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The neural architecture of trustworthiness judgments: judging a book by its cover and content

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A commentary on

Who can you trust? Behavioral and neural differences between perceptual and memory-based influences

by John D. Rudoy and Ken A. Paller.

Can we help but "judge a book by its cover?" Recent neural evidence suggests that we do this fairly quickly and perhaps without even realizing it. As Rudoy and Paller (2009) recently demonstrated, people judge the trustworthiness of a stranger's face with dual pathways. One pathway quickly processes the physical characteristics of the face, while a second, slower pathway processes information that has been learned about the owner of the face. These data contribute to a growing literature on the neural basis of trustworthiness judgments. Much like judgments of attractiveness, judgments of trustworthiness happen especially quickly compared to other trait judgments and occur even when people are not explicitly asked to evaluate trustworthiness (Winston et al., 2002; Willis and Todorov, 2006). Together, these findings raise a number of questions about the "dual nature" of the neural pathways that contribute to trustworthy judgments, and how these pathways are modulated by socioemotional contexts.

Rudoy and Paller (2009) show that "perceptual" information (i.e., pictures of faces) is processed more quickly than "memory-based" information (i.e., personality traits) when making judgments of trustworthiness from a face. In their two studies, they presented participants with faces that varied in stereotypical trustworthiness. Stereotypical trustworthiness reflects the extent to which most people perceive the face to be trustworthy (it does not necessarily predict actual trustworthiness: Zebrowitz et al., 1996). The faces were paired with either positive personality trait words or negative personality trait words. Participants then saw the faces again without the words and had to judge their trustworthiness. One study required participants to make these judgments with or without a time limit. When under a time limit, participants' judgments of trustworthiness varied less across faces that had been paired with negative, compared to positive, personality traits. However, the time limit did not affect the relation between physical appearance and trustworthiness judgments. A second study found that variance in the stereotypical trustworthiness of a face elicited different amplitudes of the ERPs from the anterior frontal midline location (Fpz) within 200–400 ms. The valence of the paired word was associated with different amplitudes of parietal ERPs at 800–1000 ms. Together, these findings suggest that perceptual information and memory-based information are processed at different rates and by different neural systems. These findings represent a new approach to thinking about the dual processes and pathways that contribute to trustworthiness judgments. For example, previous research has focused on neural distinctions that differentiated trustworthiness judgments depending on whether a person consciously intends to evaluate trustworthiness from a face (Winston et al. 2002).

What might dual processes characterized by differences in timing and content imply about how trustworthiness is judged? General models of judgment suggest that, in the interest of efficiency, faster information exerts more influence on final judgments, unless there are strong reasons to incorporate slower information (e.g., Tversky and Kahneman, 1974). Does the faster processing of perceptual information mean that it has a stronger influence than memory-based information on final judgments of trustworthiness? Intriguingly, previous research shows that people's judgments of the trustworthiness of a face are significantly formed after seeing the face for only 100 ms (Willis and Todorov, 2006). Even when given more time, people do not significantly change their ratings of trustworthiness, although they may feel more confident in their judgments (Willis and Todorov, 2006). So is this evidence that people are slaves to their first impressions when judging trustworthiness? Not necessarily – these studies have only examined trustworthiness judgments based on faces and have not manipulated memory-based information. Therefore, it remains unknown whether trustworthiness judgments are relatively cemented by 100 ms, when both facial information and learned information are available to be processed. Furthermore, Rudoy and Paller's (2009) study shows that some people prefer to use facial information, while others are more likely to draw on the personality trait information when judging trustworthiness. Therefore, it may not be the rate of information processing that determines trustworthiness judgments. Instead, future research may find that an individual difference that predicts preferences for heuristic compared to deliberative processing is a more powerful predictor of trusthworthiness judgments.

Another fruitful next step for neural research on judgments of trustworthiness is to examine how neural processing of different kinds of information is modulated by socioemotional contexts. For example, one implication of Rudoy and Paller's (2009) findings is that the neural regions that represent physical characteristics of a face are more quickly engaged for judgments of trustworthiness than the neural regions that represent learned information. Is this the case or does it depend on the perceptual salience of physical characteristics? One can imagine real-world judgments, where information rather than physical features are more salient. For example, hiring decisions may be made on the basis of salient paperwork (e.g., resumes) and memories of a person's face during a previous interview. In such a case, would the stereotypical trustworthiness of the face still influence judgments in the same manner and show the same rapid neural signature?

A further question is: how familiarity affects judgments of trustworthiness? In other realms of social perception, familiarity modulates both neural and information-processing. For example, there are neural distinctions for making inferences about well-known others (compared to strangers), and for making inferences about strangers who are similar to the self (compared to those who are dissimilar) (Mitchell et al., 2006; Vanderwal et al., 2008). Additionally, people can more quickly access abstract trait information about other people who are close to them (when compared to people they know less well) (Klein et al., 1992). How does familiarity affect the neural and information-processing that contribute to trustworthiness judgments? It may be that the greater accessibility of learned information for familiar others affects the relative timing or engagement of pathways, which process "perceptual" and "memory-based" information for trustworthiness judgments. Future research might manipulate familiarity by including faces of well-known others and strangers, or faces of ingroup and outgroup members.

Rudoy and Paller (2009) contribute to a growing body of research that sets the stage for how perceptual and memory-based information may be processed differently for trustworthiness judgments. This research suggests that, like so many other judgments, both heuristic and deliberative processing contribute to trustworthiness judgments. Our understanding of the neural basis of these dual processes will be deepened by future research examining these processes across different socioemotional contexts.

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