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Social attributions from faces bias human choices

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Our success and well-being, as individuals and societies, depend on our ability to make wise social decisions about important interpersonal matters, such as the leaders we select and the individuals we choose to trust. Nevertheless, our impressions of people are shaped by their facial appearances and, consequently, so too are these social decisions. This article summarizes research linking facial morphological traits to important social outcomes and discusses various factors that moderate this relationship.

Throughout history and across cultures, individuals and societies have maintained the belief that the human face can reveal various aspects of a person's true nature and intentions [1]. So prevalent were these beliefs that some scholars tried to develop a science of 'physiognomy' – a system for identifying personality types, or even criminals, from facial characteristics [1]. Although these attempts were eventually debunked and abandoned within the scientific community [1], the lay belief that faces are 'windows to the soul' has persisted. People continue to draw inferences about the characteristics of others from their facial appearances and these social attributions, in turn, can have important consequences.

The outcomes of our most important social decisions (e.g., which political leaders to elect, which person to marry, etc.) depend on our ability to draw accurate inferences about other people's tendencies, motivations, and qualifications. Unfortunately, these judgments are often influenced by superficial and weakly diagnostic cues. In particular, our impressions of people are heavily shaped by their facial appearances. The face is a rich source of information about a target person's age, gender, ethnicity, and emotional state, yet face-based social inferences also fuel judgments about personality, behavioral intentions, and cognitive abilities [1]. As a result, facial traits can bias human choices. The potential for faces to influence social decisions is illustrated by their ability to predict a wide range of important outcomes.

Face-based social attributions predict real-world outcomes

A large body of research shows that facial appearances predict significant social outcomes in domains as diverse as politics [2–5], law [6–10], business [3,11], and the military [3,12]. Many of these studies find that individuals who

possess particular facial characteristics are more likely to experience desirable outcomes (e.g., winning an election) or avoid undesirable outcomes (e.g., being convicted of a crime) than are their peers who lack these facial attributes. There is strong agreement across individuals when it comes to judging which faces look competent, trustworthy, and so on, and considerable progress has been made in identifying the configurations of facial features that lead to these inferences (Box 1). The literature on face-based inferences and their consequences is too vast to fully cover here, but two broad categories of decisions are worth discussing, given their importance to individual and societal wellbeing.

The first category of biased decisions involves leadership selection and rank attainment. Numerous studies have shown that we form impressions of aspiring leaders from their faces, which in turn predict their success in reaching prestigious leadership positions. In the domain of politics, candidates' chances of electoral success are related to how competent, dominant, sociable, threatening, conservative, and even 'politician-like' their faces make them look [2–5] (Figure 1). Within the domain of business, CEOs whose faces are perceived to look more competent are more likely to be hired by large, successful companies [11], even though they perform no better than their less competent-looking peers [1]. So strong, it seems, is this facial bias, that the CEOs of Fortune 500 companies have more competent-looking faces than other types of leaders [3]. Finally, within the military domain, having a face that is perceived to be dominant-looking predicts rank attainment [3,12].

The second category of biased decisions concerns judgments of trust, guilt, and criminality. Here the evidence shows that people are more likely to trust, and less likely to convict, individuals whose faces are generally perceived to look trustworthy or innocent. Financially, having a face that is perceived to be trustworthy-looking strengthens a person's ability to attract investments and procure loans. One recent study found that potential borrowers on a peer-to-peer lending site were more likely to have their loans funded if they had a trustworthy-looking appearance [13]. This finding is further corroborated by experimental laboratory studies showing that participants in strategic economic games are less willing to trust and invest money in partners who have untrustworthy-looking faces, even when relevant information about their past behaviors is available [14,15].

The implications for the legal system are no less serious because facial appearances predict judgments of criminal guilt. Individuals who have stereotypically criminal-looking faces are more likely to be selected from a police lineup, and thus to face trial [8]. Once on trial, defendants who have untrustworthy-looking faces [9] or faces that fit the

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Box 1. Building models of social attributions from faces

Psychologists have known that there is consensus in social attributions from faces since the early 20th century [1]. Relying on this consensus has been the most common approach to measuring the impressions that faces convey. In a typical study, participants are asked to evaluate faces on the dimension(s) of interest (e.g., competence) and their aggregated judgments are then used to predict an outcome (e.g., electoral success). Alternatively, researchers can preselect faces rated high (vs low) on the dimension(s) of interest and use these faces to study the effects of appearances on decisions in experimental studies.

Recently, new methods have been developed to build computational models of this consensus and visualize the configurations of facial features that lead to specific social attributions [1]. These data-driven methods start with a mathematical representation of facial morphology in which each face is completely characterized by a set of vector coordinates. Using people's evaluations (e.g., of competence, trustworthiness, etc.) of randomly generated faces from this

representation, it is possible to build a facial-morphological model of the social dimension(s) being evaluated. These models visualize the changes in the face that contribute to specific social attributions. Figure I shows a computerized face manipulated to look more (or less) competent, dominant, extroverted, and trustworthy. The changes in the face are holistic – that is, not limited to single features – and capture the systematic variance in social attributions from faces. The trustworthiness model, for example (Figure ID), shows that faces perceived to be trustworthy-looking tend to be feminine and resemble the expression of positive emotions, whereas untrustworthy-looking faces tend to be masculine and resemble the expression of negative emotions. These models can be applied to novel faces, which in turn can be used to experimentally study the biasing effects of facial morphology on social choices. Several research groups have used model-derived faces to demonstrate the causal influence of facial morphology on human decision-making [1,15].
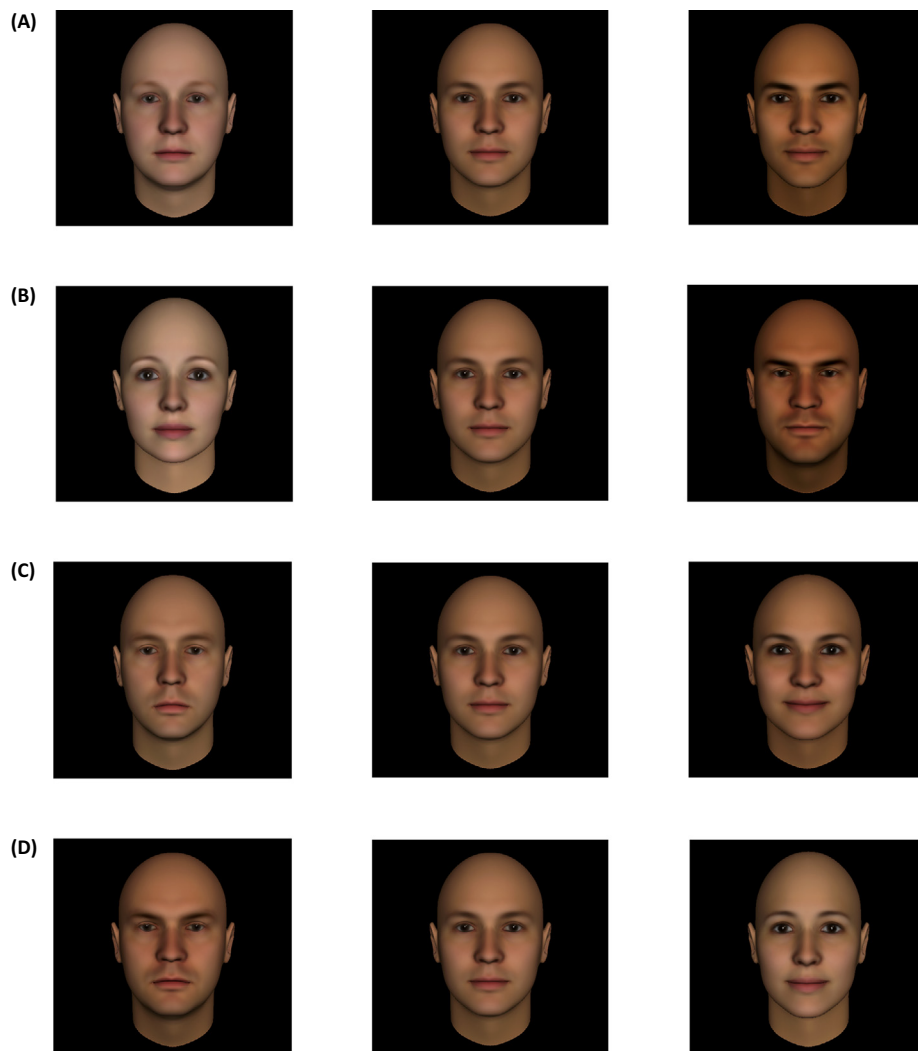

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Figure I. Faces generated by data-driven computational models of evaluations of **(A)** competence, **(B)** dominance, **(C)** extroversion, and **(D)** trustworthiness. The face in the middle column represents an average face in the statistical model. Faces in the right column are 3 standard deviations (SD) above the average face on the respective trait dimension; faces in the left column are 3 SD below the average face on that same dimension [1].