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Professional Excellence in Eye Health

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Empirical research

Thinking about sight as a sense

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Abstract

Sight is often considered to be the most valuable sense. However, the way in which senses are defined, considered and researched in science and society has changed over time. Increasingly, definitions of the senses move beyond the five 'traditional' senses of sight, hearing, smell, taste and touch to include functions such as balance, temperature and pain perception. Our senses also interact substantially, and while neural reorganisation in the brain can help to compensate for the loss of one sensory modality, dual or multisensory impairments are a growing issue in the ageing population.

This article reports the results of a UK-based cross-sectional online survey, where members of the public were surveyed in March–April 2016 to explore which sense they considered to be most valuable. Participants were first asked to rank the five traditional senses (sight, hearing, touch, smell and taste) plus three other 'non-traditional' senses (balance, temperature and pain) in order of most valuable to least valuable. Sight was indeed ranked by participants as the most valuable sense, followed by hearing and then balance.

Overall, these findings substantiate the idea of sight being the most valuable sense among a cross-section of the UK public. This provides a further argument for promotion of eye health as a key priority for public health. However, the broader research on the senses helps to caveat and contextualise such findings. Notably, the importance of sight may be socially and culturally relative, and results could be different if the study were conducted in other contexts, for example in different countries or among people living with sensory loss. It is argued that optometrists have a key role to play in responding to anxieties regarding sight loss, dispelling stigma and fear, and promoting ways to adapt to sight loss.

Introduction: what is meant by a 'sense'?

Optometrists aim to measure, preserve and optimise sight, which is often assumed to be our most valuable sense. For instance, in their article 'Sight – the most critical sense for public health', Sim and Mackie[1] write the following:

> At an individual level, arguably most people value their own sight above all other senses; although a more thoughtful approach will appreciate the central importance of touch, or that those who lose the ability to taste or to hear will experience significant impairment.

This quotation implies that, at the most intuitive level, sight is our most valuable sense. This raises a question of what is actually meant by a 'sense', and what the implications are of comparing sight with other senses.

Despite the fact that we generally learn about the senses early in life, defining and demarcating the senses is relatively difficult. The *Oxford English Dictionary's* long and detailed definition of 'sense' shows how a seemingly simple concept has evolved in time to become more complex:

> Originally: any of the faculties of sight, hearing, smell, taste, and touch; any of the five senses ... In later use more generally: any of the faculties by which external or internal stimuli are perceived, involving the transmission of nerve impulses from specialized neurons (receptors) to the brain ... In addition to the traditional five senses, the faculties perceiving temperature, pressure, body position and movement, and pain are now usually regarded as senses.

The idea of five senses is now thought to have originated with the ancient Greek philosopher Aristotle, who argued in *On the Soul* that there were only five senses, the traditional senses of sight, sound, smell, taste and touch. However, in the contemporary scientific and health literature (as mentioned in the *Oxford English Dictionary* definition above), capacities such as balance (equilibrioception), ability to feel pain (nociception) and ability to feel temperature (thermoception) may also be seen as sensory functions. Sometimes these latter functions are referred to as 'internal' senses, which can be differentiated from the five 'external' senses (such as sight or hearing) which respond to external stimuli such as light or sound. This internal/external distinction has its roots in medieval philosophy,[2] but continues to be influential in scientific research on the senses today. An alternative typology was proposed by an early-20th-century physiologist, Charles Scott Sherrington, who suggested distinguishing between exteroception – sensitivity to stimuli outside the body (thus encompassing the five traditional senses) – and two other sensory modalities, interoception and proprioception.[3] Interoception can be considered as awareness of physiological or emotional states within the body, such as hunger or pain.[4] Meanwhile, proprioception can be considered the sensation of inhabiting a body, and the sensation of the body's movement and position in the space around you; one basic example of proprioception in action is the ability to bring your finger to the tip of your nose, without relying on sight.[5] In proprioception, receptors in the muscles, skin and joints provide information to the brain about the body's position and movement in space, in a feedback-loop-style mechanism. Indeed, many neurological or neurodegenerative conditions causing 'non-organic' vision loss, such as stroke and Parkinson's disease, may also cause impairments in proprioception and balance.

Many scientists now suggest that humans have many more than five senses; nonetheless, there is no firm consensus on how many of these vital capacities we have, and debates continue regarding how our interacting, overlapping senses should be grouped and classified.[6] For example, some argue that nociception (pain perception) and thermoception (temperature perception) can be seen as either exteroceptive (i.e. sensation in response to external stimuli), while

others[7] suggest these functions have more interoceptive qualities because of how pain and temperature affect our internal moods and motivations. Often these senses beyond sight and hearing are described as 'neglected'[8,9] or even as 'lower senses'.[10] Implicitly, sight along with hearing is often conceived to be at the top of this sensory hierarchy.

Large numbers of individuals in the UK are affected by loss or decline of the senses, including sight and hearing (Table 1). There is growing interest in and awareness of the experience of living with different forms of sensory loss beyond sight and hearing loss. Particularly at the time of writing during the COVID-19 pandemic, research is ongoing to understand the role of the disease in causing anosmia, loss or change of smell or taste.[11] While research on loss of smell and taste has generally been relatively limited compared to research on sight or hearing loss, a review on anosmia discusses its potential negative impacts, such as blunting enjoyment of food, difficulty detecting smells that warn of hazards (e.g. smoke) and challenges in social and professional situations.[12]

Form of sensory loss	Estimate of number of individuals affected
Sight loss	Over 2 million people in the UK are affected by sight loss. Figures for 2017 show that 350,000 people are registered as sight-impaired or severely sight-impaired[13]
Hearing loss	12 million people across the UK are living with hearing loss. 900,000 have severe or profound hearing loss. Around 70% of people over the age of 70 have hearing loss[14]
Smell loss (anosmia) Reduced sense of smell (hyposmia)	5% of people in the UK are affected by smell loss – around 3.25 million people – with an additional 15% affected by a reduced sense of smell[15]
Taste loss (ageusia) Reduced sense of taste (hypogeusia) Altered sense of taste (dysgeusia)	Complete taste loss appears to be rare; in a Swiss study of 761 participants aged 5–89, reduced sense of taste was present in 5% of participants[16]
Diminished sense of touch (hypoaesthesia) Abnormal sensation of touch, e.g. numbness, pins and needles (paraesthesia) More intense or painful altered sensations (dysaesthesia)	Many conditions can lead to an altered or reduced sense of touch, or numbness, and it is challenging to estimate the number of people affected. A cross-sectional survey of 10,000 adults in Japan found that 7.7% of respondents experienced limb numbness (including paraesthesia, dysaesthesia and hypoaesthesia) without pain.[17] In a study involving people living with multiple sclerosis, 12% of participants had experienced dysaesthesia at some point in their life[18]

Table 1. The number of individuals affected by impairment of the five senses

Interaction and integration of the senses

We also know intuitively that our senses interact, and there is a significant research literature in the study of multisensory integration. A classic example of multisensory integration is ventriloquism, where a ventriloquist moves a puppet's mouth while producing speech 'invisibly'. Assuming this is done effectively, we integrate the visual and auditory stimuli and perceive these stimuli to emanate from the same spatial location.[19] Another example of audiovisual integration is known as the McGurk effect. This effect can be demonstrated by playing the sound of a consonant, such as [b], while watching a speaker silently move their mouth into the position required to articulate the sound [v]; even when the [b] sound remains the same, we begin to hear the [b] sound as [v] because of the effect of the visual input.[20] In this case, the auditory and visual stimuli are integrated in a way that changes how we perceive the sound. Given that auditory and visual stimuli travel at different speeds, there is also a field of research considering how the brain can resolve small time lags to allow us to process multisensory stimuli simultaneously.[21]

Risk of sight loss increases with age, and increasing age can also lead to changes in how the senses work together and integrate. A relatively recent systematic review of 49 peer-reviewed articles on multisensory integration found that adults over 60 years show more difficulties than younger adults in selecting and integrating information distributed across multiple sensory modalities.[22] The authors also found that the older cohort may have more difficulty in filtering out irrelevant sensory information to focus on relevant information in the sensory domain of interest. In one study, in a task comparing younger and older adults' awareness of tactile (touch-based) stimuli, the presence of visual distractors resulted in significantly more errors among older compared to younger participants.[23] Dual sensory loss, of sight and hearing together, is increasingly prevalent with a globally ageing population.[24] The UK charity Sense estimates that there are over 390,000 people with dual sensory loss in the UK, and this figure is set to increase to over 600,000 by 2035.[25] As Heine and Browning make clear in their systematic review of research about dual sensory loss and its association with mental health, there is a limited understanding of the effects of dual sensory loss on older adults over 80, where multisensory impairment may interact with comorbidities such as dementia or cognitive impairment.[26] Dual sensory loss of sight and hearing together can make communication and social participation particularly difficult, and management of the condition requires multidisciplinary collaboration from optometrists and audiologists.[24] In addition, conditions such as dementia can affect multiple sensory phenomena at the same time, including sight,[27] but also sensory functions such as temperature and pain processing.[28] Dual or multisensory forms of impairment can create particular challenges, because impairment in sight is then intensified by the difficulty of compensating with hearing, meaning that the functional impact is more than just the sum of losses of each sense.[29] It is also important for optometrists to be aware of sensory processing disorder (SPD), which impedes integration of sensory information and can affect development of oculomotor function in children. SPD can cause difficulties with eye contact, shifting gaze and hand–eye coordination, as well as poor fine and gross motor skills.[30]

Nevertheless, research is increasingly demonstrating how the brain may adapt and compensate for impairment in one sensory modality, sometimes referred to as cross-modal plasticity. This theory posits that adaptive reorganisation takes place in the brain, whereby areas of the brain normally associated with a specific sense (such as the occipital lobe for sight) can be recruited to process information

from intact sensory modalities.[31] As one example, studies have shown that in individuals with congenital or early sight loss learning Braille, the area of the brain that represents the finger used to read Braille enlarges, and parts of the visual cortex in the occipital lobe of the brain are recruited for processing the tactile stimuli provided by Braille.[32] However, competing against this theory of compensatory changes is a hypothesis known as the 'general loss hypothesis', which suggests that sensory loss such as visual impairment can lead to dysfunction in other sensory modalities. For instance, there is some evidence that people who are severely sight-impaired from early in life may struggle on sensory tasks which rely on spatial orientation. In one study, when evaluating the distance of an auditory stimulus, participants with vision loss acquired as adults outperformed sighted participants, who themselves performed better than participants with congenital or early visual impairment.[33] Yet despite ongoing debates about the precise mechanisms and extent of sensory compensation, overall there is significant potential for neural and behavioural adaptation to maximise remaining sensory modalities.[34]

What does research tell us about attitudes towards sensory loss?

In contrast to the neuroscientific research on the complexities of sensory impairment and adaptation, everyday attitudes and perceptions around sensory loss have not been studied in great detail, which encouraged this article's authors to undertake a study. Some research has been conducted by sight charities, such as RNIB,[35] who commissioned a survey which found that 88% of 2,011 respondents stated that sight was the sense they most feared losing, compared to hearing, smell, taste and touch. More recent research in the USA has shown that members of the public rate loss of their vision as more concerning than losing their memory, a limb, speech and hearing, and chronic health conditions such as HIV/AIDS, heart disease and arthritis.[36] In this survey of 2,044 individuals, almost half described losing their eyesight as having the greatest effect on their everyday life. Furthermore, 87.5% of participants in this study agreed that good eye health is important to health overall.

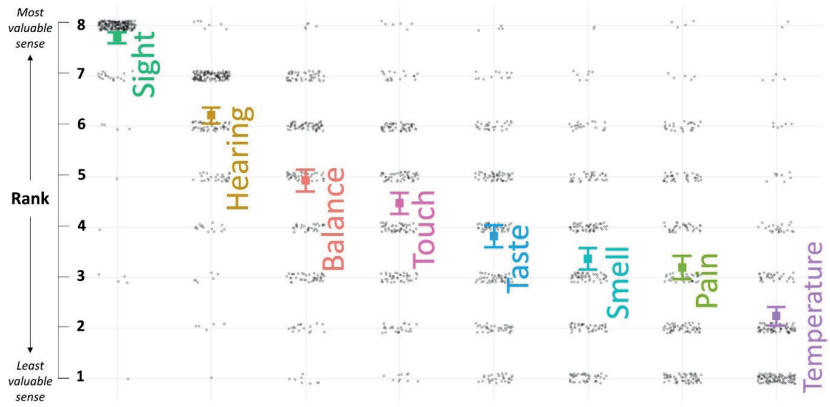

Figure 1. Participants' rankings of eight senses. The coloured squares represent mean ratings, and the error bars represent 95% confidence intervals. The points in faint grey show individual responses (which have been shifted horizontally solely for illustrative purposes).

Even more recently, a longitudinal clinical study involving participants experiencing different forms of sensory loss has shown that loss of sight and touch causes the greatest decrease in quality of life before loss of hearing, taste and smell.[37] Each participant in this study had experienced the form of sensory loss they were asked to evaluate, over a 15-year period. The authors found that the greatest reductions in quality of life were experienced by those with vision loss (38% reduction in quality of life), followed by those who had lost their sense of touch (29%), followed by hearing (14%), taste (7%), then smell (6%). They suggest that loss of tactile sensation may be particularly difficult due to the associated loss of proprioception, and increased risks of injury and pain.

While both these studies imply that vision is the sense that individuals most value, an aim of the present study was to consider how people evaluated their sight and hearing relating to other sensory capacities – such as balance (equilibrioception) – that do not generally fit with the traditional conception of the five senses. For this reason, the authors of this article conducted a survey in March–April 2016 to determine which senses are rated most valuable by a cross-section of the UK public.[38] A market research company distributed the survey to members of their participant pool. Working with the company ensured that a relatively large number of individuals could be surveyed in a short amount of time; however, sampling from a pool of people who had signed up to take part in paid surveys could have introduced selection bias. Indeed, the 250 participants in the survey had a median age of 50 (age range of 22–80 years), compared to a UK median age of 40.5 years, while 56.4% of participants were female (compared to 51% in the UK population generally).[39] The survey was open to participants both with and without sensory impairments, and 15% of participants reported a family history of sensory impairment.

The survey first involved a simple ranking exercise, with participants asked: 'Thinking about your daily activities, please rate the following from "most valuable" (8) to "least valuable" (1)'. The dot plot in Figure 1 shows how participants responded. Sight is shown on the top left of the graph in green. Sight received a mean ranking of 7.8 out of a possible 8. Hearing was most frequently ranked as the second-most valuable sense, with a mean rank of 6.2 out of 8. Balance was ranked as the third-most valuable sense, above the three more traditional senses of touch, taste and smell. As a caveat, it should be noted that there was no statistically significant difference between the rankings of taste, smell and ability to feel pain, suggesting that the rank order for these three senses may have arisen due to chance.

This ordering of the senses held true across demographic variables such as gender, education level and marital status. Regarding age, there was a statistically significant (though weak) positive correlation between increasing age and prioritising of both ability to feel pain and ability to feel temperature. So participants aged 60 and over rated ability to feel pain as marginally more important than smell, whereas generally, smell was ranked as marginally more valuable than ability to feel pain. However, there was less variation in the order by demographic group than might perhaps

have been expected. The fact that balance scored so highly, significantly more highly than touch, was initially surprising. Yet balance clearly plays an important role in mobility and carrying out daily activities, and there is empirical evidence showing the association between balance impairments and reduced quality of life.[40] Furthermore, several studies have shown the links between vision loss and poorer balance, with one study showing that individuals with worse glaucomatous visual field loss show greater swaying and less balance when tested on a variety of different surfaces.[41] While there is no single pathway that can simply explain the mechanism by which vision aids balance, one convincing explanation is provided by Willis and colleagues,[42] who reference the vestibulo-ocular reflex, a reflex which produces eye movements of equal magnitude but in opposite direction to head movements and consequently keeps the gaze stable as the head moves. The authors hypothesise that, with reduced visual inputs over time, the reflex becomes less well calibrated, thus contributing to balance dysfunction. Another factor may also be reduced physical activity (as this can benefit balance and posture) associated with sight loss, or common neurodegenerative processes underpinning vision and balance impairment together. Willis and colleagues conclude that further investigation of interconnections between the visual and vestibular systems is required to help better understand the mechanisms for reduced balance among individuals with visual impairment.

In the second part of the study, sight and hearing were compared more directly, given that these were hypothesised to be the two senses that participants would rate as most valuable. To do so, a time trade-off exercise was used.[43] Participants were asked to imagine they had 10 years left to live, and then had to make a series of choices. Figure 2 shows a screenshot of an example question participants were asked to answer.

First, the participant was asked to choose between Life A on the left, 10 years without sight, and Life B on the right, which was 10 years in perfect health; here, one would expect the majority of people to choose Life B, 10 years of perfect health. Then, on the next question, participants were asked to choose between Life A, once again 10 years without sight, and Life B, now reduced

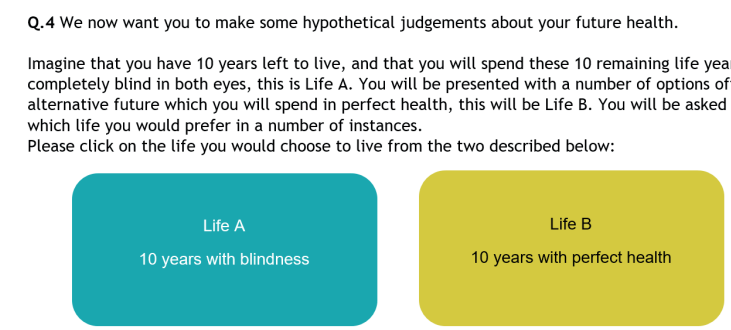

Figure 2. Screenshot from the survey, showing an example question from the time trade-off exercise.

to 9 years of perfect health. Then over the course of the following questions, Life B would reduce in 1-year intervals, eventually culminating in 0 years of perfect health. At this point, one would expect more people to choose Life A over Life B. Participants then responded to exactly the same set of questions for hearing. From their responses, it was possible to compare how participants viewed the prospect of sight loss versus the prospect of hearing loss. In order to analyse the data, the authors looked to see where participants generally switched from choosing Life B, the perfect health option, to choosing Life A, the option of 10 years without sight or 10 years without hearing.

It was found that participants were, on average, prepared to sacrifice 5.4 years without sight and 3.2 years without hearing in order to remain in perfect health. That is to say that participants would choose 4.6 (i.e. 10 – 5.4) years of perfect health as an alternative to 10 years living with total sight loss. By a similar token, participants would choose 6.8 (10 – 3.2) years of perfect health as an alternative to 10 years living with total hearing loss. This time trade-off procedure showed that participants imagined a future without sight as being significantly worse than an imagined future without hearing. However, the time trade-off exercise must be interpreted with caution. In particular, the survey asked participants to choose between Life A of 10 years without sight/hearing and Life B of perfect health overall, and not simply perfect sight/hearing; this could conceivably inflate the number of people choosing Life B, and therefore muddy the conclusions that can be drawn.[44] Nonetheless, it is striking that 14.8% of participants would choose death (0 years of Life B) rather than 10 years with complete sight loss, and 6% of participants would choose death rather than 10 years with complete hearing loss. It is worth noting that the choice presented here was somewhat artificial, given that most people will experience more moderate forms of living with sensory loss; for instance, complete sight loss is relatively rare.

Men were willing to sacrifice almost 1 year more without sight than women in exchange for perfect health. However, men's more negative attitudes to sight loss in this study do not reflect real-world healthcare-seeking behaviour, with evidence that men are more likely than women to present with advanced sight problems; one study found that an individual with late-stage presentation of glaucoma is 16% more likely to be a man.[45] This in turn shows the risk of 'overinterpreting' results from the time trade-off procedure, given that participants' attitudes at the time of response – when participants are asked to focus squarely on an issue like sight loss – do not reliably represent how they more generally think about the issue in real life.

Complexities in evaluating sight as the most valuable sense

While these results seemed to suggest fairly conclusively that sight is the sense people most value among this UK sample, there are limits to how generalisable such findings may be. In thought about the senses, from Aristotle onwards, there has been the presumption that there is a universal general hierarchy of the senses, with sight at the top, as the seemingly most fundamental gateway to perceiving and interacting with the world around us. The primacy of sight over other senses is attested in linguistics, with one study by San Roque and colleagues[46] showing that sight verbs are used in everyday conversation significantly more frequently

than other senses across 13 different world languages. In English specifically, recent research shows that there are more unique terms to talk about vision that any other sense, suggesting the linguistic dominance of sight above other senses.[47] However, a study comparing how sensory stimuli are encoded in 20 different languages, including three sign languages, suggests the hierarchy of senses is culturally relative.[48] In this study, languages such as English and British Sign Language were shown to have a high level of richness for vocabulary to describe vision, while languages such as Farsi and Cantonese were found to have a high level of richness for vocabulary to describe taste. The main commonality among languages featured in this study was a low level of richness to describe the sense of smell compared to other senses. Overall, however, the study suggests that, rather than having an inherent human tendency to privilege sight over other senses, cultural and linguistic factors likely play a key role in influencing our sensory experiences. Indeed, it has been argued that an initial bias towards sight (at least in western societies) has become self-reinforcing, with a culturally engrained belief that we live in a 'visual society' becoming a self-fulfilling prophecy, in terms of how we talk, think about and study vision as seemingly our most important sense.[49]

Another, perhaps more fundamental, limitation of the present study is that it falls into the category of what Schillmeier[50] calls 'medical, psychological and pedagogical studies [which] dominate the discussion on blindness by treating it as lack of sight or generally as a problem of sensory impairment'. By asking participants about how much they value their different senses, and by using time trade-off, aspects of the methodology can be seen to be rooted in what disability theorists refer to as the 'personal tragedy model of disability',[51] whereby impairment or disability is something that is inherently to be feared or undesirable. As Professor Tom Shakespeare states:

> It appears to be the case that our appraisal of life with impairment may have less to do with actuality than with fear, ignorance, and prejudice, all of which make the experience appear worse than it actually is. That is to say, we have a distorted view of disability, one made more graphic by the ways cultural representations of disability play on our fears of impotence, incapacity, and dependency.[52]

With this in mind, there are fundamental problems in asking members of the public who do not have sensory impairment to imagine their future without sight or hearing, because of the influence of widely held beliefs, assumptions and fears about life without sight or hearing.[53] Indeed, methodologies like time trade-off that seek to place a value on different aspects of health by asking people to imagine hypothetical scenarios have been critiqued on many levels, both in terms of the specific techniques used and at a deeper conceptual level.[54] Crucially, asking people to imagine a hypothetical future disease state does not account for the way that affected individuals may adapt and accommodate themselves to that state. Indeed, results from the present study showed, interestingly, that people with a family history of sensory impairment were less likely to trade off years without hearing. While this pattern was not found for the time trade-off questions with sight, there is evidence that healthy individuals can frequently overestimate the negative impact of disease or disability on their quality of life and underestimate the possibilities of adaptation. This can be seen as an example of the so-called 'focusing effect',[55] the idea that when people are asked to imagine a future (say, without sight), they will have an instant preconception, potentially based on 'fear, ignorance, and prejudice' referred to by Shakespeare, above, that is unlikely to match up with a more nuanced reality.

The implications of the present study's results for optometric practice

Nonetheless, the results discussed here do clearly show that people place a very high value on their sight. This may further strengthen the argument for improved education and awareness raising about how sight loss may be prevented, in a context (at least in the UK) where over 50% of cases of sight loss are considered avoidable.[56] For example, it is known that smoking more than doubles the risk of age-related macular degeneration (AMD),[57] and yet general awareness of the link between smoking and sight loss generally remains low in the UK and across the world. Given the importance people attach to their sight, one study has recommended warnings on cigarette packs about the link between smoking and sight loss.[58] A study in 2007 found that only 6.2% of UK-based community optometrists asked about smoking status at an initial consultation, and only 2.2% asked at follow-up visits. The most common reason for not doing so provided by participants in this study was the belief that it is not their role, followed by time constraints.[59] However, almost 68% of the optometrists participating in this study wished to improve their knowledge about the links between visual impairment and smoking, and 56% were in favour of further training. A more recent study found that around one-third of participating UK optometrists were routinely assessing their patients' smoking status,[60] significantly higher than the study conducted a decade before, even if still a relatively small proportion. However, Lorencatto and colleagues found that 83% of participating optometrists had received no training in the practical skills required to deliver advice on smoking in a way that is sensitive and feasible within the time constraints of optometric practice. Although evidence-based training and guidance interventions specific to optometry are yet to be developed, the latter authors recommend the online training provided by the National Centre for Smoking Cessation and Training (*ncsct.co.uk*), a half-hour module which equips practitioners to provide very brief, evidence-based advice on stopping smoking.

The research suggests a more encouraging trend in terms of how optometrists provide nutritional advice. In a UK-based study of optometrists, 53.6% of optometrists reported frequent provision of dietary advice to patients at risk of AMD, while 67.9% gave such advice to patients with established AMD.[61] This could include advice on the importance of leafy green vegetables, fruit, oily fish and – for those at moderate to high risk of advanced AMD – use of supplements containing vitamin C, vitamin E, the carotenoids lutein and zeaxanthin, and zinc.[62] Numbers of patients aware of the role of diet in AMD progression are relatively low, with one study showing that only 55% among a sample of AMD patients were aware of the importance of diet for eye health,[63] while in another study involving patients from an AMD hospital outpatient clinic, only 40% of participants recalled having received

dietary advice at the hospital.[64] An Australian study, although not necessarily generalisable to the UK, suggests that a majority of patients (almost three in four) feel comfortable with discussing general lifestyle and health behaviours with their optometrist.[65] These findings of the value people placed on their sight further reinforce the need to explore new interventions to train, guide and support optometrists with providing brief advice on lifestyle factors and their influence on eye health.

Optometrists thus clearly have a role to play in raising awareness of risk factors for sight loss, as well as for hearing loss in practices where these services are integrated. In conjunction, it is also vitally important to consider social, economic and environmental factors that may enable or impede better eye health at the population level. As one example, there are concerns around rationing of cataract surgery, with a *British Medical Journal* investigation suggesting that over half of clinical commissioning groups consider elective cataract surgery to be a procedure of 'limited clinical value'.[66] This assessment was found to contradict NICE guidelines, which support cataract removal as a cost-effective measure, access to which should not be restricted on the basis of visual acuity (NICE guideline 1.2.2[67]). Indeed, evidence from randomised controlled trials shows that removal of cataracts can improve not only visual function but also overall health status and reduce risk of falls.[68] Thus improving awareness around prevention of avoidable sight loss at the individual level must also be accompanied by public health strategies that provide equitable access to eye care and potentially sight-saving treatments.

Our results pointing to fears people may have about losing their sight suggest that optometrists have a role to play in having difficult conversations with their patients in ways that can engage with their anxieties and consequently contribute to better eye health. The role of anxiety in optometric settings has received fairly limited scholarly attention, although one valuable study suggests that patient anxiety in optometric practice may be linked particularly to the fear of receiving bad news, alongside other factors, such as patients' general anxiety in everyday life.[69] Research has also found that patient anxiety can be a key factor in reduced satisfaction after an optometric consultation, particularly as anxiety may impede effective communication between the optometrist and patient.[70] Indeed, anxiety in clinical settings more generally is known to make it more difficult for patients to disclose and discuss their worries with practitioners, or even to attend appointments in the first place.[69] As such, optometrists need to consider that patients will have their own different thresholds and tolerance for what constitutes 'bad news', and seek to put patients at ease as much as possible. Some strategies for reducing anxiety may include active listening, a technique that involves listening intently and empathically to the patient, summarising what the patient has said and clarifying with them whether their concerns and views have been well understood.[71] If working with patients with vision loss, an important skill is to provide relevant information to patients about treatment and rehabilitation options and to make appropriate referrals where necessary, balancing realism with optimism.[72] While certain optometrists may naturally feel less anxious or more skilled at having these conversations, there is evidence that vital communication skills to help with breaking bad news can be learned through training,[73] further demonstrating the importance of lifelong learning for optometrists. Fuerst et al.'s study suggests that clinicians may also be better than they think at this communication skill, and may be significantly more self-critical of their abilities in this field than their patients.

Conclusions

The authors' study findings substantiate the idea of sight being the most valuable sense, although the broader research on the senses helps to caveat and contextualise these findings. Firstly, such findings about the importance of sight may be socially and culturally relative, and results could be different if the study were conducted in other settings. Secondly, this article has argued that our senses interact significantly, and that sensory integration underpins much of how we perceive and process our environment. Therefore, rather than considering the senses as separate entities, a useful avenue for future research could be to consider attitudes towards and experiences of dual or multisensory impairment, especially given that the prevalence of hearing and sight loss together is rising in a globally ageing population.[74] Thirdly, asking participants to consider and evaluate a future without their sight or other senses may obscure how people living with sight and other sensory impairment accommodate to the changes. Indeed, there is the risk that documenting people's negative attitudes towards losing their sight, while demonstrating the urgent need for eye health promotion, may also stigmatise and create fear around sight impairment. For example, in the study discussed in detail in this article, men rather than women appeared to show more negative attitudes towards sight loss, but evidence from other studies shows that men generally seek treatment at a more advanced stage of eye disease. Optometrists therefore have a crucial role to play not only in assessing and maintaining people's sight, but also in sight loss prevention and dispelling fears around sight loss, through discussions with patients about practical aids and strategies to cope with sight loss, and employing effective communication and empathy.

Summary

This article considers sight in the context of our other senses, and in light of how our scientific conception and understanding of the senses have changed over time. The article then discusses research regarding attitudes to our different senses, including results from a recent study by the authors. It then considers the implications of public views on sight loss for eye health promotion at both the individual and societal level. For example, we suggest that optometrists may have a key role to play in addressing patient anxieties around sight loss and providing lifestyle advice that may benefit eye health.

Relevance to practice

- The research discussed here further reinforces the value individuals place on their sight, and the vital importance of eye health promotion
- The article highlights the ways that sight interacts with other senses, and the particular challenges associated with dual or multisensory loss (e.g. of sight and hearing together)
- It is argued that optometrists and eye care professionals should be empathetic and sensitive to people's anxieties regarding their sight, while helping to tackle stigma and misinformation around sight loss
- By building on and applying their clinical communication skills, optometrists are well placed to provide advice on smoking cessation and nutrition that can help protect patients' sight

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CET multiple choice questions

This article has been approved for one non-interactive point under the GOC's Enhanced CET Scheme. The reference and relevant competencies are stated at the head of the article. To gain your point visit the College's website college-optometrists.org/oip and complete the multiple choice questions online. The deadline for completion is 31 October 2021. Please note that the answers that you will find online are not presented in the same order as in the questions below, to comply with GOC requirements.

1. **Which of these terms refers to the sensation of the body's movement and position in space?**

   - Equilibrioception
   - Proprioception
   - Interoception
   - Exteroception

2. **What percentage of people over 70 in the UK are living with hearing loss?**

   - 50%
   - 60%
   - 70%
   - 80%

3. **Which sensory systems are involved in the McGurk effect?**

   - Auditory and visual
   - Auditory and vestibular
   - Visual and proprioceptive
   - Visual and vestibular

4. **In the study discussed in this paper, what percentage of the UK public rated sight as their most valuable sense?**

   - 76%
   - 80%
   - 84%
   - 88%

5. **In an Australian study by Downie et al. (2017), what proportion of patients were comfortable discussing lifestyle and health behaviours (e.g. smoking and diet) with their optometrist?**

   - One in four patients
   - Two in four patients
   - Three in four patients
   - All patients

6. **Active listening may help put patients at ease if breaking bad news. Which of the following is not a component of active listening?**

   - Listening with empathy
   - Providing advice
   - Summarising or paraphrasing what the speaker has said
   - Asking questions to clarify what the speaker has said

CPD exercise

After reading this article, can you identify areas in which your knowledge of sight as a sense has been enhanced?

How do you feel you can use this knowledge to offer better patient advice?

Are there any areas you still feel you need to study and how might you do this?

Which areas outlined in this article would you benefit from reading in more depth, and why?