Forum

Moral Perception

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Based on emerging research, we propose that human perception is preferentially attuned to moral content. We describe how moral concerns enhance detection of morally relevant stimuli, and both command and direct attention. These perceptual processes, in turn, have important consequences for moral judgment and behavior.

Morality Shapes Perception

We propose that morality shapes perception. While it seems unequivocal that moral content colors our interpretations of situations [1,2], we hypothesize that the influence of moral concerns reaches deeper, shaping what we see and how we come to see it. In particular, moral content has been shown to influence two stages in the perceptual processing stream: moral content is (i) readily detected and (ii) both commands and drives attention (Figure 1).

The role of morality in perception is especially important given recent evidence that perceptual processes influence judgments of wrongness, blameworthiness, and even legal punishment decisions [3].

Detecting Moral Stimuli

‘Detection’ is a basic element of perception; a stimulus must be detected for it to reach conscious awareness. The visual system is closely integrated with other parts of the brain, allowing people to segregate significant from mundane stimuli [4]. For instance, recent research suggests that moral concerns might enhance the detection of visual cues. Moral emotions, such as disgust, can tune perception towards the light end of the light–dark spectrum due to moral concerns regarding purity. Specifically, individuals high in trait disgust sensitivity and people exposed to disgusting stimuli are selectively better at detecting a digit presented one shade lighter than the background color [5]. Although this work does not test the effect of morality directly, it does suggest that moral emotions, such as disgust, can alter detection.

Recent research has shown that the visual system is preferentially sensitive to moral content. Specifically, people correctly detect moral words (e.g., kill, moral, should) with greater frequency than non-moral words (e.g., die, useful, could) – a phenomenon termed the ‘moral pop-out effect’. Importantly, the moral pop-out effect is only observed when words are presented ambiguously, near the threshold for perceptual awareness (i.e., halfway between chance and complete accuracy). Not only are the moral and non-moral

Figure 1. The Role of Detection and Attention during Perception of a Potentially Moral Situation. At a given moment, the visual field is cluttered with various stimuli. It is critical to be able filter and prioritize relevant information. People therefore selectively ‘attend’ (indicated by blue arrows) toward relevant aspects of the environment (e.g., looking at trash on the sidewalk). If so, the perceiver is more likely to ‘detect’ (indicated by green arrow) morally relevant cues (e.g., the trash is paper, and thereby recyclable), and sustain attention to a particular object (e.g., the recycling bin over the trash big), which drives judgment (e.g., recycling is the right thing to do) and possibly behavior (e.g., I should recycle). The impact of morality on perception is likely greater when the cues are perceptually ambiguous. A stimulus is ambiguous when it does not conformed easily to known objects (e.g., dissimilar perceptual input to the left and right eye) or because it is not easily visible (e.g., presented for a short time, in low contrast, or among many stimuli). We do not think that these processes happen in any one order, but rather can happen in different combinations (e.g., detecting a recycling symbol can capture attention).
words similar in length and language frequency, evidence suggests that the moral pop-out effect is not due to differences in the reported intensity, extremity, or arousal of the stimuli [6]. The moral pop-out effect provides initial evidence that perceptually ambiguous moral content reaches conscious awareness more readily than non-moral content, requiring fewer perceptual prerequisites.

Immoral social actions have also been shown to determine the detection of faces. Using binocular rivalry, researchers presented different images to the left and right eye simultaneously (e.g., a house and face), creating ambiguous input, which the mind reconciles by perceiving alternating faces. Using binocular rivalry, researchers presented different images to the left and right eye simultaneously (e.g., a house and face), creating ambiguous input, which the mind reconciles by perceiving alternating faces. Researchers have shown that moral judgments can influence perceptual processes, such as the detection of faces. For example, when given a picture of a face paired with moral content (e.g., a neutral or positive word), participants were more likely to detect faces in that picture than in a picture of a face paired with non-moral content (e.g., a neutral or positive word). This suggests that moral concerns can tune and enhance the detection of faces.

**Moral Concerns Tune and are Tuned by Attention**

At any given moment, it is critical to be able filter and prioritize relevant information in a cluttered visual field. To maximize information processing, low-level features drive attention, and people tune attention (intentionally and unintentionally) toward motivationally relevant aspects of the environment. Attention heightens sensitivity to a particular aspect of the visual field and has downstream consequences for what we see and how we interpret our surroundings. According to Just World Theory, people have a need to believe that they live in a world where people get what they deserve. In one study, people listened to auditory scenarios about protagonists acting in morally good (e.g., making dinner for his exhausted wife) or bad (e.g., demands his exhausted wife make him dinner) ways. Before revealing what happened next, participants were given a preview of two possible outcomes for the protagonists: a good one (e.g., a successful business contract) and a bad one (e.g., a terrible car accident). People's eye gaze revealed that they were expecting good outcomes to befall good protagonists and bad outcomes to befall bad protagonists [8]. When individuals view a morally good or bad actor, their visual attention reflects expectations that people will get what they deserve.

Individual differences in concerns for justice also bias visual attention. In one experiment, people watched a video where either one group treated another unfairly or two groups get along peacefully, and were then asked to identify the direction of an arrow that appeared behind either a justice-related word (e.g., unfair) or a negative word (e.g., foolish) matched for length, language frequency, and valence. People who first saw the unfair video clip were faster at identifying the arrow's direction when it replaced a justice-related word (vs a neutral word) – especially if they were high in justice sensitivity. In other words, concerns about justice captured people's attention; their gaze was already in the right place to detect the arrow [2]. In the face of unfairness, justice-related information captures attention.

People are also able to amplify attention when their moral values are at stake. In one experiment, people took an Implicit Association Test (IAT) to assess how strongly they associated an outgroup with negativity. They were either told that the test measured competence or moral values (i.e., egalitarianism). Those who were told that the test measures egalitarianism expressed less racial bias on the IAT and had greater event-related potentials associated with early attentional processing of faces (P150) and error monitoring (N450), respectively [9]. Moral context heightened attention to relevant stimuli to promote the expression of one's moral values, leading them to act more egalitarian.

**Attention is not merely a consequence of moral concerns, it can also influence moral judgment.** In a set of experiments, participants heard a series of moral statements (e.g., ‘murder is sometimes justifiable’) and were subsequently presented with
two on-screen choices (‘sometimes justifiable’ or ‘never justifiable’) while their eye gaze was tracked. The experimenters randomly selected one of the two choices, (e.g., ‘sometimes justifiable’) and prompted participants’ decisions at a moment that they had either viewed the assigned option longer or were currently fixating on it. This led participants to endorse moral statements that the experimenters had randomly, and surreptitiously, selected [10]. These findings suggest that where one looks both tracks and determines moral judgment.

Concluding Remarks
The notion that morality influences perception is still a hypothesis and will require more evidence before it is firmly accepted. But growing evidence suggests that morality plays a role in human perception: moral content is more readily detected by the visual system, commands attention, and moral judgment is influenced by attention. While we have focused on visual perception, we suspect that other sensory modalities are also sensitive to moral concerns. The ability to recognize moral situations and act appropriately is critical to one’s survival in social groups, and helps to secure access to needed physical and psychological resources afforded by group members; so much so, that morality is chronically salient. To date, most models of moral cognition focus on the processes that unfold after perception has occurred. But future research on morality would be wise to incorporate perception. How we arrive at our moral judgments and actions almost certainly begins with perception.

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