.g., Klayman & Ha, 1987). Finally, unlike the static structural models, the Matching Heuristic, like other simple heuristics is capable of using different cues to make decisions on different cases.

Third, simple heuristics actualise behaviour which has been empirically demonstrated in other areas of psychology. Gigerenzer and Goldstein (1996) pointed out how their simple heuristics conformed to other psychological phenomena. For instance, the Take The Last heuristic is compatible with evidence of functional fixedness or the Einstellung effect (Luchins & Luchins, 1994 cited in Gigerenzer & Goldstein, 1996). The Matching Heuristic embodies the principle of matching characteristics of individual cases with a prototype. This behaviour is consistent with evidence from the field of categorisation (see Estes, 1994). In fact, the Matching Heuristic differs from many of the models that have been proposed for human categorisation such as exemplar models (e.g., Estes, 1986). These models search, and most integrate, all available information, and they do not contain explicitly specified information search or stopping rules. They are more complex than the Matching Heuristic. For instance, in exemplar models, all of the cues are used to compute the similarity between an object and all of the exemplars of every possible category to which the object may belong.

It should be noted that at the time the present research was conducted, there were no published fast and frugal heuristics for categorisation tasks, and the Matching Heuristic was developed specifically for this purpose. Recently, Berretty et al., (1999) have developed a fast and frugal heuristic called Categorization By Elimination. Like the Matching Heuristic, it is non-compensatory; it looks at the direction in which cue values point (i.e., called critical cue value in the Matching Heuristic); it searches through cues in order of their usefulness; and it is flexible in the cues used. As each cue

is processed, the number of possible categories to which an object may belong is reduced, and processing stops either when only one category remains or when all cues have been exhausted, whereby a choice is made randomly. This heuristic has fared relatively well against more complex models such as neural networks and exemplar models when categorising flowers, wines and mushrooms (Berretty et al., 1999), and against Dawes' rule and Franklin's rule when predicting peoples' judgements of intention based on motion (Blythe, Todd, & Miller, 1999). However, this heuristic is more complex than the Matching Heuristic, in terms of how cue order and direction of values are determined.

Ease of understanding. One of the goals of SJT is to improve judgment (Hammond et al, 1975). Judgment policies may be communicated to individuals in order to aid and train them to make consistent, accurate decisions, or reduce disagreement among individuals. The ease with which a model is understood is thus an important consideration. As discussed in Chapter 2, although the regression model has proved a very useful aid (Balzer et al., 1989; Doherty & Balzer, 1988), it is difficult to apply without the aid of a computer, and without knowledge of the parameters of the data set on which the model was based. In addition, practitioners with little knowledge of the statistical analysis may find it to understand. By contrast, fast and frugal heuristics such as the Matching Heuristic, provide a transparent, non-mathematical description of judgment behaviour in terms of a flowchart. The Matching Heuristic is simple to apply, and although the properties of the data set are essential for its construction, knowledge of the properties are not essential for its application. For example, knowledge of the natural variance of gender in the remand decision making task is unnecessary for the heuristic to predict a punitive decision if the defendant is male when the defendant in this case is male. On the other hand, if a standardised weight was to be applied (as in a regression model), this knowledge is required.

Ease of construction. The multiple linear regression model is a parametric model which contains certain assumptions regarding the data. These are normality, linearity, homoscedasticity and independence of residuals (Cohen & Cohen, 1983; Tabachnick & Fidell, 1996). Violations of these assumptions will undermine the validity of these tests. Cooksey (1996a) points out that the assumptions of homoscedasticity and independence of residuals are often violated in JA studies. In addition, as has been discussed in Chapter 2, regression based techniques may require a large data set if many cues are being studied, and inter-cue correlations may lead to difficulties in interpretation of the beta weights. Finally, the fact that the cues are to be

weighted and combined in a regression model, means that they need to be converted to a common currency. These restrictions prevented the use of a regression model on the data set in the present research. Like other simple heuristics, the Matching Heuristic, is a non-parametric technique, and so is less restrictive with regard to the assumptions underlying the data. It does however, require that the dependent variable is discrete and non-overlapping.

In sum, there are many reasons for choosing simple heuristics as models of human judgement behaviour. In fact, according to scientific principles, researchers should choose simple heuristics over the more complex regression model, because they meet the criteria of parsimony.

6.3.3. A fast and frugal lens model. Through using regression models, social judgement theorists have painted a complex picture of human judgement. Not only have they done this in the face of evidence from the heuristics and biases approach which indicated that people use heuristic processing (see Kahneman et al., 1982), but they also seemed to have overlooked an indication that individuals may be using simple strategies from the regression models themselves. This is the finding that usually only a handful of cues are statistically significant (Brehmer, 1994; Slovic & Lichtenstein, 1971).

The use of regression models has led social judgment theorists to test certain hypotheses about the nature of the judgement process such as linearity, and to neglect others (Brehmer, 1979; Brehmer & Brehmer, 1988). In Chapter 2, it was pointed out that social judgment theorists have generally neglected to test alternative hypotheses regarding the combination rule; relying instead on the idea that people integrate cues in an additive way (Brehmer, 1979; Doherty & Brehmer, 1997). The present research has done this and has shown that people such as magistrates can be better described using a non-compensatory non-additive rule. In addition, social judgment theorists do not consider information search and selection. These hypotheses, among with others, would come to light using the simple heuristics approach. However, in order to avoid a similar situation regarding the future use of simple heuristics, researchers should compare the relative descriptive and predictive validity of these heuristics and other non-compensatory models.

As discussed in Chapter 2, one major reason for SJT's reliance on the regression model is its intellectual roots in Brunswikian theory. Brunswik (1952) advocated the use of the correlation coefficient when capturing the process of vicarious functioning. Although Brunswik (1952) mentioned the process of cue substitution, he emphasised compensatory behaviour. For example, in 1943 he wrote "Survival and its sub-units,

which may be defined as the establishment of stable interrelationships with the environment, are possible only if the organism is able to establish compensatory balance in the face of comparative chaos within the physical environment” (p. 257). In 1952 he continued “the use of cues and the taking into account of several variables at the same time injects an element of reasoning into stabilization mechanisms” (p. 681). Later, Brunswik (1956) used the analogy of the perceptual system as an intuitive statistician calculating correlations. Subsequently, Hammond and his colleagues likened the human judgement process to the multiple regression procedure (e.g., Cooksey, 1996a; Hammond, 1955; Hammond et al., 1964; Hammond & Summers, 1972; Reilly & Doherty, 1989, 1992; Schmitt & Levine, 1977), although they have concurrently argued that they do not consider the regression model as representing the judgment process (e.g., Brehmer, 1979; Lane et al., 1982). Researchers using JA have rarely considered alternative models of the judgement process. Hammond’s (1996b) recent confession of the over-reliance on the regression model has paved the way for change. SJT is not synonymous with the use of regression models and fast and frugal heuristics present a viable alternative. Figure 6.1 illustrates how Brunswik’s (1952) original lens model would be revised if vicarious functioning was described in terms of a fast and frugal heuristic such as the Matching Heuristic.

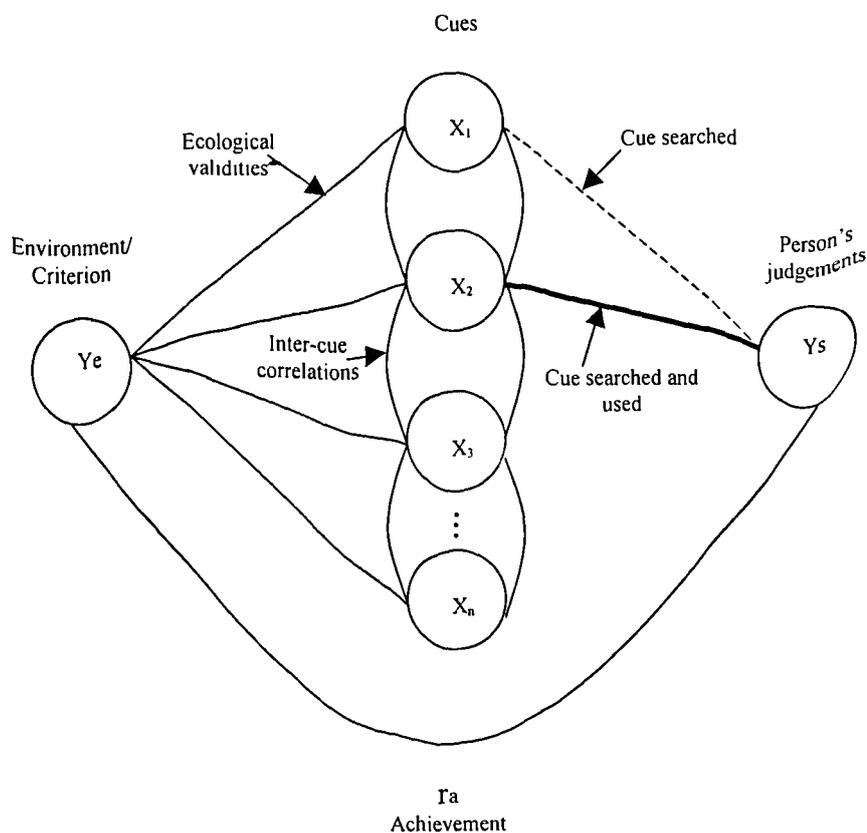


Figure 6.1. Fast and frugal lens model

Prescriptive utility of simple heuristics. Describing human judgement behaviour is only the first step for SJT research. The ultimate goal is to prescribe changes to improve performance (Hammond et al., 1975). Therefore, the prescriptive utility of simple heuristics should be explicitly examined. Should magistrates be using fast and frugal methods for making remand decisions? To date, Gigerenzer and his colleagues have measured the value of simple heuristics in terms of their accuracy, speed and frugality (see Gigerenzer et al., 1999b). They have focused on overall accuracy. In fact, although, fast and frugal heuristics have been shown to be accurate there is, to date, no evidence from human data demonstrating that people can be accurate using these heuristics. A full lens model analysis is required (Harries & Dhimi, 2000). In many domains, overall accuracy is not as important as reducing either a type I or type II error (Hammond, 1996a). Furthermore, people may have other goals such as accountability (Tetlock, 1985). Different models may achieve these goals with differing successes.¹⁰

The Matching Heuristic does not search through all available information; does not order cues in an optimal way; does not integrate all “relevant” information; and bases its decision on only one cue. In this sense, although it is descriptively valid, it lacks prescriptive utility, because magistrates behaving in this fast and frugal manner are not observing due process requirements as they are currently defined (King, 1981; Packer, 1968). Due process requirements aim to reduce a type I error. The Matching Heuristic performed better when predicting punitive decisions, thus if such behaviour were prescribed there may be an increased risk of making a type II error, which is more compatible with the crime control model (Packer, 1968). The due process model would require that magistrates do not use defendant and crime control related cues and they carefully search through all of the available information and appropriately weight and then integrate the relevant information. This way of making a decision characterises how compensatory models such as regression models, portray the judgment process. However, as mentioned earlier, human cognitive limitations and certain task characteristics may prevent individuals from using such judgment strategies. In sum, the prescriptive utility of simple heuristics should be further investigated.

¹⁰ Einhorn (1970, 1971) argued that the conjunctive model minimises a false positive.

6.3. Conclusions

The research presented in this thesis was the first psychological investigation of magistrates' remand decision making. It was also the first to integrate SJT with the simple heuristics approach, and it provided the first test of the Matching Heuristic. In doing so, more questions about magistrates' remand decision making and about the simple heuristics approach have been raised, than have been answered.

It is clear that if researchers wish to develop psychologically plausible decision mechanisms, they should attempt to integrate evidence from the broader context of psychology. They should construct models that are compatible with human cognitive limitations, and with the idea that the task environment in which people work affects their behaviour.

It is also clear that magistrates, who are trained and entrusted to apply legal rules and procedures, must perform a tremendous balancing act when making decisions such as the remand decision. They must protect the public whilst simultaneously respecting an individual defendant's right to liberty. The findings of the present research indicate that due process is not being observed when magistrates make remand decisions. Fortunately, our conceptions of crime and order are socially constructed and so the concerns expressed by different groups in society regarding the appropriateness of some of the legal decisions made, have often led to specific changes in legal rules and procedures. Unfortunately, judgment and decision making researchers, despite being equipped with the necessary tools, have tended to neglect legal decision making, especially in the English criminal justice system. I propose that they, like criminologists, should take the opportunity to challenge and change the system.

APPENDIX A

Accused..... Date of Birth

Offences.....

DECISION OF THE COURT DATE OF DECISION

- The accused is remanded to appear before the above named Magistrates' Court at _____ am/pm on _____
- The accused is committed to appear before the Crown Court on such day, time and place as may be notified to the accused by the appropriate officer of that Court
- The accused is granted unconditional bail
- The accused is granted bail subject to the conditions set out below
- The accused is refused bail and committed to custody
- The accused has consented to the hearing and determination in his absence of future applications for remands until _____ and the notice overleaf applies.

N.B. Failure to surrender to bail or comply with bail conditions can result in arrest. Failure to surrender to bail is an offence punishable by imprisonment and/or a fine.

EXCEPTIONS TO RIGHT TO UNCONDITIONAL BAIL FOUND BY THE COURT. SCHEDULE 1			Pt. I p		Pt. II p		REASONS FOR FINDING EXCEPTIONS TO RIGHT TO UNCONDITIONAL BAIL
<input type="checkbox"/>	Belief would fail to surrender	2(a)			<input type="checkbox"/>	Nature and gravity of the offence	
<input type="checkbox"/>	Belief would commit offence on bail	2(b)			<input type="checkbox"/>	Accused's previous record	
<input type="checkbox"/>	Belief would obstruct justice	2(c)			<input type="checkbox"/>	Lack of community ties	
<input type="checkbox"/>	Custody for own protection/welfare	3	3		<input type="checkbox"/>	Failure to answer bail in the past	
<input type="checkbox"/>	Serving custodial sentence	4	4		<input type="checkbox"/>	Failure to comply with bail conditions in past	
<input type="checkbox"/>	Insufficient information for bail decision	5			<input type="checkbox"/>	Accused's demeanour in court	
<input type="checkbox"/>	Arrested under S.7 Bail Act 1976	6		5	<input type="checkbox"/>	To secure preparation of reports	
<input type="checkbox"/>	Otherwise impracticable complete enquiries	7			<input type="checkbox"/>		
<input type="checkbox"/>	Previous failure to surrender			2	<input type="checkbox"/>		

CONDITIONS TO BE COMPLIED WITH BEFORE/AND/OR AFTER RELEASE ON BAIL

- To provide _____ sureties in the sum of £ _____ each
- To live and sleep each night at _____
- To give prior notice to police of any change of address _____
- To observe a curfew between the hours of _____
- To report to _____ Police Station each _____ between
- Passport to be surrendered to/retained by police _____
- Not to contact directly or indirectly any person whose name is supplied to the accused by police in writing _____
- Not to come within _____ of _____ except to see Solicitor by prior written appointment
- To make himself available as and when required to enable inquiries or report to be made _____
- To provide a security in the sum of £ _____ to be deposited with the court
to be deposited with the accused's Solicitors to be held unconditionally and irrevocably to the order of the Chief Clerk of the Magistrates' Court.

CERTIFICATE AS TO HEARING OF FULL ARGUMENT ON APPLICATION FOR BAIL

(This certificate should accompany any application made for bail to the Crown Court under S.81(1)(g) Supreme Court Act 1981)

- It is hereby certified that today the court heard full argument on an application for bail made by or on behalf of the accused, before refusing the application and remanding the accused in custody.
- The court has not previously heard full argument on an application for bail by or on behalf of the accused in these proceedings.
- The court has previously heard full argument from the accused on an application for bail, but is satisfied (that there has been the following change in his circumstances:) *(That the following new considerations have been placed before it,*

Distribution
 White – Accused
 Blue – File
 Maize – Charge Sheet
 Pink – Fourth copy

.....
 Clerk of the Court present during these proceedings

ACCUSED PERSON CONSENTING TO REMAND IN HIS ABSENCE

You have today consented to the hearing and determination in your absence of application for remands.

If you wish to withdraw your consent you should let the court know immediately. You may do this either by asking your legal representative to inform the court, or by writing to the court yourself. You should tell the prison governor what you have done. You will then be brought to court at, or as soon as possible after, the next remand hearing in your case.

Remand hearings can only take place in your absence while you are legally represented (although your legal advisor does not have to be present in court at the hearing.) If you cease to be legally represented at any time you should immediately write to the court, and inform the prison governor that you have done so. You will then be brought to court at, or as soon as possible after, the next remand hearing in your case.

If three remand hearings have taken place in your absence you will in any event be brought to court at the next hearing.

**MCA 5A
149/50
151/151A**

**Bail Notice
Certificate of
hearing full
argument on
application**

**Notice to
Accused**

Haringey Magistrates' Court (2742)

Accused:

Date of Birth:

Offence:

DECISION

THE ACCUSED IS:-

- Remanded to appear before the Haringey Court sitting at the HIGHGATE/TOTTENHAM Court House at 9.45a.m./1.45p.m. on
- Committed to appear before the Crown Court as notified.
- Granted un/conditional bail.
- Refused bail.

Exception(s) to bail	Reason(s) for applying exception(s)
Para 2(a) Fail surrender. <input type="checkbox"/>	<input type="checkbox"/> Nature & gravity of offence & probable sentence.
2(b) Commit offence. <input type="checkbox"/>	<input type="checkbox"/> Character/antecedents.
2(c) Interfere with etc. <input type="checkbox"/>	<input type="checkbox"/> Lack of community ties.
3 Own protection/Welfare. <input type="checkbox"/>	<input type="checkbox"/> Previously failed to surrender to custody.
4 Serving sentence. <input type="checkbox"/>	<input type="checkbox"/> Behaviour towards/proximity to prosecution witnesses.
5 Insufficient info. <input type="checkbox"/>	<input type="checkbox"/>
6 Current bail breach. <input type="checkbox"/>	
7 Cannot complete report/enquiries. <input type="checkbox"/>	

CONDITIONS TO BE COMPLIED WITH BEFORE RELEASE ON BAIL

To provide surety(ies) in the sum of £ (each) to secure the accused's surrender to custody at the time and place appointed.

- Surrender passport.
- Provide security in the sum of £

CONDITIONS TO BE COMPLIED WITH AFTER RELEASE ON BAIL

- To reside at
- Report to Police station between Twice/Daily
- Curfew between p.m. and a.m. daily.
- Not to communicate or interfere with prosecution witnesses.
-

The above conditions were imposed on the grant of bail for the following reasons:-

- To ensure surrender to custody.
- To prevent the commission of further offences.
- To protect witnesses.
-

Accused agreed to remands in absence:- YES/NO

I HEREBY CERTIFY that, at a hearing this day, the court heard full argument on an application for bail made by (on behalf of) the accused, before refusing the application and remanding the accused in custody under Section of the Magistrates' Courts Act 1980.

- The court has not previously heard full argument on an application for bail by or on behalf of the accused in these proceedings.
- The court has previously heard full argument from the accused on an application for bail, but is satisfied:
 - that there has been the following change in his circumstances:
 - that the following new considerations have been placed before it:

BY ORDER OF THE COURT

APPENDIX B

OFFICE OF PROBATION

REPORT TO COURT

DATE:

COUNTY:

RATING: (ROR) Exclusive of Present Charge
 Information Rated Favorably
 for ROR: Yes..... Ver..... Unver.....
 No.....

ROR Investigation Not Made Because:
 Excludable Case
 Warrant
 Insufficient Staff Available

Comments:

Name..... Age:..... Charge..... Docket No.....
 Expect: Pvt. Att'y. Yes..... No..... To Post Bail Yes..... No.....

RESIDENCE

Address When Arrested..... Phone..... for..... with whom.....
 Prior Address..... for.....
 N.Y.C. Resident for.....

FAMILY TIES

Whom..... Name..... Rel..... Address.....

EMPLOYMENT & RESOURCES

(When Arrested)..... for..... Salary.....
 Name & Address.....

Previous Employer..... for..... Last Date.....

(Unemployed)..... Last Date..... If unemployed, how supported?.....

Welfare..... Where?..... Amount.....

Other Resources..... Specify..... Amount.....

SCHOOL..... Currently: Yes..... No..... Date Left.....

Hospital/Health.....

PRIOR CONVICTIONS: Felonies..... Misdemeanors.....

On Probation..... Parole..... Where..... P.O.....

If Released: Will live at..... with.....

Identification.....

References..... Address..... Phone.....

..... Address..... Phone.....

Investigator

I have consented to this investigation and
 certify that this information is correct.

Signature

CRIMINAL COURT ACTION

County.....

Part.....

CRIMINAL COURT OF THE CITY OF NEW YORK
 UPON REVIEW OF THIS REPORT AND OTHER IN-
 FORMATION CONCERNING PRE-TRIAL RELEASE OF
 THE ABOVE NAMED DEFENDANT IT IS HEREBY
 ORDERED THAT THE DEFENDANT BE:

PAROLED BAIL NOT SET

RELEASED UPON DEPOSITING:

\$..... SURETY BOND; OR

\$..... CASH IN LIEU OF BOND

DATED: NEW YORK CITY..... X.....

JUDGE OR JUSTICE

New York Release on Recognizances Project

OFFICE OF PROBATION ROR BRANCH RATING SHEET

To be recommended, defendant needs:

1. A New York area address where he can be reached,
AND
2. A total of five points from the following categories:

Int Ver

PRIOR RECORD

- | | | |
|----|----|--|
| 1 | 1 | No convictions. |
| 0 | 0 | One misdemeanor conviction. |
| -1 | -1 | Two misdemeanor or one felony conviction. |
| -2 | -2 | Three or more misdemeanor or two or more felony convictions. |

FAMILY TIES (In New York area)

- | | | |
|---|---|---|
| 3 | 3 | Lives in established family home <i>AND</i> visits other family members.
(Immediate family only) |
| 2 | 2 | Lives in established family home. (Immediate Family) |
| 1 | 1 | Visits others of immediate family. |

EMPLOYMENT OR SCHOOL

- | | | |
|---|---|---|
| 3 | 3 | Present job one year or more, steadily. |
| 2 | 2 | Present job 4 months <i>OR</i> present and prior 6 months. |
| 1 | 1 | Has present job which is still available.
<i>OR</i> Unemployed 3 months or less and 9 months or more steady prior job.
<i>OR</i> Unemployment Compensation.
<i>OR</i> Welfare. |
| 3 | 3 | Presently in school, attending regularly. |
| 2 | 2 | Out of school less than 6 months but employed, or in training. |
| 1 | 1 | Out of school 3 months or less, unemployed and not in training. |

RESIDENCE (In New York Area Steadily)

- | | | |
|---|---|---|
| 3 | 3 | One year at present residence. |
| 2 | 2 | One year at present or last prior residence <i>OR</i> 6 months at present residence. |
| 1 | 1 | Six months at present and last prior residence <i>OR</i> in New York City 5 years
or more. |

DISCRETION

- | | | |
|----|----|--|
| +1 | +1 | Positive, over 65, attending hospital, appeared on some previous case. |
| -1 | 0 | Negative—intoxicated—intention to leave jurisdiction. |

TOTAL INTERVIEW POINTS

R NR

TOTAL INTERVIEW POINTS

R NR

Reason(s) for discretionary points:

1 DEFENDANT

1.1 NAME	Surname	First Names	Mr/Mrs/Miss
1.2 AGE	yrs	1.3 NATIONALITY	1.4 IF BORN ABROAD, HOW LONG RESIDENT UK
1.5 REPRESENTED BY:		1.6 LEGAL AID	
		Applying	Applied
1.7 PROBATION OFFICER (IF ANY):		1.8 ON BAIL IN ANOTHER CASE	1.9 OTHER PROCEEDINGS PENDING

2 MARITAL STATUS*

2.1 UNMARRIED
2.2 MARRIED
2.3 SEPARATED
2.4 WIDOWED
2.5 DIVORCED
2.6 CO-HABITING

2.7 CHILDREN (No.)	
Living with Defendant	
Dependent on Defendant	

3 DOMESTIC CIRCUMSTANCES*

3.1 HOUSE
3.2 FLAT
3.3 PARENTS HOME
3.4 LODGINGS
3.5 BED-SIT
3.6 ROOM(S)
3.7 CARAVAN

3.8 SHARING
3.9 TENANT
3.10 OWNER/OCCUPIER

3.11 HOMELESS

4 ADDRESS(ES)

4.1 PRESENT (How long:)

4.2 PERMANENT (If different)

4.3 OTHER RECENT (If any)

No. and Street
District
Town

5 OCCUPATION*

5.1 PRESENT

5.2 USUAL (If different)

5.3 SELF-EMPLOYED

5.4 EMPLOYED

5.5 UNEMPLOYED

5.6 HOUSEWIFE

5.7 RETIRED

6 EMPLOYMENT

6.1 PRESENT (How long:)

6.2 PREVIOUS (When:)

Name of Firm etc
No. and Street
District
Town
Tel. No. (If any)

7 INCOME*

7.1 £ pw

7.2 EARNINGS

7.3 SICKNESS BENEFIT

7.4 UNEMPLOYMENT BENEFIT

7.5 PENSION

7.6 OTHER

8 POSSIBLE SURETIES

Name

Address

Tel. No. (If any)

8.1

8.2

9 RELATIVE, FRIEND OR EMPLOYER LIKELY TO BE IN COURT:

Name

Relationship etc.

10 OTHER MATTERS DEFENDANT WISHES TAKEN INTO ACCOUNT (eg Illness, Physical Condition, Employment, Domestic Difficulties):

HAMPSHIRE PROBATION SERVICE

BAIL INFORMATION SCHEMES ADVANCED MONITORING

1. Name _____

Address _____

2. Court

3. Date of Birth

4. Date of First Appearance

5. Accommodation
- 1. Local
 - 2. Hostel
 - 3. Non-Local
 - 4. N.F.A.

6. Known to the Probation Service
- 1. No
 - 2. Current Client
 - 3. Former Client

7. Gender
- 1. Male
 - 2. Female

8. Year of Last Contact

9. Solicitor Represented Not Represented

First Appearance

Is the defendant:-

10. Alleged to be in breach of bail
- 1. Yes
 - 2. No

11. Charged with a new offence today
- 1. Yes
 - 2. No

If yes specific offences Codes (In order of seriousness):

12.

13.

14.

Summary _____

15. Police Recommendation
- 1. Unconditional Bail
 - 2. Conditional Bail
 - 3. RIC
 - 4. RIPC
 - 5. None

15. Probation Intervention
- 1. None attempted - negative information
 - 2. None attempted - other reasons
 - 3. Defendant declined assistance
 - 4. Information Sheet
 - 5. Oral Information

17. Factors for Bail
- 1. Stable Address
 - 2. Strong Local Ties
 - 3. Good Community Support

- 18.
- 4. Good Supervision History
 - 5. Demonstrated Reliability
 - 6. Appropriate Services

7. Other (Please Specify) _____

19. CPS Request
- 1. No Objection to Unconditional Bail
 - 2. Request Conditional Bail
 - 3. RIC
 - 4. RIPC
 - 5. None

20. Defence Request
- 1. No Objection to RIC
 - 2. No Objection to RIPC
 - 3. Request Unconditional Bail
 - 4. Conditional Bail

21. Magistrates Decision
- 1. Unconditional Bail
 - 2. Conditional Bail
 - 3. RIC
 - 4. RIPC
 - 5. Sentenced

22. Date of Next Appearance

Subsequent Appearance (Complete this section when information is supplied to the CPS for use at a subsequent appearance)

23. Appearance Date

24. Probation Intervention

- 1. 1st Information Sheet
- 2. 2nd Information Sheet
- 3. Oral Information

25. Factors for Bail

- 1. Stable Address
- 2. Strong Local Ties
- 3. Good Community Support
- 7. Other (Please Specify) _____

26.

- 4. Good Supervision History
- 5. Demonstrated Reliability
- 6. Appropriate Services

27. CPS Request

- 1. No Objection to Unconditional Bail
- 2. Request Conditional Bail
- 3. RIC
- 4. RPC

28. Defence Request

- 1. No Objection to RIC
- 2. No Objection to RPC
- 3. Request Unconditional Bail
- 4. Conditional Bail

29. Magistrates Decision

- 1. Unconditional Bail
- 2. Conditional Bail
- 3. RIC
- 4. RPC
- 5. Sentenced

30. LC1

31. LC2

32. LC3

33. LC4

34. LC5

35.

36. LC7

37. LC8

38.

INSTRUCTIONS FOR COMPLETION

1. A form should be completed for all cases referred to the Bail Information Officer including those where the defendant is sentenced at the remand appearance.
2. All items on the form need to be completed. Where information is not available write N/K alongside the question. NB Forms containing items which are not completed as described will be returned for completion (See 3 below)
3. If information is not provided for use at a subsequent appearance items 22 - 27 may be left blank i.e. not be necessary to put not known alongside each item.

APPENDIX C

HYPOTHETICAL CASE USED IN INTERVIEWS DURING TASK ANALYSIS

The defendant, Mr Ali Akbar aged 19 has been charged with theft from a shop, committed yesterday. He is represented by the duty solicitor and has pleaded not guilty to the charge and consented to summary trial. The prosecution has asked for the case to be adjourned for 14 days so that they can prepare the case and contact the witnesses. The prosecution opposes the bail requested by the defence on the grounds that the defendant presents a risk of absconding because he has no fixed address.

At the end of the interviews, interviewees were presented with this case and asked the following questions:

- is it realistic?
- does it contain sufficient information for you to make a bail decision?
- if not, then what further information would you need and why?

APPENDIX D

HYPOTHETICAL CASES IN MODELLING AND HOLDOUT SETS FOR STUDY 1

Set*	Cues**								
	gender	race	age	offence	prosreq	pcbr	proscase	comties	polbail
M	2.00	1.00	2.00	2.00	2.00	1.00	2.00	1.00	3.00
M	1.00	2.00	2.00	3.00	1.00	6.00	2.00	1.00	2.00
M	1.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00	2.00
M	2.00	1.00	1.00	1.00	3.00	6.00	1.00	1.00	3.00
M	2.00	3.00	1.00	3.00	2.00	5.00	1.00	1.00	2.00
M	2.00	3.00	1.00	2.00	3.00	1.00	2.00	1.00	2.00
M	1.00	1.00	1.00	3.00	2.00	3.00	2.00	1.00	1.00
M	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.00	2.00
M	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00
M	2.00	2.00	1.00	2.00	1.00	4.00	2.00	2.00	1.00
M	1.00	3.00	2.00	1.00	2.00	4.00	1.00	1.00	3.00
M	1.00	3.00	1.00	2.00	1.00	2.00	1.00	1.00	3.00
M	2.00	3.00	2.00	1.00	1.00	3.00	1.00	2.00	2.00
M	1.00	1.00	2.00	2.00	1.00	3.00	1.00	1.00	2.00
M	1.00	2.00	2.00	3.00	2.00	1.00	1.00	2.00	3.00
M	1.00	1.00	1.00	3.00	3.00	4.00	1.00	1.00	2.00
M	1.00	1.00	2.00	2.00	3.00	5.00	1.00	2.00	1.00
M	2.00	2.00	1.00	1.00	2.00	3.00	1.00	1.00	1.00
M	2.00	2.00	2.00	3.00	3.00	2.00	1.00	1.00	1.00
M	1.00	3.00	1.00	2.00	2.00	6.00	1.00	2.00	1.00
M	1.00	2.00	1.00	1.00	1.00	5.00	2.00	1.00	3.00
M	1.00	2.00	1.00	2.00	3.00	3.00	1.00	1.00	3.00
M	1.00	3.00	2.00	1.00	3.00	2.00	2.00	1.00	1.00
M	2.00	1.00	1.00	3.00	1.00	2.00	1.00	2.00	3.00
M	1.00	3.00	1.00	3.00	3.00	3.00	2.00	2.00	3.00
M	1.00	3.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00
M	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
H	1.00	1.00	2.00	3.00	3.00	5.00	1.00	1.00	1.00
H	2.00	3.00	1.00	1.00	3.00	6.00	1.00	2.00	1.00
H	2.00	2.00	1.00	2.00	2.00	6.00	1.00	1.00	2.00
H	2.00	1.00	1.00	1.00	3.00	2.00	2.00	2.00	2.00
H	2.00	3.00	2.00	2.00	3.00	5.00	1.00	1.00	1.00
H	1.00	2.00	2.00	2.00	3.00	2.00	1.00	2.00	1.00
H	2.00	2.00	2.00	3.00	1.00	3.00	2.00	2.00	2.00
D	2.00	1.00	2.00	2.00	2.00	1.00	2.00	1.00	3.00
D	2.00	3.00	1.00	3.00	2.00	5.00	1.00	1.00	2.00
D	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00
D	2.00	2.00	1.00	2.00	1.00	4.00	2.00	2.00	1.00
D	1.00	1.00	2.00	2.00	1.00	3.00	1.00	1.00	2.00
D	2.00	2.00	1.00	1.00	2.00	3.00	1.00	1.00	1.00
D	1.00	3.00	1.00	2.00	2.00	6.00	1.00	2.00	1.00

Note: *M = modelling set, H = holdout set. **When modelling magistrates' decision making policies, the binary cues were recoded as 0 for value 1 and 1 for value 2. The polytomous cues were dichotomised and recoded. For race, offence, polbail, prosreq, value 1 was recoded as 0 and the other values were recoded as 1. For pcbr, values 1 and 2 were recoded as 0 and the other values were recoded as 1.

BACKGROUND INFORMATION AND HYPOTHETICAL CASE USED IN STUDY ONE

Background information presented to cases

In all of the cases presented, it is the defendant's first appearance at court since he/she was charged by the police. The defendant has pleaded not guilty, and has consented to trial (at crown court where appropriate). The prosecution has asked for the case to be adjourned for four weeks so that they can prepare the case. The defendant is at present represented by the duty solicitor and will obtain his/her own solicitor later. The solicitor has applied for bail. There is a possibility of a surety. Where a defendant does not have any previous convictions he/she may still have a past bail record as he/she may have been tried but not convicted in the past.

Case presented

The defendant James Wilson is male, white and 22 years old. He has been charged with supplying class B drugs. The police granted him unconditional bail after he was charged. The prosecution objected to bail. James has one previous conviction for a dissimilar offence, and has offended on bail in the past. The prosecution case against him at present seems strong. He is unemployed.

APPENDIX E

**MAGISTRATES' BAIL DECISION MAKING:
OBSERVATION CODING SCHEME**

CASE NO

DATE

MAGISTRATES' COURTHOUSE & COURTROOM

1. Court A
2. Court B
 - 2.10. Courtroom 1
 - 2.20. Courtroom 2

DURATION OF HEARING

RETIRE

1. Retire or confer
2. No pause

DECISION

1. Unconditional bail
2. Conditional bail
 - 2.1 Reporting
 - 2.2 Curfew
 - 2.3 Surety
 - 2.4 Residence
 - 2.5 Bail hostel
 - 2.6 Boundaries
 - 2.7 Not interfere with witnesses
 - 2.8 Other
3. Remand in custody

Characteristics of Magistrates

MAGISTRATE ON BENCH

1. Lay
2. Stipendiary
3. Lay and stipendiary

SEX

1. All male
2. All female
3. Male and female

RACE/ETHNIC ORIGIN (by name and physical appearance)

1. All white/European
2. Black and white
3. Asian and white
4. Other

Characteristics of Defendant

DEFENDANT PRESENT IN COURT

1. Yes

2. No

*DATE OF BIRTH (record year only)

SEX

1. Male
2. Female

RACIAL/ETHNIC ORIGIN (by name and physical appearance)

1. White
2. Ethnic

Characteristics of Case

**DEFENCE REPRESENTATION

1. Not represented
2. *Duty solicitor*
3. *Own solicitor*

PROSECUTORS

1. CPS
2. Other (specify)

**SERIOUSNESS OF OFFENCE (see court sheet)

1. Summary
2. *Either-way*
3. *Indictable*

*CATEGORY OF OFFENCE

1. Violence against person
2. Sexual offences
3. Burglary
4. Robbery
5. Theft and handling
6. Fraud and forgery
7. Criminal damage
8. Drugs offences
9. Driving offences
10. Other

*NUMBER OF OFFENCES

**VICTIM

1. *None*
2. Victim known or unknown person
3. *Business*

SOLE INVOLVEMENT IN OFFENCE

1. Yes
2. No

PLEA

1. Guilty
2. Not guilty
3. No plea

PREVIOUS CONVICTIONS

1. None
2. Yes, similar
3. Yes, dissimilar (specify)

**CIRCUMSTANCE OF BAIL DECISION

1. Adjournment for trial
2. *Adjournment for sentence*
3. *Appeal against magistrates' court's decision*
4. *Other*

ADJOURNMENT REQUESTED BY WHOM

1. Defence
2. Prosecution
3. Court

LENGTH OF ADJOURNMENT REQUESTED

*NUMBER OF PREVIOUS ADJOURNMENTS (see court sheet)

**PROSECUTION REQUEST

1. Don't oppose bail
2. *Ask for conditions*
3. *Oppose bail*

DEFENCE REQUEST

1. Apply for unconditional bail
2. Suggest conditions (specify)
3. Don't apply for bail

***PREVIOUS COURT BAIL DECISION (see court sheet)

1. None
2. Unconditional bail
3. Conditional bail (specify conditions)
4. Remand in custody

**POLICE BAIL DECISION

1. Unconditional bail
2. *Conditional bail (specify conditions)*
3. *Remand in custody*

**BAIL RECORD

1. *None*
2. *Good*
3. Poor (specify breaches)

STRENGTH OF PROSECUTION CASE

1. Strong i.e. physical evidence/witnesses

2. Weak

MAXIMUM PENALTY IF CONVICTED (see court sheet)

1. Custodial
2. Non-custodial

***STRENGTH OF COMMUNITY TIES

CTJOB

1. Yes
2. No
3. No information

CTCHILD

1. Yes
2. No
3. No information

CTSPOUSE

1. Yes
2. No
3. No information

CTHOME

1. Yes
2. No
3. No information

CTOTHER

1. Yes
2. No
3. No information

Other Information

MAGISTRATES SEEK INFORMATION FROM COURT (not including from clerk)

1. Yes (specify)
2. No

MAGISTRATES SEEK HELP OF CLERK

1. Yes (specify)
2. No

DECISION COMMUNICATED TO DEFENDANT

1. No
2. No because defendant not in court
3. Yes, verbal
4. Yes, verbal and bail sheet

REASONS FOR DECISION GIVEN IN OPEN COURT

1. None given
2. Yes given (specify)

Note: The asterisks denote the variables that were re-coded for analysis (see Table 4.1 in Chapter 4). *The date of birth was re-coded into 18-21 years and 21+. The category of the offence was separated into offences against the person, against property, and other. The number of offences was re-coded as either one or more than one. The number

of previous adjournments was re-coded as zero and one, or more than one. **The italicised values of these variables were grouped together to form one value. ***The previous court bail decision was divided into two (i.e., none or unconditional bail versus conditional bail or remand in custody). For strength of community ties, the yes values of all sub-variables were grouped together, and all the no values of the sub-variables were grouped together.

APPENDIX F

**STATISTICALLY SIGNIFICANT FIRST ORDER INTER-CUE
CORRELATIONS IN COURTS A AND B**

Statistically significant inter-cue correlations ($p < 0.05$)			
Court A		Court B	
Cues	Coefficients	Cues	Coefficients
Defcourt x noffence	$\phi = -0.20, N = 158$	Defcourt x sole	$\phi = -0.16, N = 183$
Defcourt x circums	$\phi = -0.17, N = 159$	Agedef x sole	$\phi = -0.33, N = 183$
Defcourt x lenadj	$\phi = 0.16, N = 159$	Agedef x circums	$\phi = 0.16, N = 183$
Defcourt x noadj	$\phi = 0.23, N = 141$	sexdef x racedef	$\phi = -0.20, N = 171$
Defcourt x prosreq	$\phi = -0.22, N = 159$	Sexdef x cicrums	$\phi = 0.21, N = 183$
Agedef x noffence	$\phi = -0.17, N = 158$	Defrep x soffence	$\phi = 0.24, N = 183$
Sexdef x soffence	$\phi = 0.16, N = 158$	Defrep x victim	$\phi = 0.27, N = 183$
Sexdef x victim	$\phi = 0.16, N = 158$	Defrep x sole	$\phi = 0.15, N = 183$
Racedef x noffence	$\phi = -0.19, N = 127$	Defrep x prevdec	$\phi = 0.22, N = 180$
Racedef x victim	$\phi = -0.18, N = 127$	Soffence x victim	$\phi = 0.55, N = 183$
Defcourt x maxpen	$\phi = 0.17, N = 156$	Soffence x sole	$\phi = 0.17, N = 183$
Sexdef x polbail	$\phi = -0.32, N = 58$	Soffence x circums	$\phi = -0.16, N = 183$
Racedef x maxpen	$\phi = 0.22, N = 126$	Soffence x prevdec	$\phi = 0.24, N = 180$
Defrep x soffence	$\phi = 0.23, N = 157$	Noffence x circums	$\phi = 0.18, N = 183$
Defrep x noffence	$\phi = 0.18, N = 157$	Soffence x maxpen	$\phi = 0.29, N = 181$
Defrep x victim	$\phi = 0.20, N = 157$	Noffence x comties	$\phi = 0.20, N = 179$
Defrep x sole	$\phi = 0.19, N = 158$	Victim x sole	$\phi = 0.19, N = 183$
Defrep x circums	$\phi = 0.21, N = 158$	Victim x prosreq	$\phi = 0.21, N = 183$
Defrep x lenadj	$\phi = -0.17, N = 158$	Victim x prevdec	$\phi = 0.20, N = 180$
Defrep x noadj	$\phi = 0.27, N = 140$	Sole x circums	$\phi = -0.19, N = 183$
Defrep x prosreq	$\phi = 0.29, N = 158$	Circums x lenadj	$\phi = -0.91, N = 177$

Defrep x prevdec	$\phi = 0.31, N = 158$	Circums x nprevadj	$\phi = -0.23, N = 177$
Soffence x victim	$\phi = 0.60, N = 158$	Circums x prevdec	$\phi = -0.20, N = 180$
Soffence x victim	$\phi = 0.30, N = 158$	Lenadj x nprevadj	$\phi = 0.25, N = 171$
Soffence x nprevadj	$\phi = 0.22, N = 140$	Lenadj x prevdec	$\phi = 0.15, N = 174$
Soffence x prosreq	$\phi = 0.16, N = 158$	Victim x proscase	$\phi = 0.30, N = 93$
Soffence x prevdec	$\phi = 0.19, N = 154$	Victim x maxpen	$\phi = -0.32, N = 181$
Noffence x circums	$\phi = 0.17, N = 158$	Circums x proscase	$\phi = -0.23, N = 93$
Noffence x prevdec	$\phi = 0.28, N = 154$	Nprevadj x prevdec	$\phi = 0.24, N = 17$
Defrep x polbail	$\phi = 0.41, N = 58$	Defreq x proscase	$r = 0.21, N = 93$
Soffence x maxpen	$\phi = -0.22, N = 156$	Defreq x comties	$r = 0.15, N = 179$
Victim x sole	$\phi = 0.29, N = 158$	Prevdec x comties	$\phi = 0.16, N = 176$
Victim x nprevadj	$\phi = 0.20, N = 140$	Defreq x victim	$K = -0.15, N = 182$
Victim x prosreq	$\phi = 0.22, N = 158$	Defreq x prosreq	$K = -0.37, N = 182$
Victim x prevdec	$\phi = 0.24, N = 154$	Defreq x polbail	$K = -0.43, N = 47$
Sole x nprevadj	$\phi = 0.24, N = 141$	Coffence x agedef	$R^2 = 0.03, N = 182$
Sole x prosreq	$\phi = 0.17, N = 159$	Coffence x defrep	$R^2 = 0.07, N = 182$
Sole x prevdec	$\phi = 0.24, N = 155$	Coffence x soffence	$R^2 = 0.33, N = 182$
Circums x lenadj	$\phi = -0.95, N = 159$	Coffence x victim	$R^2 = 0.83, N = 182$
Victim x bailrec	$\phi = 0.43, N = 34$	Coffence x sole	$R^2 = 0.06, N = 182$
Victim x maxpen	$\phi = -0.18, N = 156$	Coffence x circums	$R^2 = 0.03, N = 182$
Nprevadj x prosreq	$\phi = 0.18, N = 141$	Coffence x prosreq	$R^2 = 0.03, N = 182$
Nprevadj x prevdec	$\phi = 0.45, N = 140$	Coffence x prevdec	$R^2 = 0.03, N = 179$
Prosreq x prevdec	$\phi = 0.37, N = 155$	Coffence x proscase	$R^2 = 0.14, N = 92$
Nprevadj x polbail	$\phi = 0.45, N = 47$	Coffence x maxpen	$R^2 = 0.10, N = 180$
Prosreq x polbail	$\phi = 0.68, N = 58$	Plea x racedef	$R^2 = 0.04, N = 170$
Prevdec x polbail	$\phi = 0.54, N = 56$	Plea x soffence	$R^2 = 0.08, N = 182$
Prevdec x bailrec	$\phi = 0.39, N = 33$	Plea x noffence	$R^2 = 0.03, N = 182$
Defcourt x defreq	$K = 0.17, N = 159$	Plea x victim	$R^2 = 0.03, N = 182$
Defrep x defreq	$K = -0.18, N = 158$	Plea x circums	$R^2 = 0.41, N = 182$

Prosreq x defreq	$K = -0.21, N = 159$	Plea x lenadj	$R^2 = 0.39, N = 176$
Prevdec x prevconv	$K = 0.43, N = 41$	Plea x nprevadj	$R^2 = 0.12, N = 176$
Polbail x prevconv	$K = 0.53, N = 18$	Plea x prevdec	$R^2 = 0.03, N = 179$
Coffence x sexdef	$R^2 = 0.06, N = 157$	Plea x proscase	$R^2 = 0.06, N = 92$
Coffence x defrep	$R^2 = 0.06, N = 156$	Adjreq x agedef	$R^2 = 0.08, N = 182$
Coffence x soffence	$R^2 = 0.59, N = 157$	Adjreq x victim	$R^2 = 0.03, N = 182$
Coffence x victim	$R^2 = 0.71, N = 157$	Adjreq x nprevadj	$R^2 = 0.06, N = 176$
Coffence x sole	$R^2 = 0.12, N = 157$	Adjreq x prevdec	$R^2 = 0.06, N = 179$
Coffence x circums	$R^2 = 0.03, N = 157$		
Coffence x lenadj	$R^2 = 0.05, N = 157$		
Coffence x nprevadj	$R^2 = 0.09, N = 139$		
Coffence x prosreq	$R^2 = 0.05, N = 157$		
Coffence x prevdec	$R^2 = 0.11, N = 153$		
Coffence x maxpen	$R^2 = 0.03, N = 155$		
Plea x noffence	$R^2 = 0.04, N = 157$		
Plea x circums	$R^2 = 0.48, N = 158$		
Plea x lenadj	$R^2 = 0.51, N = 158$		
Plea x bailrec	$R^2 = 0.15, N = 33$		
Adjreq x defcourt	$R^2 = 0.03, N = 158$		
Adjreq x sole	$R^2 = 0.07, N = 158$		
Adjreq x circums	$R^2 = 0.05, N = 158$		
Adjreq x lenadj	$R^2 = 0.03, N = 158$		
Adjreq x nprevadj	$R^2 = 0.04, N = 140$		

APPENDIX G

**HYPOTHETICAL CASES IN MODELLING AND HOLDOUT SETS FOR
STUDY 3**

Set*	Cues**								
	age	gender	race	offence	polbail	pcbr	proscase	prosreq	defreq
M	1.00	2.00	1.00	2.00	1.00	2.00	2.00	2.00	3.00
M	1.00	1.00	3.00	1.00	1.00	5.00	2.00	3.00	2.00
M	1.00	1.00	2.00	3.00	2.00	2.00	1.00	1.00	2.00
M	2.00	1.00	2.00	1.00	1.00	3.00	1.00	2.00	3.00
M	2.00	1.00	1.00	3.00	2.00	6.00	1.00	3.00	3.00
M	1.00	1.00	2.00	2.00	3.00	4.00	1.00	3.00	1.00
M	2.00	2.00	2.00	2.00	1.00	1.00	1.00	3.00	2.00
M	1.00	1.00	1.00	3.00	1.00	3.00	1.00	3.00	2.00
M	1.00	2.00	1.00	3.00	3.00	3.00	2.00	3.00	1.00
M	2.00	1.00	3.00	1.00	3.00	2.00	1.00	3.00	1.00
M	1.00	1.00	2.00	1.00	3.00	6.00	2.00	2.00	2.00
M	1.00	1.00	3.00	3.00	2.00	1.00	2.00	2.00	1.00
M	2.00	1.00	3.00	2.00	3.00	3.00	2.00	1.00	3.00
M	2.00	2.00	3.00	3.00	3.00	1.00	1.00	2.00	2.00
M	1.00	2.00	3.00	2.00	1.00	6.00	1.00	1.00	1.00
M	1.00	1.00	2.00	2.00	2.00	1.00	2.00	3.00	3.00
M	1.00	1.00	3.00	2.00	2.00	3.00	1.00	1.00	2.00
M	1.00	2.00	2.00	1.00	2.00	3.00	1.00	2.00	1.00
M	1.00	2.00	3.00	1.00	2.00	2.00	1.00	3.00	3.00
M	2.00	1.00	1.00	2.00	2.00	5.00	1.00	2.00	1.00
M	1.00	2.00	2.00	3.00	3.00	5.00	1.00	1.00	3.00
M	2.00	2.00	1.00	1.00	2.00	4.00	2.00	1.00	2.00
M	1.00	1.00	1.00	2.00	3.00	2.00	1.00	2.00	2.00
M	2.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	1.00
M	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
M	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.00	3.00
M	1.00	1.00	3.00	3.00	1.00	4.00	1.00	2.00	3.00
H	2.00	2.00	1.00	2.00	1.00	5.00	1.00	1.00	1.00
H	1.00	2.00	3.00	3.00	2.00	3.00	2.00	1.00	3.00
H	1.00	2.00	2.00	3.00	1.00	4.00	2.00	1.00	2.00
H	2.00	1.00	2.00	2.00	1.00	3.00	2.00	2.00	1.00
H	1.00	2.00	2.00	3.00	1.00	1.00	1.00	2.00	2.00
H	1.00	2.00	1.00	1.00	1.00	5.00	2.00	3.00	3.00
H	1.00	1.00	1.00	3.00	3.00	2.00	1.00	3.00	3.00

Note: *M = modelling set, H = holdout set. **When modelling magistrates' decision making policies, the binary cues were recoded as 0 for value 1 and 1 for value 2. The polytomous cues were dichotomised and recoded. For race, offence, polbail, prosreq and defreq, value 1 was recoded as 0 and the other values were recoded as 1. For pcbr, values 1 and 2 were recoded as 0 and the other values were recoded as 1.

BACKGROUND INFORMATION AND HYPOTHETICAL CASES USED IN STUDY THREE

Background information presented to cases

In all of the cases presented, it is the defendant's first appearance at court since he/she was arrested and charged by the police. The defendant has pleaded not guilty, and has consented to trial (at crown court where appropriate). The trial date has been set for six weeks time. The defendant is represented by his/her own solicitor. Please note that where a defendant does not have any previous convictions he/she may still have a past bail record as he/she may have been tried but not convicted.

Case presented to BIS group

The defendant Andrew Fellows is male, white and 19 years old. He has been charged with robbery. He has one previous conviction for a dissimilar offence, and has a good past bail record. The police granted him unconditional bail after he was charged. The prosecution has objected to unconditional bail being granted. The prosecution case against him at present seems strong. The defence has suggested that conditions may be attached to bail. He has a fixed address, is attending a part-time vocational course and a surety is available.

Case presented to no BIS group

The defendant Andrew Fellows is male, white and 19 years old. He has been charged with robbery. He has one previous conviction for a dissimilar offence, and has a good past bail record. The police granted him unconditional bail after he was charged. The prosecution has objected to unconditional bail being granted. The prosecution case against him at present seems strong. The defence has suggested that conditions may be attached to bail. He has a fixed address.

APPENDIX H

LIST OF PUBLICATIONS, CONFERENCE PRESENTATIONS AND INVITED TALKS

Publications

Dhmi, M. K. (1999a). A psychologist on the bench. *The Psychologist*, 12, 328-329.

Dhmi, M. K. (1999b). Who's judging the judges? *EDAM Bulletin*, September.

Dhmi, M. K. & Ayton, P. (in press). Bailing and jailing the fast and frugal way. *Journal of Behavioral Decision Making*.

Dhmi, M. K. & Harries, C. (2001). Fast and frugal versus regression models of human judgment. *Thinking and Reasoning*, 7, 5-27.

Harries, C. & Dhmi, M. K. (2000). On the descriptive validity and prescriptive utility of fast and frugal models [Commentary]. *Behavioral and Brain Sciences*, 23, 753-754.

Conference Presentations and Invited Talks*

*In reverse order.

Dhmi, M. K. (October 2000). Models of legal decision making. Psychology Department Colloquia, University of Hertfordshire, UK.

Discussant, (April 2000). Seminar on the Future of the Magistracy, organised by the Institute for Public Policy Research, London, UK.

Dhmi, M. K. (November 1999). Legal decision making the fast and frugal way. Psychology Department Colloquia, University of Northumbria, Newcastle, UK.

Dhmi, M. K. (August 1999). A psychologist on the bench. Conference on Subjective Probability, Utility and Decision Making, Mannheim, Germany.

Dhmi, M. K. (August 1999). Can justice be fast and frugal? Paper presented at the Conference on Subjective Probability, Utility and Decision Making, Mannheim, Germany.

Dhmi, M. K. & Ayton, P. (November 1998). Legal decision making the fast and frugal way. Poster presented at the Meeting of the Society for Judgment and Decision Making, Dallas, US.

Dhmi, M. K. (November 1998). Judgement analysis at the systems level: On the when, why and how. Paper presented at the Meeting of the Brunswik Society, Dallas, US.

Dhmi, M. K. (December 1998). Legal decision making: How do magistrates make bail decisions? Paper presented at the London Conference of the British Psychological Society, London, UK.

Dhami, M. K. & Ayton, P. (September 1998). Applying the law on bail: An assessment of risk. Paper presented at the Conference of the Division of Criminological and Legal Psychology, British Psychological Society, Durham, UK.

Dhami, M. K. (April 1998). Magistrates' bail decisions: An exercise in risk assessment. Paper presented at the Seminar on Risk, Leeds University, Leeds, UK.

Dhami, M. K. & Ayton, P. (November 1997). A policy capturing study of magistrates' bail decision making. Poster presented at the Meeting of the Society for Judgment and Decision Making, Philadelphia, US.

Dhami, M. K. (September 1997). A policy capturing study of magistrates' bail decision making. Poster presented at the Annual Meeting of the Cognitive Psychology Section, British Psychological Society, Bristol, UK.

Dhami, M. K. (August 1997). A study of magistrates' bail decision making. Poster presented at the Conference on Subjective Probability, Utility and Decision Making, Leeds, UK.

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