



Beauty stereotypes affect the generalization of behavioral traits associated with previously seen faces

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ABSTRACT

People make split-second inferences about a third person's trustworthiness. It has also been shown that beauty stereotypes govern our social judgments of, and expectations towards, others. In this study, we aim to investigate the effect of positive and negative behavioral descriptions on perceived trustworthiness of male faces varying in attractiveness. We created four categories of faces: attractive and trustworthy faces paired with either positive or negative descriptions, and unattractive and untrustworthy faces paired with either positive or negative descriptions. Furthermore, we generated a composite face from the individual faces within each category (4 composites in total). We applied two conditions: in the first condition, participants saw the stimuli 5 times during the learning phase; in the second, the stimuli were presented only 3 times. We found that stereotype-inconsistent descriptions had a greater effect on Spontaneous Trait Inferences (STI) than stereotype-consistent ones. Furthermore, negative social information affected the STI process more strongly than positive information did. We also revealed a clear learning effect related to the number of stimulus presentations whereby the importance of the social information in trustworthiness decisions increased as did the number of stimulus presentation. These results demonstrate a stereotype-inconsistent effect and the dynamic process of stereotype formation.

1. Introduction

People readily and quickly form impressions of others (Asch, 1946). This process is referred to as spontaneous trait inference (STI), which appears to occur automatically and unintentionally (Uleman, Newman, & Moskowitz, 1996) even when the available cognitive capacity is limited (Todorov & Uleman, 2003). Todorov and Uleman (2002) demonstrated in a previous study that spontaneous trait inferences became closely associated with the observed target who exhibited trait-implicating behavior. Affective valence is most often attached to the stimulus as a result of associative learning mechanisms such as classical conditioning (Bliss-Moreau, Barrett, & Wright, 2008). This latter essentially refers to a procedure in which an emotion-eliciting stimulus (*unconditioned stimulus*; *US*) is repeatedly associated with a neutral stimulus (*conditioned stimulus*; *CS*). After a sufficient number of repetitions, the *CS* will elicit the affective response even when it is not associated with the *US* (Bliss-Moreau et al., 2008; De Houwer, Thomas, & Baeyens, 2001). As a result of evaluative conditioning, however, affective valence of the *CS* (liking or disliking) may change even when it is associated with the *US* only once (De Houwer et al., 2001). Using a brain imaging technique (fMRI), Todorov, Gobbini, Evans, and Haxby

(2007) demonstrated that faces previously associated with descriptions varying in valence (aggressive, disgusting, neutral and likeable) activated different neural networks in the recall phase. In other words, participants needed only one trial to associate the emotion-eliciting social information with the faces seen previously. On the other hand based on the rules of classical conditioning one could expect that the more frequently the *US* is presented with the *CS*, the deeper the learning process and the more resistant the association to extinction (Schmajuk, 2010).

Subsequent studies also revealed that the affective tone associated with individual faces not only affected judgments of the previously seen individuals (Bliss-Moreau et al., 2008) but also the evaluation of those with similar facial features (Gawronski & Quinn, 2013). Participants in these studies preferred composite faces that were generated from individual faces previously associated with a positive stimulus, while they showed aversion to composites generated from faces associated with a negative stimulus (Kocsor & Bereczkei, 2016; Verosky & Todorov, 2010, 2013). In another study, faces previously associated with a positive, negative or neutral stimulus were morphed into individual faces at a 20% or 35% rate. The study revealed that the greater the similarity was between the composite face and the original face, the stronger the effect

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of affective generalization proved (Verosky & Todorov, 2010). However, the affective learning process may also be brought about by means of socially irrelevant stimuli. The effects of affective conditioning were demonstrated by using aversive acoustic stimuli (Jones, Debruine, Little, & Feinberg, 2007) as well as positively and negatively valenced pictures of the IAPS (Kocsor & Bereczkei, 2017).

1.1. The effects of stereotypes on spontaneous trait inferences (STIs)

Similarly to spontaneous trait inferences, stereotypes also serve economical processing of social information based on categorization (McGarty, Yzerbyt, & Spears, 2004; Neuberg & Newsom, 1993). Social psychological theorizing consistently views stereotypes as reflecting prejudice against groups defined by clear criteria (e.g. gender, age, ethnic origin, occupation, physical attractiveness; Hilton & Von Hippel, 1996; McGarty et al., 2004). A Dutch study has revealed that the effectiveness of spontaneous trait inferences largely depends on stereotypes (Wigboldus, Dijksterhuis, & Van Knippenberg, 2003). Social information that is consistent with behavioral expectations based on stereotypes is more readily associated with the target than stereotype-inconsistent information. This is because social categories activate a set of associated traits while preventing access to semantic information inconsistent with the active category (Moskowitz, 1993). Intelligence is more readily associated with a university teacher than with a street cleaner while aggressiveness is more difficult to associate with a lecturer than with a criminal.

In another study, researchers generated faces that participants judged to be stereotypical tokens of various occupational categories (actors, artists, bankers and criminals; Hills, Lewis, & Honey, 2008). In the learning phase, participants saw a label describing an occupation before being presented with each face. The label was either congruent or incongruent with the subsequent category represented by the face. The findings showed that participants more accurately recalled those faces that were preceded by a stereotype-consistent label. Furthermore, semantic information provided by stereotype-consistent labels increased the frequency of false responses to previously unseen faces congruent with these labels (Hills et al., 2008).

Dion, Berscheid, and Walster (1972) were the first to demonstrate that people are biased towards physically attractive individuals. The authors revealed the stereotype “what is beautiful is good” (Dion et al., 1972). This essentially means that individuals with a more attractive appearance are associated with more positive personality traits and more successful life outcomes (Dion et al., 1972; Langlois et al., 2000). A few decades later, researchers also revealed effects of the stereotype “what is ugly is bad” reflected in the finding that people judge individuals with an unattractive face to be less sociable, altruistic and intelligent compared to more attractive individuals (Griffin & Langlois, 2006). In a similar vein, Fink and colleagues found that adult participants judged women with a more symmetrical face to be significantly more attractive, healthier, more intelligent and even emotionally more balanced than women with a less symmetrical face (Fink, Neave, Manning, & Grammer, 2006). Finally, a study based on an experimental game revealed that more attractive players evoked more positive emotions in observers and that attractive cooperators received greater rewards while attractive defectors were less severely punished than less attractive players (Putz, Palotai, Csertő, & Bereczkei, 2016).

The aim of the present study is two-fold. First, we aimed to reveal the effects of stereotype-consistent (SC) and stereotype-inconsistent (SIC) behavioral descriptions on the perceived trustworthiness of previously unseen faces. As opposed to previous studies, however, in which occupational categories were used to reveal the effects of stereotypes (Hills et al., 2008; Wigboldus et al., 2003), we aimed to test the effects of beauty stereotypes and the associated semantic information by using faces differing in attractiveness. To this end, we presented participants with four different types of stimuli: i) attractive faces with positive descriptions (SC), ii) attractive faces with negative descriptions (SIC),

iii) unattractive faces with positive descriptions (SIC) and iv) unattractive faces with negative descriptions (SC). In accordance with previous findings, we predicted that stereotype-consistent descriptions would have a stronger effect on the perceived trustworthiness of the faces than stereotype-inconsistent information. More specifically, our hypothesis was that positive descriptions would increase the perceived trustworthiness of attractive faces more than that of unattractive faces and, similarly, negative descriptions would decrease the perceived trustworthiness of unattractive faces more than that of attractive faces.

Second, this study was aimed at examining the generalization effect of social and stereotypical (attractiveness-related) information. To this end, participants were divided into two experimental groups in the learning phase: the social information associated with each face was presented 5 times in one group while only 3 times in the other group. We aimed to test two specific hypotheses. First, we predicted that the more frequently participants were exposed to the experimental manipulation, the greater effect the valence of the social information would have on STIs. More specifically, we predicted that participants who saw the stimuli 5 times would judge the faces paired with positive descriptions to be more trustworthy and the faces paired with negative descriptions less trustworthy than participants who saw the stimuli only 3 times. Second, we hypothesized in relation to the generalization phase of the experiment that participants exposed to the stimuli 5 times would rely more on the valence of the social information whereas those presented with the stimuli only 3 times would rely more on the beauty stereotypes when choosing the more trustworthy composites.

2. Method

2.1. Development of the stimulus material

2.1.1. Validation of the faces

2.1.1.1. *Participants.* The portraits were rated by 53 first-year students of psychology at the University of Pécs, Hungary, including 15 males (age: $M = 19.89$, $SD = 1.034$) and 38 females (age: $M = 21.13$, $SD = 1.685$).

2.1.1.2. *Stimulus material.* The 16 portraits used in the study were selected from a set of 50 Caucasian male portraits used in a previous study (Meskó, 2007). Each of the 50 faces were successively presented to participants by means of the Microsoft™ Powerpoint™ software.

2.1.1.3. *Procedure.* Participants rated the attractiveness and trustworthiness of each face on a 9-point Likert scale for each dimension (1 = extremely unattractive/untrustworthy; 9 = extremely attractive/trustworthy). Each face was displayed on the screen for 12 s.

2.2. Results

A medium correlation was found between perceived attractiveness and trustworthiness of the faces (Spearman's $\rho = 0.638$; $p < 0.001$). Those faces were sorted into the attractive category whose mean scores of attractiveness and trustworthiness fell into the upper 25% of mean ratings on each dimension (attractiveness score > 4.14 ; trustworthiness score > 4.99). Those faces were sorted into the unattractive category whose mean scores of attractiveness and trustworthiness fell into the lower 25% of mean ratings on each dimension (attractiveness score < 2.62 ; trustworthiness score < 3.88). In this way, 11 faces were sorted into each category, from which we randomly selected the 8 attractive and trustworthy male faces and the 8 unattractive and untrustworthy male faces used in the study.

2.3. Validation of the behavioral descriptions

The behavioral descriptions were adopted from a previous study (see Kocsor & Bereczkei, 2016). These descriptions are statements about

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