

# Affective reactions to pictures of ingroup and outgroup members

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## Abstract

A pervasive form of social categorization among humans is between *us* and *them*. In this study, we assessed emotional reactions when people viewed pictures depicting members of the same or different ethnic group. African American and European American participants viewed a series of pleasant and unpleasant pictures portraying either ingroup or outgroup members, while physiological, behavioral, and evaluative judgments were measured. Two hypotheses were assessed. The *outgroup antipathy* hypothesis predicts that people will respond to outgroup pictures with more negative affect than to ingroup pictures. In contrast, the *ingroup empathy* hypothesis predicts that people will show exaggerated (pleasant and unpleasant) affective responses to pictures of ingroup members, due to group identification or personal relevance. The data provided no support for the antipathy hypothesis, whereas facial EMG, skin conductance, rating, and viewing time data lent support to the ingroup empathy hypothesis, in which greater pleasure and displeasure were apparent when viewing ingroup pictures. © 2005 Elsevier B.V. All rights reserved.

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## 1. Affective reactions to pictures of ingroup and outgroup members

One of the most pervasive forms of categorization among humans is the distinction between *us* and *them*. People generally view ingroup members, i.e., “us”, more positively than outgroup members, i.e., “them”, and also allocate more rewards to the ingroup, compared to the outgroup (Tajfel, 1978). This occurs when participants are divided into groups arbitrarily in the laboratory (Tajfel, 1978) as well as when group membership is based on longstanding cultural or social relations (Judd et al., 1995). When conflict exists between groups, perceptions of outgroup members become negative, with the result that people will mete out detrimental consequences to outgroup members (Sherif et al., 1954). Even when people seem to perceive and treat ingroup and outgroup members in an even-handed manner, this equality often only exists when people can consciously control their responses, with implicit responses still revealing a bias towards ingroup members (Devine, 1989).

In this study, we used the affective picture paradigm to study emotional reactions to ingroup and outgroup

members among African American and European American participants. All participants viewed a series of pleasant and unpleasant pictures that depicted Black<sup>1</sup> or White people while physiological and behavioral measures were recorded. Previous studies using the picture viewing paradigm have found specific physiological responses that covary with pleasure and arousal ratings (e.g., Lang et al., 1993), with increased corrugator EMG activity (i.e., frowning) and potentiated startle responses (i.e., eyeblink) when viewing unpleasant pictures, and heightened zygomatic EMG activity (i.e., smiling) and attenuated startle responses when viewing pleasant pictures. For both types of affective pictures, increased skin conductance responses (i.e., sweating) are obtained, compared to neutral pictures (Bradley and Lang, 2000). In the current study, corrugator and zygomatic EMG, skin conductance, heart rate, and the startle reflex were measured to assess affective reactions when African American and European American participants viewed pictures of ingroup and outgroup members.

<sup>1</sup> Throughout this manuscript, we will use the terms “African American” and “European American” to refer to the *participants* in this study, and the terms “Black” and “White” to refer to IAPS *pictures* that depict people from different ethnic groups.

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Previous data are somewhat equivocal regarding affective reactions to ingroup and outgroup stimuli. For instance, Roberts et al. (2000) did not find differences in cardiovascular and electrodermal activity when film stimuli were ethnically matched to the participant, whereas Roberts and Levenson (2002) found partial support for the role of ethnic matching during film viewing on self-reported responses and emotional behavior. Some neuroimaging research reveals that people display greater fusiform activity in response to facial pictures of members of their own ethnic group, compared to those of another ethnic group (Golby et al., 2001), while other research finds that (prejudiced) people display more right dorsolateral prefrontal cortex activity in response to outgroup pictures (Richeson et al., 2003).

We examined two hypotheses regarding people's responses to pictures of their own, compared to another, ethnic group. On the one hand, intergroup relations are often characterized by negative emotion towards outgroup members (Hamilton, 1981; Stephan and Stephan, 1985). Consequently, one prediction is that people respond to unpleasant pictures of a different ethnic group more strongly (e.g., greater corrugator activity and larger startle responses) than to unpleasant pictures of their own ethnic group and that, conversely, responses to pictures depicting pleasant outgroup events will be attenuated (e.g., less zygomatic activity, less inhibition of the startle reflex). We will refer to this as the *outgroup antipathy hypothesis* in which affective reactions to unpleasant pictures of outgroup members are accentuated, whereas reactions to pleasant pictures of outgroups members are attenuated.

On the other hand, rather than reacting differently to outgroup members, some suggest that people are more reactive to ingroup members, perhaps through better identification on the basis of personal relevance (Smith, 1993). According to this hypothesis, people will show exaggerated affective responses when viewing pictures depicting ingroup members (see Batson et al., 1995; Houston, 1990), reacting with more displeasure to unpleasant pictures and more pleasure to pleasant pictures. We will refer to this as the *ingroup empathy hypothesis*, speculating that this pattern may be mediated by an empathetic response.

In this study, we were also able to assess general physiological differences that might exist between darker pigmented people and lighter pigmented people. Generally, previous studies have found that relative to lighter skinned people, darker skin is associated with higher skin resistance and lower skin conductance levels (Lieblich et al., 1973; Malmö, 1965; Johnson and Corah, 1963; Korol and Kane, 1978). Whether these tonic differences translate into differences in phasic response is equivocal. Some studies have found ethnic differences in electrodermal reactions (Davis and Cowles, 1989; Fredrikson, 1985; Korol et al., 1977; Korol et al., 1975), whereas others have not (Bernstein, 1965; Fisher and Kotses, 1973; Johnson and Corah, 1963)—particularly after controlling for baseline levels (Morrell et al., 1988; Vrana and Rollock, 2002). In addition, Tsai et al. (2002)

found both inter- and intraethnic differences in facial expressivity, and Matsumoto (1993) suggests that African Americans are more facially expressive than European Americans. Our design allowed assessment of physiological responsivity for African American and European American participants as they looked at pictures in the current study.

## 2. Method

### 2.1. Participants

Eighty-seven students from the General Psychology course subject pool at the University of Florida were participants. The final sample included 43 African American (22 female and 21 male) and 40 European American (20 female and 20 male) students. Two African American male participants were paid for their participation while all other students received partial course credit for their participation in the study. Four students (two female and two male) were either Latino/Latina ( $n = 2$ ), Egyptian ( $n = 1$ ) or had parents of different ethnicities ( $n = 1$ ) and consequently, were excluded from further analyses. The modal age of students was 18 and 70% of the students were 18 or 19 years of age. Ninety-eight percent of them ranged from 17 to 25 years of age, while 2% were outside of this age range (i.e., they marked “other”).

### 2.2. Measures

At the beginning of the semester, African American students completed the centrality subscale of the Multi-dimensional Inventory of Black Identity (MIBI) (Sellers et al., 1997) as part of a larger battery of questions completed for course credit. This subscale measures the strength of their ethnic identity. A sample item is “In general, being Black is an important part of my self-image.”

### 2.3. Stimuli and design

Pictures were selected from the International Affective Picture System (CSEA, 2001) that depicted: (1) Black people; (2) White people and (3) animals and objects.<sup>2</sup> Pairs

<sup>2</sup> Set 1 included IAPS numbers 9190, 6510, 2410, 1610, 2095, 3130, 4606, 8497, 2357, 1930, 6241, 4624, 2501, 7207, 1300, 8010, 2395, 4677, 2715, 3266, 3530, 8501, 1440, 8060, 2500, 7211, 6800, 2216, 5731, 6830, 8380, 1460, 6243, 3015, 2030, 2360, 6610, 7020, 4310(m)/4500(f), 2271, 7270, 2270, 2375.1, 4250(m)/4520(f), 2595, 7160, 1050, 2722, 5531, 4004(m)/4534(f), 2310, 8500, 3051, 2372, 2276, and 2341 where “(m)” indicates the picture for male participants and “(f)” indicates the picture for female participants. Set 2 included IAPS numbers 5731, 5531, 4503(f)/4001(m), 3120, 6610, 6311, 1930, 2304, 2540, 8501, 9070, 2661, 2280, 8540, 6800, 2311, 4537(f)/4220(m), 8500, 7207, 2499, 3500, 2303, 1050, 2375, 3170, 2590, 6314, 1610, 8050, 1460, 6010, 2516, 7211, 8232, 3261, 2399, 4610, 7270, 2299, bmnude(f)/4002(m), 1300, 6244, 2455, 8490, 2480, 4676, 3230, 4625, 1440, 7160, 7020, 6241, 9409, 4622, 2394, and 9265. Because there was no erotic picture of a Black male in the IAPS, we used a non-IAPS picture that we labeled bmnude.

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