RUNNING HEAD: Correspondence Bias: Measurement, Consequences, and Correction

Individual Differences in Correspondence Bias: Measurement, Consequences, and Correction of Biased Interpersonal Attributions

Forthcoming*: Management Science*

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Abstract

Across consequential attributions of attitudes, ability, emotions, and morality, people make *correspondent inferences*. People infer stable personality characteristics from others' behavior, even when that behavior is caused by situational factors. We examined the structure of correspondent inferences and report the development and validation of an instrument measuring individual differences in this correspondence bias (a *Neglect of External Demands* scale, or "*NED"*). The NED is internally consistent and distinct from scales and measures of intelligence, cognitive ability, cognitive reflection, general decision making ability, preference for control, and attributional style. Individual differences in correspondence bias predict blaming people for harmful accidents, believing coerced confessions, correcting for job and task difficulty when making performance evaluations and incentive-compatible personnel selections, and separating market and fund performance when making incentive-compatible investments. Fortunately, the tendency to commit correspondence bias can be reduced. Making situational information easier to process debiases those most prone to correspondence bias.

People tend to make *correspondent inferences* when observing others. They infer stable personality characteristics from the behavior of others, even when the presence of external factors severely constrains the range of possible behaviors other persons might have exhibited. This general tendency leads observers to over-attribute the behavior of actors to their enduring dispositions and under-weight the influence of situational factors, committing a *correspondence bias* (Ross 1977, Gilbert and Malone 1995, Jones 1979, 1990, Jones and Harris 1967). Correspondent inferences are prevalent and consequential. Correspondence bias is exhibited by a majority of American adults and generalizes across demographic characteristics (Bauman and Skitka 2010). These biased attributions affect a wide variety of social judgments including performance and ability assessments in personnel selection and evaluation (e.g., Moore et al. 2010), blame and guilt judgments in jury verdicts (e.g., Kassin and Sukel 1997), impression formation in social interactions (e.g., Gilbert 1998, Ross et al. 1977), and judgments of moral character (Bierbrauer 1979, Miller et al. 1974). Correspondence bias and more general forms of correspondent inferences have been studied through the lens of the different attributions made by actors and observers such as attitudes, abilities, susceptibility to emotions, and morality (Gawronski 2004).

We examined whether these various manifestations underlie a general tendency to make correspondent inferences, explored consequential managerial and legal implications, and tested whether this tendency can be debiased. To this end, we developed an instrument, the *Neglect of External Demands*—NED[1]—scale, to assess the coherence and structure of the general construct, variations between and within persons, and tested its reliability and validity. We found our instrument predicts judgments and behaviors in consequential (conceptually related) judgments and decisions: attributions of blame for accidental harms, juror verdicts in cases of coerced confessions, the sensitivity of performance evaluations to job difficulty, the recognition of unfair advantages and disadvantages when selecting personnel, and the consideration of market performance when evaluating the performance of investments. These effects were observed even when situational information was provided to participants in a clear format, and when controlling for other individual differences such as intelligence, personality, and decision making ability. Finally, we tested whether the tendency to make correspondent inferences can be debiased. We found that making situational information easier to process debiased the judgments of people most prone to make correspondent inferences.

Variety of Correspondent Inferences

Research on correspondent inferences traces back to Heider's (1958) theory of "naïve psychology," which distinguished the determinants of behavior into dispositional causes (i.e., psychological characteristics that are relatively enduring or invariant over time) and situational causes

(i.e., external influences), predicting that observers would tend to prefer dispositional attributions. This tension between dispositional and situational influences in the attribution of behavior has been examined in four basic paradigms (Gawronski 2004). Each paradigm focuses on a specific type of inference: attitudes (i.e., attitude attribution paradigm, Jones and Harris 1967), abilities (i.e., quizmaster paradigm, Ross et al. 1977), susceptibility to emotions (i.e., silent interview paradigm, Snyder and Frankel 1976), and morality (i.e., moral attribution paradigm, Bierbrauer 1979).

Attitudes. The attitude attribution paradigm measures the extent to which observers attribute the expressed attitudes and opinions of an actor to her disposition or to the pressures and constraints of her situation. A celebrity product endorsement, for example, could be attributed to a favorable opinion of the endorsed product or to a financial incentive. Jones and Harris (1967) provided the first empirical evidence of correspondence bias in this paradigm. In their study, participants ("observers") read an essay that supported or opposed the Castro regime in Cuba by a writer who had freely chosen or was forced to endorse the position of her essay. Observers then inferred the true attitude of the writer toward the Castro regime. Observers judged the real attitude of the writer to be consistent with her essay when her position was freely chosen, a correct correspondent inference. Observers exhibited correspondence bias in judging that the real attitude of the writer was consistent with her essay when she was forced to endorse the position of her essay. Jones and Harris interpreted the latter result as a natural tendency of observers to evaluate the behavior of actors in terms of individual characteristics rather than in terms of the social situations in which the actors are placed. Observers made correspondent inferences in this and many other subsequent demonstrations of this attitude attribution paradigm (e.g., D'Agostino and Fincher-Kiefer 1992, Jones 1979, Krull et al. 1999, Miller and Rorer 1982, Moore et al. 2010), attributing the behavior of actors to their disposition even when their behavior was severely constrained by the situation.

Ability. The quizmaster paradigm measures the extent to which observers consider the difficulty of the task an actor performed when evaluating her ability. An airline customer may attribute a flight delay, for instance, to the incompetence of an airline or to bad weather that was impossible to avoid. In the quizmaster paradigm, participants are randomly assigned to play the role of contestant, quizmaster, or observer in a game show. Quizmasters generate challenging questions from their own general knowledge and contestants try to answer those questions. This situation favors the quizmaster, who can choose questions on obscure and unfamiliar topics. Indeed, contestants fail to answer most of the questions that they are posed. Observers first hear the questions and answers. They then judge how knowledgeable are the quizmasters and contestants. Observers typically infer that quizmasters are more knowledgeable than the contestants (e.g., Ross et al. 1977) because observers insufficiently discount the difficulty of answering questions drawn from the personal knowledge of another person. In other words, observers

attribute the difficulty that contestants experience to their lack of knowledge rather than to the disadvantages of their situation.

Emotions. The silent interview paradigm measures the extent to which observers attribute the physical demeanor of an actor to her disposition or to the pressures and constraints of her situation. A person may fidget during an interview, for instance, because she is a nervous person or because of the intrusive or personal nature of the questions she is asked. The silent interview paradigm originated in an experiment by Snyder and Frankel (1976), in which participants watched a silent film of a young woman being interviewed who behaved somewhat anxiously and then rated her level of dispositional anxiety (see also, Gilbert et al. 1988, Krull and Erickson 1995, Lieberman et al. 2005). Participants were told that the interview topic was either anxiety provoking or mundane. Reasonably, they should have deemed her to be more dispositionally anxious if she looked anxious when interviewed about mundane topics than when interviewed about anxiety-provoking topics. Instead, participants tended to attribute the anxiety to her personality. They perceived her to be similarly anxious whether the interview topic was anxiety provoking or mundane.

Morality. The moral attribution paradigm measures the extent to which observers attribute the moral or immoral behavior of an actor to her disposition or to the pressures and constraints of her situation. A public relations firm, for example, may defend a firm's ethically questionable behavior because they believe in the firm's innocence or because it is their job. In the moral attribution paradigm (Miller et al. 1974, Bierbrauer 1979) participants first read descriptions of experiments demonstrating how situational pressures influence moral behavior (e.g., Milgram 1963). They then judged the morality of participants who behaved immorally in replications of those experiments. Miller and colleagues (1974), for example, had such "knowledgeable" observers rate the behavior of actors in a replication of Milgram's classic obedience to authority study. Despite reading about the powerful influence of situational factors on behavior just moments before, observers attributed undesirable dispositions to actors who complied with the instructions of an experimenter to administer electroshocks to another participant up to the highest voltage level.

Individual Differences and Correspondent Inferences

The origins and effects of each of these examples of correspondence bias have been examined extensively in isolation. It is unclear, however, whether observers exhibit a consistent degree of correspondent inference-making across different kinds of judgments in which they must discern the cause of a person's behavior. Research on correspondence bias has proposed several different processes underlying the tendency to make correspondent inferences (Gilbert and Malone 1995, Gawronski 2004):

lack of awareness (i.e., observers may not be aware of the situational influences on the observed behavior), unrealistic expectations (i.e., observers may not believe that situational influences are sufficiently powerful to produce the observed behavior), inflated categorizations (i.e., awareness of the situational constraints influencing the behavior may generate perceptual assimilation and increase the weight given to dispositional explanations), and insufficient correction (i.e., the contamination of causal attribution by initial inferences about underlying dispositions, which fails to be fully corrected by the subsequent consideration of situational constraints).

Given the multiple inputs to correspondence bias, the propensity to make correspondent inferences may vary to such a degree across circumstances that it cannot be described as an individual difference. It is also possible that the tendency to make correspondent inferences varies considerably across the inferences that observers make. Judgments of ability may be influenced by the ability of observers (e.g., Kruger and Dunning 1999), for example, whereas judgments of morality may be driven to a greater extent by the degree to which observers are sensitive to disgust (Inbar et al. 2009, Jones and Fitness 2008).

One factor suggesting that the propensity to make correspondent inferences is a stable individual difference is the presence of a common inferential correction process underlying correspondence bias (Gilbert 1998, Lieberman et al. 2002, Trope 1986). Gilbert (1988) suggested that the initial dispositional inferences that people draw when judging the behavior of others are the result of a relatively automatic process requiring little effort or conscious attention, which appears to hold across cultures (Lieberman et al. 2005). Correction of these automatic inferences to account for situational constraints occurs as the result of a more controlled and deliberate process that requires the presence and effortful expenditure of cognitive resources (Hagá et al. 2014). As a consequence, the ability and motivation to devote cognitive resources to performing that correction process may account for considerable variation across persons in the tendency to make correspondent inferences (Gilbert et al. 1988).

In line with this inferential correction model, individual differences in motivation, cognitive ability, and beliefs do appear to be related to susceptibility to correspondence bias in attitude attributions. People high in Need for Cognition (NFC), who are more prone to engage in analytic processing (Cacioppo and Petty 1982), are less susceptible to correspondence bias because they are more likely to correct for situational constraints than are people low in NFC (D'Agostino and Fincher-Kiefer 1992). Analogously, people with high levels of need for closure (e.g., who are faster at making judgments and feel greater urgency to complete judgments, Webster and Kruglanski 1994), show greater susceptibility to correspondence bias in attitude attributions than people with low levels of need for closure (Webster 1993). Adult observers lacking cognitive abilities such as formal operations—the ability to integrate multiple pieces of information such as dispositional and situational factors—appear to engage in less

attributional correction and exhibit more correspondence bias than observers with formal operations (Blumberg and Silvera 1998). Developmental comparisons also find that younger children are less likely to correct for situational influences on actors—a more cognitively demanding task than categorizing or characterizing actors (Hagá et al. 2014; c.f., Ruble et al. 1988). Beyond motivation and cognitive ability, believing that one should correct for situational pressures also contributes to the tendency to make dispositional inferences. The degree to which adults believe that even when constraints are very strong, the true traits and attitudes of actors still "leak out" is positively correlated with susceptibility to correspondence bias in attitude attributions (Lord et al. 1997). Similarly, people who hold a dispositionist lay theory (i.e., a belief that people behave consistently across situations; Norenzayan et al. 2002) are more likely to show correspondence bias in attitude attributions (Bauman and Skitka 2010).

Cultural Differences in Correspondent Inference-Making

A second source of evidence that the tendency to make correspondent inferences may be a stable individual difference is represented by the variance of correspondence bias across cultures. Individualistic cultures tend to believe that the decontextualized individual, rather than the situation or social context, is the primary source of causality (e.g., Newman 1993, Choi et al. 1999). In contrast, collectivistic cultures are more likely to believe the situation and the social context to be the primary sources of causality.

Consistent with these beliefs, attributional differences between observers in individualistic and collectivistic societies have been identified. A comparison by Miller (1984) of the attributions made by samples in India and the United States found that Americans made more dispositional attributions than Indians, whereas Indians made more situational attributions than did Americans. These tendencies were not observed in young children, but appeared to increase with cognitive development. Miyamoto and Kitayama (2002) found that the correspondence bias was significantly weaker for Japanese than for Americans when the behavior was minimally diagnostic of the actor's attitude. Choi and Nisbett (1998) found that the correspondence bias was much weaker for Koreans than for Americans when the situational constraint was made more salient. Masuda and Kitayama (2003) found an analogous difference between Japanese and American participants. Supporting an inferential correction model, cultural differences in correspondent inferences appear to be more a function of the extent to which automatic dispositional inferences are subsequently corrected than of differences in automatic dispositional inferences (Lieberman et al. 2005). Thus, these cultural differences suggest that there may be systematic (environmentally caused) differences in the propensity to make correspondent inferences.

Individual Differences in Judgment

A third source of evidence that the tendency to make correspondent inferences may be a stable individual difference is that decision making ability and susceptibility to decision making biases appear to vary systematically across people (Bruine de Bruin et al. 2007; Levin et al. 2002, Frederick 2005, Morewedge et al. 2015, Scopelliti et al. 2015, Stanovich 1999, West and Stanovich 1997). Performance across decision making tasks tends to have high internal consistency, with the same people showing strong or weak performance across a variety of tasks such as susceptibility to framing effects and sunk costs, and appropriately recognizing the limits of their knowledge (Blais et al. 2005, Bornstein and Zickafoose 1999, Klayman et al. 1999, Scopelliti et al. 2015, Stankov and Crawford 1996, 1997, Stanovich and West 2000). Similar to general decision making ability, correspondent inference-making and bias may vary systematically across individuals.

Most research has examined correspondent inferences by using between-subjects comparisons, which do not address whether there is systematic individual variation across the different types of inferences. Experimental designs typically compare inferences about the behavior of an actor by observers who were told the behavior occurred under one of several different degrees of situational constraint (between-subjects). The four common types of inferences examined include the attitude of essay writers who either chose which essay position to write or were assigned to a position, the emotionality of an interviewee who discussed either anxiety provoking or mundane topics, the abilities of game players assigned roles with different levels of difficulty, or the morality of a person who acted immorally either because she chose to or was instructed to by an influencer (Gawronski 2004). It is yet to be demonstrated whether observers who are more prone to making correspondent inferences for one type of judgmental task or target are prone to make correspondent inferences across this variety of judgmental tasks and targets.

In this paper we adopt a psychometric approach to the analysis of the propensity to make correspondent inferences. To examine whether the propensity to make correspondent inferences is a unique construct and a stable individual difference, we developed and validated an instrument that combines the four paradigms most commonly used to assess correspondence bias, taking into account different types of dispositions—attitudes, abilities, emotionality, and morality. Our first three studies (1A, 1B, and 2) develop a new individual-difference measure (i.e., Neglect of External Demands scale, or NED[1]) designed to assess the extent to which a person makes correspondent inferences across varied judgmental tasks and targets, evaluate the reliability and the dimensionality of the instrument, and verify its factorial structure and discriminant validity.

In Studies 3, 4, 5A, 5B, 6 and 7 we then tested the extent to which the propensity to make correspondent inferences predicted consequential, conceptually related, but different judgments and decisions. In Study 3, we examined the relationship between the propensity to make correspondent

inferences and attributions of blame to actors for having accidentally harmed another person. In Study 4, we examined whether people who are more prone to make correspondent inferences are less likely to account for coercion in confessions when judging guilt. In Studies 5A and 5B, we investigated whether the propensity to make correspondent inferences is associated with neglecting job difficulty when evaluating the performance of employees for promotion, even when information on job difficulty is readily accessible. In Study 6, we tested whether high propensity to make correspondent inferences increases the odds of selecting personnel whose prior role provided them with an unfair advantage relative to personnel whose prior role placed them at an unfair disadvantage. In Study 7, we examined whether high propensity to make correspondent inferences induces investors to neglect the overall performance of the market when evaluating fund performance and making incentive-compatible investment decisions. Together, the studies and instrument elucidate the structure of the construct and the extent to which it predicts consequential social judgments faced by professionals in managerial contexts and their personal life. Finally, in Study 8 we examined whether those identified as most prone to correspondent inference-making can benefit from making situational information easier to process, a debiasing intervention that should help them correct for the influence of the situation in their attributions. All data and analysis code is hosted on the Open Science Framework at osf.io/dbjtz/.

STUDY 1A

In Study 1A, we generated and tested numerous scale items through a purification process. The result of this process is a 10-item scale measuring the propensity to make correspondent inferences, the *Neglect of External Demands* (i.e., NED) scale, that has good reliability and stability. We used an item-generation process to capture a broad sense of the construct. We reviewed the literature on correspondent inferences, correspondence bias, and the fundamental attribution error, identifying the classic paradigms used to assess the bias: the attitude attribution paradigm (Jones and Harris 1967), the quizmaster paradigm (Ross et al. 1977), the silent interview paradigm (Snyder and Frankel 1976), and the moral attribution paradigm (Bierbrauer 1979).

Given the common process underlying the different paradigms, we treated the propensity to make correspondent inferences construct as a latent variable that leads observers to underweight situational constraints across different types of causal attributions. Accordingly, we approached the conceptualization and the operationalization of the construct as a reflective measurement model (Bollen and Lennox 1991, Edwards and Bagozzi 2000): A model in which the direction of causality is from the construct to the indicators, where changes in the underlying construct are hypothesized to cause changes in the indicators. Accordingly, changes in individual propensity to make correspondent inferences (i.e., a

latent variable), should cause changes in the extent to which observers exhibit confidence in dispositional attributions for the behavior of actors across different targets, contexts, and behaviors.

Method

Participants

One hundred and fifty residents of the United States (89 women; M_{age} = 32.6 years, SD = 11.7) received $1 for completing a survey administered through Amazon Mechanical Turk[2] (AMT). Participants were 82.7% White, 7.3% Asian, 4.7% African American, 4.0% multiracial, and 1.3% Native American. Sample size was determined in advance for all studies reported[3]. No participants were excluded. Participation in any study reported here resulted in ineligibility for participation in subsequent studies (i.e., no person participated in more than one study).

Materials

Item Generation. To develop and select items to include in the scale, we identified existing paradigms used to assess correspondence bias in the literature: the attitude attribution paradigm (Jones and Harris 1967), the quizmaster paradigm (Ross et al. 1977), the silent interview paradigm (Snyder and Frankel 1976), and the moral attribution paradigm (Bierbrauer 1979). We then developed a pool of questions by varying some aspects of the situation described, adapting each paradigm to a uniform question format. Specifically, each question described an instance of behavior and participants rated their confidence in a dispositional attribution for that behavior on a 7-point scale with endpoints, *Not at all confident* (1) and *Very confident* (7). The pool of questions generated was then submitted to a sample of respondents to be purified. An example item based on Jones and Harris' (1967) attitude attribution paradigm appears below.

> A struggling freelance writer finally lands her first paid gig. Her employer, a political magazine, assigns her to write a piece advocating for the election of Senator Smith. Her feature story focuses on these three issues: 1) Senator Smith is backing legislation to spur job creation in certain sectors; 2) Senator Smith is committed to reducing America's dependence on foreign oil; and 3) Senator Smith is supporting tax cuts for small businesses.
>
> Based on the information provided, how confident are you that the writer supports Senator Smith? (1 = Not at all confident; 7 = Very confident)

Procedure

Participants completed 36 unique items designed to assess different forms of correspondent inferences. Item order was random. Afterwards, participants reported their age, gender, and ethnicity.

Results

Purification. We first reduced the number of items to improve the psychometric properties and maximize the usability of the scale. In the interest of parsimony, we initially removed items that were too similar (e.g., that assessed the same underlying disposition). We then computed the correlations between each item and the rest of the scale, and removed items with item-to-total correlations lower than .40. This purification process led to a final 10-item scale (see Table 1 for all items and paradigms).

Reliability. The 10-item NED scale showed high reliability ($\alpha = .83$), well above the acceptable threshold of .70 (Nunnally 1978). All items appeared to be worth retention. No question eliminations yielded a higher value of the Cronbach's alpha coefficient ($\alpha\text{-if-item-deleted}_i < \alpha$). Forty-four of the 45 pairwise correlations between the items were positive and significant ($p < .05$). One was positive and marginally significant ($p = .055$). The correlation matrix is reported in Table 2. The average pairwise correlation between items was .32. Finally, each item correlated well with the scale, as signaled by an average item-to-total correlation equal to .51. All further analyses, in this and subsequent studies, use this 10-item scale.

Exploratory factor analysis. We submitted the 10 NED scale items to an exploratory factor analysis (EFA) followed by a parallel analysis (Horn 1965). Parallel analysis, one of the most accurate methods for determining the number of factors to retain (Velicer et al. 2000, Zwick and Velicer 1986), involves the construction of several correlation matrices of random variables based on the same sample size and number of variables in the actual data. The average eigenvalues from the random correlation matrices are then compared to the eigenvalues from the actual correlation matrix. The analysis suggests the retention of factors as long as their actual eigenvalues are greater than the parallel average eigenvalues from the random correlation matrices (Glorfeld 1995, Horn 1965, Zwick and Velicer 1986). The parallel analysis suggested an underlying single-factor structure, with only the first eigenvalue observed in the data being higher than a parallel average random eigenvalue based on the same sample size and number of variables (see Figure 1 for a plot of the observed eigenvalues and the parallel random eigenvalues). In the single-factor model, all 10 items loaded onto a single factor accounting for 39.6% of the total variance, and each item had a high correlation with that factor (all λs > .44). Items and their factor loadings are reported in Table 3.

Discussion

The results suggest that the tendency to make correspondent inferences adheres to a single-factor structure across a variety of judgments and targets. Moreover, the high inter-item correlations and factors loadings suggest that there are individual differences in the propensity to make correspondent inferences. Some people have a higher propensity to make correspondent inferences that makes them more confident in dispositional attributions for observed behaviors across different judgments, targets, and situations. A 10-item NED scale was purified and a measurement model was specified. The results of this first study suggest that the NED reliably assesses the propensity to make correspondent inferences construct, and it captures the single latent variable proposed by our construct operationalization.

STUDY 1B

In Study 1B, we verified the factorial structure of the NED by submitting the 10 scale items to a confirmatory factor analysis with a new sample of participants. In addition, we tested the stability of the scale over time by conducting a second administration of the scale to a subsample of those same participants after a three-week lag.

Method

Participants

Initial Sample. One hundred and fifty-one residents of the United States (64 women; M_{age} = 30.4 years, *SD* = 10.7) received $1 for completing a survey administered through AMT. Participants were 80.8% White, 6.6% African American, 6.0% Asian, 4.0% multiracial, .7% Native American, and 2.0% did not indicate their ethnicity.

Follow-Up Sample. To assess the test-retest reliability of the instrument, all participants in the initial sample received an invitation to retake the survey for an additional $1 three weeks after the initial administration. People who were not part of the initial sample were not able to access the survey. Seventy-five participants retook the survey (33 women; M_{age} = 31.2 years, *SD* = 10.7) yielding a 50% retention rate. Participants in this subsample were 78.7% White, 9.3% African American, 5.3% multiracial, 5.3% Asian, and 1.3% did not indicate their ethnicity. There were no differences between the initial sample and the follow-up sample in terms of age, $F(1,149) = .86$, $p = .36$, gender, $\chi^2(1) = .16$, $p = .69$, or ethnicity, $\chi^2(3) = 2.50$, $p = .48$.

Procedure

Participants first completed the 10-item NED, with items presented in a random order. In addition, participants reported their age, gender, ethnicity, highest level of education completed, and approximate household yearly income before taxes on a 6-point scale (i.e., 1 = under $25,000; 2 =$25,001- $49,999; 3 = $50,000 - $74,999; 4 = $75,000 - $99,999; 5 = $100,000 -$149,999; 6 = $150,000 and over). We assessed test-retest reliability of the NED by sending all participants an invitation to

complete the questionnaire again three weeks after the initial administration through the AMT messaging system. Test items were again presented in a random order. Participants were given three days to complete the survey, after which they could no longer access it.

Results and Discussion

Confirmatory factor analysis. To test the factorial structure that emerged in the exploratory factor analysis in Study 1A, we conducted a confirmatory factor analysis (CFA). We first evaluated the assumption of multivariate normality of the data, which is a necessary condition for the use of maximum likelihood estimation. Mardia's test of multivariate skewness and kurtosis was significant ($\chi^2 = 439.55$, $p < .001$), signaling that the assumption of multivariate normality of the data was violated. As a consequence we opted for a robust maximum likelihood estimation (RML). The CFA suggested that the single-factor model emerged in the exploratory factor analysis from Study 1A fits the data in Study 1B well, with a goodness-of-fit index (GFI) of .94, a Bentler's Comparative Fit Index (CFI) of .97, a non-normed fit index of .96 (NNFI), and a root mean square error of approximation (RMSEA) of .05. Those values indicate a good fit between the model and the observed data. The factor-loading estimates are reported in Table 4 and were all significant, all ts > 4.9, all ps < .0001.

Test-Retest Reliability. To assess test-retest reliability, we computed NED scores on the data collected in the second administration of the scale on participants in Study 1B ($\alpha = .74$), and examined the correlation between NED scores in the first ($\alpha = .70$) and in the second administration, $r(73) = .73$, $p < .001$. The high correlation signaled the stability of the NED scale over time.

Descriptive Statistics. We examined the distribution of the NED scores. The scores were normally distributed ($M = 4.08$, $SD = 1.02$), as both the Kolmogorov-Smirnov test, $z = .06$, $p = .20$, and the Shapiro-Wilks test, $z = .99$, $p = .16$, were not significant, and the observed range spanned from 1.40 to 7.00 (see Figure 2).

We then examined whether demographic variables accounted for some differences in NED scores. Gender appeared to be unrelated to the propensity to make correspondent inferences. The scores of male ($M = 4.14$, $SD = .99$) and female participants ($M = 3.99$, $SD = 1.06$) were not significantly different, $F < 1$. Similarly, the correlation between age and NED scores was not significant, $r(149) = .04$, $p = .59$. Also, ethnicity did not appear to be associated with different levels of NED scores, $F(3, 143) = .32$, $p = .81$. Education achieved was negatively and significantly correlated with NED scores, $r(148)^4 = -.21$, $p = .011$, suggesting that higher levels of education were associated with lower propensity to make correspondent inferences. Personal income was also negatively and significantly correlated with NED scores, $r(146)^5 = -.21$, $p = .01$, suggesting that higher levels of income were associated with lower

propensity to make correspondent inferences, although the underlying direction and nature of this relationship would be difficult to ascertain.

Discussion

The results suggest that the propensity to make correspondent inferences is a latent, unidimensional construct. Furthermore, the high test-retest reliability observed indicated that the individual difference tapped by our NED scale enjoys a good level of stability over time. NED scores were not affected by demographic variables such as gender, age, and ethnicity, but did tend to decrease as the level of education and income increased. In the next study, we test the discriminant validity of the NED in relation to several established scales measuring potentially related psychological constructs.

STUDY 2

The development of a valid and reliable measurement scale introduces the possibility to clarify the relationships between the propensity to make correspondent inferences and related constructs that compose its nomological network (Cronbach and Meehl 1955). Using seven different samples of respondents we examined the discriminant validity of the NED scale in relation to 21 established measures of potentially related psychological constructs including measures of intelligence, inclination toward cognitive activities (i.e., SAT scores, Decision Making Competence, Cognitive Reflection Test scores, and Need for Cognition), measures of cognitive processing preferences (i.e., Need for Precision, Need to Evaluate, and Need for Cognitive Closure), measures of attributional style, psychological constructs that assess traits related to causality (i.e., Locus of Control, and Desirability of Control), and personality traits (i.e., the Big Five Inventory; BFI). These comparisons determine whether individual differences in the propensity to make correspondent inferences simply reflect individual differences in more basic individual differences or established personality traits.

Method

Participants

One thousand and seventy-four participants were recruited in seven unique samples (598 women; M_{age} = 31.8 years, SD = 11.3). For each sample, the content of the questionnaire varied. All participants were residents of the United States who received $1 or $2 (Sample 1) for completing a survey administered through AMT. Participants were 79.5% White, 6.1% African American, 6.3% Asian, 4.6% multiracial, 1.3% Native American, and 2.1% did not indicate their ethnicity. The seven samples did not differ in terms of NED scores, $F(5, 1067) = .83$, $p = .55$, no participant was included in more than one sample, and no participant took part in previous or subsequent studies.

Materials and Procedure

Sample 1. Participants (n = 121) first completed the 10-item NED with items presented in a random order. Then they were administered the Adult Decision Making Competence inventory (A-DMC; Bruine de Bruin et al. 2007), a comprehensive instrument to assess people's ability to make judgments and decisions. Participants completed the six behavioral decision making batteries of measures composing the A-DMC: *Resistance to Framing* (14 paired items), which measures whether value assessment is affected by irrelevant variations in problem descriptions; *Recognizing Social Norms*, which measures how well people assess peer social norms (16 items); *Under/Overconfidence*, which measures how well participants recognize the extent of their own knowledge (34 items); *Applying Decision Rules*, which asks participants to indicate, for hypothetical individual consumers using different decision rules, which products they would buy out of a choice set (10 items); *Consistency in Risk Perception*, which measures the ability to follow probability rules (16 paired items); and *Resistance to Sunk Costs*, which measures the ability to ignore prior investments when making decisions (10 items)[6]. Both the order of the batteries and the order of the items were randomized, with scale items nested within battery. Participants also reported their scores on the math and verbal sections of the SAT if they had taken the SAT. In order to facilitate the accuracy of participants who might have taken the test several years before, participants reported approximate SAT scores on two 12-point scales increasing in 50-point increments from 200-249 to 750-800.

Sample 2. Participants (n = 101) first completed the 10-item NED with items presented in a random order. They then completed the original three-item Cognitive Reflection Test (CRT; Frederick 2005) in open-ended format. Given the diffusion of the three original CRT on AMT and the ease of retrieving the solution to those three questions, participants were also administered nine additional and less common CRT questions (Frederick, personal communication) resulting in a total of 12 CRT items.

Sample 3. Participants (n = 200) first completed the 10-item NED with items presented in a random order. Then they completed the BFI (44 items; John and Srivastava 1999). As in Sample 1, participants who took the SAT reported their scores.

Sample 4. Participants (n = 199) first completed the 10-item NED with items presented in a random order. Then they completed a series of personality scales: the Need for Cognition scale (NFC, 18 items; Cacioppo et al. 1984), the Need for Precision scale (20 items; Viswanatian 1997), the Need to Evaluate Scale (16 items; Jarvis and Petty 1996), the Desirability of Control scale (20 items; Burger and Cooper 1979), and the BFI (44 items; John and Srivastava 1999). Each scale was administered using its original answer format and coding scheme. Both the order of the scales and the order of the items were

randomized, with scale items nested within scale. As in Sample 1 and 3, participants who took the SAT reported their scores.

Sample 5. Participants (n = 150) first completed the 10-item NED with items presented in a random order. Then they completed the Attributional Style Questionnaire (ASQ; Peterson et al. 1982). The questionnaire asks to indicate the major causes of 12 events, and to rate these causes on four dimensions: internality, stability, and globality. Each scale was administered using its original answer format and coding scheme. The order of the events was random, while the order of the three rating dimensions was the same for all the events. As in Samples 1, 3, and 4, participants who took the SAT reported their scores.

Sample 6. Participants (n = 151) first completed the 10-item NED with items presented in a random order. Then they completed the Locus of Control scale (LOC, 23 items; Rotter 1966), in its original answer format and coding scheme, with the items presented in a random order.

Sample 7. Participants (n = 152) first completed the 10-item NED with items presented in a random order. Then they completed the Need for Cognitive Closure scale (NCC, 42 items; Webster and Kruglanski 1994), in its original answer format and coding scheme, with the items in randomized order. As in Samples 1, 3, 4, and 5, participants who took the SAT reported their scores.

Results

For each of the samples we computed NED scores (all αs $\geq .78$ and $\leq .82$). For each of the constructs that were measured using multi-item scales we computed an overall average score after reverse scoring appropriate items, and we examined the correlations of these scores with NED scores. Table 5 presents the scales and measures, their Cronbach's alpha coefficients, and their zero-order correlations with the NED scale.

Intelligence, cognitive ability, cognitive reflection, and cognitive processing preferences.

Given the inferential correction structure of correspondence bias, we assessed whether a greater propensity to make correspondent inferences merely reflects poor cognitive ability. If the propensity to make correspondent inferences merely reflects poor cognitive ability, we should observe high negative correlations between NED scores and measures of intelligence, decision making ability, cognitive reflection, and inclination toward cognitive activities.

SAT scores are frequently used as a measure of intelligence, as both the verbal and math scores load highly on psychometric g or general intelligence (Brodnick and Ree 1995, Frey and Detterman 2004, Unsworth and Engle 2007). Out of the 822 participants who were administered the question, 412 reported their SAT test scores. We computed the correlation between the reported approximate SAT scores (both

verbal and math) and NED scores. Both the correlation between NED scores and the verbal and math SAT scores were negative and significant, $r(410) = -.12$, $p = .02$, and $r(410) = -.13$, $p = .01$, respectively. These results suggest that propensity to make correspondent inferences is greater at lower levels of intelligence, but the small size of the correlation coefficients suggests that the construct is distinct from general intelligence.

Second, we examined the correlation between NED scores and general decision making competence, measured using the six A-DMC inventory tasks: Resistance to Framing ($\alpha = .46$); Recognizing Social norms ($\alpha_{Y/N} = .73$, $\alpha_{\%} = .85$); Under/overconfidence ($\alpha_{\%} = .86$); Applying Decision Rules ($\alpha = .61$); Consistency in Risk Perception ($\alpha = .73$); and Resistance to Sunk Costs ($\alpha = .53$). These levels of reliability were generally consistent with those reported by Bruine de Bruin and colleagues (2007). NED scores were significantly correlated with three of the A-DMC components: applying decision rules, $r(119) = -.21$, $p = .02$, consistency in risk perception, $r(119) = -.19$, $p = .04$, and resistance to sunk costs, $r(119) = -.21$, $p = .02$. NED scores were not correlated with the other three components: resistance to framing, recognizing social norms, and under/overconfidence, all rs $< |.10|$, ps $> .28$. The small size of the significant coefficients suggests that the propensity to make correspondent inferences and the dimensions of decision making ability measured by the A-DMC are independent constructs. Most important, the lack of a correlation with overconfidence suggests that the confidence exhibited in dispositional attributions on the NED does not merely reflect a general tendency to be overconfident.

Third, we examined whether high NED scores are associated with a higher reliance on intuition than on deliberate reasoning by examining their correlation with scores on the CRT, a set of questions that each have an incorrect intuitive response and a correct response that can be reached through deliberate reasoning (Frederick 2005). We computed a composite measure of performance on the CRT by assigning a score of 1 to each correct answer, a score of 0 to each incorrect answer, and summing all items ($M = 3.50$, $SD = 2.65$). NED scores were significantly and negatively correlated with CRT scores and this pattern of correlations was consistent irrespective of which CRT items are considered: all 12 items: $r = -.31$, $p = .002$, the 3 "original" items: $r = -.24$, $p = .015$, or the 9 "new" items $r = -.30$ $p = .002$. We also computed a composite measure of reliance on intuition, by assigning a score of 1 to each instance in which participants gave the incorrect 'intuitive' answer to a CRT item, a score of 0 to any other answer, and summing up all items ($M = 4.17$, $SD = 2.32$). NED scores were significantly and positively correlated with CRT intuitive answering scores, $r(99) = .23$, $p = .02$. This pattern of correlations was consistent also considering only the 3 "original" items, $r = .22$ $p = .03$, or the 9 "new" items, $r = .18$, $p = .07$.

Participants more prone to make correspondent inferences were more likely to rely on their intuition and less likely to engage in cognitive reflection and deliberation, consistently with an inferential correction process underlying correspondence bias. The size of the correlation between cognitive

reflection and NED scores, however, was low enough to suggest that although the propensity to make correspondent inferences is associated with lower cognitive reflection, it is not simply a manifestation of it.

Fourth, we examined the correlation between NED scores and self-reported inclination toward cognitive activities, NFC. People high in NFC tend to put more effort into processing information and have been found to exhibit less correspondence bias in previous research, as they are more likely to exhibit situational correction than people low in NFC (D'Agostino and Fincher-Kiefer 1992). In line with this finding, we observed a significant and negative correlation between NED scores and NFC, $r(197) = -.21$, $p < .01$, however, the small size of the correlation coefficient signals the conceptual discrimination of the two constructs.

In addition to these standard measures of cognitive ability and motivation, we examined the relationship between the NED and two scales measuring chronic cognitive processing preferences. The Need to Evaluate scale assesses the tendency of individuals to form evaluative responses about situations and objects by measuring chronic differences in the likelihood and in the extent of evaluative responding (Jarvis and Petty 1996). Since both dispositional attributions and situational attributions may be considered as manifestation of a need to evaluate, we expected this construct to be independent from the propensity to make correspondent inferences. In line with this prediction, the correlation between NED scores and need to evaluate was not significant, $r(197) = .01$, $p = .87$.

The Need for Precision scale measures individual preference toward more precise or fine-grained modes of processing (Viswanatian 1997). One might argue that correspondent inferences are the mere manifestation of low need for precision, which induces people to use general dispositional information rather than precise and individuating situational information to characterize behavior. The correlation between NED scores and need for precision was negative, but did not reach statistical significance, $r(197) = -.07$, $p = .36$, signaling the conceptual discrimination of the two constructs.

Finally, we examined the relationship between the NED and Need for Cognitive Closure (Webster and Kruglanski 1994), a personality trait that measures the extent to which a person faced with a judgment desires any answer as compared with confusion and ambiguity (Kruglanski 1989). NCC is a multidimensional construct composed by five sub dimensions: preference for order and structure, discomfort with ambiguity (i.e., the discomfort experienced when lacking closure), preference for predictability (i.e., the desire for knowledge that can be relied on across different circumstances), decisiveness (i.e., the experience of a urgent desire to reach closure), and closed-mindedness (i.e., the unwillingness to have one's knowledge confronted by alternative opinions or inconsistent evidence). NCC may be associated with higher propensity to make correspondent inferences, because one may argue

that people high in need for cognitive closure are more likely to stop their deliberation before having taken situational factors into account (Webster 1993), consistently with the positive correlation we observed, $r(150) = .19$, $p = .02$.

Dimensions of control

People may draw correspondent inferences because they have a chronic preference for control. Their preference may engender a belief that others have control over situational factors, for example, and that behaviors are more likely to be driven by dispositions than by the situation. We measured preference for control using the desirability of control scale (Burger and Cooper 1979), and the locus of control scale (Rotter 1966). The desirability of control scale measures a desire to have control over the events in one's life. The locus of control scale measures individual perceptions of personal control. Internal locus of control, indicated by low locus of control scores, corresponds to the belief that one has control over one's life. External locus of control, indicated by high locus of control scores, refers to the belief that external forces influence one's life circumstances. The correlation between NED scores and desirability of control was positive and marginally significant, $r(197) = .12$, $p = .098$, whereas the correlation with locus of control was not significant, $r(149) = .02$, $p = .81$.

Big five personality traits

For each of the Big Five personality traits, we computed an overall average score after reverse scoring appropriate items. NED scores were significantly correlated with Agreeableness, $r(397) = .19$, $p < .001$, and Extraversion, $r(397) = .11$, $p = .03$, and uncorrelated with Conscientiousness, $r(397) = .08$, $p = .14$, Openness to Experience, $r(397) = -.06$, $p = .27$, and Neuroticism, $r(397) = -.08$, $p = .12$. The small size of the significant correlations suggests that the NED scale is sufficiently discriminated from these dimensions of personality.

Attributional style

We also examined the correlation between the NED and the ASQ, a measure of attributional style developed in order to predict the occurrence of depression (Peterson et al. 1982). The ASQ measures individual differences in the tendency to attribute the causes of good and bad events to internal (vs. external), stable (vs. unstable), and global (vs. specific) factors (Abramson et al. 1978). Participants generated a cause for each of six positive and six negative events that might occur to them (e.g., becoming very rich, going on a date that goes badly, looking for a job unsuccessfully) and rated each cause along scales corresponding to internal, stable, and global dimensions. We computed average scores on each of the three dimensions and examined their correlation with NED scores. High average scores on the three dimensions of the ASQ correspond to high internal attribution, high stability, and high globality, respectively. NED scores were significantly correlated with internality scores, $r(148) = .22$, $p = .001$,

suggesting that the tendency to make dispositional attributions tends to apply both to the self and to other people. However, both the correlation between NED scores and stability, $r(148) = -.05$, $p = .58$, and the correlation between NED scores and globality were not significant, $r(148) = .04$, $p = .67$, signaling the independence of the propensity to make correspondent inferences from these constructs.

Discussion

The propensity to make correspondent inferences as measured by the NED does not appear to be a derivative of general intelligence, decision making ability, cognitive processing styles, preferences and beliefs about control, personality traits, or attributional style. Most important, the small size of all the significant correlation coefficients observed in Study 2 suggests that the NED measures a distinct construct, supporting its discriminant validity. There were interesting significant correlations with related constructs in directions that would be predicted by an inferential correction model of correspondence bias: Participants more prone to correspondent inferences were characterized by significantly lower intelligence scores, lower decision making competence on some dimensions (i.e., applying decision rules, consistency in risk perceptions, and resistance to sunk costs), lower propensity to engage in cognitive reflection, lower need for cognitions scores, and higher need for cognitive closure scores. The significant and positive correlation between NED scores and the internality dimension of the attributional style questionnaire provides proof of its convergent validity. Perhaps worth examination by future research, the propensity to make correspondent inferences showed positive and significant correlations with personality traits such as extraversion, agreeableness, and desirability of control.

STUDIES 3-7: PREDICTIVE VALIDITY

Studies 3, 4, 5A, 5B, 6, and 7 tested the predictive validity of the NED, its ability to predict judgments and behaviors influenced by the propensity to make correspondent inferences. Studies 3 and 4 examined the relationship between NED scores and attributions of blame and guilt. Specifically, Study 3 tested the relationship between NED scores and attributions of blame to actors who accidentally harmed another person. Study 4 tested whether high NED scores correspond to a greater propensity to believe that defendants who made confessions under coercive circumstances are guilty of the crimes to which they confessed.

Studies 5A and 5B, 6, and 7 examined the relationship between NED scores and attributions of ability and performance. Studies 5A and 5B tested the effect of the NED in predicting the weight given to task difficulty when evaluating the performance of employees for promotion. Studies 6 and 7 examined the effects of the NED on behavioral outcomes. Study 6 tested whether higher NED scores predicted a tendency to ignore the advantages and disadvantages imposed by previous roles on candidates when

selecting which one would exhibit superior future performance. Study 7 tested whether higher NED scores would be associated with less discounting for market forces when evaluating investment performances and making incentive-compatible investment decisions.

STUDY 3: CORRESPONDENT INFERENCES AND ATTRIBUTING BLAME

We first examined whether the propensity to make correspondent inferences predicts the amount of blame observers attribute to people who accidentally harm another person. Specifically, we compared scenarios in which an actor was causing negligent or accidental harm, with the expectation that participants with a greater propensity to make correspondent inferences would be more likely to attribute blame to the actor, even in cases of accidental harm, in which they should take into account the impact of situational factors.

Method

Participants

Two hundreds residents of the United States (106 women; M_{age} = 30.6 years, SD = 10.7) received $1 for completing a survey administered through AMT. Participants were 78.5% White, 9.0% African American, 5.0% multiracial, 2.5 % Asian, 1.5% Native American, and 3.5% did not indicate their ethnicity.

Materials and procedure

Participants completed the 10-item NED with items presented in a random order. The stimuli used for the blame attribution judgments were a set of 24 scenarios describing a moral situation adapted from Young and Saxe (2009). Each participant saw one of two versions of each scenario: A version in which the protagonist caused negligent harm to a person (harm stemming from the failure of the protagonist to use reasonable care), or a version in which the protagonist caused accidental harm to the same person. In both versions of the scenario the background information and the harm caused (outcome) were the same. An example appears below:

> *Background information*: Mitch and his colleagues are at a new sushi restaurant close to their office. Mitch happens to know the owner of the restaurant through a mutual friend.
>
> *Negligent harm version***:** Mitch thinks that the tuna isn't very fresh after hearing his friend complain about it. Mitch thinks everyone should avoid the tuna in case of parasites.

*Accidental harm version***:** Mitch thinks the tuna is especially excellent, after hearing his friend rave about it. Mitch thinks anyone who likes tuna should order the tuna here.

Outcome: Mitch recommends the tuna to his colleagues at the table. One of his colleagues orders the tuna and ends up getting a nasty strain of parasites.

Each participant read 24 scenarios of which 12 involved negligent harm and 12 involved accidental harm. The order of the scenarios was random. After reading each scenario, participants evaluated the extent to which they believed the protagonist was blameworthy for causing harm on a 5-point scale (1 = not at all; 5 =extremely). Finally, participants reported their age, gender, and ethnicity.

Results and discussion

NED scores were computed by averaging across the 10 items (α = .80). A mixed model analysis was used to estimate the effect of propensity to make correspondent inferences, type of scenario (accidental harm vs. negligent harm), and their interaction on attributions of blame, controlling for the set of scenarios that participants were administered. Since each participant provided attributions of blame for both accidental and negligent harm scenarios, we let the intercept vary randomly to take into account the lack of independence between the observations. We estimated the following model:

$$Bl_{ij} = \beta_0 + \beta_1 NED_i + \beta_2 Sc_j + \beta_3 NED_i * Sc_j + \beta_4 Set_i + U_{0i} + \varepsilon_{ij}$$

where Bl refers to blame rating, index i refers to participants and index j refers to the scenario evaluated. The dependent variable was thus the blame judgment expressed by each participant on each scenario. The explanatory variables were each participant's mean-centered NED score (NED_i), the type of scenario dummy (0 = accidental harm vs. 1 = negligent harm, Sc_j), the interaction between these two variables, a dummy indicating which set of 24 scenarios each participant evaluated (Set_i), and U_{0i} indicated each participant's random effect. Results are based on a total of 4800 observations, where each observation is a blame judgment provided by a participant.

The results revealed a significant effect of propensity to make correspondent inferences, β_1 = .265, *SE* = .033, *t* = 8.02, *p* < .001, a significant effect of type of scenario, β_2 = 1.57, *SE* = .032, *t* = 49.15, *p* < .001, and a significant interaction between propensity to make correspondent inferences and type of scenario (accidental harm versus negligent harm) on attributions of blame, β_3 = -.16, *SE* = .030, *t* = -5.39, *p* < .001, controlling for the set of scenarios evaluated. Table 6 reports the results of this estimation and the comparison of this model with an alternative model that includes only the main effects.

The significant interaction between propensity to make correspondent inferences and type of scenario was further explored by examining the simple slopes of the type of scenario at all levels of propensity to make correspondent inferences (Preacher et al. 2006). The results revealed that propensity to make correspondent inferences was associated with higher attributions of blame for negligent harm, $\beta = .106$, $SE = .033$, $z = 3.20$, $p = .001$ but also, and more strongly so, with attributions of blame for accidental harm, $\beta = .265$, $SE = .033$, $z = 8.02$, $p < .001$ (see Figure 3).

In sum, participants characterized by high propensity to make correspondent inferences were more likely to make dispositional attributions to actors for harmful events when the harm was due to the their negligence. Moreover, this relationship was even stronger when the outcome was purely accidental—when participants should have discounted more for situational factors contributing to that harm. The results provide evidence of the predictive validity of the NED with respect to attributions of blame.

STUDY 4: CORRESPONDENT INFERENCES AND COERCED CONFESSIONS

In a second test of the predictive validity of the NED, we examined whether the propensity to make correspondent inferences predicts the extent to which judgments of guilt in mock juror verdicts are affected by confessions obtained under coercion. We expected that participants more prone to make correspondent inferences should be less likely to take into account the situational influences that may have induced a defendant to confess, and therefore should be more likely to consider a forced confession to be a relevant piece of evidence in forming their judgment. As a consequence, they should be more likely to consider a defendant who confessed to be guilty even when his confession was obtained under coercion and then withdrawn.

Participants

One hundred and thirty residents of the United States (51 women; $M_{age} = 28.98$ years, $SD = 8.4$) received $1 for completing a survey administered through AMT. Participants were 76.2% White, 8.5 % Asian, 6.2% African American, 5.0% multiracial, 1.6% Native American, and 3.1% did not indicate their ethnicity.

Materials and procedure

Participants completed the 10-item NED, with items presented in a random order. Next, they read a summary of an aggravated assault trial (adapted from Kassin and Neumann 1997, see Appendix 1). For participants randomly assigned to the coerced confession condition, the trial summary mentioned that a confession was obtained after pressuring the defendant for several hours, which was eventually retracted. For participants randomly assigned to the control condition, the trial summary was identical but there was

no mention of the confession or its retraction. After reading the trial summary, participants imagined they were members of the jury and indicated to what extent they believed the defendant to be guilty on a 7-point scale (1 = Definitely not guilty; 7 = Definitely guilty). Finally, participants reported their age, gender, and ethnicity.

Results and discussion

We predicted that information on a confession obtained under coercion would increase the likelihood that participants more prone to make correspondent inferences would consider the defendant to be guilty, as the judgment requires correcting for situational pressures. This prediction was tested using the procedures outlined by Aiken and West (1991) to decompose the predicted interaction using regression analysis.

NED scores were computed by averaging across the 10 items ($\alpha = .81$). Guilt ratings were regressed on the type of scenario dummy (1 = coerced confession; 0 = control), mean-centered NED scores, and the interaction between these two variables. The analysis revealed a significant interaction between the type of scenario and propensity to make correspondent inferences, $\beta = .937$, $SE = .361$, $t = 2.59$, $p = .01$. The effects of type of scenario, $\beta = .071$, $SE = .383$, $t = .19$, $p = .85$, and of propensity to make correspondent inferences, $\beta = -.039$, $SE = .234$, $t = -.17$, $p = .87$, were not significant. Table 7 reports the results of this estimation and the comparison of this model with an alternative model that includes only the main effects.

To illuminate the nature of the interaction, we examined the effect of the coerced confession on guilt ratings at all levels of propensity to make correspondent inferences using the Johnson-Neyman method (Spiller et al. 2013). The analysis revealed two Johnson-Neyman points (see Figure 4), whereby the effect of the coerced confession on guilt ratings was positive and significant for participants characterized by high propensity to make correspondent inferences (NED > 5.25), but negative and significant for participants characterized by low propensity to make correspondent inferences (NED < 2.74).

The propensity to make correspondent inferences moderated the effect of the coerced confessions on guilt ratings. Participants more prone to make correspondent inferences were positively influenced by a coerced confession in rating the likelihood that the defendant was guilty. These participants were more likely to neglect the situational influences (i.e., the coercion) that may have induced the defendant to confess, and therefore may have used the confession as a relevant piece of evidence in forming their judgment. Participants less prone to make correspondent inferences showed the opposite effect, as they were less likely to consider the defendant guilty in the coerced confession condition than in the control

condition. This effect was unexpected, and may be due to the fact that these participants attributed such a high weight to the situational factors resulting in the confession that they overcorrected their guilt ratings.

STUDY 5A: CORRESPONDENT INFERENCES AND PERFORMANCE EVALUATIONS

Study 5A investigated the ability of the NED to predict the weight given to job difficulty when evaluating the performance and promotion-worthiness of employees. We used an experimental paradigm in which clear and quantified information about the situation was available, so participants could adjust their judgments appropriately (Swift et al. 2013). An advantage of this paradigm is that it rules out the possibility that participants' neglect of situational information is simply a consequence of having incomplete information about situational constraints (Moore et al. 2010). Participants evaluated twelve candidates who were up for promotion to a higher rank position. Individual candidate performance was provided, together with information about the difficulty of the situation in which each candidate operated. We expected that the propensity to make correspondent inferences would be inversely related to the extent that participants adjusted performance evaluations of job candidates for the difficulty of their job, even though that information was readily available.

Method

Participants

Two hundred and five residents of the United States (84 women; M_{age} = 34.67 years, *SD* = 11.05) received $1 for completing a survey administered through AMT. Participants were 76.6% White, 7.8% Hispanic, 6.8% African American, 5.9% Asian, .5% Native American, and 2.4% did not indicate their ethnicity. They had on average, 14.3 (SD = 9.9) years of work experience and had been involved with an average of 2.4 (SD = 4.2) promotion decisions.

Materials and procedure

Participants completed the 10-item NED with items presented in a random order. All participants then read a business scenario in which they were the CEO of an airline deciding whom to promote to a senior management position from a set of twelve candidates currently managing different airports (from Swift et al. 2013, Study 2). The performance of the candidates was expressed as the percentage of flights departing on time from their respective airports over the five years in which they were in charge. Participants were told why departure time is a relevant performance indicator and were provided with the performance of each airport five years before each candidate arrived. On the basis of this information, half of the airports were historically punctual (about 85% of flights departed on time, corresponding to low situational difficulty) and half were historically tardy (about 70% of flights departed on time,

corresponding to high situational difficulty). The individual performance of the twelve candidates was varied such that one third of the candidates performed 5% above the previous average of their respective airports, one third at the previous average, and one third 5% below the previous average. These numbers were varied by a few tenths of a percentage point to increase the realism of the scenario, as in the original study. All the possible combinations between airport and performance were counterbalanced and administered in a random order. For each candidate, participants were shown the historical departure time performance across ten years: five years preceding the candidate's appointment and the most recent five years under their management. Participants then evaluated each candidate on two items, one related to her performance (1 = Very bad; 7 = Very good) and the other to her promotion worthiness (1 = Definitely no; 7 = Definitely yes). Finally, participants reported their years of work experience, number of promotion decisions they had been involved in, and their age, gender, and ethnicity.

Results and discussion

NED scores were computed by averaging across the 10 items ($\alpha = .79$). The two items asking participants to rate the performance and the promotion worthiness of each candidate were highly correlated, $r(2445) = .90$, $p < .001$, and were averaged in an overall evaluative index. A mixed model analysis was used to estimate the effect of propensity to make correspondent inferences, individual performance, performance adjusted for the situational difficulty, and the two-way interactions between each of the two performance measures and propensity to make correspondent inferences. Since each participant provided evaluations for all the candidates, we let the intercept vary randomly to take into account the lack of independence between the observations. We estimated the following model:

$$Eval_{ij} = \beta_0 + \beta_1 NED_i + \beta_2 IP_j + \beta_3 AP_j + \beta_4 NED_i * IP_j + \beta_5 NED_i * AP_j + U_{0i} + \varepsilon_{ij}$$

where Eval refers to evaluations, index i refers to participants and index j refers to the candidate evaluated. The dependent variable was thus the evaluation given by each participant to each candidate. The explanatory variables were each participant's mean-centered NED score (NED_i), the candidates' individual performance scores (on time average in the five years of the candidate's tenure, IP_j), the candidates' performance scores adjusted for the difficulty of the situation (individual performance score minus the on time average in the five years prior to the candidate's appointment, AP_j), and U_i indicated each participant's random effect. Results are based on a total of 2460 observations, where each observation is a candidate evaluation provided by a participant.

We predicted that participants more prone to make correspondent inferences would be less influenced by adjusted performance (i.e., performance corrected for situational difficulty) when assessing candidates. The results supported this prediction, as they revealed a significant and negative interaction between NED scores and adjusted performance, $\beta_5 = -.055$, $SE = .006$, $t = -9.14$, $p < .001$. Interestingly, the interaction between NED scores and individual performance was also significant, but positive in sign, $\beta_4 = .022$, $SE = .003$, $t = 7.94$, $p < .001$. Table 8 reports the results of this estimation and the comparison of this model with an alternative model that includes only the main effects. The results show that propensity to make correspondent inferences affects the extent to which people incorporate information about job or task difficulty when evaluating the performance of others. Participants characterized by high NED scores were less likely to anchor their performance evaluations on adjusted performance, favoring candidates who benefited from easier circumstances. These results are particularly interesting in light of the fact that participants were provided with information on the situational difficulty next to information on individual performance, and in the same format, suggesting that the NED scale is diagnostic of dispositional attributions also in contexts where information on situational factors is available and clear.

STUDY 5B – REPLICATION AND EXTENSION

Study 5B replicated Study 5A with a different population, undergraduate business majors. In addition, it compared the predictive validity of the NED to a standard measure of intelligence (the SAT) in its ability to explain variance in performance evaluations that neglected the influence of job difficulty.

Method

Participants

One hundred and nine undergraduate business majors at a large private university in New England (49 women; $M_{age} = 19.74$ years, $SD = .83$) received partial course credit for completing the study. Participants were 37.9% White, 9.7% Hispanic, 4.9% African American, 35.9% Asian, and 11.7% did not indicate their ethnicity. Six participants did not report their SAT scores and could not be included in the analysis. Their NED scores were not significantly different from those of the other participants, $F(1,107) = .23$, $p = .64$.

Materials and procedure

Participants completed the 10-item NED with items presented in a random order. Afterwards, they were administered the same scenario as in study 5A. Finally, they reported their age, gender, ethnicity, and scores on the math and verbal sections of the SAT if they had taken the SAT. Scores were collected on two 12-point scales increasing in 50-point increments from 200-249 to 750-800.

Results and discussion

NED scores were computed by averaging across the 10 items (α = .79). The two items asking participants to rate the performance and the promotion worthiness of each candidate were highly correlated, $r(1212) = .88$, $p < .001$, and were averaged in an overall evaluative index. A mixed model analysis was used to estimate the effect of propensity to make correspondent inferences, individual performance, performance adjusted for the situational difficulty, and the two-way interactions between each of the two performance measures and propensity to make correspondent inferences. Since each participant provided evaluations for all the candidates, we let the intercept vary randomly to take into account the lack of independence between the observations. We estimated the following model:

$$Eval_{ij} = \beta_0 + \beta_1 NED_i + \beta_2 SAT_{MATH_i} + \beta_3 SAT_{VERB_i} + \beta_4 IP_j + \beta_5 AP_j + \beta_6 NED_i * IP_j + \beta_7 NED_i * AP_j + \beta_8 SAT\_MATH_i * IP_j + \beta_9 SAT\_MATH_i * AP_j + \beta_{10} SAT\_VERB_i * IP_j + \beta_{11} SAT\_VERB_i * AP_j + U_{0i} + \varepsilon_{ij}$$

where Eval refers to evaluations, index i refers to participants and index j refers to the candidate evaluated. The dependent variable was thus the evaluation given by each participant to each candidate. The explanatory variables were each participant's mean-centered NED score (NED_i), SAT math score (SAT_MATH_i), SAT verbal score (SAT_VERBAL_i), the candidates' individual performance scores (on time average in the five years of the candidate's tenure, IP_j), the candidates' performance scores adjusted for the difficulty of the situation (individual performance score minus the on time average in the five years prior to the candidate's appointment, AP_j), and U_{0i} indicated each participant's random effect. Results are based on a total of 1227 observations, where each observation is a candidate evaluation provided by a participant (the total number of observations would have been 1236 but nine candidate ratings were missing).

Most important, the significant and negative interaction between NED scores and adjusted performance was replicated in Study 5B, $\beta_7 = -.034$, $SE = .012$, $t = -2.71$, $p = .007$. By contrast, the interaction between SAT math scores and adjusted performance, $\beta_9 = .0003$, $SE = .0002$, $t = 1.72$, $p = .09$, and the interaction between SAT verbal scores and adjusted performance, $\beta_{11} = .0003$, $SE = .0002$, $t = 1.85$, $p = .06$, were only marginally significant. Table 9 reports the results of this estimation and the comparison of this model with an alternative model that includes only the main effects, and an alternative model that includes only the interactions between the two performance measures and SAT scores. The inclusion of the interactions between NED scores and the performance measures improved significantly the explanatory power of the model, $\chi^2(2) = 16.473$, $p < .001$.

In sum, the results of Study 5B are in line with those of Study 5A. Both studies found the propensity to make correspondent inferences to engender miscalibrated performance assessments. Participants high in the propensity to make correspondent inferences did not account for the influence of job difficulty on candidates' performance. Even when controlling for intelligence, the NED scale substantially improved the ability to predict which participants would ignore the influence of situational pressures in their evaluations of job performance.

STUDY 6: CORRESPONDENT INFERENCES AND PERSONNEL SELECTION

In Study 6 we examined in an incentive-compatible context whether the NED predicts personnel selections based on attributions of success and failure when both were as much product of the situation as the person. We chose to conduct this test using a personnel selection paradigm because the implementation of fair and accurate selection procedures can confer competitive considerable financial advantages for firms (Schmidt and Hunter 1981; Schmidt et al. 1982). In the study, we incentivized the incorporation of situational information in participants' selection decision, by having them bet a monetary bonus on the future performance of their preferred candidate.

Participants watched a video in which a quizmaster asked a quiz taker challenging trivia questions about Supreme Court law. The quiz taker did poorly. Next, participants selected who would perform better on an unrelated mythology quiz—the quizmaster or the quiz taker—by placing a real bet on one of these two quiz bowl contestants. We expected that propensity to make correspondent inferences would predict the extent to which participants neglected the considerable advantages conferred by the situation to the quiz master, and (erroneously) bet on her to win. In addition, this study examined whether the explanatory power of the NED scale makes a unique contribution above the explanatory power provided by measures of personality, intelligence, and cognitive reflection.

Method

Participants

Three hundred residents of the United States (154 women; M_{age} = 35.4 years, SD = 10.8) received $4.00 for completing a survey administered through AMT plus the opportunity to place a bet for an additional 50¢ bonus. Participants were 83.3% White, 7.7% African American, 5.0 % Asian, 2.7% multiracial, 1.0% Native American, and .3% did not indicate their ethnicity.

Materials and procedure

Participants completed the 10-item NED, 12 CRT items (same as in Study 2, Sample 2), and the BFI (as in Study 2, samples 3 and 4). Both the order of the scales and the order of the items were

randomized, with scale items nested within scale. Then they reported their scores on the math and verbal sections of the SAT if they had taken the SAT (as in Study 2).

Afterwards, they watched a video in which two graduate students, Lauren and Erin, engaged in a quiz bowl. Participants were told that Lauren, the quizmaster, prepared 10 questions in her preferred category (i.e., *Landmark United States Supreme Court Cases*), and that Erin, the quiz taker, received no advance notice of the category. In the video, Erin answered 1 out of 10 questions correctly. Participants were then informed that both Lauren and Erin were contestants in a second trivia quiz testing knowledge in an unrelated category (i.e., *Mythology*). Participants saw all ten quiz questions. They bet that either Lauren or Erin would answer more questions correctly on the second quiz. If they bet on the higher performer, they would receive a 50¢ bonus at the end of the experiment in addition to their compensation. (Both Lauren and Erin did actually take the mythology quiz in advance of the study. Erin answered more questions correctly.) Finally, participants reported their age, gender, and ethnicity.

Results

We compared the explanatory power of the NED by estimating its ability to predict the selection of a candidate unfairly favored by the situation when also accounting for measures of intelligence (SAT), personality (BFI), and cognitive reflection (CRT). Our primary dependent variable was the person upon whom each participant chose to bet in the second quiz —the quizmaster whose role conferred an unfair advantage in the first quiz or the quiz taker whose role conferred an unfair disadvantage in the first quiz.

NED scores were computed by averaging across the 10 items ($\alpha = .83$). We computed a composite measure of performance on the 12 CRT questions by assigning a score of 1 to each correct answer, a score of 0 to each incorrect answer, and summing all items ($\alpha = .76$, $M = 4.03$, $SD = 2.70$). For each of the Big Five personality traits, we computed an overall average score after reverse scoring appropriate items (all αs > .81). Since only 172 out of 300 respondents reported their SAT scores, we first estimated a logistic regression model on the entire sample to assess the effect of propensity to make correspondent inferences, CRT scores, and Big Five personality traits on the likelihood of placing a bet that the quizmaster in the first quiz bowl would win the second quiz bowl.

The first model yielded a positive and significant effect of the NED, $\beta = .277$, $SE = .122$, Wald $\chi^2(1) = 5.20$, $p = .023$, $\exp(\beta) = 1.32$, and a significant and negative effect of CRT scores $\beta = -.119$, $SE = .048$, Wald $\chi^2(1) = 6.26$, $p = .012$, $\exp(\beta) = .88$ on betting the quizmaster to win round 2. Specifically, for each unit increase in NED scores, the odds of betting on the quizmaster increased by 32%; the odds decreased by 12% for each unit increase in CRT scores. No Big Five personality traits were significant predictors, all *p*s > .123. Table 10 reports the results of this estimation and the comparison of this model

with an alternative model not including NED scores. Including NED scores significantly improved the predictive ability of the model, $\chi^2(1) = 5.38$, $p = .02$.

We then estimated a second logistic regression model including SAT math and verbal scores for the subsample of participants that reported their SAT scores. It also yielded a positive and significant effect of the NED, $\beta = .456$, $SE = .171$, Wald $\chi^2(1) = 7.14$, $p = .008$, $\exp(\beta) = 1.58$. In this more conservative model, each unit increase in NED scores increased the odds of betting on the quizmaster by 58%. The effect of CRT scores was not significant, $\beta = -.064$, $SE = .068$, Wald $\chi^2(1) = .91$, $p = .34$, $\exp(\beta) = .94$. The effect of one personality variable, agreeableness, was negative and significant, $\beta = -.702$, $SE = .314$, Wald $\chi^2(1) = 5.01$, $p = .03$, $\exp(\beta) = .495$. No other predictors were significant, all ps $> .25$. Table 11 reports the results of this estimation and the comparison of this model with an alternative model that does not include NED scores. Again, including NED scores significantly improved the predictive ability of the model, $\chi^2(1) = 7.80$, $p < .001$.

Discussion

Participants who were more prone to make correspondent inferences were more likely to bet that a person unfairly favored by her previous role would perform better than a person unfairly disadvantaged by her previous role, when both competed in a task that was equally challenging. The NED added significant additional explanatory power beyond measures of intelligence, personality, and cognitive reflection in predicting which participants would fail to discount the advantages conferred to the quizmaster and the disadvantages conferred to the quiz taker by the roles they previously occupied. Indeed, the NED was the only predictor that consistently predicted gambles in the larger and more restricted samples. Although the magnitude of the stakes used in this study could be considered small, the results of studies using similarly small stakes on AMT are generally consistent with results of studies using larger stakes with other populations (Amir et al. 2012).

STUDY 7: CORRESPONDENT INFERENCES AND FINANCIAL DECISIONS

As an additional test of our predictive validity analysis we examined whether NED scores influence attributions of credit for investor success and failure, as well as incentive-compatible investment decisions based on those attributions. Participants evaluated the performance of two fund managers whose fund either decreased in value but outperformed the market, or increased in value but underperformed with respect to the market. As in Studies 5A and 5B, information on the situation (i.e., market performance) was readily available for participants to adjust their judgments. Nonetheless, we expected that propensity to make correspondent inferences would affect the extent to which participants neglected

market performance in their evaluations of the fund managers, in their preferences between funds, and in a real decision about the fund in which to invest bonus money received in the experiment, which would be adjusted by the current performance of the fund.

Method

Participants

Two hundreds and one residents of the United States (84 women; M_{age} = 29.3 years, SD = 9.2) received $.75 for completing a survey administered through AMT plus a $1 bonus adjusted based on a real investment fund performance (see Appendix 2 for details) as compensation. Participants were 79.6% White, 9.5% Asian, 4.5% African American, 3.0% multiracial, .5% Native American, and 2.9% did not indicate their ethnicity.

Materials and procedure

Participants completed the 10-item NED with items presented in a random order. Afterwards, they read information about the performance of two mutual investment funds, one managed by Richard and one managed by Lee, in different calendar years. One of the funds decreased in value but outperformed the market in 2008, whereas the other fund increased in value but underperformed with respect to the market in 2010. For each fund, participants read what the return of the fund had been in percentage points, and the amount that would be gained or lost by investing $1000 in that fund for one year. In addition, they also read information about the overall market performance (i.e., the return of the S&P500 index) in the same year, i.e., an important situational factor affecting the performance of each fund. If taking into account situational information, the fund that decreased in value had a superior net performance compared to the fund that increased in value. The names of the fund managers were counterbalanced (for all values and examples, see Appendix 2).

After reading the information, participants rated the performance of each of the two fund managers on 5-point scales (1 = Not good at all; 5 = Very good). They then made a hypothetical investment choice by indicating if they had $1000 to invest and could only choose between the funds run by the two fund managers, in which fund they would invest their money on a 5-point scale marked, *Definitely Richard* (1)*, Probably Richard* (2)*, No preference* (3)*, Probably Lee* (4)*, Definitely Lee* (5). Finally, participants were told that they would receive a $1 bonus payment to invest in the fund they thought superior and that the bonus would be modified by the gains or losses experienced in 2011 by the chosen fund. Thus, they would receive the 2011-adjusted bonus at the end of the experiment in addition to their initial compensation. Participants were told they were choosing between real funds and that they would gain or lose money based on their decision. The fund descriptions are reported in Appendix 2, and

were based on the performance of two investment funds that were then used to adjust the value of the bonus participants received (i.e., $1.15 or $1.24). The real names of the funds were not included in the description, to make sure participants could not search information on the funds performance. Afterwards, participants reported their age, gender, and ethnicity.

Results and discussion

NED scores were computed by averaging across the 10 items (α = .79). A multilevel repeated measures analysis was used to estimate the effect of propensity to make correspondent inferences, type of investment fund (negative performance but above the market versus positive performance but below the market), and their interaction on fund manager evaluations, controlling for the counterbalanced names of the fund managers. Since each participant provided evaluations for both managers, to take into account the lack of independence between the observations we specified an unstructured variance-covariance matrix within the model estimation. We estimated the following model:

$$Eval_{ij} = \beta_0 + \beta_1 NED_i + \beta_2 Fund_j + \beta_3 NED_i * Fund_j + \beta_4 Name_i + \varepsilon_{ij}$$

where Eval refers to the fund manager evaluation rating, index i refers to participants and index j refers to the fund evaluated. The dependent variable was thus the evaluative judgment expressed by each participant for each of the two funds. The explanatory variables were each participant's mean-centered NED score (NED_i), the type of fund dummy ($Fund_j$: 0 = positive performance but below the market; 1 = negative performance but above the market), the interaction between these two variables, and the fund manager name set dummy ($Name_i$). Results are based on a total of 402 observations, where each observation is the evaluation of a fund manager provided by a participant.

The results revealed a significant effect of the propensity to make correspondent inferences, β_1 = .364, *SE* = .059, *t* = 6.19, *p* < .001 and a significant interaction between the propensity to make correspondent inferences and the type of fund, β_3 = -.488, *SE* = .101, *t* = -4.84, *p* < .001, on evaluations. Neither the effect of the type of fund, β_2 = .055, *SE* = .105, *t* = .52, *p* = .60, nor the effect of fund manager names, β_4 = .084, *SE* = .068, *t* = 1.24, *p* = .22, was significant. Table 12 reports the results of this estimation and the comparison of this model with an alternative model that includes only the main effects.

The significant interaction between propensity to make correspondent inferences and type of fund was further explored by examining the simple slopes of the type of fund at all levels of propensity to make correspondent inferences (Preacher et al. 2006). The results revealed that propensity to make correspondent inferences was associated with more favorable evaluations of the manager of the fund that increased in value but underperformed with respect to market performance, β = .364, *SE* = .059, *z* = 6.19,

$p < .001$, and less favorable evaluations of the manager of the fund that decreased in value but outperformed market performance, $\beta = -.124$, $SE = .061$, $z = -2.04$, $p = .04$ (see Figure 5).

We then examined which of the two funds participants preferred using a linear regression model with mean-centered NED scores as independent variable and the scale measuring the likelihood of choosing between the two funds recoded such that high numbers indicated preference for the fund with a positive performance but underperforming with respect to market performance. The effect of propensity to make correspondent inferences on choice of this fund was positive and significant, $\beta = .45$, $SE = .086$, $t = 5.20$, $p < .001$. As was the case for evaluative judgments, participants more prone to make correspondent inferences were more likely to prefer the fund that increased in value but underperformed with respect to the market than the fund that decreased in value but outperformed the market.

Finally, we analyzed the effect of the propensity to make correspondent inferences on the incentive compatible choice of the fund in which participants decided to invest their dollar obtained as a bonus by means of a logistic regression analysis in which the choice between the two funds (0 = negative performance but above the market; 1 = positive performance but below the market) was regressed on mean-centered NED scores. The results showed that propensity to make correspondent inferences reliably distinguished the choice between the two funds, $\beta = .557$, $SE = .149$, Wald $\chi^2(1) = 13.94$, $p < .001$, $\exp(\beta) = 1.745$. Specifically, for each unit increase in NED scores the odds of choosing the fund that increased in value but underperformed with respect to the market (i.e., the fund with the inferior net performance) would increase by 74.5%. Participants more prone to make correspondent inferences were more likely to choose the fund that increased in value but underperformed with respect to the market, in line with the results of the previous two analyses.

Considered together, the results suggest that participants more prone to make correspondent inferences were more likely to make dispositional attributions for good and bad absolute performances and ignore the comparative value of those performances than participants less prone to make correspondent inferences. They were more likely to view a positive gain that was lower than the rise of the market favorably, and a loss that was less than the fall of the market unfavorably, despite having the information needed to adjust their attributions readily available. The consistency of this pattern across performance evaluations, preferences, and incentive-compatible choices made by participants provides further evidence of the predictive validity of the NED and of the pervasive effect of correspondent inferences not only on judgments, but also on behavior. As in Study 6, we believe that the pattern of results observed is not a function of the small magnitude of the stakes used. In general, these findings in studies using small stakes on AMT are consistent with the findings of studies using larger stakes with other populations (Amir et al. 2012).

STUDY 8: DEBIASING CORRESPONDENCE BIAS

In Study 8 we tested a potential debiasing strategy that acts on the mechanism producing correspondence bias, the neglect of situational information. People more prone to make correspondent inferences do not seem to benefit from the availability of situational information, and may require a framing of the information that makes the interplay of situational and individual factors more evident. To this end, we manipulated the accessibility of situational information within the investment decision paradigm used in Study 7 to observe whether making situational information easier to process increases the extent to which individuals most prone to bias take it into account in their judgments.

Method

Participants

Three hundreds and six residents of the United States (111 women; M_{age} = 33.3 years, *SD* = 11.6) received $.75 for completing a survey administered through AMT. Participants were 78.8% White, 7.5% African American, 6.9 % Asian, 4.9% multiracial, .3% Native American, and 1.6% did not indicate their ethnicity.

Materials and procedure

Participants completed the 10-item NED with items presented in a random order. Afterwards, they were randomly assigned to one of two conditions. In the control condition they read information about the performance of the two mutual investment funds described in Study 7, and information about the return of the S&P500 index in the same years. In the high accessibility condition, the information on the individual performance of the fund and on market performance was aggregated in a table, which also contained a figure indicating the net performance of the fund with respect to the market (see Appendix 2). After reading the information, participants rated the performance of each of the two fund managers and made a hypothetical investment choice between the two funds as in Study 7. The names of the fund managers were counterbalanced. Finally, participants reported their age, gender, and ethnicity.

Results and discussion

NED scores were computed by averaging across the 10 items (α = .79). A multilevel repeated measures analysis was used to estimate the effect of propensity to make correspondent inferences, accessibility condition, type of investment fund (negative performance but above the market performance

versus positive performance but below market performance), and their interactions on fund manager evaluations, controlling for the counterbalanced names of the fund managers. Since each participant provided evaluations for both managers, to take into account the lack of independence between the observations we specified an unstructured variance-covariance matrix within the model estimation. We estimated the following model:

$$Eval_{ij} = \beta_0 + \beta_1 NED_i + \beta_2 AccSit_i + \beta_3 Fund_j + \beta_4 NED_i * AccSit_i + \beta_5 NED_i * Fund_j + \beta_6 AccSit_i * Fund_j + \beta_7 NED_i * AccSit_i * Fund_j + \beta_8 Name_i + \varepsilon_{ij}$$

where Eval refers to the fund manager evaluation rating, index i refers to participants and index j refers to the fund evaluated. The dependent variable was thus the evaluative judgment expressed by each participant for each of the two funds. The explanatory variables were each participant's mean-centered NED score (NED_i), the accessibility of situational information condition ($AccSit_i$: 0 = controls, 1 = high accessibility), the type of fund dummy ($Fund_j$: 0 = positive performance but below the market; 1 = negative performance but above the market), the pairwise two-way interactions between these three variables, their three-way interaction, and the fund manager name set dummy ($Name_i$). Results are based on a total of 612 observations, where each observation is the evaluation of a fund manager provided by a participant.

The results revealed a significant effect of propensity to make correspondent inferences, β_1 = .478, *SE* = .081, *t* = 5.89, *p* < .001, a significant effect of accessibility of situational information, β_2 = -.324, *SE* = .102, *t* = -3.18, *p* = .002, a significant two-way interaction between propensity to make correspondent inferences and accessibility, β_4 = -.321, *SE* = .105, *t* = -3.06, *p* = .002, a significant two-way interaction between propensity to make correspondent inferences and type of fund, β_5 = -.841, *SE* = .151, *t* = -5.56, *p* < .001, a significant two-way interaction between accessibility and type of fund, β_6 = .622, *SE* = .190, *t* = 3.27, *p* = .001, and a significant three-way interaction between propensity to make correspondent inferences, accessibility, and type of fund, β_7 = .559, *SE* = .195, *t* = 2.86, *p* = .005. Neither the effect of the type of fund, β_3 = -.046, *SE* = .135, *t* = -.34, *p* = .74, nor the effect of fund manager names, β_8 = .046, *SE* = .056, *t* = .83, *p* = .41, was significant. Table 13 reports the results of this estimation and the comparison of this model with alternative models.

The significant three-way interaction between propensity to make correspondent inferences, accessibility of situational information, and type of fund was further explored by examining the simple slopes of the type of fund at specific conditional values of the other two predictors (Preacher et al. 2006). Specifically, we estimated the effect of the type of fund at different combinations of the accessibility (control vs. high) of situational information, and different levels of propensity to make correspondent inferences (i.e., one standard deviation below and above the mean NED score). The results revealed that,

for participants characterized by low propensity to make correspondent inferences (-1 *SD*), their evaluations of the fund outperforming market performance were significantly higher than their evaluations of the fund underperforming with respect to market performance, both when situational information was not salient (control condition), β = .790, *SE* = .207, *z* = 3.82, *p* < .001, and when it was made salient (high accessibility condition), β = .856, *SE* = .180, *z* = 4.80, *p* < .001. In contrast, for participants characterized by high propensity to make correspondent inferences (+1 *SD*), their evaluations of the fund outperforming market performance were significantly lower than their evaluations of the fund underperforming with respect to market performance when situational influences were not made salient (control condition), β = -.881, *SE* = .198, *z* = -4.46, *p* < .001, but they were not significantly different when situational influences were made salient (high accessibility condition), β = .296, *SE* = .185, *z* = 1.60, *p* = .11. For these participants, increasing the accessibility of situational information improved the evaluations of the fund outperforming market performance, and reduced those of the fund underperforming with respect to the market. Figure 6 illustrates the three-way interaction.

We then examined participants' hypothetical choice between the two funds using a linear regression model with mean-centered NED scores, accessibility condition, and the interaction between these two variables as predictors (controlling for the names of the fund managers), and the scale measuring the likelihood of choosing between the two funds, recoded such that high numbers indicated preference for the fund with a positive performance but underperforming with respect to market performance, as dependent variable. This analysis revealed a significant effect of propensity to make correspondent inferences, β = .553, *SE* = .111, *t* = 4.99, *p* < .001, a significant effect of accessibility of situational information, β = -.477, *SE* = .140, *t* = -3.42, *p* < .001, and a significant two way interaction between propensity to make correspondent inferences and accessibility of situational information condition, β = -.318, *SE* = .143, *t* = -2.22, *p* = .03. Table 14 reports the results of this estimation and the comparison of this model with an alternative model that includes only the main effects.

To shed light on the nature of the interaction, we examined the effect of accessibility of situational information at all levels of propensity to make correspondent inferences using the Johnson-Neyman method (Spiller et al. 2013). The analysis revealed one Johnson-Neyman point (see Figure 7), whereby the effect of accessibility of situational information was negative and significant for participants characterized by NED scores higher than 3.73, reducing their preference for the fund characterized by a positive return but underperforming with respect to the market. Replicating the pattern of results observed for evaluations, participants most prone to make correspondent inferences were the ones most affected by the increased accessibility of situational information in (hypothetical) investment decisions requiring them to account for market performance. Building on recent evidence showing the persistence of correspondence bias even when situational information is readily available (Moore et al. 2010, Swift et al.

2013) our results show that individuals less prone to correspondent inference-making are able to make more accurate judgments when situational information is provided, but individuals more prone to correspondent inference-making are more resistant to the use of situational information unless they are nudged toward it.

General Discussion

For half a century, the tendency to make correspondent inferences has been explored empirically across different targets, contexts, and dispositions in attributions of attitudes, ability, emotionality, and morality. We find that these various forms of correspondent inferences appear to constitute a coherent, stable, and unidimensional construct captured by a single factor. It influences consequential judgments and decisions faced by people in their professional and personal lives, from attributions of blame and guilt, to performance evaluations and personnel selection, to financial investments. The results of the eight studies we report provide evidence that there is substantial variation across persons in their propensity to make correspondent inferences, but that there are stable individual differences that could be targeted by debiasing strategies.

We developed a measure of propensity to make correspondent inferences—the NED—that includes the different dispositional inferences assessed by the canonical four correspondence bias paradigms (i.e., attitudes, ability, emotionality, morality; Gawronski 2004). Using a psychometric approach, we developed and validated this instrument, and found that the propensity to make correspondent inferences is discriminated from intelligence, decision making, cognitive ability and cognitive reflection, individual differences in cognitive processing, locus of control, and attributional style. In other words, the propensity to make correspondent inferences is not merely one instance of generally poor decision making ability or a lack of intelligence. Nor is it a function of individual processing style, preference for control, or attributional style. As a latent construct, the propensity to make correspondent inferences seems to determine an overconfidence in dispositional attributions that is reflected uniformly across a variety of consequential kinds of attributions.

We did find the propensity to make correspondent inferences to be systematically associated with consequential judgments and behaviors that one would predict from an inferential correction model (Gilbert 1998). The propensity to make correspondent inferences was associated with the extent to which people attributed blame for accidental harm (Study 3). It affected the extent to which people considered a defendant to be guilty based on a coerced confession (Study 4). It induced a higher neglect of job difficulty when assessing the performance of candidates in a promotion decision (Studies 5A and 5B). It

increased the odds of betting on a candidate unfairly favored by situational factors in an incentive compatible decision (Study 6). Finally, it influenced whether evaluative judgments of and incentive compatible choices between fund managers overweighed their absolute performance and neglected their performance relative to the market (Study 7). Furthermore, we provide evidence of a potential debiasing strategy to reduce the impact of the propensity to make correspondent inferences on judgments by increasing the accessibility of situational information with a simple nudge (Study 8). Taken together, these results elucidate the nature of the construct, which can be characterized as an overarching bias whose strength varies systematically across the general population, which influences patterns of correspondent inferences across different types of judgments and decisions. Different from a chronic individual difference in personality, the propensity to make correspondent inferences can be mitigated by means of appropriate training and situation-specific interventions (see Morewedge et al. 2015, for evidence of its susceptibility to debiasing training).

The systematic study of individual differences in decision making is in its infancy (Stanovich and West 1998, Stanovich 1999). As indicated by several studies (Baron and Ritov 2004, Frederick 2005, Ito and Cacioppo 2005, Bruine de Bruin et al. 2007, Scopelliti et al. 2015), such differences appear to be prevalent, but their implications have often been overlooked. We believe the identification and assessment of individual differences in susceptibility to specific biases is a valuable approach to identify the structure and dimensionality of a bias, test its influence in consequential judgments, decisions, and behaviors, and to understand whether susceptibility to bias can or cannot be mitigated by means of debiasing interventions.

Structure. Literature on the accuracy of personality judgments[5] and other authors (Funder 1987, 1995, Moore et al. 2010) have criticized classic paradigms used to assess correspondence bias, as most provide more vivid, salient, or easy to process information about the behavior of actors than their situation. From this view, these paradigms are open to the criticism that correspondence bias is as much a bias about what people do with incomplete information (Moore et al. 2010), or information that is not representative of what people might reasonable encounter in the world (Funder 1987, 1995). Our results are consistent with the idea that the correspondence bias is present even in contexts in which people could be accurate. Participants exhibited correspondence bias in Studies 5A, 5B, 7 and 8 (in the control condition) even though clear and quantified information about the situational influence on the actors they judged was available. Furthermore, our results show that people most prone to make correspondent inferences incorporate situational information about actors into their attributions only when that information is exogenously made salient and easy to process during judgment. We think these findings may help to assuage concerns regarding the accuracy of labeling correspondence bias as a "bias."

Influence. The existence of individual differences in the propensity to make correspondent inferences has implications in many contexts and domains where biased attributions of ability or intentions have important downstream consequences. For example, personnel evaluation is a ubiquitous organizational task based on inferences about ability. Correspondent inferences would result in biased ratings of people benefitting from advantageous situations and easy tasks, and in the underestimation of the quality of people penalized by disadvantageous or difficult situations. This problem is particularly relevant in employee selection, assessment, and consideration for promotion (Swift et al. 2013), as well as in school admissions where score and grade inflation are typically not sufficiently accounted for when evaluating prospective students (Moore et al. 2010). Biased performance evaluations are not only potentially detrimental for organizations that select to hire individuals who perform poorly when hired for more challenging tasks than experienced in their previous employment, but they may also contribute to the persistence of inequality within organizations, as they may determine an unfair assignment of responsibility, rewards, and organizational resources.

With respect to broader audiences, this tendency is also likely to affect the extent to which organizational performance is overattributed to leadership through romanticizing and exaggerating the role of leaders within organizations (Meindl et al. 1985, Chen and Meindl 1991). Specifically, it may underlie the overestimation of the extent to which CEOs determine the success of companies, a phenomenon that affects journalists, shareholders, the general public, and the CEOs themselves. This results in the perception of CEOs as celebrities, which in turn leads to overconfidence in their self-assessments of ability and judgmental accuracy (Hayward et al. 2004). Such over-confidence (at any level of organizational responsibility) is detrimental for organizations that might select individuals who will perform poorly when hired for more challenging tasks than experienced in their previous employment.

Similar adverse effects of biased performance evaluations might be observed in investment and consumer behavior. The propensity of an investor to make correspondent inferences can lead him or her to make suboptimal financial decisions, based on the absolute performance of investment prospects without taking into account how the general economic and financial situation may have constrained performance. In the domain of consumer behavior, consumers more prone to correspondent inferences may be more likely to make dispositional attributions for service failure experiences (Folkes 1984), even when the provider is not responsible (e.g., when a snowstorm disrupts product or service delivery), which would negatively affect their future purchase intentions (Folkes et al. 1987). Consumers more prone to correspondent inferences may also be more likely to interpret celebrity or expert endorsed advertising messages as manifestations of the endorser's dispositions. Hence, they may be more vulnerable to persuasion (Cronley et al. 1999, Silvera and Austad 2004).

Multiple other domains exist where biased attributions of intention have important consequences. Relevant for the reputation of organizations or individuals, an observer's high propensity to make correspondent inferences may result in unduly attributing blame to individuals or organizations that caused harm with no intention to do so, or that unintentionally made unethical decisions (Chugh et al. 2005, Tenbrunsel and Smith-Crowe 2008). Similarly, these individual differences, while operating beyond awareness, may induce both jurors and judges to give wrongful weight and consideration to inadmissible evidence in coming to a verdict (Kassin 1997, 2014, Kassin and Sukel 1997, Kassin and Wrightsman 1980). In negotiation and conflict resolution, the tendency to attribute the bargaining behaviors of a counterpart to her personality or underlying intentions rather than to her situational constraints may result in misperceptions and antipathy that escalate conflict and hinder or even prevent negotiated agreement (Morris et al. 1999).

Debiasing. While using the NED to measure the distribution of individual neglect of situational information in these relevant domains may be a straightforward first application, our studies suggest the NED may be a valuable tool to reduce the influence of correspondence bias in consequential evaluations. Consider an organization's performance evaluation and personnel selection procedures. Simply measuring an assessor's propensity to exhibit correspondence bias during performance evaluations might help improve the fairness of the selection procedure by i) providing an estimate of the prevalence of biased evaluations; ii) suggesting when situational causes are neglected and need to be made salient; and iii) indicating when assessors are biased and need debiasing training.

Research in judgment and decision making has historically focused on the identification of judgmental biases. A relevant new area of advancement has begun to develop and test strategies to improve and debias decision making (Milkman et al. 2009, Ratner et al. 2008; Soll et al., 2016). Decision making can be improved (Nisbett et al., 1987; Morewedge et al. 2015), but measures of individual differences in susceptibility to judgmental biases such as the NED are necessary to quantify the efficacy of debiasing. These measures can be used to examine the efficacy and effect size of training interventions, for example, whose effects may have been underestimated due to the lack of reliable scales to measure stable individual differences in susceptibility to bias (Morewedge et al., 2015).

Previous research has typically reduced correspondence bias by changing the framing of attributions. Frames leading to the adoption of a focus on the situation (e.g., rating the degree to which a behavior was due to the situation rather than the actor) have been shown to significantly reduce the weight given to dispositional factors (Krull 1993, Krull and Erickson 1995). Rather than by reducing correspondent inferences, however, these frames shift their direction so that observers anchor their judgments on the situation and insufficiently correct for dispositional influences (Krull 1993). Within the same frame, we found that correspondent inference making can itself be reduced with a debiasing strategy

that facilitates bias correction—reducing the neglect of situational information by increasing its salience. We think this is a strategy that should be easy to adopt when situational information can be made salient.

Conclusion

The propensity to make correspondent inferences appears to be a coherent, unidimensional, stable individual difference. It influences observer inferences regarding the attitudes, abilities, emotionality, and morality of actors. Correspondence bias is measurable with a scale that is easy to implement and predicts consequential judgments including attributions of blame, juror verdicts, performance evaluations, and investment decisions. Research in the last 50 years has done much to elucidate the predictors of correspondent inferences and the process by which correspondent inferences influence attributions (Gilbert 1998). There is still much to learn about how correspondence bias influences consequential social judgments, and predicts more general forms of discounting for contextual influences. We hope the NED and our findings elucidate how the influence of correspondence bias in these judgments can be tested and quantified.

FOOTNOTES

1. The scale is named after Edward E. "Ned" Jones, who first found evidence for this tendency and the correspondence bias.

2. AMT workers have been shown to exhibit susceptibility to biases in judgment and decision making similar to traditional college samples with respect to common tasks such as the Asian disease problem, the conjunction fallacy and outcome bias, to exhibit similar levels of risk aversion, and to exhibit similar levels of cooperation in behavioral economics games such as the prisoner's dilemma (Berinsky et al. 2012, Horton et al. 2011, Paolacci et al. 2010).

3. We did not use power analyses in setting our minimum sample sizes because we did not have sufficient information to confidently estimate effect sizes. Sample sizes were set as follows:

- For all studies conducted on AMT, we pre-specified a minimum number of participants:
    a) In Study 1A, since we aimed to obtain a parsimonious instrument with at most 15 items, we determined the sample size to N = 150 based on a 10:1 observations to variables ratio suitable to conduct a factor analysis (Nunnally 1978). We set the same sample size for study 1B.
    b) In Study 2, each sample size was set arbitrarily to a round number equal to 100 (Sample 2), 120 (Sample 1), 150 (Samples 5, 6, and 7), or 200 (Samples 3 and 4) respondents, often reflecting the availability of funds on AMT at the time the study was conducted. The same criterion applies to studies in which participants were not randomly assigned to conditions, in which sample sizes were set to N = 200 (Studies 5A and 7), or N = 300 (Study 8).
    c) In studies with clear assignment of participants to conditions, we considered the recommendations by Simmons, Nelson, and Simonsohn (2013) and set the sample size to be greater than 50 per condition, specifically to N = 65 per condition in Study 4, N = 100 per condition in Study 3, and N = 150 per condition in Study 8. The increases in sample sizes reflect the chronological order in which the studies were conducted.
- For our lab study (Study 5B), we collected as much data as we could in one day worth of sessions.

We did not analyze the data for each study until data collection was completed. No participants were excluded from the analyses (except for study 5B where 6 participants who did not report SAT scores could not be included in the analyses) and we report all manipulations and measures. Minor

discrepancies between the pre-specified number of participants and the final number reported in the paper for some of the studies are due to the fact that on AMT a small number of respondents may

a) submit a completion code shared by another participant – or obtained by completing the study from a different AMT account – without having completed the study, resulting in a sample size slightly lower than requested (e.g., N = 199 in Sample 3 of Study 2); or

b) complete the study but fail to submit a completion code within the allotted time slot, resulting in a sample size slightly higher than requested (e.g., N = 201 in Study 7, N = 306 in Study 8).

4. One participant did not report her level of education.

5. Three participants did not report their income level.

6. For a programming error one of the items from the Applying Decision Rules battery and one of the items from the Resistance to Framing battery were not administered to participants.

7. Interestingly, literature on the accuracy of personality judgments also highlights the need for research on individual characteristics of the judge as moderators of accuracy in personality judgments (Funder 1995, 2012).

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Table 1. NED scale items and corresponding paradigm.

Item	Description	Paradigm
1	A famous millionaire commissioned a portrait to a local artist for 2 million dollars. The portrait will be positioned in the hall of a new museum that the millionaire has recently funded, to acknowledge his contribution. The artist portrays him as a triumphant Roman emperor. Based on the information provided, how confident are you that the artist admires the millionaire?	Attitude attribution
2	Ben and Zach are presenting introductory information to new employees at a telemarketing company that calls potential customers with information about a home appliance. They flipped a coin to randomly pick what topics each would present. Ben talks about sales strategies that most often do not work. He recounts stories of being hung up on, insulted repeatedly, and led on wild goose chases by people. Zach talks about sales strategies that seem to work well. He relates times that he has connected with people, built good impressions about the product, and arranged large orders with new customers. Based on the available information, how confident are you that Zach sells more than Ben?	Quizmaster
3	Mary is working on an essay on the negative aspects of capitalism that she was assigned to prepare for her sociology course. The main points she plans to include in her essay are: that capitalism is inherently exploitative, that it leads to imperialism and oppression, and that it creates wasteful practices such as planned obsolescence of products. Based on the information provided, how confident are you that Mary's attitude toward capitalism is negative?	Attitude attribution
4	A struggling freelance writer finally lands her first paid gig. Her employer, a political magazine, assigns her to write a piece advocating for the election of Senator Smith. Her feature story focuses on these three issues: 1) Senator Smith is backing legislation to spur job creation in certain sectors; 2) Senator Smith is committed to reducing America's dependence on foreign oil; and 3) Senator Smith is supporting tax cuts for small businesses. Based on the information provided, how confident are you that the writer supports Senator Smith?	Attitude attribution
5	Supermodel Kate Moss has been a celebrity endorser for Rimmel make-up products for over 10 years. She appeared in more than 20 television commercials and in dozens of print advertisements. Based on the information provided, how confident are you that she really likes Rimmel products?	Attitude attribution
6	Wendy found herself crying while watching a sentimental movie, which critics raved to be one of the most brilliant, powerful, and emotionally stirring films in cinema history. Based on this information, how confident are you that Wendy is an emotional person?	Silent interview

7	Deborah had invited Peter to watch her class performance of Shakespeare's play A Midsummer Night's Dream. After the show, Deborah and Peter were discussing the plot. During this discussion, Deborah had to correct Peter multiple times on important events that occurred during the play. Based on the information provided, how confident are you that Deborah is more knowledgeable than Peter?	Quizmaster
8	In response to citywide budget cuts a principal is instructed to fire six teachers at her school. The principal fires Mary, a young English teacher who is extremely popular with the students. Mary is devastated to be unemployed and nervous about how she will pay her rent next month. Based on the available information, how confident are you that the principal is an inconsiderate person?	Moral attribution
9	Lily is in the second grade. Her teacher has given all of the second grade students an assignment to perform an act of charity and tell the class about it. Lily collects $2.50 in change from her family and neighbors, and donates it to the Salvation Army. Based on the information provided, how confident are you that Lily is a generous child?	Moral attribution
10	Paula and Jasmine live in different suburbs of Los Angeles. Paula's suburb collects trash and recycling separately every week, so Paula takes the time to separate recyclable paper, plastic, and glass from her trash. Jasmine's suburb does not pick up recycling so she puts all her trash in one trash bag. Based on the information provided, how confident are you that Paula cares about the environment more than Jasmine?	Moral attribution

Table 2. Correlations between the 10 selected NED scale items.

Item	1	2	3	4	5	6	7	8	9	10
1										
2	.386**									
3	.256**	.350**								
4	.424**	.437**	.438**							
5	.394**	.276**	.267**	.287**						
6	.378**	.375**	.204**	.168*	.157°					
7	.211**	.294**	.215**	.167*	.194*	.257**				
8	.317**	.346**	.365**	.391**	.260**	.373**	.359**			
9	.412**	.414**	.336**	.368**	.235**	.384**	.274**	.321**		
10	.372**	.503**	.247**	.353**	.294**	.337**	.326**	.437**	.406**	

Table 3. Items and factor loadings from exploratory factor analysis in Study 1A.

Item	Factor loading
1	.612
2	.677
3	.515
4	.604
5	.452
6	.518
7	.437
8	.607
9	.619
10	.655

Table 4. Completely standardized parameters from confirmatory factor analysis in Study 1B.

Item	Parameter
1	.567
2	.585
3	.539
4	.645
5	.513
6	.474
7	.376
8	.390
9	.645
10	.448

Table 5. Scale reliabilities and correlations with the NED scale in Study 2.

Construct	α	*N*		*r*
Intelligence				
SAT_{Math}	--	412		-.13*
SAT_{Verbal}	--	412		-.12*
Decision Making Competence				
Resistance to framing	.46	121		.10
Recognizing social norms	.73, .85	121		-.01
Under/overconfidence	.86	121		.05
Applying decision rules	.61	121		-.21*
Consistency in risk perception	.73	121		-.19*
Resistance to sunk costs	.53	121		-.21*
Cognitive Reflection Test - Performance				
12 items	.77	101		-.31**
3 'original' items	.76	101		-.24*
9 new items	.62	101		-.30**
Cognitive Reflection Test – Reliance on Intuition				
12 items	.57	101		.23*
3 'original' items	.69	101		.22*
9 new items	.20	101		.18°
Big Five Personality Traits				
Neuroticism	.88	399		-.08
Extraversion	.88	399		.11*
Openness	.82	399		-.06
Agreeableness	.83	399		.19**
Conscientiousness	.88	399	.04	.08
Need for Cognition	.91	199		-.21**
Desirability of Control	.83	199		.12°
Need for Precision	.87	199		-.07
Need to Evaluate	.87	199		.01
Locus of Control	.77	151		.02

Attributional Style			
Internality	.68	150	.22**
Stability	.55	150	-.05
Globality	.68	150	.04
Need for Cognitive Closure	.86	152	.19*

Note: ** $p < .01$; * $p < .05$; º $p < .10$

Table 6. Regression results and model comparison for Study 3.

	Main Effect Model				Full Model			
Variable	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***
Intercept	2.214	.103	21.56	<.001	2.214	.103	21.56	<.001
NED[b]	.186	.030	6.27	<.001	.265	.033	8.02	<.001
Type of Scenario	1.568	.032	49.00	<.001	1.568	.032	49.15	<.001
Set	.171	.064	2.67	.008	.171	.064	2.67	.008
NED[b] * Type of Scenario					-.159	.030	-5.39	<.001
	Variance components							
	Estimate	**SE**	**Wald *z***	***p***	**Estimate**	**SE**	**Wald *z***	***p***
Intercept	.153	.020	7.48	<.001	.154	.020	7.50	<.001
Residual	1.229	.027	47.96	<.001	1.221	.025	47.96	<.001
-2 Log-Likelihood	14889.709				14860.730			
df	6				7			
AIC	14901.709				14874.730			
BIC	14940.567				14920.065			
Likelihood Ratio Test					28.979 (1), $p < .001$			

[a] Unstandardized coefficients

[b] Mean-centered

Table 7. Regression results and model comparison for Study 4.

	Main Effect Model				Full Model			
Variable	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***
Intercept	5.23	.276	18.94	<.001	5.265	.271	19.46	<.001
NED[b]	.354	.182	1.94	.054	-.039	.234	-.17	.868
Confession	.059	.391	.150	.881	.071	.383	.19	.852
NED[b] * Confession					.937	.361	2.59	.011
R^2	.029				.078			
Adjusted R^2	.014				.056			
F Change (1,126)					6.73			
Sig F Change					p = .011			

[a] Unstandardized coefficients

[b] Mean-centered

Table 8. Regression results and model comparison for Study 5A.

	Main Effect Model				Full Model			
Variable	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***
Intercept	-.875	.223	-3.93	<.001	-.875	.218	-4.02	<.001
NED[b]	.108	.044	2.45	.015	-1.650	.226	-7.31	<.001
Individual Performance	.068	.003	23.91	<.001	.068	.003	24.43	<.001
Adjusted Performance	.149	.006	25.10	<.001	.149	.006	25.65	<.001
NED[b] * Individual Performance					.023	.003	7.94	<.001
NED[b] * Adjusted Performance					-.054	.006	-9.14	<.001

	Variance Components							
	Estimate	**SE**	**Wald *z***	***p***	**Estimate**	**SE**	**Wald *z***	***p***
Intercept	.273	.036	7.49	<.001	.277	.036	7.60	<.001
Residual	1.141	.034	33.58	<.001	1.09	.033	33.58	<.001

-2 Log-Likelihood	7582.688	7484.438
df	6	8
AIC	7594.688	7500.438
BIC	7629.536	7546.902
Likelihood Ratio Test		98.25 (2), $p < .001$

[a] Unstandardized coefficients

[b] Mean-centered

Table 9. Regression results and model comparison for Study 5B.

	Main Effect Model				Two-Way Interactions with SAT				Full Model			
Variable	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***
Intercept	4.429	.725	6.11	<.001	5.730	4.441	1.29	.197	5.222	4.477	1.17	.244
NED[b]	.176	.061	2.89	.005	.177	.061	2.91	.004	.514	.462	1.11	.266
SAT_{Math}	.001	.001	1.72	.088	.010	.006	1.74	.083	.011	.006	1.85	.065
SAT_{Verbal}	-.001	.001	-1.72	.088	-.011	.006	-2.03	.043	-.011	.006	-2.06	.040
Individual Performance	-.0003	.005	-.057	.954	-.017	.057	-.30	.765	-.010	.057	-.18	.86
Adjusted Performance	.013	.011	1.11	.268	-.408	.119	-3.42	.001	-.355	.120	-2.95	.003
NED[b] * Individual Performance									-.004	.006	-.74	.461
NED[b] * Adjusted Performance									-.034	.012	-2.71	.007
SAT_{Math} * Individual Performance					-.0001	.00007	-1.52	.130	-.0001	.00008	-1.64	.102
SAT_{Math} * Adjusted Performance					.0004	.0002	2.42	.016	.0003	.0002	1.72	.087
SAT_{Verbal} * Individual Performance					.0001	.00007	1.82	.070	.0001	.00007	1.84	.066
SAT_{Verbal} * Adjusted Performance					.0003	.0002	1.72	.087	.0003	.0002	1.85	.064

Variance Components

	Estimate	**SE**	**Wald *z***	***p***	**Estimate**	**SE**	**Wald *z***	***p***	**Estimate**	**SE**	**Wald *z***	***p***
Intercept	.137	.044	3.08	.002	.141	.045	3.17	.002	.143	.044	3.207	.001
Residual	2.105	.089	23.70	<.001	2.06	.087	23.70	<.001	2.041	.086	23.70	<.00

-2 Log-Likelihood	4454.272	4432.463	4419.804
df	8	12	14
AIC	4470.272	4456.463	4447.804
BIC	4511.171	4517.811	4519.376
Likelihood Ratio Test		21.809 (4), $p < .001$	12.659 (2), $p = .0017$

[a] Unstandardized coefficients

[b] Mean-centered

Table 10. Regression results and model comparison for Study 6, full sample, no SAT.

Logistic Regression Model

	Model without NED					Model with NED				
Variable	**B**[a]	**SE**	***Wald***	***p***	**exp(B)**	**B**[a]	**SE**	***Wald***	***p***	**exp(B)**
Intercept	2.689	1.388	3.757	.053	14.723	1.418	1.501	.893	.345	4.129
NED						.277	.122	5.200	.023	1.320
CRT-12	-.148	.046	10.574	.001	.862	-.119	.048	6.255	.012	.888
Extraversion	-.128	.133	.923	.337	.880	-.125	.135	.853	.356	.883
Agreeableness	-.213	.219	.946	.331	.808	-.272	.223	1.483	.223	.762
Conscientiousness	-.179	.213	.708	.400	.836	-.163	.216	.568	.451	.850
Neuroticism	-.267	.164	2.670	.102	.765	-.256	.166	2.378	.123	.774
Openness	.097	.169	.328	.567	1.102	.127	.172	.547	.459	1.136
-2 Log-Likelihood			399.994					394.616		
df			6					7		
Nagelkerke R^2			.064					.087		
Likelihood Ratio Test								5.378(1), $p = .020$		

[a] Unstandardized coefficients

Table 11. Regression results and model comparison for Study 6, subsample (N = 172) including SAT.

Logistic Regression Model

	Model without NED					Model with NED				
Variable	**B**[a]	**SE**	***Wald***	***p***	**exp(B)**	**B**[a]	**SE**	***Wald***	***p***	**exp(B)**
Intercept	2.736	2.250	1.479	.224	15.424	.081	2.522	.001	.974	1.084
NED						.456	.171	7.141	.008	1.578
CRT-12	-.115	.063	3.316	.069	.891	-.064	.068	.910	.340	.938
Extraversion	-.103	.193	.284	.594	.902	-.155	.199	.609	.435	.856
Agreeableness	-.594	.303	3.856	.050	.552	-.702	.314	5.012	.025	.495
Conscientiousness	.002	.310	.000	.995	1.002	.111	.323	.118	.731	1.117
Neuroticism	-.222	.232	.920	.338	.801	-.203	.240	.716	.397	.816
Openness	.118	.246	.233	.630	1.126	.138	.251	.300	.584	1.148
SAT_{Math}	-.001	.002	.167	.683	.999	-.001	.002	.440	.507	.999
SAT_{Verbal}	.001	.002	.356	.551	1.001	.003	.002	1.349	.245	1.003
-2 Log-Likelihood			227.861					220.060		
df			8					9		
Nagelkerke R^2			.079					.135		
Likelihood Ratio Test								7.801(1), $p < .001$		

[a] Unstandardized coefficients

Table 12. Regression results and model comparison for Study 7.

Mixed Model

	Main Effect Model				Full Model			
Variable	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***
Intercept	2.900	.120	24.20	<.001	2.900	.120	24.46	<.001
NED[b]	.126	.032	3.90	<.001	.364	.059	6.19	<.001
Type of Fund	.055	.111	.49	.623	.055	.105	.52	.604
Manager Name	.084	.068	1.24	.217	.084	.068	1.24	.217
NED[b] * Type of Fund					-.488	.101	-4.84	<.001

	Covariance Parameters							
	Estimate	**SE**	**Wald *z***	***p***	**Estimate**	**SE**	**Wald *z***	***p***
Variance ($Fund_i$=0)	.820	.083	9.79	<.001	.758	.076	10.02	<.001
Variance ($Fund_i$=1)	.886	.090	9.80	<.001	.817	.082	10.02	<.001
Covariance	-.392	.066	-5.93	<.001	-.327	.060	-5.44	<.001

-2 Log-Likelihood	1028.582	1006.389
df	7	8
AIC	1042.582	1022.389
BIC	1070.557	1054.361
Likelihood Ratio Test		22.193(1), $p < .001$

[a] Unstandardized coefficients

[b] Mean-centered

Table 13. Regression results and model comparison for Study 8.

Mixed Model

	Main Effect Model				Two-Way Interactions Model				Full Model			
Variable	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	***p***
Intercept	2.881	.067	42.84	<.001	3.023	.079	38.49	<.001	3.017	.078	38.71	<.001
NED[b]	.057	.028	2.01	.045	.327	.062	5.26	<.001	.478	.081	5.89	<.001
Type of Fund	.258	.102	2.53	.012	-.059	.137	-.43	.666	-.046	.135	-.34	.735
Accessibility	-.043	.056	-.77	.44	-.326	.103	-3.17	.002	-.324	.102	-3.18	.002
Manager Name	.046	.056	.83	.41	.046	.056	.83	.410	.046	.056	.83	.410
NED[b] * Type of Fund					-.506	.097	-5.22	<.001	-.841	.151	-5.56	<.001
NED[b] * Accessibility					-.070	.057	-1.21	.226	-.321	.105	-3.06	.002
Type of Fund * Accessibility					.627	.193	3.25	.001	.622	.190	3.27	.001
NED[b] * Type of Fund * Accessibility									.559	.195	2.86	.005

Covariance Parameters

	Estimate	**SE**	**Wald *z***	***p***	**Estimate**	**SE**	**Wald *z***	***p***	**Estimate**	**SE**	**Wald *z***	***p***
Variance ($Fund_i$=0)	.895	.074	12.07	<.001	.812	.066	12.29	<.001	.797	.064	12.37	<.001
Variance ($Fund_i$=1)	1.196	.099	12.12	<.001	1.097	.089	12.31	<.001	1.075	.087	12.37	<.001
Covariance	-.553	.067	-8.24	<.001	-.463	.060	-7.71	<.001	-.445	.059	-7.58	<.001

-2 Log-Likelihood	1655.248	1616.936	1608.858
df	8	11	12
AIC	1671.248	1638.936	1632.858
BIC	1706.581	1687.520	1685.858
Likelihood Ratio Test		38.312(3), $p < .001$	11.96(1), $p = .005$

[a] Unstandardized coefficients

[b] Mean-centered

Table 14. Regression results and model comparison for Study 8.

	Main Effect Model				Full Model			
Variable	**B**[a]	**SE**	***t***	***p***	**B**[a]	**SE**	***t***	
Intercept	3.184	.122	26.04	<.001	3.178	.122	26.15	<.
NED[b]	.363	.071	5.14	<.001	.553	.111	4.99	<.
Accessibility	-.479	.140	-3.42	.001	-.477	.140	-3.42	<.
Manager Name	-.040	.140	-.29	.776	-.043	.139	-.31	.7
NED[b] * Accessibility					-.318	.143	-2.22	.0
R^2	.116				.130			
Adjusted R^2	.107				.118			
F Change (1, 301)					4.914			
Sig F Change					p = .027			

[a] Unstandardized coefficients

[b] Mean-centered

Figure 1. Scree-plot from the exploratory factor analysis, with observed and parallel random eigenvalues in Study 1A.

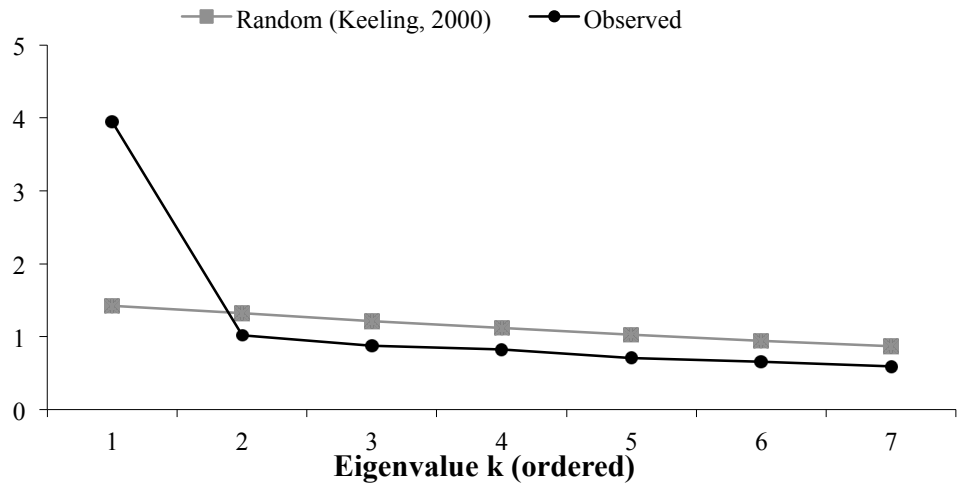


Figure 2. Histogram of NED scores in Study 1B. High scores indicate greater propensity to make correspondent inferences; range is 1 to 7; median is 4.20.

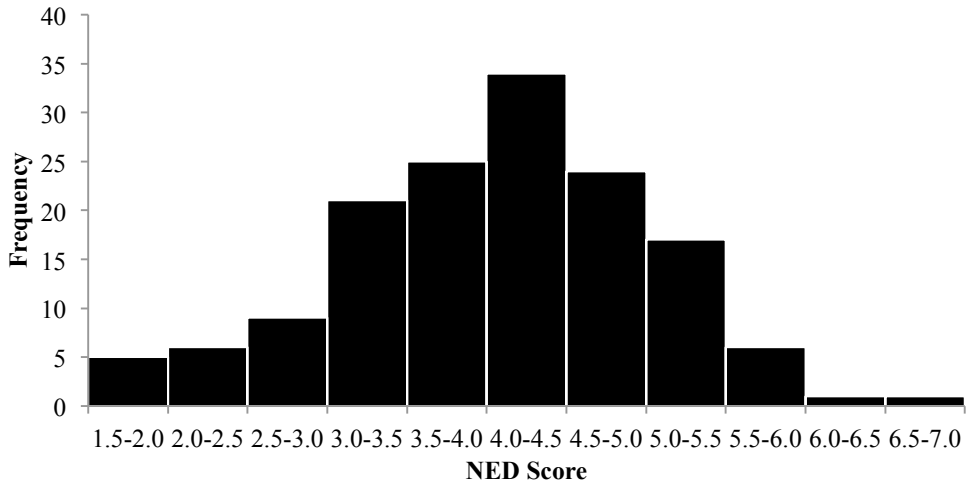


Figure 3. Relationship between propensity to make correspondent inferences and blame attributed for intentional and accidental harms in Study 3.

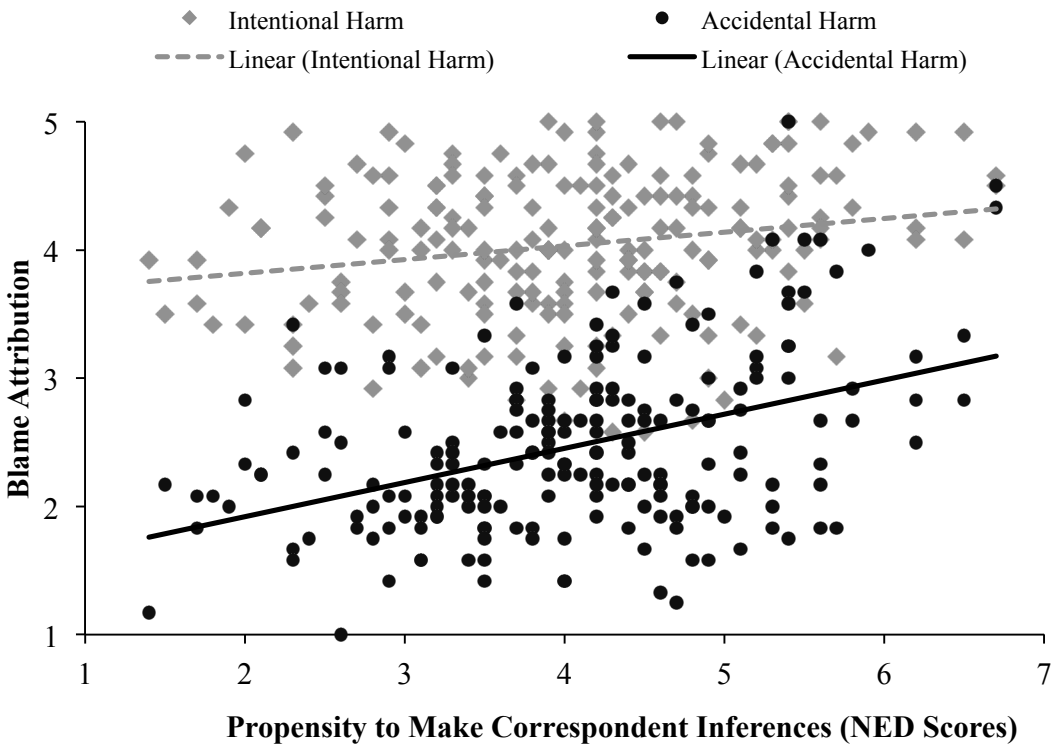


Figure 4. Regression lines with Johnson-Neyman points identifying the regions of significance of the effect of coerced confession in Study 4.

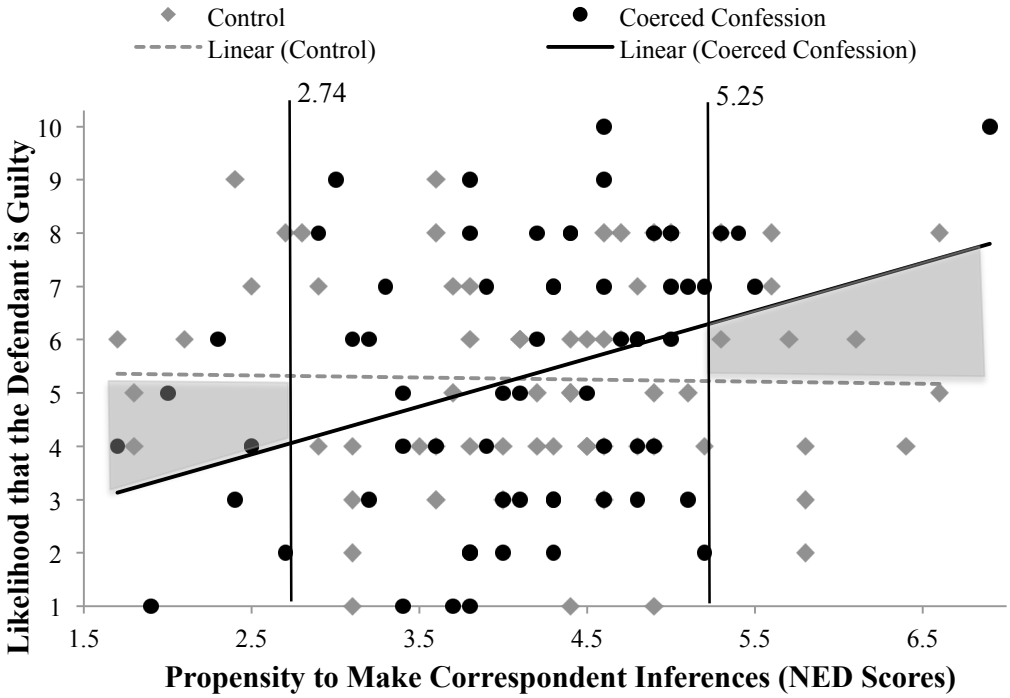


Figure 5. Relationship between propensity to make correspondent inferences and investment evaluations in Study 7.

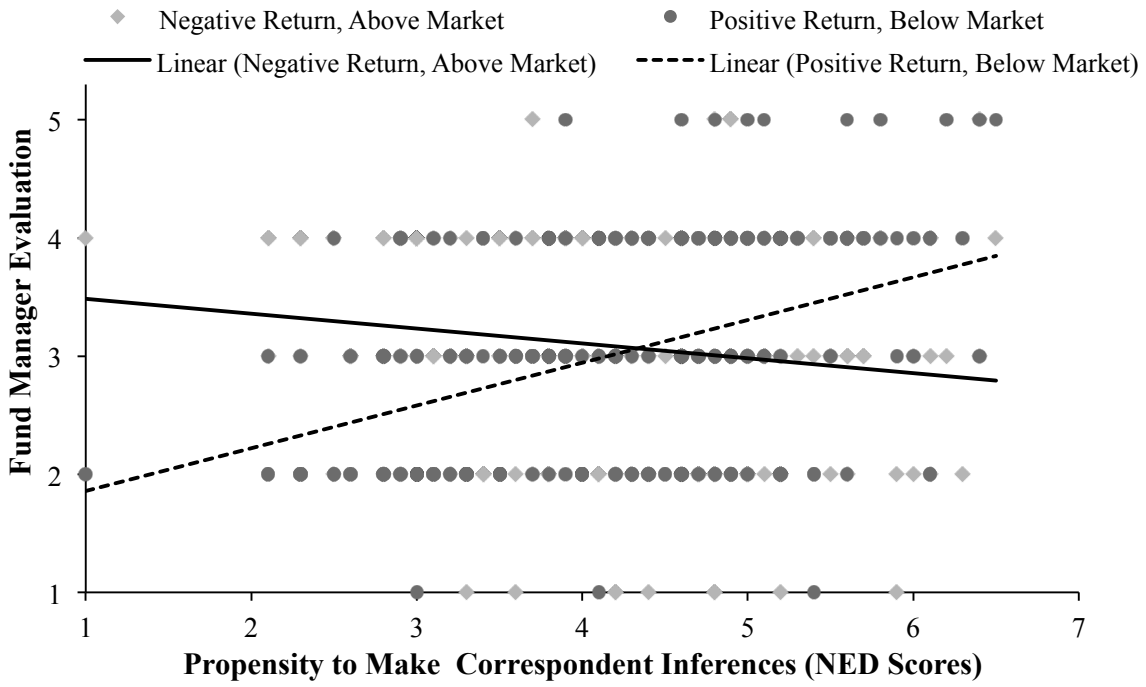


Figure 6. Influence of investment funds and accessibility of market performance on investment evaluations for participants with low vs. high propensity to make correspondent inferences in Study 8.

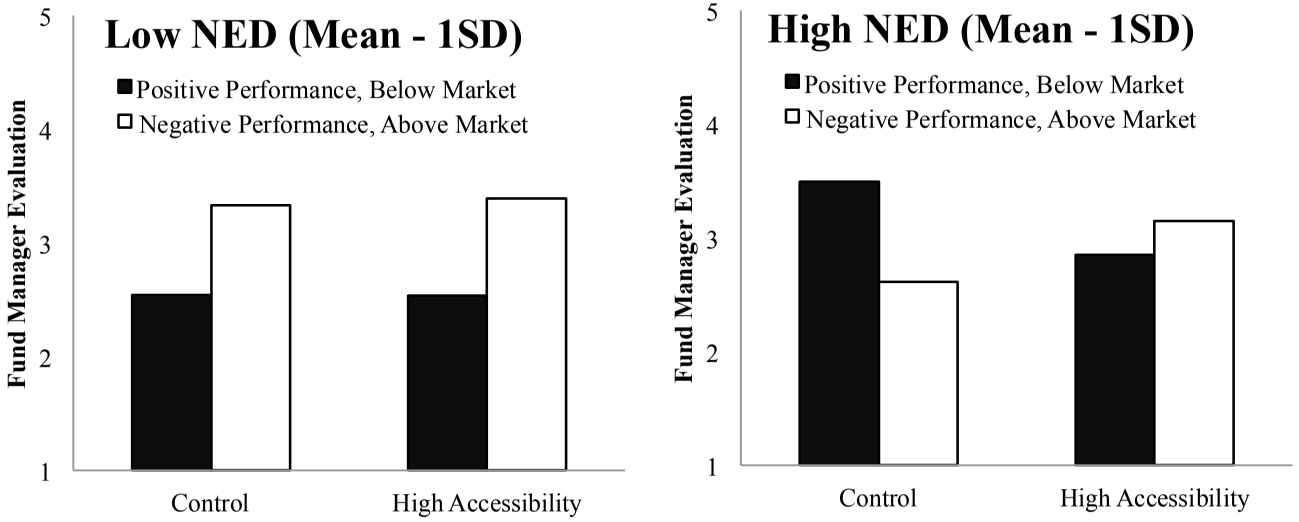
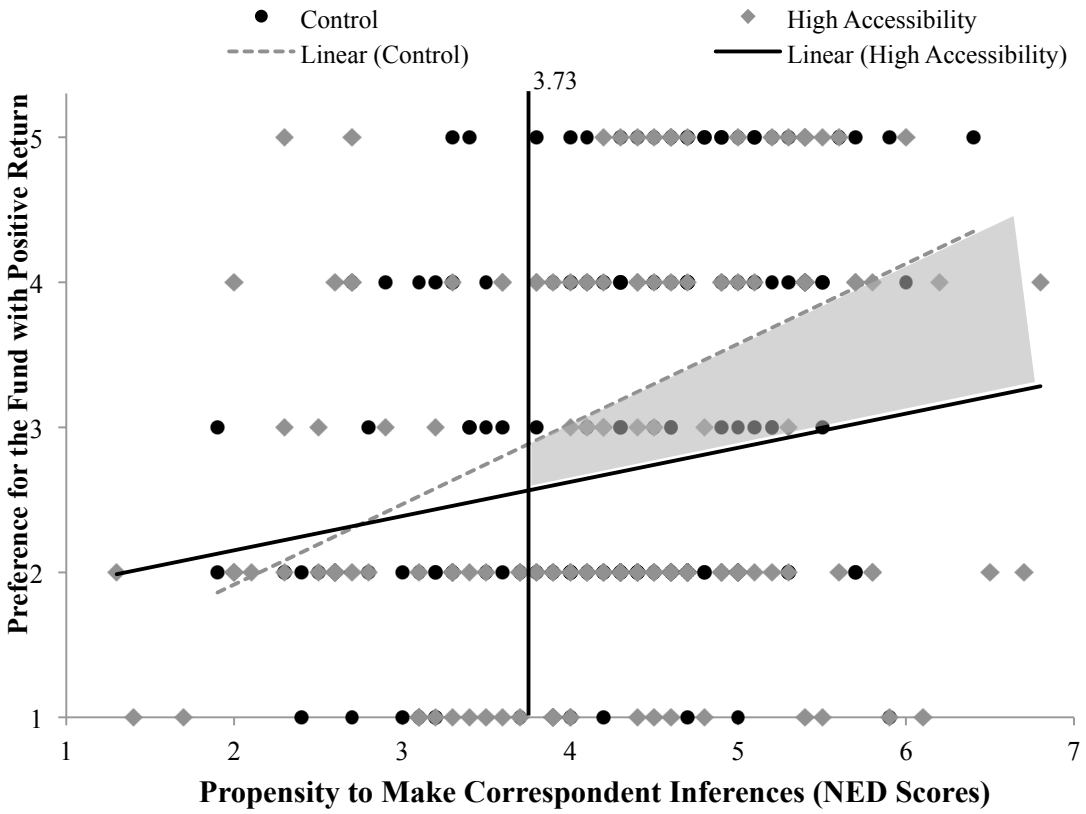


Figure 7. Regression lines with Johnson-Neyman point identifying the region of significance of the
of the debiasing treatment on preference for the fund with positive, below market performance in St



APPENDIX 1

Summaries of criminal trials used in Study 4 (underlined section was not included in the control condition).

PARTIAL TRANSCRIPT OF PROCEEDINGS
November 9-12, 1981

THE STATE OF ILLINOIS Plaintiff vs. SAMUEL ADAMS, Defendant

CHARGE: Aggravated Assault

The Prosecution

The Defendant, Mr. Samuel Adams, was charged with the crime of aggravated assault for the stabbing of Michael Zemp. Zemp owed Adams money, so he set up a time and place to meet and talk about the debt. The two men sat at a corner table in the back of the Jackson tavern. During what became a heated discussion, Zemp accidentally pushed the table into Adams, who fell to the floor. At that point, a fight broke out. The State believes that Adams then stabbed Zemp in the stomach with a piece of broken glass, with intent to injure, and should be found guilty. Michael Zemp testified. Zemp explained that he and Adams met by pre-arrangement at the Jackson Tavern. Zemp said that, at one point, he accidentally pushed the table forward with his knees, knocking it into Adams and forcing him to the ground. Adams was furious and screamed as he fell. A fight then broke out, others joined in, and there was a great deal of confusion. Before he knew it, Zemp was knocked to the ground, bleeding, with a sharp pain in his stomach. All he could remember from then on was waking up in a hospital bed. Officer Thompson put Adams under arrest, read him his rights, and took him to the police station for questioning.

After several hours of interrogation, Adams finally confessed. He said he was drinking, Zemp had provoked him, and everything was very confusing. Seeing broken glass on the floor, and being "pissed off" about the situation, Adams admitted that he stabbed Zemp.

The State Closed its case by arguing that the evidence compelled the conclusion that Adams brutally stabbed Zemp in the heat of an argument because he was angry.

The Defense

The defense argued that Adams was not guilty. Zemp had pushed him to the ground, he said, and threatened to beat him, but he did not stab the man. The Defendant testified that he went to the bar because Zemp owed him money. The defendant said Zemp got angry and refused to repay the loan. According to Adams, Zemp shoved the table at him, knocked him to the ground, and challenged him to a fight. Adams said that he was scared because Zemp is bigger than he is and was in a state of rage. Before he knew it, others jumped in to break up the scuffle, but it got worse. According to Adams, someone in the crowd -- not him -- stabbed Zemp. "I would never do such a thing," he said. "I've never even been arrested before."

When asked about his confession, Adams explained that he was interrogated at a time when he was upset and vulnerable, he felt trapped and thought that the best solution was to confess in spite of his innocence. The next morning, he withdrew the confession and claimed his innocence.

The defense then cross-examined Officer Thompson. Thompson reported that the Defendant did not resist arrest or try to escape. He also described Adams as "shaking" and "disoriented."

The defense concluded that the State had failed to prove its case beyond a reasonable doubt and that the jury should submit a verdict of not guilty.

APPENDIX 2

Investment fund description used in Study 7 and 8 (control condition). Managers' names were counterbalanced.

Fund that decreased in value but outperformed the market

Richard's fund decreased in value by 20.5% in 2008. In other words, if you invested $1000 in Richard's fund on January 1st, 2008, it would be worth $795 on December 31st, 2008.

Please note that the S&P500 index of US stocks decreased by 37.5% in the year 2008. That means that stocks on average decreased by 37.5% in value.

Fund that increased in value but underperformed with respect the market

Lee's fund increased in value by 8% in 2010. In other words, if you invested $1000 in Lee's fund on January 1st, 2010, it would be worth $1080 on December 31st, 2010.

Please note that the S&P500 index of US stocks increased by 15.06% in the year 2010. That means that stocks on average increased by 15.06% in value.

Funds used as anchors:

Richard's fund is Vanguard Explorer
2008 performance is -20.5%
2009 performance is +9.2%
2010 performance is +12.3%
2011 performance is +24.0%

Lee's fund is Vanguard Growth Equity
2008 performance is -25.0%
2009 performance is +8.0%
2010 performance is +8%
2011 performance is +15%

Market
2008 performance is -37.0%
2009 performance is +26.46%
2010 performance is +15.06%
2011 performance is +2.05%

Investment fund descriptions used in Study 8 (high accessibility condition). Managers' names were counterbalanced.

Fund that decreased in value but outperformed the market

Richard's fund decreased in value by 20.5% in 2008. In other words, if you invested $1000 in Richard's fund on January 1st, 2008, it would be worth $795 on December 31st, 2008.

Please note that the S&P500 index of US stocks decreased by 37.5% in the year 2008. That means that stocks on average decreased by 37.5% in value.

Richard's Fund Performance (2008)	Market Performance (2008)	**Richard's Fund Performance Adjusted for Market Performance (2008)**
-20.5%	-37.5%	**+17%**

Fund that increased in value but underperformed with respect the market

Lee's fund increased in value by 8% in 2010. In other words, if you invested $1000 in Lee's fund on January 1st, 2010, it would be worth $1080 on December 31st, 2010.

Please note that the S&P500 index of US stocks increased by 15.06% in the year 2010. That means that stocks on average increased by 15.06% in value.

Lee's Fund Performance (2010)	Market Performance (2010)	**Lee's Fund Performance Adjusted for Market Performance (2010)**
+8%	+15.06%	**-7.06%**