AMERICAN PSYCHOLOGICAL ASSOCIATION

Journal of Experimental Psychology: General

ISSN: 0096-3445

2024, Vol. 153, No. 11, 2789–2809
https://doi.org/10.1037/xge0001597

Impact of Duchenne and Non-Duchenne Smiles on Perceived Trustworthiness of Black and White Faces: A Black Perspective

Kerry Kawakami[1], Chanel Meyers[1, 2], and Justin P. Friesen[3]
[1] Department of Psychology, York University
[2] Department of Psychology, University of Oregon
[3] Department of Psychology, University of Winnipeg

In five experiments, we investigated how Black participants perceive Duchenne and non-Duchenne smiles on Black and White targets. Results consistently demonstrated that when assessing happiness, faces with Duchenne compared to non-Duchenne smiles were rated as happier on both Black and White targets. However, when assessing a more socially evaluative dimension, trustworthiness, perceptions of Black and White targets diverged. Whereas White targets with Duchenne compared to non-Duchenne smiles were rated as more trustworthy, ratings of Black targets with Duchenne and non-Duchenne smiles did not differ, with both appraised as highly trustworthy. Although the degree to which Black participants identified with their race did not moderate these effects, the perceived genuineness of targets did mediate the relationship. One reason why Duchenne compared to non-Duchenne smiles on White but not Black targets were perceived as more trustworthy is because Duchenne compared to non-Duchenne smiles on White but not Black targets were perceived as more genuine. A final study extended these findings by exploring the impact of target race and smile type on partner choice. In accordance with the results related to trustworthiness ratings, Black participants selected White partners with Duchenne compared to non-Duchenne smiles more often but did not differentiate in their choice of Black partners with Duchenne versus non-Duchenne smiles. These findings underscore the importance of investigating not only diverse targets but also diverse perceivers. Our results suggest that Black perceivers use facial cues differently when rating the trustworthiness of Black and White targets and that these perceptions have important downstream consequences.

Public Significance Statement

Given the lack of representation in the face-processing literature, researchers have recently been called upon to go beyond White participants and include other racial groups when investigating how people form impressions from facial cues. The primary goal of the present research was, therefore, to examine how Black perceivers are impacted by emotional cues in perceptions of happiness and attributions of trustworthiness to White and Black faces. Our findings indicate that Black perceivers were impacted by even subtle cues related to Duchenne and non-Duchenne smiles on both Black and White targets when assessing happiness. However, when assessing trustworthiness, these participants differed in their ratings of Duchenne and non-Duchenne smiles on White but not Black targets. Furthermore, our findings indicate that these perceptions can have important consequences for our willingness to interact with members of different racial groups. With growing racial tension and intergroup conflict, it is especially important that future research develops a deeper, more thoughtful understanding not only of White peoples' perceptions of key characteristics such as trustworthiness on White faces, as well as other racial faces, but also other racial groups' perceptions of these faces.

Keywords: intergroup relations, face processing, emotion recognition, trustworthiness, smiles

This article was published Online First May 2, 2024.
Sarah Gaither served as action editor.
Chanel Meyers https://orcid.org/0000-0002-7755-5413
Parts of this article have been presented in 2023 at the Kendon Smith Lecture Series, University of North Carolina Greensboro, Greensboro, North Carolina, United States, and the Nonverbal Communication Preconference of the Society for Personality and Social Psychology, Atlanta, Georgia, United States. Access to the data and preregistrations can be found at https://osf.io/rhq64/.

Kerry Kawakami and Chanel Meyers contributed equally as cofirst authors. Chanel Meyers served as lead for data curation and formal analysis. Justin P. Friesen served in a supporting role for conceptualization, investigation, methodology, and writing–review and editing. Kerry Kawakami and Chanel Meyers contributed equally to conceptualization, methodology, writing–original draft, writing–review and editing, and investigation.

Correspondence concerning this article should be addressed to Kerry Kawakami, Department of Psychology, York University, 4700 Keele Street, Toronto, ON M3J 1P3, Canada, or Chanel Meyers, Department of Psychology, University of Oregon, 1227 University Street, Eugene, OR 97403, United States. Email: kawakami@yorku.ca or chanelm@uoregon.edu

Imagine an initial brief encounter with a stranger. Is this person trustworthy? How should I engage with them? Should we become friends? Research demonstrates that one way to infer important characteristics such as trustworthiness is to use facial cues. For example, we can attend to their emotional expressions. However, would these cues influence our impressions in the same manner if the target person is Black versus White? Would it make a difference if the perceiver (you in this case) is Black versus White? Furthermore, how would these factors impact attributions of trustworthiness?

Traditionally, research on face perception has focused primarily on White targets and White perceivers (Roberts et al., 2020; Thomas et al., 2023). More recent research, however, has highlighted the importance of race when forming impressions—demonstrating that the race of the target (the person being evaluated) can have a significant impact on how this process unfolds (Karmali & Kawakami, 2023; Kawakami et al., 2020, 2022). Although the literature on face perception in an intergroup context, which includes targets of different races, is relatively small (Kawakami et al., 2017), perceivers (the person doing the evaluating) in this research are predominantly White, with few studies examining how Black people or members of other racialized groups respond to facial cues on White, Black, or other racialized targets (Oswald & Adams, 2023). Furthermore, even when researchers investigate responses by racialized participants, they are often advised to include a White comparison group, shifting the focus away from responses by the target group to how responses differ from a White perspective (Buchanan et al., 2021; Graham, 1992; Roberts, 2022).

Although understanding how people form impressions of others is essential to comprehending and improving interpersonal and intergroup relations, to fully appreciate this process, research must not only consider the facial features of the target but also the characteristics of the perceiver (Freeman & Ambady, 2011). This is especially important in an intergroup context and with critical impressions such as trustworthiness (Bar-Tal & Alon, 2016; Halabi et al., 2021; Tropp, 2008). Facial trustworthiness is a key dimension in person perception and predicts critical social outcomes (Oosterhof & Todorov, 2008; Todorov, 2017; Todorov & Oh, 2021). Furthermore, mistrust of outsiders is a core, perhaps universal, driver of intergroup conflict (Brewer, 2001). The primary goal of the present research was to investigate in five experiments how emotional cues (i.e., Duchenne and non-Duchenne smiles) impact Black perceivers' perceptions of happiness and attributions of trustworthiness to White and Black faces.

Facial Cues Related to Trustworthiness

The human face is arguably the most important of all social stimuli because people use facial features, momentary emotional expressions, and a multitude of other cues provided by the face to form relatively stable impressions of others (Freeman & Ambady, 2011; Kawakami et al., 2017; Todorov, 2017). Furthermore, these first impressions can have important downstream consequences by determining how we respond to others (Adams & Kleck, 2005; Hugenberg & Wilson, 2013; Niedenthal & Brauer, 2012).

Facial trustworthiness, along with dominance, is one of two key dimensions when forming social impressions (Jones et al., 2021; Oosterhof & Todorov, 2008; Todorov, 2017), and research has demonstrated that people can infer a target's trustworthiness from subtle expressions within milliseconds (Todorov et al., 2009; Willis & Todorov, 2006). Furthermore, perceiver consensus is high when it comes to judging trustworthiness from faces (Hehman et al., 2017; Rule et al., 2012). Although there is mixed evidence as to whether facial appearance related to trustworthiness is predictive of actual trustworthiness in interpersonal contexts (Krumhuber & Kappas, 2022; Porter & ten Brinke, 2008; Todorov et al., 2015), there is no denying the social outcomes of perceptions of trustworthiness. They have been associated with a range of consequences, including affiliative and prosocial behaviors, ingroup inclusion, responses in strategic economic games, judicial sentencing decisions, voting, and higher pay (Chang et al., 2010; Fruhen et al., 2015; Olivola et al., 2014; Porter et al., 2010; Slepian et al., 2017; Stirrat & Perrett, 2010; Sutherland et al., 2020; Thierry & Mondloch, 2021; Todorov et al., 2015; R. E. Tracy et al., 2020; Wilson & Rule, 2015), to name just a few.

Researchers have explored not only the implications of perceived trustworthiness but also what characteristics make a face look trustworthy—what expressions and facial configurations create an impression of trustworthiness (Todorov, 2017). Using a variety of techniques including reverse correlation and mathematical modeling, meaningful combinations of features have been shown to predict perceived trustworthiness (Dotsch & Todorov, 2012; Todorov & Oosterhof, 2011). Specifically, relative to untrustworthy faces, trustworthy faces tend to have larger, rounder eyes, a larger mouth with slightly upturned corners, a larger forehead, and a shorter chin (Kleisner et al., 2013; J. L. Tracy et al., 2020).

Notably, certain emotional expressions have also been associated with perceptions of trustworthiness (Fang et al., 2018; Feinberg et al., 2012; Oosterhof & Todorov, 2008). For example, Duchenne compared to non-Duchenne smiles have been linked to trustworthiness. Whereas Duchenne smiles involve muscle movements around both the mouth (i.e., zygomatic major) and eyes (i.e., orbicularis oculi, the Duchenne marker), non-Duchenne smiles involve the activation of major muscles around the mouth without the Duchenne marker (1862/1990; Duchenne de Bologne, 1862; Ekman & Friesen, 1982). Although faces expressing Duchenne compared to non-Duchenne smiles are typically perceived as happier (Krumhuber & Kappas, 2022; Messinger et al., 2008; Miles & Johnston, 2007), researchers have also found that faces expressing Duchenne compared to non-Duchenne smiles are rated as significantly more trustworthy (Calvo et al., 2019; Johnston et al., 2010; Krumhuber et al., 2007). These findings are consistent with a past meta-analysis based on the results from 22 articles that included 2,981 participants and 30 independent effect sizes (Gunnery & Ruben, 2016). Specifically, the meta-analysis demonstrated that Duchenne smiles were more associated with positive traits (such as trustworthiness) than non-Duchenne smiles (with a random effects mean effect size of $r = .51$ and a fixed effects mean effect size of $r = .34$).

Perceiving Trustworthiness in an Intergroup Context

A notable limitation in the literature on face processing, however, is that it has not fully considered target and perceiver social identities (Jones et al., 2021; Oswald & Adams, 2023; Thomas et al., 2023; Xie et al., 2021), with studies focusing primarily on White targets and White perceivers. This is a problem because the universality of these models has been challenged and the extent to which the current findings generalize to other target groups and participant populations is questionable (Friesen et al., 2019; Hugenberg &

Bodenhausen, 2003, 2004; Jones et al., 2021; Kawakami et al., 2022; J. L. Tracy et al., 2020).

In this vein, it is important to note that impressions of others are determined both by bottom-up characteristics related to the physical features of the target as well as by top-down characteristics related to the motives and expectancies of the perceiver (Freeman & Ambady, 2011; Hehman et al., 2017; Kawakami et al., 2017). For example, whether targets are judged as trustworthy may be influenced not only by their emotional expressions but also by the experiences or cultural knowledge of the perceiver (Xie et al., 2021). Therefore, to fully understand how impressions are formed, one must consider target-level factors, perceiver-level factors, the interplay between these factors, and the specific judgments being made (e.g., happiness vs. trustworthiness).

Intergroup research on emotion identification has demonstrated that responses to targets from different racial groups can differ. For example, research by Hugenberg and Bodenhausen (2003, 2004) indicated that White participants perceived anger appearing sooner and lingering longer on the faces of Black compared to White targets. Furthermore, even though past research (Friesen et al., 2019) has shown that White participants rated Duchenne smiles as happier than non-Duchenne smiles on both White and Black faces, the difference in their ratings of these expressions was larger for White compared to Black faces.

Despite the fact that research, in general, has shown that people are sensitive to subtle variations in facial expressions on targets when identifying emotions (e.g., happiness; Friesen et al., 2019; Keltner & Bonanno, 1997; Miles & Johnston, 2007), top-down factors such as the race of the perceiver may uniquely impact how people form impressions of targets of different races. Furthermore, whereas top-down experiences of Black perceivers may be less consequential in the identification of emotional expressions, such as happiness, they may significantly impact attributions of trustworthiness. Because emotional expressions related to Duchenne and non-Duchenne smiles are based on a few facial action units more directly associated with happiness than trustworthiness (Ekman & Friesen, 1982; Ekman et al., 2002) and because trustworthiness is more evaluative in nature (Vazire, 2010; Vazire & Carlson, 2011), and considered to be a core personality dimension (Oosterhof & Todorov, 2008; Todorov, 2017; Todorov & Oh, 2021), people may be more influenced by social motivations and other top-down factors in their ratings of trustworthiness compared to happiness. Specifically, Black participants may be especially likely to make different inferences based on facial expressions about the quality of character of the target, such as trustworthiness, depending on whether the target is Black or White.

Moderators and Mediators of Perceived Trustworthiness

Not surprisingly, racialized experiences between groups can give rise to racial differences in how people think, feel, and behave (Bonilla-Silva, 2014; Goodman, 2000; Kendi, 2017; Pauker et al., 2018). These experiences, related to the social resources of the perceiver, being subjected to discrimination, interracial contact, and social norms, can influence a range of psychological phenomena, including the visual processing of faces and emotion identification (Roberts et al., 2020).

A large literature indicates that, due to their lived experiences, Black people may learn to approach interracial interactions with distrust, anxiety, and suspicion (Cohen & Steele, 2002; Shelton, 2000; Swim et al., 1998; Tropp, 2008). Notably, when an outgroup is perceived to pose a threat (Dickter et al., 2015; Donders et al., 2008; Richeson & Trawalter, 2008; Trawalter et al., 2008), people become more attuned to the emotional expressions on faces of members of that group. In addition, research has demonstrated that Black people are not only vigilant toward negative behavior by White people but also toward their positive responses. For example, minorities may be vigilant toward smiles by majority group members because these members may be believed to be acting nicer than normal (Bergsieker et al., 2010; Harber, 1998; Harber et al., 2012) or potentially hiding racial prejudice (Major et al., 2013, 2016).

For example, Kunstman et al. (2016) found that Black participants, who were suspicious that White people's positive overtures were more motivated by concerns about appearing nonprejudiced rather than being nonprejudiced, perceived non-Duchenne smiles on White but not Black targets as more threatening. Furthermore, these researchers found that Black but not White participants, who were more suspicious of White peoples' motives, were better at distinguishing between Duchenne and non-Duchenne smiles on White targets. Together, these findings suggest that Black people's beliefs about White people can influence the extent to which they attend to and are influenced by cues on the faces of White targets.

Alternatively, when Black participants are instructed to judge the trustworthiness of Black targets, they may be less suspicious about the targets' motives and less vigilant when monitoring their facial cues. They, therefore, may be less likely to be impacted by these cues when assessing highly evaluative traits such as trustworthiness. For example, research has demonstrated that groups that have suffered discrimination may have higher levels of ingroup trust, even when presented with obvious untrustworthiness cues (Rotella et al., 2013). Together, these findings suggest that although Black participants may be vigilant toward White targets if they are not confident that majority group members are worthy of their trust (L. M. Brown & Dobbins, 2004; Cohen & Steele, 2002), they may assume that Black targets are trustworthy until proven otherwise.

For Black North Americans, past experiences with both Black and White people may impact their perceptions of trustworthiness of not only White targets but also Black targets and the use of facial cues in these judgments. While Kunstman et al. (2016) examined Black participants' suspicions about the motives of White people, with a primary focus on White targets, another top-down perceiver characteristic that may influence the use of affective facial cues by Black participants when forming impressions of racial targets is racial identification (Sellers et al., 1997).

A secondary goal of this research was to explore the extent to which being Black is a core component of an individual's self-concept and predicts the use of bottom-up stimuli-based cues related to Duchenne and non-Duchenne smiles in judgments of trustworthiness. Although racial identification may not be related to the use of facial cues for White targets, it may be the case with Black targets. Because identifying strongly with a Black racial identity is inherently tied to an awareness of discrimination and subjugation in society (Neville & Cross, 2017) and because a sense of shared fate and destiny with other Black people, due to their positionality in social and historical contexts within the United States, can increase the extent to which targets are perceived as Black (Dawson, 1995; Ho et al., 2017), it is possible that racial identification can impact the use of cues when attributing trustworthiness. Specifically, Black participants who rate being Black as more central to their identity may rely less on facial

features related to Duchenne and non-Duchenne smiles when judging Black targets and perceive a higher level of trustworthiness in general for ingroup targets (Scheepers et al., 2006). Alternatively, Black participants who rate being Black as less central to their identity may rely more on Duchenne and non-Duchenne smiles when assessing the trustworthiness of Black targets.

Top-down perceiver experiences may also influence the perceived genuineness of Duchenne and non-Duchenne smiles by Black participants, which in turn may impact trustworthiness ratings. In general, research related to primarily White targets and White perceivers has associated Duchenne smiles not only with the perception of positive emotions, such as joy and happiness, but also with genuineness and authenticity (Krumhuber & Kappas, 2022). In particular, these smiles are associated with conveying accurate and honest information (W. M. Brown et al., 2003; Frank et al., 1993; Krumhuber et al., 2007; Sheldon et al., 2021; Zaalberg et al., 2004; Zahavi, 1975). Non-Duchenne smiles, in contrast, are associated with more variable meanings and are thought to imply forced or insincere feelings or signs of appeasement (Ekman, 2006; Quadflieg et al., 2013; Rychlowska et al., 2014, 2017; Young et al., 2015). These smiles may be perceived to be regulated (e.g., a polite smile) rather than a reflection of a genuine emotion. Because authentic expressions are judged to be more trustworthy (Slepian & Carr, 2019), it is not surprising that, in general, research that focuses on primarily White participants and target groups has found that faces depicting Duchenne compared to non-Duchenne smiles are rated as more trustworthy (Calvo et al., 2019; Johnston et al., 2010; Krumhuber et al., 2007).

However, given the past experiences of Black Americans with both Black and White people, it is possible that they perceive the genuineness of Duchenne and non-Duchenne smiles differently on Black and White targets. Whereas Black people may rely on Duchenne markers on White targets to assess whether a person is being genuine, they may be less affected by these cues on Black targets and assume that smiles on ingroup faces are genuine. In short, although based on the literature related to predominantly White perceivers and White targets, general expectations are that Duchenne compared to non-Duchenne markers are associated with perceptions of true emotions, genuineness, and authenticity, these assumptions may be more specific to these perceiver and target groups than the perceptions of Black perceivers. Furthermore, if Black perceivers associate genuineness with Duchenne compared to non-Duchenne smiles more for White than Black targets, these perceptions would be expected to better predict trustworthiness ratings for White than Black targets.

Current Experiments

Perceptions of trustworthiness and untrustworthiness play a large role in intergroup contexts (Bar-Tal & Alon, 2016; Bergsieker, 2012; Halabi et al., 2021; Lloyd et al., 2017; Tropp, 2008). Because distrust between racial and ethnic social categories fuels much of the conflict and apprehension between groups (Campbell, 1967; Tropp & Prenovost, 2008), understanding the process of attributions of trustworthiness on Black and White faces is essential to improving race relations. However, given the importance of characteristics related not only to targets but also perceivers and the interplay between these factors, it is critical to investigate the responses of not only White perceivers, as was the norm in the past, but also Black perceivers. In line with this reasoning, researchers have recently argued that the perspectives of marginalized group members as participants are severely underrepresented in the social vision literature and their inclusion is necessary to make theoretical advances (Oswald & Adams, 2023; Thomas et al., 2023). The goals of the present research, therefore, were to examine how Black perceivers are impacted by emotional cues (e.g., Duchenne and non-Duchenne smiles) in perceptions of happiness and attributions of trustworthiness to White and Black faces and one potential moderator and mediator of these effects.

Specifically, in Experiment 1, Black participants were presented with images of Black and White targets depicting subtle differences in smiles and asked to rate the happiness and trustworthiness of the targets in two separate tasks. In a second set of studies, rather than rating both types of racial faces with Duchenne and non-Duchenne smiles, Black participants were randomly assigned to rate the happiness and trustworthiness of either White faces (Experiment 2a) or Black faces (Experiment 2b). This design was used to examine whether a similar pattern would occur when presented with members of only one race. Because Black participants may be reluctant to judge any Black target in a context with both Black and White targets as untrustworthy (Rotella et al., 2013), it is possible that when evaluating only Black targets, they may be more amenable to distinguishing between Black targets with Duchenne and non-Duchenne smiles. In Experiment 3, we examined the moderating role of racial identity, and in Experiment 4, we explored one potential mediator of attributions of trustworthiness of faces with Duchenne and non-Duchenne smiles, perceived genuineness. A final goal of this research was to extend our findings beyond ratings of trustworthiness to examine the implications of affective cues on White and Black targets for interpersonal behavior in a partner choice paradigm (Aron et al., 1997; Karmali & Kawakami, 2023; Kawakami et al., 2014). Specifically, in Experiment 5, Black participants were presented with two Black and two White targets, with one face from each race depicting either a Duchenne or non-Duchenne smile, and instructed to choose their preferred partner for an upcoming self-disclosure task. By asking participants to choose the more trustworthy face from multiple Black and White faces, this task was expected to reduce Black participants' reluctance in judging a particular Black target as untrustworthy in the context of White faces. Specifically, when choosing a Black partner, it will be telling whether Black participants differentially select a partner with a Duchenne or non-Duchenne smile.

The present research is among the first to examine how Black perceivers infer happiness and trustworthiness from facial expressions on Black and White targets and to explore one possible moderator (racial identity) and mediator (perceived genuineness) that impact this process. Our goal is to respond to recent exhortations to investigate how effects that were previously assumed universal operate within diverse populations (Hehman et al., 2021; Henrich et al., 2010; Roberts et al., 2020). Using both trait ratings and partner choices, as well as a large and diverse set of facial images, this research has the potential to contribute to our knowledge of face processes and perceptions of happiness and trustworthiness in an intergroup context.

Transparency and Openness

We report how we determined our sample size, all data exclusions, manipulations, and measures for each study. Please refer to the author note for a link to the data of all studies. Research materials are available upon request from the authors. The design, hypotheses, and analysis plan were preregistered for Experiment 4. All studies received ethics approval from the Research Ethics Board of York University.

Experiment 1

The goal of the first study was to investigate Black participants' perceptions of Duchenne and non-Duchenne smiles on White and Black faces. This experiment extends the findings of previous research by focusing on ratings of happiness and trustworthiness by a racial minority in an intergroup context. Based on previous research on emotion identification (Friesen et al., 2019), we expected that Black participants would rely on bottom-up cues and rate Duchenne compared to non-Duchenne smiles on White and Black targets as happier. Specifically, for relatively nonevaluative ratings of happiness, we expected that participants would use facial expressions. In contrast, we were uncertain about how these cues would be used in ratings of trustworthiness. Although research with predominantly White targets and White participants has demonstrated that Duchenne compared to non-Duchenne smiles are rated as more untrustworthy (Gunnery & Ruben, 2016; Johnston et al., 2010; Krumhuber et al., 2007), it is unclear how Black participants rate White and Black targets on this dimension. Whereas Black participants may rely more on smile cues when rating the trustworthiness of ingroup Black faces than White faces, it is also possible that they rely less on these cues and assume more trustworthiness of their own race in general in this context.

Method

Participants and Design

To maximize power, we chose a 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) within-subject design. Although we recruited 83 Black undergraduates who received course credit for completing the study, the data from 10 students were dropped from the analyses because they reported recognizing target faces included in the experiment, leaving a total of 73 (64 women, nine men, $M_{age} = 22.78$ years, $SD = 4.68$) participants. A sensitivity analysis using G*Power (Faul et al., 2007, 2009) indicated that our sample had 0.80 power to detect a Target Race × Smile Type interaction for trustworthiness ratings with an effect size of $\eta_p^2 = .04$ (observed interaction, $\eta_p^2 = .06$).

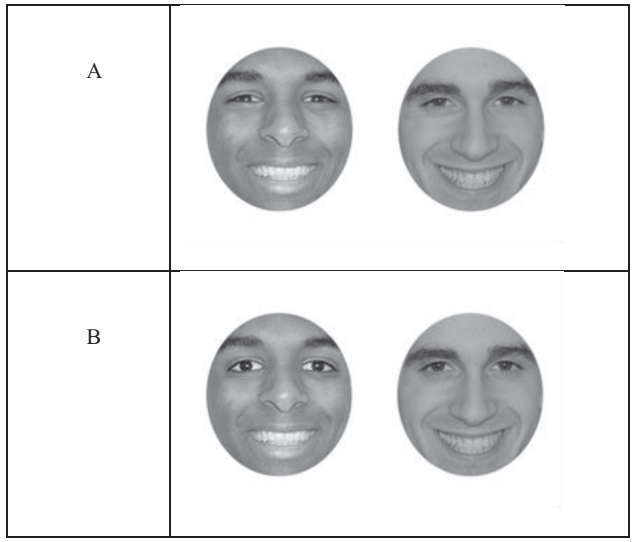
Procedure

All participants were instructed to complete two tasks related to happiness and trustworthiness ratings in an online survey hosted on Qualtrics (https://www.qualtrics.com). In each task, participants were presented with 64 (16 Black male, 16 Black female, 16 White male, and 16 White female) faces. Half of the targets in each category expressed a Duchenne smile and the other half of the targets expressed a non-Duchenne smile, see Figure 1. Two sets of 64 images were created so that every target appeared once in each set (e.g., with a Duchenne smile expression in Set 1 and a non-Duchenne smile expression in Set 2) and participants were randomly assigned to only one set.

The stimuli were drawn from an unpublished database of smiling expressions that have been used in two previous publications (Friesen et al., 2019; Kunstman et al., 2016). Individuals were recruited from the same university population used in Experiments 1, 2a, 2b, 3, and 5. To generate Duchenne smiles, targets were encouraged to express enjoyment by smiling with their mouths to activate the zygomatic major muscles around the mouth (e.g., by attempting to make participants laugh) and to activate the orbicularis oculi muscles around the eyes (i.e., Facial Action Coding System [FACS] Units 6 and 7; see Ekman & Friesen, 1982). For non-Duchenne smiles, targets were instructed to smile with their mouths while maintaining neutral eyes. Next, photographed faces were split into top (eyes) and bottom (mouth) halves, and each feature was rated separately on happiness by a separate group of participants ($N = 59$). Happiness ratings were consistent with predictions (i.e., "smiling" eyes were rated as displaying more happiness than "neutral" eyes).

Figure 1

Examples of Stimuli Showing Duchenne (A) and Non-Duchenne (B) Smiles on Black and White Targets



Note. From "Perceiving Happiness in an Intergroup Context: The Role of Race and Attention to the Eyes in Differentiating Between True and False Smiles," by J. P. Friesen, K. Kawakami, L. Vingilis-Jaremko, R. Caprara, D. M. Sidhu, A. Williams, K. Hugenberg, R. Rodríguez-Bailón, E. Cañadas, and P. Niedenthal, 2019, *Journal of Personality and Social Psychology: Attitudes and Social Cognition, 116*(3), p. 379 (https://doi.org/10.1037/pspa0000139). Copyright 2019 by the American Psychological Association.

To ensure that the muscle movements were similar for Black versus White targets, we chose a smiling mouth for each target such that there were no significant differences in happiness ratings between target races on this facial feature ($M_{Black} = 6.31$ vs. $M_{White} = 6.31$), $t(58) = 0.72$, $p = .943$. Next, we used these faces and only changed whether the eyes were smiling (i.e., depicted a Duchenne marker) or neutral to create stimuli in which the only difference between targets with the Duchenne and non-Duchenne smiles was the eye region (for a similar method, see Calvo et al., 2019). Importantly, there were no significant racial differences in happiness ratings between targets with Duchenne eyes ($M_{Black} = 6.23$ vs. $M_{White} = 6.12$), $t(58) = 0.24$, $p = .813$, and non-Duchenne eyes ($M_{Black} = 4.52$, $M_{White} = 4.62$), $t(58) = -1.15$, $p = .256$. Given the theoretical focus of our research was on differentiating between emotional expressions by comparing Duchenne and non-Duchenne smiles within each target race, this process ensured that across races, targets with the Duchenne and non-Duchenne smiles were equated on appearance and only differed in the eye regions.

In the happiness rating task, on each trial, a single target was presented in the center of the screen for 3 s and participants were instructed to rate the face on a 9-point scale from 1 = *not at all happy* to 9 =

extremely happy. After a response, the next face appeared immediately until all 64 images, presented in a random order, were rated. In the trustworthiness rating task, the same targets were presented for 3 s in a different random order and participants were instructed to rate each face on a 9-point scale from 1 = *not at all trustworthy* to 9 = *completely trustworthy*. The order of the two tasks was counterbalanced. At the end of all studies, participants completed demographic questions related to age (a slider scale from 0 to 100), gender (man, woman, or open-response), and race/ethnicity (open-response).

Results and Discussion

Happiness Ratings

Mean happiness ratings were analyzed using a 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) repeated-measures analysis of variance (ANOVA). The main effects of target race, $F(1, 72) = 12.74$, $p < .001$, $\eta_p^2 = .15$, and smile type, $F(1, 72) = 51.33$, $p < .001$, $\eta_p^2 = .42$, were significant. Black faces ($M = 5.98$, $SD = 1.15$) were rated as happier than White faces ($M = 5.74$, $SD = 1.10$), and faces expressing Duchenne smiles ($M = 6.04$, $SD = 1.13$) were rated as happier than faces expressing non-Duchenne smiles ($M = 5.68$, $SD = 1.12$). The two-way interaction was not significant, $F(1, 72) = 2.90$, $p = .093$, $\eta_p^2 = .04$. Given our theoretical focus on comparing Duchenne and non-Duchenne smiles within each target race, we further examined the impact of smile type within Black and White faces separately. Participants rated faces with Duchenne smiles as happier than faces with non-Duchenne smiles for both White faces ($M_{\text{Duchenne}} = 5.95$, $SD = 1.10$; $M_{\text{non-Duchenne}} = 5.52$, $SD = 1.10$), $t(72) = 5.99$, $p < .001$, $d = 0.70$, 95% confidence interval (CI) [0.44, 0.96], and Black faces ($M_{\text{Duchenne}} = 6.12$, $SD = 1.16$; $M_{\text{non-Duchenne}} = 5.83$, $SD = 1.14$), $t(72) = 4.91$, $p < .001$, $d = 0.58$, 95% CI [0.33, 0.82].[1]

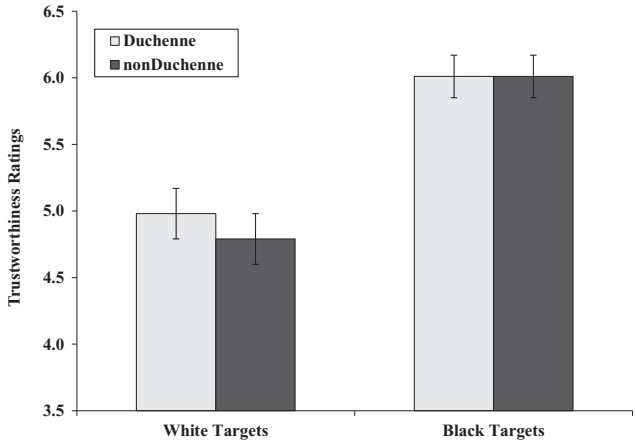
Trustworthiness Ratings

Mean trustworthiness ratings were also analyzed using a 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) repeated-measures ANOVA. The main effect of target race was significant, $F(1, 72) = 53.10$, $p < .001$, $\eta_p^2 = .42$. Black faces ($M = 6.01$, $SD = 1.33$) were rated as more trustworthy than White faces ($M = 4.89$, $SD = 1.63$). Although the main effect of smile type was not significant, $F(1, 72) = 3.78$, $p = .056$, $\eta_p^2 = .05$, the two-way interaction was significant, $F(1, 72) = 4.97$, $p = .029$, $\eta_p^2 = .06$, see Figure 2. To decompose this interaction, we again examined the impact of smile type for Black and White faces separately. Whereas participants rated Whites targets with Duchenne compared to non-Duchenne smiles as more trustworthy ($M_{\text{Duchenne}} = 4.98$, $SD = 1.63$; $M_{\text{non-Duchenne}} = 4.79$, $SD = 1.62$), $t(72) = 2.84$, $p = .006$, $d = 0.33$, 95% CI [0.10, 0.57], trustworthiness ratings did not differ for Black targets with Duchenne and non-Duchenne smiles ($M_{\text{Duchenne}} = 6.01$, $SD = 1.33$; $M_{\text{non-Duchenne}} = 6.01$, $SD = 1.33$), $t(72) = -0.04$, $p = .966$, $d = -0.01$, 95% CI [−0.23, 0.22].[2]

In summary, the results related to White targets indicated that faces expressing Duchenne smiles were rated as happier and more trustworthy than faces with non-Duchenne smiles. For Black targets, in contrast, whereas faces with Duchenne smiles were also rated as happier than faces with non-Duchenne smiles, the effect of smile type on perceptions of trustworthiness was not significant.

Figure 2

Trustworthiness Ratings for White and Black Targets With Duchenne and Non-Duchenne Smiles in Experiment 1



Note. Error bars represent the standard error of the mean.

Regardless of whether Black faces expressed Duchenne or non-Duchenne smiles, targets were rated as highly trustworthy.

Although the findings related to happiness ratings on White and Black targets replicate previous research on emotion identification that included Black participants (Friesen et al., 2019, Experiment 3), the pattern of results related to trustworthiness ratings is new. These preliminary findings indicate that subtle cues related to Duchenne and non-Duchenne smiles impacted Black participants' ratings of trustworthiness more for White than Black targets. Even though these participants distinguished between these smile types in terms of happiness ratings on both Black and White targets, they used these cues more when evaluating trustworthiness for White than Black targets. These findings are important because they suggest that Black perceivers show distinct processes for Black and White targets. To further explore these effects, we designed two additional studies to see whether this same pattern would replicate if Black participants rated only Black targets or only White targets rather than both categories simultaneously.

Experiments 2a and 2b

The primary goal of Experiments 2a and 2b was to test whether the initial pattern of findings in the first study, that Black participants rate Duchenne compared to non-Duchenne smiles as more trustworthy on White faces but differentiate less in their ratings of Black faces

[1] We also conducted an ANOVA with the additional factors of Target Sex and Participant Gender on ratings of happiness. The main effects of Target Sex and Participant Gender were not significant, $ps > .264$, and neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .824$. Importantly, neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .219$.

[2] We also conducted an ANOVA with the additional factors of Target Sex and Participant Gender on ratings of trustworthiness. Although the main effect of Participant Gender was not significant, $p > .240$, the effect of Target Sex was significant, $F(1, 71) = 7.11$, $p = .009$, $\eta_p^2 = .09$. Female targets ($M = 5.58$, $SD = 1.58$) were rated as more trustworthy than male targets ($M = 5.32$, $SD = 1.50$). Importantly, neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .310$.

based on smile type, would replicate using an alternative paradigm. Because social contexts matter when perceiving facial expressions (Barrett et al., 2019), in these studies, rather than rating both Black and White faces, participants were presented with faces of only one race expressing Duchenne and non-Duchenne smiles and were instructed to rate each face on happiness and trustworthiness. Because Black participants may be reluctant to label Black targets as untrustworthy within a context that includes members of the ingroup and outgroup, regardless of their smile type (Rotella et al., 2013), instead of rating both White and Black targets, participants in Experiments 2a and 2b, provided ratings for either White faces or Black faces, respectively.

Method

Participants and Design

Although both Experiments 2a and 2b used a 2 Smile Type (Duchenne vs. non-Duchenne) within-subjects design, participants in the first study were presented with only White faces and separate participants in a second study were presented with only Black faces. Specifically, although we recruited 87 Black undergraduates in Experiment 2a who received course credit for completing the study, the data from one student were dropped from the analyses because they reported recognizing target faces, leaving a total of 86 Black (67 women, 19 men, $M_{age} = 20.99$ years, $SD = 4.56$) participants. Although we recruited 84 Black undergraduates in Experiment 2b who received course credit for completing the study, the data from two students were dropped from the analyses because they reported recognizing target faces, leaving a total of 82 Black (63 women, 19 men, $M_{age} = 20.82$ years, $SD = 7.10$) participants. A sensitivity analysis using G*Power (Faul et al., 2007, 2009) indicated that the sample of both studies had 0.80 power to detect the effect of smile type for trustworthiness ratings with an effect size of $d = 0.27$ (observed effect for Study 2a, $d = 0.47$, and for Study 2b, $d = 0.10$).

Procedure

The experiments were conducted online with Qualtrics using the same stimuli as Experiment 1 with one exception; participants were presented with either 32 White faces in Experiment 2a or 32 Black faces in Experiment 2b. All participants were instructed to rate each face according to happiness and trustworthiness with the same scales used in Experiment 1 and the order of the two tasks was counterbalanced.

Results and Discussion

Happiness Ratings

Mean happiness ratings were analyzed using a paired test for both Experiments 2a and 2b. Participants rated faces with Duchenne compared to non-Duchenne smiles as happier for both White targets in Experiment 2a ($M_{Duchenne} = 5.95$, $SD = 0.89$; $M_{non\text{-}Duchenne} = 5.38$, $SD = 0.88$), $t(85) = 8.50$, $p < .001$, $d = 0.92$, 95% CI [0.66, 1.17] and Black targets in Experiment 2b ($M_{Duchenne} = 5.87$, $SD = 1.03$; $M_{non\text{-}Duchenne} = 5.50$, $SD = 0.96$), $t(81) = 5.19$, $p < .001$, $d = 0.57$, 95% CI [0.34, 0.80].

Although participants were not randomly assigned to experiment and rated White targets or Black targets based on the study, we also conducted an additional analysis that included Experiment (2a vs. 2b) as a between-subjects factor related to target race: 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) mixed ANOVA. The main effect of target race was not significant, $F(1, 166) = 0.02$, $p = .902$, $\eta_p^2 = .001$. The main effect of smile type was significant, $F(1, 166) = 92.28$, $p < .001$, $\eta_p^2 = .36$. Faces with Duchenne smiles were rated as happier ($M = 5.91$, $SD = 0.96$) than faces with non-Duchenne smiles ($M = 5.44$, $SD = 0.92$). Furthermore, the two-way interaction was significant, $F(1, 166) = 4.12$, $p = .044$, $\eta_p^2 = .02$. As indicated by the effect sizes in the pairwise comparisons, the effect was somewhat larger for White than Black targets.[3]

Trustworthiness Ratings

Mean trustworthiness ratings were analyzed using a paired test for both Experiments 2a and 2b. In Experiment 2a, participants rated White targets with Duchenne compared to non-Duchenne smiles as more trustworthy ($M_{Duchenne} = 4.86$, $SD = 1.11$; $M_{non\text{-}Duchenne} = 4.47$, $SD = 1.15$), $t(85) = 4.26$, $p < .001$, $d = 0.46$, 95% CI [0.24, 0.68]. However, in Experiment 2b, participants did not differ in their trustworthiness ratings of Black targets with Duchenne and non-Duchenne smiles ($M_{Duchenne} = 5.30$, $SD = 1.29$; $M_{non\text{-}Duchenne} = 5.36$, $SD = 1.27$), $t(81) = -0.86$, $p = .39$, $d = -0.09$, 95% CI [−0.31, 0.12], see Figure 3.

The results of an additional analysis that included Experiment (2a vs. 2b) as a between-subjects factor related to target race indicated a significant main effect of target race, $F(1, 166) = 14.34$, $p < .001$, $\eta_p^2 = .08$. Black targets were rated as more trustworthy ($M = 5.33$, $SD = 1.28$) than White targets ($M = 4.66$, $SD = 1.13$). The main effect of smile type was also significant, $F(1, 166) = 8.67$, $p = .004$, $\eta_p^2 = .05$. Faces with Duchenne smiles were rated as more trustworthy ($M = 5.08$, $SD = 1.20$) than faces with non-Duchenne smiles ($M = 4.91$, $SD = 1.21$). Lastly, as expected, the two-way interaction was significant, $F(1, 166) = 15.47$, $p < .001$, $\eta_p^2 = .09$, see previous pairwise comparisons.[4]

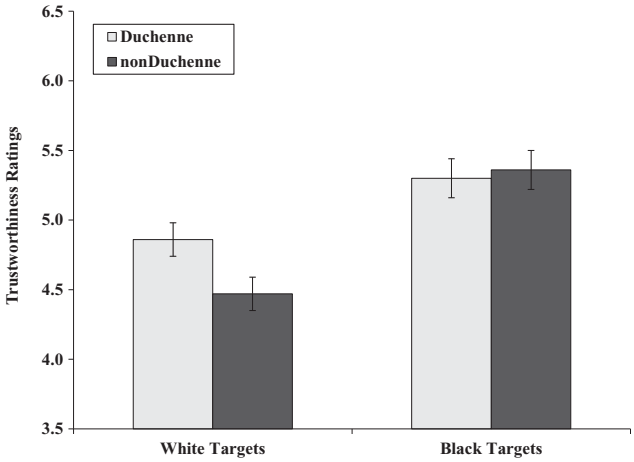
In summary, the results of Experiments 2a and 2b replicated the findings in our initial study. Even when Black participants were presented with only White or only Black targets, faces with Duchenne smiles were rated as happier than faces with non-Duchenne smiles for both White and Black targets. More importantly, faces with Duchenne

[3] We also conducted an ANOVA with the additional factors of Target Sex and Participant Gender on ratings of happiness. The main effects of Target Sex and Participant Gender were not significant, $ps > .707$. Target Sex, however, did qualify the Target Race × Smile Type effect, $F(1, 164) = 5.20$, $p = .024$, $\eta_p^2 = .03$. Follow-up simple effects analyses revealed that the Target Race × Smile Type effect was significant in both female and male targets, $Fs > 9.80$, $ps < .003$. Participant Gender and its interaction with Target Sex, however, did not qualify the Target Race × Smile Type effect, $p > .238$. Importantly, Participant Gender did not qualify the Target Race × Smile Type effect, $p = .524$.

[4] We also conducted an ANOVA with the additional factors of Target Sex and Participant Gender on ratings of trustworthiness. The main effect of Participant Gender was not significant, $p > .339$. However, the main effect of Target Sex, $F(1, 164) = 31.75$, $p < .001$, $\eta_p^2 = .16$, was significant. Female targets ($M = 5.19$, $SD = 1.35$) were rated as more trustworthy than male targets ($M = 4.79$, $SD = 1.32$). Importantly, neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .475$.

Figure 3

Trustworthiness Ratings for White Targets in Experiment 2a and Black Targets in Experiment 2b With Duchenne and Non-Duchenne Smiles



Note. Error bars represent the standard error of the mean.

smiles were only rated as more trustworthy than non-Duchenne smiles for White targets. Black targets, in contrast, were rated as relatively trustworthy regardless of whether these faces depicted Duchenne or non-Duchenne smiles. In the next experiment, we investigated one potential moderator of the impact of Duchenne and non-Duchenne smiles on ratings of trustworthiness—racial identity.

Experiment 3

In Experiment 3, we examined whether the extent to which racial identity was central to a participant's core definition of the self (Sellers et al., 1997) would influence the trustworthiness ratings of White and Black faces with Duchenne and non-Duchenne smiles. It is possible that if in general Black participants (i.e., both those high and low in racial identification) are more suspicious of White targets, they may scrutinize them more carefully than Black targets (Dovidio et al., 2002; Kunstman et al., 2016) and rate all Black targets as relatively higher in trustworthiness because of category-based depersonalized trust (Brewer, 1999; B. Simpson et al., 2007). However, it is also possible that the strength of Black participants' racial identity may moderate ratings of trustworthiness of Black targets. Given that Black people who highly identify with their race may be more vigilant about discrimination (Neville & Cross, 2017) and that stronger group identification is associated with increased trust for ingroup members when one's group is threatened (Voci, 2006), it is possible that perceivers who report high compared to low identification with other Black people may be more trusting of all Black targets, regardless of their momentary facial expressions. In contrast, perceivers who report low racial identification may rely more on facial cues related to smiles to discern whether Black targets are trustworthy.

Method

Participants and Design

Although we recruited 165 Black undergraduates who received course credit for completing an online experiment on Qualtrics, the data from 10 students were dropped from the analyses because they reported recognizing target faces, leaving a total of 155 (114 women, 41 men, $M_{age} = 21.14$, $SD = 6.53$) participants. Because our design now included a between-subjects factor related to racial identity, we followed the approach of Jaeger (2021) and conducted a sensitivity analysis using the SIMR package (Green & Macleod, 2016) in R to determine the smallest effect size the current design was able to detect for our Target Race × Smile Type × Racial Identity interaction. This approach differs from a post hoc power analysis by systematically varying the effect of the interaction on trustworthiness ratings in the model and calculating power at each level. This analysis demonstrated that the current sample had 0.80 power (with $\alpha = .05$) to detect $b = 0.29$ for the three-way interaction for trustworthiness ratings (observed interaction, $b = -0.04$).

Procedure

Although the Happiness and Trustworthiness Rating Tasks were the same as in Experiment 1, upon completion of these measures, all participants were presented with a Racial Identity questionnaire. Specifically, the Centrality scale of the Multidimensional Inventory of Black Identity (Sellers et al., 1997) was used to measure the extent to which race was a core component of the participant's identity. Black participants were presented with eight items on this scale and instructed to respond on a 7-point Likert scale ranging from *strongly disagree* to *strongly agree*. Two example items were "I have a strong attachment to other Black people." and "Being Black is an important reflection of who I am." The mean of the participant's responses across the items was calculated with higher scores reflecting greater racial centrality ($M = 4.86$, $SD = 1.04$, Cronbach's $\alpha = .75$).

Results and Discussion

Happiness Ratings

We conducted a mixed linear model with target race (White vs. Black), smile type (Duchenne vs. non-Duchenne), racial identity (continuous; mean-centered), and their interactions as factors on mean happiness ratings, clustered by participants. The main effects of target race ($b = 0.01$, $SE = 0.05$), $t(459) = -0.13$, $p = .90$, 95% CI [−0.10, 0.11], and racial identity ($b = 0.005$, $SE = 0.08$), $t(224.63) = 0.06$, $p = .951$, 95% CI [−0.14, 0.15], were not significant. The main effect of smile type, however, was significant ($b = -0.36$, $SE = 0.05$), $t(459) = -6.71$, $p < .001$, 95% CI [−0.47, −0.26]. Faces with Duchenne smiles ($M = 5.81$, $SD = 0.97$) were rated as happier than faces with non-Duchenne smiles ($M = 5.30$, $SD = 0.96$). The two-way Target Race × Smile Type interaction was also significant ($b = -0.30$, $SE = 0.08$), $t(459) = -3.86$, $p < .001$, 95% CI [−0.45, −0.15]. Although participants rated faces with Duchenne compared to non-Duchenne smiles as happier for White targets ($M_{Duchenne} = 5.81$, $SD = 0.95$; $M_{non\text{-}Duchenne} = 5.15$, $SD = 1.02$), $t(154) = -13.11$, $p < .001$, $d = 1.05$, 95% CI [0.85, 1.25] and Black targets ($M_{Duchenne} = 5.81$, $SD = 0.99$; $M_{non\text{-}Duchenne} = 5.44$, $SD = 0.91$), $t(154) = 8.08$, $p < .001$, $d = 0.65$, 95% CI [0.47, 0.82], as indicated by the significant interaction and effect sizes, this effect was smaller for Black targets. Importantly, this two-way interaction was not qualified by racial identification. The three-way Target Race × Smile Type × Racial

Identity interaction was not significant ($b = -0.04$, $SE = 0.07$), $t(459) = -0.48$, $p = .634$, 95% CI [−0.18, 0.11].[5]

Trustworthiness Ratings

We also conducted a mixed linear model with target race (White vs. Black), smile type (Duchenne vs. non-Duchenne), racial identity (continuous; mean-centered), and their interactions as factors on mean trustworthiness ratings, clustered by participants, see Table 1. The main effect of racial identity ($b = 0.01$, $SE = 0.08$), $t(153) = 0.15$, $p = .882$, 95% CI [−0.14, 0.16], was not significant. The main effects of smile type ($b = -0.14$, $SE = 0.06$), $t(459) = -2.48$, $p = .013$, 95% CI [−0.25, −0.03], and target race ($b = -1.07$, $SE = 0.06$), $t(459) = -19.24$, $p < .001$, 95% CI [−1.18, −0.97], were significant. Faces with Duchenne smiles ($M = 5.20$, $SD = 1.17$) were rated as more trustworthy than faces with non-Duchenne smiles ($M = 5.06$, $SD = 1.15$), and Black targets ($M = 5.67$, $SD = 1.11$) were rated as more trustworthy than White targets ($M = 4.60$, $SD = 1.21$). Although the two-way Target Race × Racial Identity interaction was significant ($b = -0.27$, $SE = 0.05$), $t(459) = -5.09$, $p < .001$, 95% CI [−0.38, −0.17], none of the simple effects were significant, $ps > .07$. More importantly, the two-way Target Race × Smile Type interaction was also significant ($b = -0.31$, $SE = 0.11$), $t(459) = -2.73$, $p = .007$, 95% CI [−0.52, −0.09], see Figure 4. Whereas participants rated White targets with Duchenne compared to non-Duchenne smiles as more trustworthy ($M_{\text{Duchenne}} = 4.74$, $SD = 1.20$; $M_{\text{non-Duchenne}} = 4.43$, $SD = 1.22$), $t(154) = 4.42$, $p < .001$, $d = 0.36$, 95% CI [0.19, 0.52], trustworthiness ratings did not differ for Black targets with Duchenne and non-Duchenne smiles ($M_{\text{Duchenne}} = 5.68$, $SD = 1.12$; $M_{\text{non-Duchenne}} = 5.67$, $SD = 1.06$), $t(154) = -0.27$, $p = .79$, $d = -0.02$, 95% CI [−0.18, 0.14]. Importantly, this two-way interaction was not qualified by racial identification. Specifically, the three-way Target Race × Smile Type × Racial Identity interaction was not significant ($b = -0.04$, $SE = 0.11$), $t(459) = 0.35$, $p = .728$, 95% CI [−0.17, 0.25].[6]

In summary, the results of Experiment 3 replicated the pattern of results in our initial studies. Whereas Black participants rated Duchenne compared to non-Duchenne smiles as happier on both White and Black targets, these facial cues impacted ratings of trustworthiness differently on White and Black targets. Although White targets with Duchenne compared to non-Duchenne smiles were rated as more trustworthy, ratings of Black targets with Duchenne and non-Duchenne smiles did not differ. Moreover, racial identification did not moderate these findings. The pattern of trustworthiness ratings for Black and White targets did not differ regardless of whether Black participant's core identity was strongly defined by race or not. In the next study, we examined one potential explanation for why White but not Black targets with Duchenne compared to non-Duchenne smiles are rated as more trustworthy—perceived genuineness.

Experiment 4

The primary goal of Experiment 4 was to explore one potential mechanism, perceived genuineness, for differences in the impact of Duchenne and non-Duchenne smiles on trustworthiness ratings of Black and White faces. Given that authentic expressions are deemed more trustworthy (Slepian & Carr, 2019), we examined whether Black participants differed in their perceptions of genuineness of Duchenne and non-Duchenne smiles based on target race.

Although past research investigating primarily White perceivers and White targets has found that Duchenne markers are associated with perceptions of true emotions, genuineness, and authenticity (Ekman, 2006; Frank et al., 1993; Krumhuber et al., 2007; Rychlowska et al., 2014, 2017; Sheldon et al., 2021; Young et al., 2015), it is possible that Black participants associate Duchenne compared to non-Duchenne markers on White compared to Black targets more with being genuine. Black ingroup targets, regardless of smile type, may be perceived as genuine. In turn, the perceived genuineness of Duchenne compared to non-Duchenne smiles is expected to predict trustworthiness ratings for White targets more than for Black targets.

To examine this process, we used the same procedure as in Experiment 1 but included ratings of genuineness rather than happiness. Importantly, recent research has demonstrated that although Duchenne and non-Duchenne smiles impact both ratings of happiness and genuineness, these ratings were both conceptually and empirically distinct (Miller et al., 2022). Moreover, trust and genuineness have been treated as distinct constructs; namely, perceptions of facial genuineness produced trust behavior (Centorrino et al., 2015).

Method

Participants and Design

To maximize power, we used a 2 Target Race (Black vs. White) × 2 Smile Type (Duchenne vs. non-Duchenne) within-subjects design. Although we initially recruited 150 Black participants via Cloud Research Connect, who were paid $1.75 upon the completion of an online Qualtrics study, the data from 12 participants who self-reported a race other than Black and four participants who reported recognizing target faces were dropped from the analyses,[7] leaving a total of 134 Black (66 women, 66 men, two not specified, $M_{\text{age}} = 33.72$, $SD = 10.39$) participants. A sensitivity analysis using G*Power found that this sample had 0.80 power to detect the predicted Target Race × Smile Type interaction with an effect size of ηp2 = .03 (observed interaction effect: genuineness ratings, $\eta_p^2 = .08$; trustworthiness ratings, $\eta_p^2 = .16$).

[5] We also conducted additional analyses with Target Sex and Participant Gender as factors on ratings of happiness. The main effects of Target Sex and Participant Gender were not significant, $ps > .210$. Importantly, neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .183$.

[6] We also conducted additional analyses with Target Sex and Participant Gender as factors on ratings of trustworthiness. Although the main effect of Participant Gender was not significant, $p = .858$, the effect of Target Sex was significant ($b = -0.32$, $SE = 0.04$, $p < .001$, 95% CI [−0.40, −0.24]). Female targets ($M = 5.32$, $SD = 2.06$) were rated as significantly more trustworthy than male targets ($M = 4.94$, $SD = 2.09$). Although Participant Gender marginally qualified the Target Race × Smile Type interaction, $p = .052$, all other interactions that included the predicted two-way interaction were not significant, including interactions with racial identity, $ps > .157$.

[7] In accordance with the previous experiments, the data of participants who recognized target faces, presumably through exposure to the same set of stimuli during other studies at Cloud Research, were excluded from analyses.

Table 1
Mixed-Design Linear Model Regression on the Ratings of Trustworthiness in Experiment 3

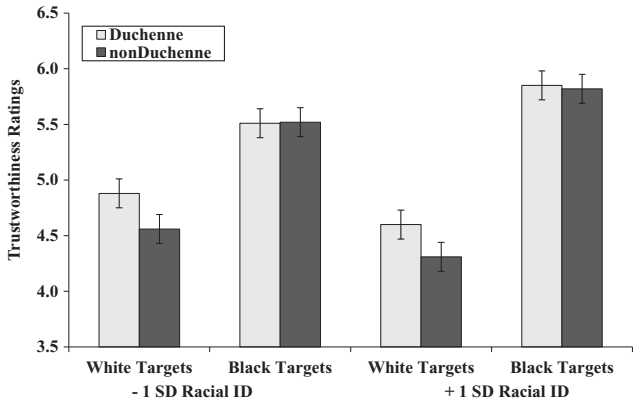
Effect	Variance	*SD*	Estimate	*SE*	95% CI	*t*	*df*	*p*
			Random effects					
Participants								
Intercept	0.86	0.92						
Residual	0.48	0.70						
			Fixed effects					
Intercept			5.13	0.08	[4.98, 5.29]	64.67	153	<.001
TR			−1.07	0.06	[−1.18, −0.97]	−19.24	459	<.001
ST			−0.14	0.06	[−0.25, −0.03]	−2.48	459	.013
BI			0.01	0.08	[−0.14, 0.16]	0.15	153	.882
TR × ST			−0.31	0.11	[−0.52, −0.09]	−2.73	459	<.007
TR × BI			−0.27	0.05	[−0.38, −0.17]	−5.09	459	<.001
ST × BI			−0.003	0.05	[−0.10, 0.11]	−0.05	459	.961
TR × ST × BI			0.04	0.11	[−0.17, 0.25]	0.35	459	.728

Note. CI = confidence interval; TR = target race; ST = smile type; BI = Black identity.

Materials and Procedure

In accordance with the procedures in Experiment 1, participants viewed 64 single faces (16 Black male, 16 Black female, 16 White male, 16 White female) displaying either Duchenne or non-Duchenne smiles. Two sets of 64 images were created so that every target appeared only once in each set (e.g., with a Duchenne smile expression in Set 1 and a non-Duchenne smile expression in Set 2) and participants were randomly assigned to only one set. Whereas half of the faces in each set were rated on genuineness, the other half of the faces were rated on trustworthiness. Specifically, participants were instructed to rate each face on a 9-point scale from 1 = *not at all genuine* to 9 = *very genuine* or from 1 = *not at all trustworthy* to 9 = *very trustworthy*. While the same face was rated on genuineness by some participants and on trustworthiness by other participants, each target was rated on both genuineness and trustworthiness by different participants displaying both Duchenne and non-Duchenne smiles. Participants first completed ratings on genuineness followed by ratings on trustworthiness and the images within each task were presented in a random order.

Figure 4
Trustworthiness Ratings for White and Black Targets With Duchenne and Non-Duchenne Smiles and Low and High Racial Identification in Experiment 3



Note. Error bars represent the standard error of the mean. ID = identification.

Results and Discussion

Genuineness Ratings

Mean genuineness ratings were analyzed using a 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) repeated-measures ANOVA. The main effects of target race, $F(1, 133) = 61.70$, $p < .001$, $\eta_p^2 = .32$, and smile type, $F(1, 133) = 22.00$, $p < .001$, $\eta_p^2 = .14$, were significant. Black faces ($M = 6.03$, $SD = 1.23$) were rated as more genuine than White faces ($M = 5.47$, $SD = 1.31$), and faces with Duchenne smiles ($M = 5.87$, $SD = 1.21$) were rated as more genuine than faces with non-Duchenne smiles ($M = 5.63$, $SD = 1.39$). These main effects, however, were qualified by a significant two-way interaction, $F(1, 133) = 10.70$, $p < .001$, $\eta_p^2 = .08$, see Figure 5. Whereas participants rated White targets with Duchenne compared to non-Duchenne smiles as more genuine ($M_{\text{Duchenne}} = 5.65$, $SD = 1.23$; $M_{\text{non-Duchenne}} = 5.29$, $SD = 1.37$), $t(133) = 5.40$, $p < .001$, $d = 0.47$, 95% CI [0.29, 0.64], they did not differ in their genuineness ratings of Black targets with Duchenne and non-Duchenne smiles ($M_{\text{Duchenne}} = 6.09$, $SD = 1.14$; $M_{\text{non-Duchenne}} = 5.98$, $SD = 1.32$), $t(133) = 1.86$, $p = .065$, $d = 0.16$, 95% CI [−0.01, 0.33].[8]

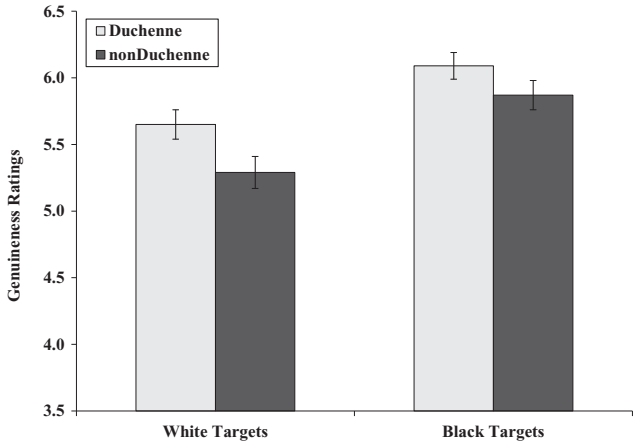
Trustworthiness Ratings

Mean trustworthiness ratings were also analyzed using a 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) repeated-measures ANOVA. The main effects of target race, $F(1, 133) = 85.44$, $p < .001$, $\eta_p^2 = .39$, and smile type, $F(1, 133) = 6.46$, $p = .012$, $\eta_p^2 = .05$, were significant. Black faces ($M = 6.00$, $SD = 1.20$) were rated as more trustworthy than White faces ($M = 5.18$, $SD = 1.34$), and faces with Duchenne smiles ($M = 5.65$, $SD = 1.27$) were rated as more trustworthy than faces

[8] We also conducted additional analyses with Target Sex and Participant Gender as factors on ratings of genuineness. The main effect of Participant Gender was not significant, $p > .396$. However, the main effect of Target Sex, $F(1, 131) = 4.27$, $p = .04$, $\eta_p^2 = .03$, was significant. Female targets ($M = 5.87$, $SD = 1.35$) were rated as more genuine than male targets ($M = 5.64$, $SD = 1.32$). Importantly, neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .135$.

Figure 5

Genuineness Ratings for White and Black Targets With Duchenne and Non-Duchenne Smiles in Experiment 4



Note. Error bars represent the standard error of the mean.

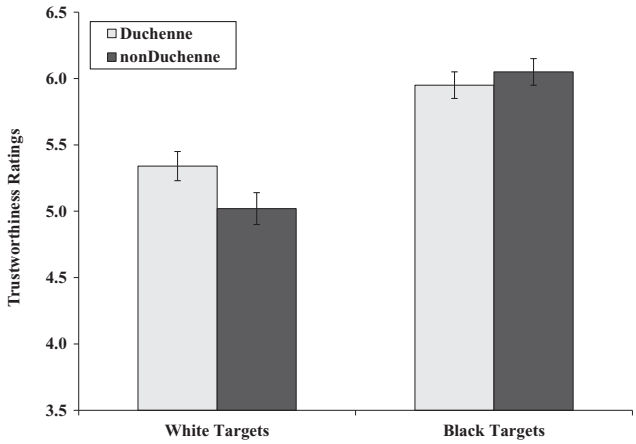
with non-Duchenne smiles ($M = 5.53$, $SD = 1.39$). These main effects, however, were qualified by a significant two-way interaction, $F(1, 133) = 25.81$, $p < .001$, $\eta_p^2 = .16$, see Figure 6. Whereas participants rated White targets with Duchenne compared to non-Duchenne smiles as more trustworthy ($M_{\text{Duchenne}} = 5.34$, $SD = 1.27$; $M_{\text{non-Duchenne}} = 5.02$, $SD = 1.39$), $t(133) = 4.62$, $p < .001$, $d = 0.40$, 95% CI [0.22, 0.57], trustworthiness ratings did not differ for Black targets with Duchenne and non-Duchenne smiles ($M_{\text{Duchenne}} = 5.95$, $SD = 1.20$; $M_{\text{non-Duchenne}} = 6.05$, $SD = 1.20$), $t(133) = -1.88$, $p = .063$, $d = -0.16$, 95% CI [−0.33, 0.01].[9]

The Relationship Between Genuineness and Trustworthiness

To examine the relationship between ratings of genuineness of Duchenne and non-Duchenne smiles on Black and White faces and trustworthiness ratings, we tested the effect of smile type (X) on differences in trustworthiness ratings of Duchenne and non-Duchenne smiles (Y) through differences in genuine ratings between Duchenne and non-Duchenne smiles (M) using the mediation and moderation analysis for repeated measures designs, V. 2.1, SPSS macro procedure (Montoya & Hayes, 2017). This procedure estimated whether differences in genuineness ratings on Duchenne versus non-Duchenne smiles predicted differences in trustworthiness on Duchenne versus non-Duchenne smiles. An analysis with 10,000 bootstrapped resamples for White targets generated an estimate of the indirect effect of 0.174 with a 95% CI [0.084, 0.283], indicating that genuineness significantly mediated perceptions of trustworthiness. For Black targets, alternatively, an estimate of the indirect effect of 0.04 with a 95% CI [−0.001, 0.076] was generated, indicating that genuineness did not mediate perceptions of trustworthiness for these targets.

Figure 6

Trustworthiness Ratings for White and Black Targets With Duchenne and Non-Duchenne Smiles in Experiment 4



Note. Error bars represent the standard error of the mean.

In summary, it is important to note that in Experiment 4, we replicated the pattern of findings related to trustworthiness in Experiments 1–3. In particular, Black participants rated White faces expressing Duchenne compared to non-Duchenne smiles as more trustworthy and genuine. Furthermore, although correlational, our mediational analyses indicate that one potential reason why White faces with Duchenne compared to non-Duchenne smiles were perceived as more trustworthy is because they were deemed more genuine. Notably, this process was markedly different for Black targets. Black participants did not differ in their ratings of trustworthiness or genuineness of Black faces expressing Duchenne and non-Duchenne smiles. For these targets, faces with both smile types were rated relatively high in trustworthiness and genuineness. Furthermore, for Black targets, ratings of genuineness did not mediate perceptions of trustworthiness. Next, to provide a statistical summary of the effects of smile type on ratings of happiness and trustworthiness on Black and White targets, we aggregated the data from the first four experiments in a meta-analysis.

Meta-Analysis of Experiments 1–4

To increase power for detecting real effects and to improve precision in effect size estimates, as recommended for a set of studies including tests of the same effect (Maner, 2014), we conducted an internal meta-analysis of our primary predictions related to happiness ratings across Experiments 1–3 and our predictions related to trustworthiness ratings across Experiments 1–4. Because these results are intended to aggregate these experiments alone, we used a fixed effects model in the analysis (Hedges & Vevea, 1998).

For happiness ratings, the analysis showed that across three experiments, the average effect of smile type for White targets ($n = 314$), Hedges's $g = 0.914$, $SE = 0.067$, 95% CI [0.782, 1.045], $Z = 13.62$, $p < .001$, and Black targets ($n = 310$), Hedges's $g = 0.606$, $SE = 0.061$, 95% CI [0.486, 0.726], $Z = 9.87$, $p < .001$, was significant.

[9] We also conducted an ANOVA with the additional factors of Target Sex and Participant Gender on ratings of trustworthiness. The main effect of Participant Gender was not significant, $p = .136$. However, the main effect of Target Sex, $F(1, 131) = 14.26$, $p < .001$, $\eta_p^2 = .10$, was significant. Female targets ($M = 5.80$, $SD = 1.33$) were rated as more trustworthy than male targets ($M = 5.38$, $SD = 1.39$). Importantly, neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .319$.

Black participants consistently rated faces with Duchenne compared to non-Duchenne smiles as happier.

For trustworthiness ratings, a different pattern emerged. Across four experiments, the average effect of smile type for White targets ($n = 448$) was significant, Hedges's $g = 0.381$, $SE = 0.049$, 95% CI [0.286, 0.477], $Z = 7.834$, $p < .001$, indicating that faces with Duchenne compared to non-Duchenne smiles were rated as more trustworthy. In contrast, the average effect of smile type for Black targets ($n = 444$) was not significant (Hedges's $g = -0.074$, $SE = 0.047$, 95% CI [−0.167, 0.019], $Z = -1.566$, $p = .117$).

In exploratory analyses, we also examined correlations between happiness and trust ratings when the data were combined across Studies 1–3. In particular, we investigated whether differences in happiness ratings for Duchenne versus non-Duchenne smiles predicted differences in trustworthiness for Duchenne versus non-Duchenne smiles for Black and White targets separately. As predicted, for White targets ($n = 324$), happiness scores were highly correlated with trustworthiness scores ($M\ r = .31$, $SE = 0.056$, $Z = 5.59$, 95% CI [0.20, 0.40], $p < .001$). The more Black participants rated White targets with Duchenne compared to non-Duchenne smiles as happy, the more they perceived White targets with Duchenne compared to non-Duchenne smiles to be trustworthy. For Black targets ($n = 320$), alternatively, although statistically significant, happiness scores were less correlated with trustworthiness scores, and only half the magnitude of the correlation for White faces ($M\ r = .16$, $SE = 0.057$, $Z = 2.86$, 95% CI [0.05, 0.27], $p = .004$).

In summary, in accordance with the individual results of Experiments 1–4, the meta-analysis indicated that Black participants rated Duchenne versus non-Duchenne smiles as happier on both Black and White targets. More importantly, in the present context, Black participants consistently rated White but not Black targets with Duchenne versus non-Duchenne smiles as more trustworthy. In the final experiment, we extended the findings beyond ratings of trustworthiness by investigating the impact of smile type on interpersonal behavior in a partner choice paradigm.

Experiment 5

In Experiment 5, we examined an important component of intergroup relations, a willingness to interact with people from another race (Allport, 1954; Karmali & Kawakami, 2023; Page-Gould et al., 2008; Tropp, 2021). Specifically, we investigated whether Black participants were more likely to choose a White or Black target expressing a Duchenne or non-Duchenne smile as a partner. Given that research with predominantly White targets and perceivers has demonstrated that people expressing Duchenne smiles are not only perceived as more trustworthy but are also approached more and receive more cooperative responses in trust games (Centorrino et al., 2015; Johnston et al., 2010; Miles, 2009; Young et al., 2015), we examined whether the choice of partners, for a close interpersonal interaction in which trustworthiness would be important, would conceptually mirror the pattern of trustworthiness ratings found in our previous studies. In particular, we expected that Black participants would choose White targets with Duchenne compared to non-Duchenne smiles more often as partners but would differ less in their choice of Black targets with Duchenne and non-Duchenne smiles.

Method

Participants and Design

To maximize power, we chose a 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) within-subject design. Although we recruited 96 Black undergraduates who received course credit for completing an online study in Qualtrics, the data from two students were dropped from the analyses because they reported recognizing target faces, leaving a total of 94 (74 women, 19 men, one not specified, $M_{age} = 21.00$ years, $SD = 5.21$) participants. A sensitivity analysis using G*Power (Faul et al., 2007, 2009) found that our sample had 0.80 power to detect a Target Race × Smile Type interaction for partner choices with an effect size of $\eta_p^2 = .04$ (observed effect, $\eta_p^2 = .08$).

Procedure

In the primary task, participants were informed that in a future task their goal would be to get close to interaction partners by asking and sharing answers to increasingly intimate questions (Aron et al., 1997; Karmali & Kawakami, 2023; Kawakami et al., 2014). As part of the cover story, participants were notified that a further aim of the study was to explore accurate assessments of partners and whether having a choice in partner selection would influence closeness on the intimacy task. Therefore, participants were informed that they would be provided with the opportunity to choose potential partners for the self-disclosure task. Specifically, participants were presented with 64 photographs used in the previous studies and asked to choose a potential partner on 16 separate trials. On each trial, participants were presented with four targets in a quadrant: a White and Black face with a Duchenne smile and a White and Black face with a non-Duchenne smile. Targets were labeled "Person 1" to "Person 4," and participants were asked to choose the person with whom they would most like to work. The position of the four types of targets was randomized across trials. After selecting one of the four targets, the next trial was presented until all trials were completed.

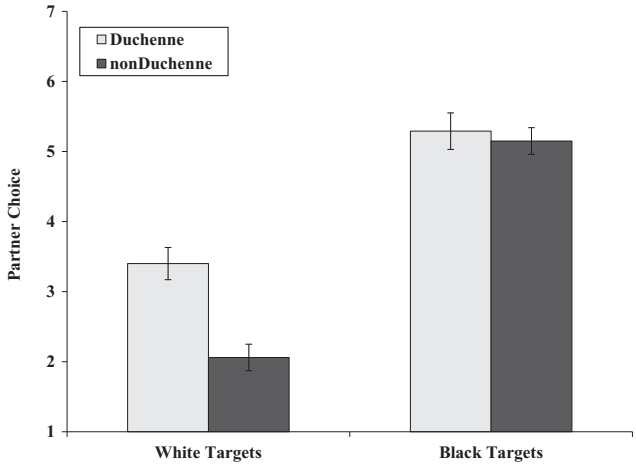
Results and Discussion

Partner Choice

To create a partner choice index, we totaled the number of times across the 16 trials a White face with a Duchenne smile, a Black face with a Duchenne smile, a White face with a non-Duchenne smile, and a Black face with a non-Duchenne smile were chosen. These choice totals were analyzed using a 2 Target Race (White vs. Black) × 2 Smile Type (Duchenne vs. non-Duchenne) repeated-measures ANOVA. The main effects of target race, $F(1, 93) = 60.63$, $p < .001$, $\eta_p^2 = .39$, and smile type, $F(1, 93) = 11.65$, $p < .001$, $\eta_p^2 = .11$, were significant. Black targets ($M = 5.22$, $SD = 2.18$) were chosen more often than White targets ($M = 2.73$, $SD = 2.08$), and targets with Duchenne smiles ($M = 4.35$, $SD = 2.39$) were chosen more often than targets with non-Duchenne smiles ($M = 3.61$, $SD = 1.88$). These effects, however, were qualified by the predicted two-way interaction, $F(1, 93) = 7.67$, $p = .007$, $\eta_p^2 = .08$, see Figure 7. Whereas Black participants choose White targets with Duchenne compared to non-Duchenne smiles more often ($M_{Duchenne} = 3.40$, $SD = 2.27$; $M_{non\text{-}Duchenne} = 2.06$, $SD = 1.86$),

Figure 7

Choice of White and Black Targets With Duchenne and Non-Duchenne Smiles in Experiment 5



Note. Error bars represent the standard error of the mean.

$t(93) = 4.59, p < .001, d = 0.47$, 95% CI [0.26, 0.69], they did not differ in their choice of Black targets with Duchenne and non-Duchenne smiles ($M_{\text{Duchenne}} = 5.29$, $SD = 2.50$; $M_{\text{non-Duchenne}} = 5.15$, $SD = 1.86$), $t(93) = 0.43, p = .667, d = 0.04$, 95% CI [−0.16, 0.25].[10]

The present findings extend our results related to trustworthiness ratings by examining the impact of Duchenne and non-Duchenne smiles on Black participants' willingness to interact with Black and White targets in an interpersonal interaction. Just as Black participants rated White faces with Duchenne versus non-Duchenne smiles as more trustworthy in the previous studies, the present results indicated that they also chose these targets more often as partners. Furthermore, just as Black participants did not differentiate in their trustworthiness ratings for Black faces with Duchenne and non-Duchenne smiles, rating all Black targets as relatively trustworthy, the present study indicated that they also did not differentiate in their choice of these targets as partners, selecting Black targets with both smile types significantly more often than White targets.

General Discussion

Understanding when we can and cannot trust someone is critical to our social life and facilitates the development and maintenance of strong, healthy relationships (J. A. Simpson, 2007). Trust is particularly important between social groups because intergroup relationships are often prone to suspicion about others' intentions (Dovidio et al., 2002; Insko & Schopler, 1998; Kramer & Messick, 1998). Intergroup trust is defined as "a social bond that is characterized by feelings of security and confidence in others' good will" (Tropp, 2008), and research has demonstrated that trust facilitates cooperation between groups (Tam et al., 2009).

Notably, one important facial cue used to assess trustworthiness is related to the type of smile (W. M. Brown et al., 2003; Krumhuber et al., 2007; Sheldon et al., 2021). In general, research with predominantly White targets and participants (Centorrino et al., 2015; Johnston et al., 2010; Young et al., 2015) has demonstrated that faces with Duchenne smiles are perceived to be more trustworthy than faces with non-Duchenne smiles. In the present research, we focused on Black perceivers and perceptions of trustworthiness of Duchenne and non-Duchenne smiles on Black and White targets. In addition to assessing perceptions of trustworthiness, we first examined whether these participants distinguished between subtle cues related to Duchenne and non-Duchenne smiles in their emotion ratings.

Indeed, we found across Experiments 1–3 that for both Black and White targets, Duchenne smiles were rated as happier than non-Duchenne smiles. Additionally, we observed some evidence that this effect of smile type on happiness ratings was stronger for White faces than Black faces, as indicated by a significant two-way Smile Type × Target Race interaction in Experiment 3. Although a seeming outgroup advantage in Black participants' happiness judgments was not predicted, it is consistent with research findings that when an outgroup is perceived to be a threat, as is the case for many Black perceivers viewing White targets, people become more attuned to the emotional expressions on faces of members of that group (Dickter et al., 2015; Donders et al., 2008; Richeson & Trawalter, 2008; Trawalter et al., 2008). Having said that, the two-way interaction effect was not significant in Experiment 1 or in an experiment by Friesen et al. (2019) which focused on Black participants and used the same stimuli set. Therefore, although these findings provide consistent evidence that Black perceivers were sensitive to and able to differentiate between these smile types on both Black and White targets, given the mixed evidence concerning whether this differentiation was stronger for White faces, we recommend future studies examine dichotomous authenticity decisions and employ signal detection analyses to disentangle sensitivity from response bias.

More importantly, we found across Experiments 1, 2a, 3, and 4, and in the meta-analysis a significant Target Race × Smile Type interaction on trustworthiness ratings. Specifically, our results consistently indicate that Duchenne smiles were rated as more trustworthy than non-Duchenne smiles on White targets. This finding is consistent with a meta-analysis by Gunnery and Ruben (2016) in which Duchenne smiles were perceived as, among other positive characteristics, more trustworthy than non-Duchenne smiles (see also Cañadas et al., 2016; Frank et al., 1993; Johnston et al., 2010; Krumhuber et al., 2007; for alternative findings see LaFrance & Hecht, 1995; Mehu et al., 2007; Quadflieg et al., 2013). Although no information related to the race of perceivers or targets in the studies included in this meta-analysis was provided, given the Eurocentric nature of psychology, we assume (though are not certain) that the majority of the data were related to White perceivers and White targets.

Black participants, however, did not differ in their ratings of trustworthiness of Black targets depicting Duchenne and non-Duchenne smiles in any individual study, Experiments 1, 2b, 3, and 4, or when aggregated in the meta-analysis. While previous research that is under review by J. P. Friesen et al. has found significant differences in trustworthiness ratings of Black targets depicting these smile types by White perceivers, to the best of our knowledge, this

[10] We also conducted additional analyses with Target Sex and Participant Gender as factors on partner choice. The main effects of Participant Gender, $p = .728$, and Target Sex, $p = .75$ were not significant. Importantly, neither factor nor their interaction qualified the Target Race × Smile Type effect, $ps > .648$.

research is the first to specifically investigate perceptions of trustworthiness (or genuineness) on Black faces expressing Duchenne and non-Duchenne smiles by Black participants. The fact that these participants rated Black targets, regardless of smile type, as relatively high in trustworthiness aligns with research that suggests that people perceive members of ingroups as more trustworthy than members of outgroups (Brewer, 1999; Kramer & Messick, 1998). It is notable, however, that Black participants did not differentiate in their perceptions of trustworthiness of Black faces depicting Duchenne and non-Duchenne smiles.

These findings potentially contradict previous research that demonstrated that perceivers are more sensitive to cues on ingroup than outgroup faces and that they are more accurate in decoding emotions on ingroup than outgroup members (Elfenbein & Ambady, 2002; Young & Hugenberg, 2010). In particular, much of the research on both pain perception and emotion identification (Cassidy et al., 2017; Friesen et al., 2019; Mende-Siedlecki et al., 2019) has indicated that predominantly White participants were more attuned to facial cues on White than Black targets. Lloyd et al. (2022), however, recently found that both Black and White participants were better at distinguishing between authentic and inauthentic pain expressions on White than Black targets. Although Black participants in the present research were influenced by subtle expressional cues in their ratings of emotions on both Black and White targets, they were less impacted by Duchenne and non-Duchenne smiles in their ratings of trustworthiness on Black than White faces.

So why were Black participants more influenced by facial cues related to Duchenne and non-Duchenne smiles when judging the trustworthiness of White than Black faces? One potential reason may be the particular context in the present experiments. Perhaps because Black participants were rating both Black and White target faces, this context made salient large intergroup differences in trust, which overwhelmed effects of relatively more subtle facial expressions. The results from Experiments 2a and 2b, when participants were presented with only Black or White faces, however, suggest that this might not be the case. When only presented with one set of racial faces (either Black or White), Black participants still did not differentiate in their trustworthiness ratings of Black targets based on smile type. Researchers, however, are encouraged to conduct future experiments in spaces that are primarily considered White versus Black (e.g., predominantly White vs. Black colleges). For example, Trawalter et al. (2021) have demonstrated that some public spaces on university campuses may be associated more with members of certain socioeconomic statuses and racial groups and that these perceptions can impact interpersonal relations.

Although there are clearly situations in which Black perceivers do not perceive all Black targets as trustworthy, one potential reason in the current studies why Black participants responded differently to White compared to Black targets with Duchenne and non-Duchenne smiles is that these perceptual processes and evaluations were driven in part by experiences with and beliefs about the two racial target groups by perceivers (Bijlstra et al., 2014; Hugenberg & Bodenhausen, 2003; Kang & Chasteen, 2009; Mende-Siedlecki et al., 2019; Roberts et al., 2020). Although Black participants in our experiments used Duchenne markers to detect intensity of an emotion (i.e., happiness) on both Black and White targets, for ratings of a more evaluative trait, they appear to scrutinize the faces of White targets more than Black targets. Specifically, when judging the trustworthiness of White targets, they used available cues, such as Duchenne and non-Duchenne markers, to assess the genuineness of the person. When judging the trustworthiness of Black targets, alternatively, Black participants might assume genuineness and therefore trustworthiness of all Black targets and rely less on Duchenne and non-Duchenne markers. Although Experiment 4 provided initial correlational evidence for this potential mediational process, further research that manipulates perceived genuineness is recommended.

One negative interpersonal outcome that can stem from perceived racial prejudice and discrimination is suspicion of others' motives and vigilance (Dovidio et al., 2002). Since Black people may be concerned about being the target of prejudice in interracial interactions and approach interracial interactions with distrust, anxiety, and suspicion (Cohen & Steele, 2002; Karmali et al., 2017; Kawakami et al., 2009; Shelton, 2000; Swim et al., 1998; Tropp, 2008), they may be more generally attuned to White people's behaviors and emotional expressions (Crocker et al., 1998; LaCosse et al., 2015; Major et al., 2016; Richeson & Shelton, 2007; Simon et al., 2019; Trawalter et al., 2008) and may look for cues to assess genuineness and trustworthiness. Alternatively, experiences of discrimination may also foster more ingroup trust and less vigilance for cues to assess genuineness that are used to judge trustworthiness of Black targets (Dawson, 1995; Ho et al., 2017; Neville & Cross, 2017; Rotella et al., 2013). Together these findings suggest that although Black participants may be vigilant toward White targets until they feel confident that majority group members are genuine and trustworthy (L. M. Brown & Dobbins, 2004; Cohen & Steele, 2002), they may be more likely to assume that Black targets are genuine until proven otherwise and therefore trustworthy. As Brewer (1999) wrote, "An important aspect of [ingroup trust] is that it is depersonalized … extended to any member of the ingroup whether personally related or not" (p. 43).

Further research is clearly necessary, however, to explore how past experiences with White and Black people impact perceptions of genuineness and trustworthiness. Although experiences with discrimination are one potential factor in whether Black people trust White and Black people, studies investigating how general intergroup trust potentially influences perceptions of genuineness and trustworthiness on both Black and White faces and the use of smile cues are warranted. In particular, researchers could examine these processes in a new series of experiments in which intergroup trust of Black and White people is explicitly measured and potentially manipulated in multiple, diverse ways.

It is possible, however, that relatively high trust in Black people and mistrust of White people may be so pervasive that these differences are hard to modify or overcome. In an initial pilot study we conducted in September 2022, when asked to respond to the statement "In general, I trust Black people will treat me fairly," on a scale from 1 = *strongly disagree* to 5 = *neither agree or disagree* to 9 = *strongly agree*, the mean response for Black participants ($N = 347$) was 6.95, $SD = 1.78$, with a larger majority agreeing by responding more than 5 (72%) than disagreeing by responding less than 5 (5%). However, when asked to respond to the statement "In general, I trust White people will treat me fairly," the mean response was 4.73, $SD = 2.25$, with more respondents disagreeing by responding less than 5 (44%) than agreeing by responding more than 5 (30%). Given these stark findings, it is possible that in certain contexts, with certain groups, not all smiles will be taken at face value and associated with positive attributes (Krys et al., 2016).

Notably, the strength of participants' racial identification did not moderate the current pattern of findings. In particular, the findings in Experiment 3 indicated that regardless of whether Black participants' core identity was strongly defined by race or not (which included a wide range of responses, $M = 4.86$, $SD = 1.04$), ratings of trustworthiness of White compared to Black targets were influenced more by smiling facial cues. A limitation of this finding, however, is that the sensitivity analysis conducted for Experiment 3 indicated that this study had 0.80 power to detect a medium-sized effect. It could be that racial identification does moderate trustworthiness judgments but has a smaller effect size that we were not sufficiently powered to detect. Moreover, although we assessed racial identification as the extent to which race was a core component of a participant's identity (Sellers et al., 1997), other scholars have conceptualized it in other ways, such as having a common fate (McClain et al., 2009) or having distinct experiences (Cokley, 2005). Future research on the influence of racial identification, therefore, should use larger samples and explore alternative measurements of this construct.

We also propose the inclusion of an alternative trustworthiness scale in future research that not only measures positive attributions of trustworthiness (ranging from not at all trustworthy to completely trustworthy) as is currently used but also attributions of untrustworthiness (ranging from not at all untrustworthy/suspicious to completely untrustworthy/suspicious). Given that larger differences were found for non-Duchenne smiles on Black and White faces than Duchenne smiles, it is possible that scales related to negative judgments may provide different, potentially stronger results. As noted by Baumeister et al. (2001), positive–negative asymmetries often exist, in which negative information has a processing advantage over positive information and can have a larger contribution when forming impressions (see also Peeters & Czapinski, 1990; Skowronski & Carlston, 1989). In the present context, non-Duchenne smiles may be especially impactful when judging the untrustworthiness of faces of specific racial groups.

Another productive avenue for future research is to examine how the present pattern of results is related to visual attention to facial features as well as to facial mimicry. Although our past research has demonstrated that the more White participants attend to the eyes of White targets, the bigger the difference in happiness ratings between Duchenne and non-Duchenne smiles on White faces (Friesen et al., 2019), future research should investigate the eye gaze of Black participants when processing Duchenne and non-Duchenne smiles and how it relates to ratings of happiness and trustworthiness. Notably, the simulation of smiles model (Niedenthal et al., 2010) proposes that eye contact facilitates emotion recognition through automatic facial mimicry (Rychlowska et al., 2014). Because the goals of our experiments were to initially investigate happiness and trustworthiness ratings related to Duchenne and non-Duchenne smiles on Black and White faces by Black participants and to explore one potential moderator (racial identity) and mediator (genuineness) of the findings, we did not test mimicry as a mechanism. Future research should, however, examine not only whether Black participants attend more to the eyes of Black relative to White faces but also how this preferential attention may be related to greater mimicry of facial expressions and ratings of happiness, genuineness, and trustworthiness (Calvo et al., 2019; Korb et al., 2014). While we believe that a focus on the impact of Duchenne and non-Duchenne smiles on emotion processing and trait attributions in an intergroup context is critical to our better understanding of race relations, we also propose further research that examines the initial visual attention phase and the role of mimicry in this process (Wood et al., 2016).

Notably, in Experiment 5, we used an alternative partner choice paradigm to explore whether Black participants would differ in their responses to Black targets with Duchenne and non-Duchenne smiles. Specifically, rather than rating each face on a trustworthiness scale as in the previous studies, participants were presented with four targets on each trial and asked to choose a partner for an upcoming task. In this task, partner trustworthiness was important because participants were expected to provide intimate self-disclosures. By asking participants to choose between two Black and two White faces (one with a Duchenne and one with a non-Duchenne smile), this paradigm alleviated self-presentation concerns related to a reluctance to rate specific Black targets as untrustworthy. Notably, even though the majority of targets chosen were Black, participants did not differentiate between Black targets with Duchenne and non-Duchenne smiles.

The present research used a large set of stimuli related to Black and White faces and each target appeared expressing both Duchenne and non-Duchenne smiles. This counterbalancing strategy minimized the possibility that individual characteristics, such as attractiveness or having (un)trustworthy facial features (Kleisner et al., 2013; J. L. Tracy et al., 2020), could have systematically confounded any effects of smile type in a way that influenced trustworthiness judgments. Moreover, we believe that any cross-race differences in target characteristics are not a plausible alternative account for the focal findings. For example, if cross-race differences in stimuli attractiveness and attractiveness produced perceptions of trustworthiness (Eagly et al., 1991), this would manifest in a main effect of target race. However, our effect of interest was not the main effect of target race but rather the Target Race × Smile Type interaction. For attractiveness to account for our findings, it would have to be the case that the same individuals expressing true smiles were rated more attractive than when they were expressing false smiles, but only for White targets and not for Black targets. Similar reasoning could be used for other stimuli-based individual differences that might exist across target race. Nevertheless, to ensure robust findings and generalizability, future research should consider using different sets of stimuli (see Westfall et al., 2015) and computer-generated faces (Friesen et al., 2019; Todorov et al., 2013). Moreover, when creating the stimuli used in the current studies, our models were given instructions intended to elicit movement of the Duchenne marker (orbicularis oculi muscles) around the eyes to create Duchenne smiles and not to elicit movement of that area when creating non-Duchenne smiles. However, the stimuli set has not been formally coded according to the FACS (Ekman et al., 2002) to ensure that Action Units 6 and 7, which define the Duchenne smile (Ekman & Friesen, 1982), were activated. It is, therefore, recommended that future researchers use an alternative set of computer-generated faces or sets of FACS-coded faces displaying Duchenne and non-Duchenne smiles when replicating the present pattern of findings.

Furthermore, it would be interesting to examine if the same pattern of results can be found using other common cues of facial trustworthiness, for example, Todorov's models of facial trustworthiness (2017; Dotsch & Todorov, 2012; Todorov & Oosterhof, 2011). Notably, while these combinations of morphological features have

been validated with trustworthiness judgments with White targets by various samples (Oosterhof & Todorov, 2008; Todorov et al., 2013), even though a similar modeling approach has been used to create stimuli related to facial trustworthiness for Black targets (Todorov & Oh, 2021), these faces have not been validated with only a sample of Black participants. It is, therefore, unknown if Black perceivers' ratings of trustworthiness would be different for these models of Black and White targets.

In addition, it would be informative to examine if ambiguity related to these morphologically distinct features would moderate the pattern of effects. Notably, in creating computational models, Todorov and his colleagues (Oosterhof & Todorov, 2008; Todorov et al., 2013) created seven distinct versions that varied in level of trustworthiness (e.g., ranging from −3 *SD* = *very untrustworthy* to +3 *SD* = *very trustworthy*). Participants' ratings of these faces reflected a linear trend in which the more the target face was manipulated to reflect the dimension of trustworthiness, the more they were perceived as trustworthy. Given that the present pattern of findings was related to very subtle cues associated with Duchenne and non-Duchenne smiles (see Figure 1), it is possible that these effects may only be found with ambiguous facial cues that can vary in meaning (Namba et al., 2022; Rychlowska et al., 2019; Van den Stock et al., 2007; Wallbott, 1988). Perhaps when cues are more obvious and distinctive, perceivers will be more likely to use this information in their assessments. For example, although Black participants may be impacted by facial cues related to morphological trustworthy features that are subtle (−1 *SD* and +1 *SD*) for White but not Black faces, when cues become very distinct (−3 *SD* and +3 *SD*), they may use these cues when judging both Black and White faces. Specifically, whereas mistrust and vigilance may impact Black perceivers' use of facial cues when the stimuli are more ambiguous and less distinctive, they may not impact the use of cues when faces present obviously trustworthy or untrustworthy features. When expressions or characteristics are more open to interpretation, target race may play a larger role (Dovidio & Gaertner, 2000; Dovidio et al., 2002; Hodson et al., 2002; Karmali et al., 2019; Sagar & Schofield, 1980).

Because impressions of others are determined not only by bottom-up characteristics related to the physical features of the target but also by top-down characteristics related to the motives and expectancies of the perceiver (Freeman & Ambady, 2011; Hehman et al., 2017; Kawakami et al., 2017), it is important to consider both emotional expressions related to trustworthiness and the strategies to decode faces that perceivers have learned through their experiences or cultural knowledge of specific groups (Roberts et al., 2020; Xie et al., 2021). In particular, the race of the perceiver may uniquely interact with the race of the target to influence impressions, especially when these traits represent inferences about the quality of character, such as trustworthiness.

Constraints on Generality

The stimuli consisted of a large number of images depicting Duchenne and non-Duchenne smiles on Black and White faces. Our results are specific to Duchenne smiles and, without further empirical evidence, are not generalizable to other cues of trustworthiness. Our research also focused on Black perceivers. To generalize the current process to other racialized groups, further research is necessary and recommended. Because a large number of Black participants were recruited from a participant pool at a university in Canada as well as from Cloud Research Connect (U.S. sample), we expect the results to generalize to both online and in-lab contexts where participants view similar stimuli. We believe the results will be reproducible with students and nonstudents from similar subject pools serving as participants. Throughout our studies, we found no impact of participants' gender identity on any of our ratings, although our sample was representative of the gender binary (women and men), we believe our findings will likely generalize across gender. However, we do not have evidence that this pattern of effects will occur in a more naturalistic setting in which participants interact with actors or actual people depicting Duchenne and non-Duchenne smiles. Finally, we have no reason to believe that the results depend on other characteristics of the participants (with the exception of race), materials, or context.

Conclusion

Because of the lack of representation in the face-processing literature (Jones et al., 2021; Kawakami et al., 2022; Oswald & Adams, 2023; Roberts et al., 2020; Thomas et al., 2023) and the importance of identifying how people form impressions from facial cues for understanding intergroup relations, it is valuable to study face perception processes beyond White participants and include other racial groups. The primary goal of the present research was therefore to examine how Black perceivers are impacted by emotional cues in perceptions of happiness and attributions of trustworthiness to White and Black faces. Our findings indicate that Black perceivers were impacted by even subtle cues related to Duchenne and non-Duchenne smiles on both Black and White targets when assessing happiness. However, when assessing trustworthiness, these participants differed in their ratings of Duchenne and non-Duchenne smiles on White but not Black targets. Although further research is clearly necessary to investigate Black people's perceptions of White and Black target's intentions, our initial findings indicate that these perceptions can have important consequences for interpersonal interactions, such as a willingness to interact with members of different racial groups. With growing racial tension and intergroup conflict, it is especially important that future research develops a deeper, more thoughtful understanding not only of White peoples' perceptions of characteristics such as trustworthiness on White faces, as well as other racial faces, but also other racial groups' perceptions of these faces.

References

Adams, R. B., & Kleck, R. E. (2005). Effects of direct and averted gaze on the perception of facially communicated emotion. *Emotion*, *5*(1), 3–11. https://doi.org/10.1037/1528-3542.5.1.3

Allport, G. W. (1954). *The nature of prejudice*. Addison-Wesley.

Aron, A., Melinat, E., Aron, E. N., Vallone, R. D., & Bator, R. J. (1997). The experimental generation of interpersonal closeness: A procedure and some preliminary findings. *Personality and Social Psychology Bulletin*, *23*(4), 363–377. https://doi.org/10.1177/0146167297234003

Barrett, L. F., Adolphs, R., Marsella, S., Martinez, A. M., & Pollak, S. D. (2019). Emotional expressions reconsidered: Challenges to inferring emotion from human facial movements. *Psychological Science in the Public Interest*, *20*(1), 1–68. https://doi.org/10.1177/1529100619832930

Bar-Tal, D., & Alon, I. (2016). Sociopsychological approach to trust (or distrust): Concluding comments. In I. Alon & D. Bar-Tal (Eds.), *The role of trust in conflict resolution. Peace psychology book series* (pp. 311–334). Springer. https://doi.org/10.1007/978-3-319-43355-4_17

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*(4), 323–370. https://doi.org/10.1037/1089-2680.5.4.323

Bergsieker, H. B. (2012). *Building, betraying, and buffering trust in interracial and same-race friendships* [Doctoral dissertation]. Princeton University.

Bergsieker, H. B., Shelton, J. N., & Richeson, J. A. (2010). To be liked versus respected: Divergent goals in interracial interactions. *Journal of Personality and Social Psychology*, *99*(2), 248–264. https://doi.org/10.1037/a0018474

Bijlstra, G., Holland, R. W., Dotsch, R., Hugenberg, K., & Wigboldus, D. H. J. (2014). Stereotype associations and emotion recognition. *Personality and Social Psychology Bulletin*, *40*(5), 567–77. https://doi.org/10.1177/0146167213520458

Bonilla-Silva, E. (2014). *Racism without racists: Color-blind racism and the persistence of racial inequality in America* (4th ed.). Rowman & Littlefield Publishers.

Brewer, M. B. (1999). The psychology of prejudice: Ingroup love or outgroup hate? *Journal of Social Issues*, *55*(3), 429–444. https://doi.org/10.1111/0022-4537.00126

Brewer, M. B. (2001). Ingroup identification and intergroup conflict: When does ingroup love become outgroup hate? In R. D. Ashmore, L. Jussim, & D. Wilder (Eds.), *Social identity, intergroup conflict, and conflict reduction* (pp. 17–41). Oxford University Press.

Brown, L. M., & Dobbins, H. (2004). Students' of color and European American students' stigma-relevant perceptions of university instructors. *Journal of Social Issues*, *60*(1), 157–174. https://doi.org/10.1111/j.0022-4537.2004.00104.x

Brown, W. M., Palameta, B., & Moore, C. (2003). Are there nonverbal cues to commitment? An exploratory study using the zero-acquaintance video presentation paradigm. *Evolutionary Psychology*, *1*(1), Article 147470490300100104. https://doi.org/10.1177/147470490300100104

Buchanan, N. T., Perez, M., Prinstein, M. J., & Thurston, I. B. (2021). Upending racism in psychological science: Strategies to change how science is conducted, reported, reviewed, and disseminated. *American Psychologist*, *76*(7), 1097–1112. https://doi.org/10.1037/amp0000905

Calvo, M. G., Krumhuber, E. G., & Fernández-Martín, A. (2019). Visual attention mechanisms in happiness versus trustworthiness processing of facial expressions. *Quarterly Journal of Experimental Psychology*, *72*(4), 729–741. https://doi.org/10.1177/1747021818763747

Campbell, D. T. (1967). Stereotypes and the perception of group differences. *American Psychologist*, *22*(10), 817–829. https://doi.org/10.1037/h0025079

Cañadas, E., Lupiáñez, J., Kawakami, K., Niedenthal, P. M., & Rodríguez-Bailón, R. (2016). Perceiving emotions: Cueing social categorization processes and attentional control through facial expressions. *Cognition and Emotion*, *30*(6), 1149–1163. https://doi.org/10.1080/02699931.2015.1052781

Cassidy, B. S., Krendl, A. C., Stanko, K. A., Rydell, R. J., Young, S. G., & Hugenberg, K. (2017). Configural face processing impacts race disparities in humanization and trust. *Journal of Experimental Social Psychology*, *73*(1), 111–124. https://doi.org/10.1016/j.jesp.2017.06.018

Centorrino, S., Djemai, E., Hopfensitz, A., Milinski, M., & Seabright, P. (2015). Honest signaling in trust interactions: Smiles rated as genuine induce trust and signal higher earning opportunities. *Evolution and Human Behavior*, *36*(1), 8–16. https://doi.org/10.1016/j.evolhumbehav.2014.08.001

Chang, L. J., Doll, B. B., van't Wout, M., Frank, M. J., & Sanfey, A. G. (2010). Seeing is believing: Trustworthiness as a dynamic belief. *Cognitive Psychology*, *61*(2), 87–105. https://doi.org/10.1016/j.cogpsych.2010.03.001

Cohen, G. L., & Steele, C. M. (2002). A barrier of mistrust: How negative stereotypes affect cross-race mentoring. In J. Aronson (Ed.), *Improving academic achievement: Impact of psychological factors on education* (pp. 303–327). Academic Press. https://doi.org/10.1016/B978-012064455-1/50018-X

Cokley, K. O. (2005). Racial(ized) identity, ethnic identity, and Afrocentric values: Conceptual and methodological challenges in understanding African American identity. *Journal of Counseling Psychology*, *52*(4), 517–526. https://doi.org/10.1037/0022-0167.52.4.517

Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 504–553). McGraw-Hill.

Dawson, M. C. (1995). *Behind the mule: Race and class in African-American politics*. Princeton University Press.

Dickter, C. L., Gagnon, K. T., Gyurovski, I. I., & Brewington, B. S. (2015). Close contact with racial outgroup members moderates attentional allocation towards outgroup versus ingroup faces. *Group Processes & Intergroup Relations*, *18*(1), 76–88. https://doi.org/10.1177/1368430214527854

Donders, N. C., Correll, J., & Wittenbrink, B. (2008). Danger stereotypes predict racially biased attentional allocation. *Journal of Experimental Social Psychology*, *44*(5), 1328–1333. https://doi.org/10.1016/j.jesp.2008.04.002

Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological and Personality Science*, *3*(5), 562–571. https://doi.org/10.1177/1948550611430272

Dovidio, J. F., & Gaertner, S. L. (2000). Aversive racism and selection decisions: 1989 and 1999. *Psychological Science*, *11*(4), 315–319. https://doi.org/10.1111/1467-9280.00262

Dovidio, J. F., Kawakami, K., & Gaertner, S. L. (2002). Implicit and explicit prejudice and interracial interaction. *Journal of Personality and Social Psychology*, *82*(1), 62–68. https://doi.org/10.1037/0022-3514.82.1.62

Duchenne de Bologne, B. (1862). *Album de photographies pathologiques: Complémentaire du livre intitulé De l'électrisation localisée*. J.-B. Baillière et fils.

Duchenne de Bologne, B. (1990). *The mechanism of human facial expression or an electro-physiological analysis of the expression of the emotions* (A. Cuthbertson, Trans.). Cambridge University Press. (Original work published 1862)

Eagly, A. H., Ashmore, R. D., Makhijani, M. G., & Longo, L. C. (1991). What is beautiful is good, but…: A meta-analytic review of research on the physical attractiveness stereotype. *Psychological Bulletin*, *110*(1), 109–128. https://doi.org/10.1037/0033-2909.110.1.109

Ekman, P. (2006). *Darwin and facial expression: A century of research in review*. Malor Books.

Ekman, P., & Friesen, W. V. (1982). Felt, false, and miserable smiles. *Journal of Nonverbal Behavior*, *6*(4), 238–252. https://doi.org/10.1007/BF00987191

Ekman, P., Friesen, W. V., & Hager, J. (2002). *Facial action coding system: A technique for the measurement of facial movement*. Research Nexus.

Elfenbein, H. A., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin*, *128*(2), 203–235. https://doi.org/10.1037/0033-2909.128.2.203

Fang, X., Sauter, D. A., & Van Kleef, G. A. (2018). Seeing mixed emotions: The specificity of emotion perception from static and dynamic facial expressions across cultures. *Journal of Cross-Cultural Psychology*, *49*(1), 130–148. https://doi.org/10.1177/0022022117736270

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. https://doi.org/10.3758/BF03193146

Feinberg, M., Willer, R., & Keltner, D. (2012). Flustered and faithful: Embarrassment as a signal of prosociality. *Journal of Personality and Social Psychology*, *102*(1), 81–97. https://doi.org/10.1037/a0025403

Frank, M. G., Ekman, P., & Friesen, W. V. (1993). Behavioral markers and recognizability of the smile of enjoyment. *Journal of Personality and Social Psychology*, *64*(1), 83–93. https://doi.org/10.1037/0022-3514.64.1.83

Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review*, *118*(2), 247–279. https://doi.org/10.1037/a0022327

Friesen, J. P., Kawakami, K., Vingilis-Jaremko, L., Caprara, R., Sidhu, D. M., Williams, A., Hugenberg, K., Rodríguez-Bailón, R., Cañadas, E., & Niedenthal, P. (2019). Perceiving happiness in an intergroup context: The role of race and attention to the eyes in differentiating between true and false smiles. *Journal of Personality and Social Psychology*, *116*(3), 375–395. https://doi.org/10.1037/pspa0000139

Fruhen, L. S., Watkins, C. D., & Jones, B. C. (2015). Perceptions of facial dominance, trustworthiness and attractiveness predict managerial pay awards in experimental tasks. *The Leadership Quarterly*, *26*(6), 1005–1016. https://doi.org/10.1016/j.leaqua.2015.07.001

Goodman, A. H. (2000). Why genes don't count (for racial differences in health). *American Journal of Public Health*, *90*(11), 1699–1702. https://doi.org/10.2105/AJPH.90.11.1699

Graham, S. (1992). Most of the subjects were white and middle class: Trends in published research on African Americans in selected APA journals, 1970–1989. *American Psychologist*, *47*(5), 629–639. https://doi.org/10.1037/0003-066X.47.5.629

Green, P., & Macleod, C. J. (2016). SIMR: An R package for power analysis of generalized linear mixed models by simulation. *Methods in Ecology and Evolution*, *7*(4), 493–498. https://doi.org/10.1111/2041-210X.12504

Gunnery, S. D., & Ruben, M. A. (2016). Perceptions of Duchenne and non-Duchenne smiles: A meta-analysis. *Cognition and Emotion*, *30*(3), 501–515. https://doi.org/10.1080/02699931.2015.1018817

Halabi, S., Eshan, A., & Dovidio, J. F. (2021). The effects of apology and perceived status relations on willingness of Israeli–Arabs to seek help from Israeli-Jews. *Peace and Conflict: Journal of Peace Psychology*, *27*(3), 362–370. https://doi.org/10.1037/pac0000574

Harber, K. D. (1998). Feedback to minorities: Evidence of a positive bias. *Journal of Personality and Social Psychology*, *74*(3), 622–628. https://doi.org/10.1037/0022-3514.74.3.622

Harber, K. D., Gorman, J. L., Gengaro, F. P., Butisingh, S., Tsang, W., & Ouellette, R. (2012). Students' race and teachers' social support affect the positive feedback bias in public schools. *Journal of Educational Psychology*, *104*(4), 1149–1161. https://doi.org/10.1037/a0028110

Hedges, L. V., & Vevea, J. L. (1998). Fixed- and random-effects models in meta-analysis. *Psychological Methods*, *3*(4), 486–504. https://doi.org/10.1037/1082-989X.3.4.486

Hehman, E., Ofosu, E. K., & Calanchini, J. (2021). Using environmental features to maximize prediction of regional intergroup bias. *Social Psychological and Personality Science*, *12*(2), 156–164. https://doi.org/10.1177/1948550620909775

Hehman, E., Sutherland, C. A. M., Flake, J. K., & Slepian, M. L. (2017). The unique contributions of perceiver and target characteristics in person perception. *Journal of Personality and Social Psychology*, *113*(4), 513–529. https://doi.org/10.1037/pspa0000090

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, *466*(7302), Article 29. https://doi.org/10.1038/466029a

Ho, A. K., Kteily, N. S., & Chen, J. M. (2017). "You're one of us": Black Americans' use of hypodescent and its association with egalitarianism. *Journal of Personality and Social Psychology*, *113*(5), 753–768. https://doi.org/10.1037/pspi0000107

Hodson, G., Dovidio, J. F., & Gaertner, S. L. (2002). Processes in racial discrimination: Differential weighting of conflicting information. *Personality and Social Psychology Bulletin*, *28*(4), 460–471. https://doi.org/10.1177/0146167202287004

Hugenberg, K., & Bodenhausen, G. V. (2003). Facing prejudice: Prejudice and the perception of facial threat. *Psychological Science*, *14*(6), 640–643. https://doi.org/10.1046/j.0956-7976.2003.psci_1478.x

Hugenberg, K., & Bodenhausen, G. V. (2004). Ambiguity in social categorization. *Psychological Science*, *15*(5), 342–345. https://doi.org/10.1111/j.0956-7976.2004.00680.x

Hugenberg, K., & Wilson, J. P. (2013). Faces are central to social cognition. In D. Carlston (Ed.), *Handbook of social cognition* (pp. 167–193). Oxford University Press.

Insko, C. A., & Schopler, J. (1998). Differential distrust of groups and individuals. In C. Sedikides, J. Schopler, & C. A. Insko (Eds.), *Intergroup cognition and intergroup behavior* (pp. 75–107). Lawrence Erlbaum Associates.

Jaeger, B. (2021). Consensual and idiosyncratic trustworthiness perceptions independently influence social decision-making. *European Journal of Social Psychology*, *51*(7), 1172–1180. https://doi.org/10.1002/ejsp.2806

Johnston, L., Miles, L., & Macrae, C. N. (2010). Why are you smiling at me? Social functions of enjoyment and non-enjoyment smiles. *British Journal of Social Psychology*, *49*(1), 107–127. https://doi.org/10.1348/014466609X412476

Jones, B. C., DeBruine, L. M., Flake, J. K., Liuzza, M. T., Antfolk, J., Arinze, N. C., Ndukaihe, I. L. G., Bloxsom, N. G., Lewis, S. C., Foroni, F., Willis, M. L., Cubillas, C. P., Vadillo, M. A., Turiegano, E., Gilead, M., Simchon, A., Saribay, S. A., Owsley, N. C., Jang, C., … Sirota, M. (2021). To which world regions does the valence–dominance model of social perception apply? *Nature Human Behaviour*, *5*(1), 159–169. https://doi.org/10.1038/s41562-020-01007-2

Kang, S. K., & Chasteen, A. L. (2009). Beyond the double-jeopardy hypothesis: Assessing emotion on the faces of multiply-categorizable targets of prejudice. *Journal of Experimental Social Psychology*, *45*(6), 1281–1285. https://doi.org/10.1016/j.jesp.2009.07.002

Karmali, F., & Kawakami, K. (2023). Posing while Black: The impact of race and expansive poses on trait attributions, professional evaluations, and interpersonal relations. *Journal of Personality and Social Psychology*, *124*(1), 49–68. https://doi.org/10.1037/pspa0000313

Karmali, F., Kawakami, K., & Page-Gould, E. (2017). He said what? Physiological and cognitive responses to imagining and witnessing outgroup racism. *Journal of Experimental Psychology: General*, *146*(8), 1073–1085. https://doi.org/10.1037/xge0000304

Karmali, F., Kawakami, K., Vaccarino, E., Williams, A., Phills, C., & Friesen, J. P. (2019). I don't see race (or conflict): Strategic descriptions of ambiguous negative intergroup contexts. *Journal of Social Issues*, *75*(4), 1002–1034. https://doi.org/10.1111/josi.12353

Kawakami, K., Amodio, D. M., & Hugenberg, K. (2017). Intergroup perception and cognition: An integrative framework for understanding the causes and consequences of social categorization. *Advances in Experimental Social Psychology*, *55*, 1–80. https://doi.org/10.1016/bs.aesp.2016.10.001

Kawakami, K., Dunn, E., Karmali, F., & Dovidio, J. F. (2009). Misreading affective and behavioral responses to racism. *Science*, *323*(5911), 276–278. https://doi.org/10.1126/science.1164951

Kawakami, K., Friesen, J. P., & Fang, X. (2022). Perceiving ingroup and outgroup faces within and across nations. *British Journal of Psychology*, *113*(3), 551–574. https://doi.org/10.1111/bjop.12563

Kawakami, K., Hugenberg, K., & Dunham, Y. (2020). Perceiving others as group members: Basic principles of social categorization processes. In P. van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (3rd ed., pp. 411–429). Guilford Press.

Kawakami, K., Williams, A., Sidhu, D., Choma, B. L., Rodriguez-Bailón, R., Cañadas, E., Chung, D., & Hugenberg, K. (2014). An eye for the I: Preferential attention to the eyes of ingroup members. *Journal of Personality and Social Psychology*, *107*(1), 1–20. https://doi.org/10.1037/a0036838

Keltner, D., & Bonanno, G. A. (1997). A study of laughter and dissociation: Distinct correlates of laughter and smiling during bereavement. *Journal of*

Personality and Social Psychology, *73*(4), 687–702. https://doi.org/10.1037/0022-3514.73.4.687

Kendi, I. X. (2017). *Stamped from the beginning: The definitive history of racist ideas in America*. Hachette UK.

Kleisner, K., Priplatova, L., Frost, P., & Flegr, J. (2013). Trustworthy-looking face meets brown eyes. *PLOS ONE*, *8*(1), Article e53285. https://doi.org/10.1371/journal.pone.0053285

Korb, S., With, S., Niedenthal, P., Kaiser, S., & Grandjean, D. (2014). The perception and mimicry of facial movements predict judgments of smile authenticity. *PLOS ONE*, *9*(6), Article e99194. https://doi.org/10.1371/journal.pone.0099194

Kramer, R. M., & Messick, D. M. (1998). Getting by with a little help from our enemies: Collective paranoia and its role in intergroup relations. In C. Sedikides, J. Schopler, & C. A. Insko (Eds.), *Intergroup cognition and intergroup behavior* (pp. 233–255). Lawrence Erlbaum Associates.

Krumhuber, E. G., & Kappas, A. (2022). More what Duchenne smiles do, less what they express. *Perspectives on Psychological Science*, *17*(6), 1566–1575. https://doi.org/10.1177/17456916211071083

Krumhuber, E. G., Manstead, A. S. R., Cosker, D., Marshall, D., Rosin, P. L., & Kappas, A. (2007). Facial dynamics as indicators of trustworthiness and cooperative behavior. *Emotion*, *7*(4), 730–735. https://doi.org/10.1037/1528-3542.7.4.730

Krys, K., Melanie Vauclair, C., Capaldi, C. A., Lun, V. M. C., Bond, M. H., Domínguez-Espinosa, A., Torres, C., Lipp, O. V., Manickam, L. S. S., Xing, C., Antalíková, R., Pavlopoulos, V., Teyssier, J., Hur, T., Hansen, K., Szarota, P., Ahmed, R. A., Burtceva, E., Chkhaidze, A., … Yu, A. A. (2016). Be careful where you smile: Culture shapes judgments of intelligence and honesty of smiling individuals. *Journal of Nonverbal Behavior*, *40*(2), 101–116. https://doi.org/10.1007/s10919-015-0226-4

Kunstman, J. W., Tuscherer, T., Trawalter, S., & Lloyd, P. E. (2016). What lies beneath? Minority group members' suspicion of Whites' egalitarian motivation predicts responses to Whites' smiles. *Personality and Social Psychology Bulletin*, *42*(9), 1193–1205. https://doi.org/10.1177/0146167216652860

LaCosse, J., Tuscherer, T., Kunstman, J. W., Plant, E. A., Trawalter, S., & Major, B. (2015). Suspicion of White people's motives relates to relative accuracy in detecting external motivation to respond without prejudice. *Journal of Experimental Social Psychology*, *61*(1), 1–4. https://doi.org/10.1016/j.jesp.2015.06.003

LaFrance, M., & Hecht, M. A. (1995). Why smiles generate leniency. *Personality and Social Psychology Bulletin*, *21*(3), 207–214. https://doi.org/10.1177/0146167295213002

Lloyd, E. P., Kunstman, J. W., Tuscherer, T., & Bernstein, M. J. (2017). The face of suspicion. *Social Psychological and Personality Science*, *8*(8), 953–960. https://doi.org/10.1177/1948550617699251

Lloyd, E. P., Lloyd, A. R., McConnell, A. R., & Hugenberg, K. (2022). Race deficits in pain detection: Medical providers and laypeople fail to accurately perceive pain authenticity among black people. *Social Psychological and Personality Science*, *13*(5), 895–905. https://doi.org/10.1177/19485506211045887

Major, B. N., Kunstman, J. W., Malta, B. D., Sawyer, P. J., Townsend, S. S. M., & Mendes, W. B. (2016). Suspicion of motives predicts minorities' responses to positive feedback in interracial interactions. *Journal of Experimental Social Psychology*, *62*(1), 75–88. https://doi.org/10.1016/j.jesp.2015.10.007

Major, B. N., Sawyer, P. J., & Kunstman, J. W. (2013). Minority perceptions of Whites' motives for responding without prejudice: The perceived internal and external motivation to avoid prejudice scales. *Personality and Social Psychology Bulletin*, *39*(3), 401–414. https://doi.org/10.1177/0146167213475367

Maner, J. K. (2014). Let's put our money where our mouth is. *Perspectives on Psychological Science*, *9*(3), 343–351. https://doi.org/10.1177/1745691614528215

McClain, P. D., Johntson Carew, J. D., Walton, E., & Watts, C. S. (2009). Group membership, group identity, and group consciousness: Measures of racial identity in American politics? *Annual Review of Political Science*, *12*(1), 471–485. https://doi.org/10.1146/annurev.polisci.10.072805.102452

Mehu, M., Grammer, K., & Dunbar, R. I. M. (2007). Smiles when sharing. *Evolution and Human Behavior*, *28*(6), 415–422. https://doi.org/10.1016/j.evolhumbehav.2007.05.010

Mende-Siedlecki, P., Qu-Lee, J., Backer, R., & Van Bavel, J. J. (2019). Perceptual contributions to racial bias in pain recognition. *Journal of Experimental Psychology: General*, *148*(5), 863–889. https://doi.org/10.1037/xge0000600

Messinger, D. S., Cassel, T. D., Acosta, S. I., Ambadar, Z., & Cohn, J. F. (2008). Infant smiling dynamics and perceived positive emotion. *Journal of Nonverbal Behavior*, *32*(3), 133–155. https://doi.org/10.1007/s10919-008-0048-8

Miles, L. K. (2009). Who is approachable? *Journal of Experimental Social Psychology*, *45*(1), 262–266. https://doi.org/10.1016/j.jesp.2008.08.010

Miles, L. K., & Johnston, L. (2007). Detecting happiness: Perceiver sensitivity to enjoyment and non-enjoyment smiles. *Journal of Nonverbal Behavior*, *31*(4), 259–275. https://doi.org/10.1007/s10919-007-0036-4

Miller, E. J., Krumhuber, E. G., & Dawel, A. (2022). Observers perceive the Duchenne marker as signaling only intensity for sad expressions, not genuine emotion. *Emotion*, *22*(5), 907–919. https://doi.org/10.1037/emo0000772

Montoya, A. K., & Hayes, A. F. (2017). Two-condition within-participant statistical mediation analysis: A path-analytic framework. *Psychological Methods*, *22*(1), 6–27. https://doi.org/10.1037/met0000086

Namba, S., Sato, W., & Matsui, H. (2022). Spatio-temporal properties of amused, embarrassed, and pained smiles. *Journal of Nonverbal Behavior*, *46*(4), 467–483. https://doi.org/10.1007/s10919-022-00404-7

Neville, H. A., & Cross, Jr., W. E. (2017). Racial awakening: Epiphanies and encounters in Black racial identity. *Cultural Diversity and Ethnic Minority Psychology*, *23*(1), 102–108. https://doi.org/10.1037/cdp0000105

Niedenthal, P. M., & Brauer, M. (2012). Social functionality of human emotion. *Annual Review of Psychology*, *63*(1), 259–285. https://doi.org/10.1146/annurev.psych.121208.131605

Niedenthal, P. M., Mermillod, M., Maringer, M., & Hess, U. (2010). The simulation of smiles (SIMS) model: Embodied simulation and the meaning of facial expression. *Behavioral and Brain Sciences*, *33*(6), 417–433. https://doi.org/10.1017/S0140525X10000865

Olivola, C. Y., Funk, F., & Todorov, A. (2014). Social attributions from faces bias human choices. *Trends in Cognitive Sciences*, *18*(11), 566–570. https://doi.org/10.1016/j.tics.2014.09.007

Oosterhof, N. N., & Todorov, A. (2008). The functional basis of face evaluation. *Proceedings of the National Academy of Sciences of the United States of America*, *105*(32), 11087–11092. https://doi.org/10.1073/pnas.0805664105

Oswald, F., & Adams, R. B. (2023). Feminist social vision: Seeing through the lens of marginalized perceivers. *Personality and Social Psychology Review*, *27*(3), 332–356. https://doi.org/10.1177/10888683221126582

Page-Gould, E., Mendoza-Denton, R., & Tropp, L. R. (2008). With a little help from my cross-group friend: Reducing anxiety in intergroup contexts through cross-group friendship. *Journal of Personality and Social Psychology*, *95*(5), 1080–1094. https://doi.org/10.1037/0022-3514.95.5.1080

Pauker, K., Meyers, C., Sanchez, D. T., Gaither, S. E., & Young, D. M. (2018). A review of multiracial malleability: Identity, categorization, and shifting racial attitudes. *Social and Personality Psychology Compass*, *12*(6), 1–15. https://doi.org/10.1111/spc3.12392

Peeters, G., & Czapinski, J. (1990). Positive-negative asymmetry in evaluations: The distinction between affective and informational negativity effects. *European Review of Social Psychology*, *1*(1), 33–60. https://doi.org/10.1080/14792779108401856

Porter, S., & ten Brinke, L. (2008). Reading between the lies: Identifying concealed and falsified emotions in universal facial expressions. *Psychological Science*, *19*(5), 508–514. https://doi.org/10.1111/j.1467-9280.2008.02116.x

Porter, S., ten Brinke, L., & Gustaw, C. (2010). Dangerous decisions: The impact of first impressions of trustworthiness on the evaluation of legal evidence and defendant culpability. *Psychology, Crime & Law*, *16*(6), 477–491. https://doi.org/10.1080/10683160902926141

Quadflieg, S., Vermeulen, N., & Rossion, B. (2013). Differential reliance on the Duchenne marker during smile evaluations and person judgments. *Journal of Nonverbal Behavior*, *37*(2), 69–77. https://doi.org/10.1007/s10919-013-0147-z

Richeson, J. A., & Shelton, J. (2007). Negotiating interracial interactions: Costs, consequences, and possibilities. *Current Directions in Psychological Science*, *16*(6), 316–320. https://doi.org/10.1111/j.1467-8721.2007.00528.x

Richeson, J. A., & Trawalter, S. (2008). The threat of appearing prejudiced and race based attentional biases. *Psychological Science*, *19*(2), 98–102. https://doi.org/10.1111/j.1467-9280.2008.02052.x

Roberts, S. (2022). *Dealing with diversity in psychology: Science and ideology*. PsyArXiv. https://doi.org/10.31234/osf.io/xk4yu

Roberts, S. O., Bareket-Shavit, C., Dollins, F. A., Goldie, P. D., & Mortenson, E. (2020). Racial inequality in psychological research: Trends of the past and recommendations for the future. *Perspectives on Psychological Science*, *15*(6), 1295–1309. https://doi.org/10.1177/1745691620927709

Rotella, K. N., Richeson, J. A., Chiao, J. Y., & Bean, M. G. (2013). Blinding trust: The effect of perceived group victimhood on intergroup trust. *Personality and Social Psychology Bulletin*, *39*(1), 115–127. https://doi.org/10.1177/0146167212466114

Rule, N. O., Adams, R. B., Ambady, N., & Freeman, J. B. (2012). Perceptions of dominance following glimpses of faces and bodies. *Perception*, *41*(6), 687–706. https://doi.org/10.1068/p7023

Rychlowska, M., Cañadas, E., Wood, A., Krumhuber, E. G., Fischer, A., & Niedenthal, P. M. (2014). Blocking mimicry makes true and false smiles look the same. *PLOS ONE*, *9*(3), Article e90876. https://doi.org/10.1371/journal.pone.0090876

Rychlowska, M., Jack, R. E., Garrod, O. G. B., Schyns, P. G., Martin, J. D., & Niedenthal, P. M. (2017). Functional smiles: Tools for love, sympathy, and war. *Psychological Science*, *28*(9), 1259–1270. https://doi.org/10.1177/0956797617706082

Rychlowska, M., Manstead, A. S. R., & van der Schalk, J. (2019). The many faces of smiles. In U. Hess & S. Hareli (Eds.), *The social nature of emotion expression* (pp. 227–245). Springer. https://doi.org/10.1007/978-3-030-32968-6

Sagar, H. A., & Schofield, J. W. (1980). Racial and behavioral cues in Black and White children's perceptions of ambiguously aggressive acts. *Journal of Personality and Social Psychology*, *39*(4), 590–598. https://doi.org/10.1037/0022-3514.39.4.590

Scheepers, D., Spears, R., Doosje, B., & Manstead, A. S. R. (2006). Diversity in in-group bias: Structural factors, situational features, and social functions. *Journal of Personality and Social Psychology*, *90*(6), 944–960. https://doi.org/10.1037/0022-3514.90.6.944

Sellers, R. M., Rowley, S. A. J., Chavous, T. M., Shelton, J. N., & Smith, M. A. (1997). Multidimensional Inventory of Black Identity: A preliminary investigation of reliability and construct validity. *Journal of Personality and Social Psychology*, *73*(4), 805–815. https://doi.org/10.1037/0022-3514.73.4.805

Sheldon, K. M., Corcoran, M., & Sheldon, M. (2021). Duchenne smiles as honest signals of chronic positive mood. *Perspectives on Psychological Science*, *16*(3), 654–666. https://doi.org/10.1177/1745691620959831

Shelton, J. N. (2000). A reconceptualization of how we study issues of racial prejudice. *Personality and Social Psychology Review*, *4*(4), 374–390. https://doi.org/10.1207/S15327957PSPR0404_6

Simon, S., Shaffer, E., Neel, R., & Shapiro, J. (2019). Exploring Blacks' perceptions of Whites' racial prejudice as a function of intergroup behavior and motivational mindsets. *Social Psychological and Personality Science*, *10*(5), 575–585. https://doi.org/10.1177/1948550618778584

Simpson, B., McGrimmon, T., & Irwin, K. (2007). Are Blacks really less trusting than Whites? Revisiting the race and trust question. *Social Forces*, *86*(2), 525–552. https://doi.org/10.1093/sf/86.2.525

Simpson, J. A. (2007). Psychological foundations of trust. *Current Directions in Psychological Science*, *16*(5), 264–268. https://doi.org/10.1111/j.1467-8721.2007.00517.x

Skowronski, J. J., & Carlston, D. E. (1989). Negativity and extremity biases in impression formation: A review of explanations. *Psychological Bulletin*, *105*(1), 131–142. https://doi.org/10.1037/0033-2909.105.1.131

Slepian, M. L., & Carr, E. W. (2019). Facial expressions of authenticity: Emotion variability increases judgments of trustworthiness and leadership. *Cognition*, *183*, 82–98. https://doi.org/10.1016/j.cognition.2018.10.009

Slepian, M. L., Chun, J. S., & Mason, M. F. (2017). The experience of secrecy. *Journal of Personality and Social Psychology*, *113*(1), 1–33. https://doi.org/10.1037/pspa0000085

Stirrat, M., & Perrett, D. I. (2010). Valid facial cues to cooperation and trust: Male facial width and trustworthiness. *Psychological Science*, *21*(3), 349–354. https://doi.org/10.1177/0956797610362647

Sutherland, C. A., Burton, N. S., Wilmer, J. B., Blokland, G. A., Germine, L., Palermo, R., Collova, J. R., & Rhodes, G. (2020). Individual differences in trust evaluations are shaped mostly by environments, not genes. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(19), 10218–10224. https://doi.org/10.1073/pnas.1920131117

Swim, J. K., Cohen, L. L., & Hyers, L. L. (1998). Experiencing everyday prejudice and discrimination. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 37–60). Academic Press. https://doi.org/10.1016/B978-012679130-3/50037-5

Tam, T., Hewstone, M., Kenworthy, J., & Cairns, E. (2009). Intergroup trust in Northern Ireland. *Personality and Social Psychology Bulletin*, *35*(1), 45–59. https://doi.org/10.1177/0146167208325004

Thierry, S. M., & Mondloch, C. J. (2021). First impressions of child faces: Facial trustworthiness influences adults' interpretations of children's behavior in ambiguous situations. *Journal of Experimental Child Psychology*, *208*, Article 105153. https://doi.org/10.1016/j.jecp.2021.105153

Thomas, A. K., McKinney de Royston, M., & Powell, S. (2023). Color-evasive cognition: The unavoidable impact of scientific racism in the founding of a field. *Current Directions in Psychological Science*, *32*(2), 137–144. https://doi.org/10.1177/09637214221141713

Todorov, A. (2017). *Face value*. Princeton University Press.

Todorov, A., Dotsch, R., Porter, J. M., Oosterhof, N. N., & Falvello, V. B. (2013). Validation of data-driven computational models of social perception of faces. *Emotion*, *13*(4), 724–738. https://doi.org/10.1037/a0032335

Todorov, A., & Oh, D. (2021). The structure and perceptual basis of social judgments from faces. In B. Gawronski (Ed.), *Advances in experimental social psychology* (pp. 189–245). Elsevier Academic Press. https://doi.org/10.1016/bs.aesp.2020.11.004

Todorov, A., Olivola, C. Y., Dotsch, R., & Mende-Siedlecki, P. (2015). Social attributions from faces: Determinants, consequences, accuracy, and functional significance. *Annual Review of Psychology*, *66*(1), 519–545. https://doi.org/10.1146/annurev-psych-113011-143831

Todorov, A., & Oosterhof, N. N. (2011). Modeling social perception of faces [social sciences]. *IEEE Signal Processing Magazine*, *28*(2), 117–122. https://doi.org/10.1109/MSP.2010.940006

Todorov, A., Pakrashi, M., & Oosterhof, N. N. (2009). Evaluating faces on trustworthiness after minimal time exposure. *Social Cognition*, *27*(6), 813–833. https://doi.org/10.1521/soco.2009.27.6.813

Tracy, J. L., Mercadante, E., Witkower, Z., & Cheng, J. T. (2020). The evolution of pride and social hierarchy. In B. Gawronski (Ed.), *Advances in experimental social psychology* (pp. 51–114). Elsevier Academic Press. https://doi.org/10.1016/bs.aesp.2020.04.002

Tracy, R. E., Wilson, J. P., Slepian, M. L., & Young, S. G. (2020). Facial trustworthiness predicts ingroup inclusion decisions. *Journal of*

Experimental Social Psychology, *91*, Article 104047. https://doi.org/10.1016/j.jesp.2020.104047

Trawalter, S., Hoffman, K., & Palmer, L. (2021). Out of place: Socioeconomic status, use of public space, and belonging in higher education. *Journal of Personality and Social Psychology*, *120*(1), 131–144. https://doi.org/10.1037/pspi0000248

Trawalter, S., Todd, A. R., Baird, A. A., & Richeson, J. A. (2008). Attending to threat: Race-based patterns of selective attention. *Journal of Experimental Social Psychology*, *44*(5), 1322–1327. https://doi.org/10.1016/j.jesp.2008.03.006

Tropp, L. R. (2008). The role of trust in intergroup contact: Its significance and implications for improving relations between groups. In U. Wagner, L. R. Tropp, G. Finchilescu, & C. Tredoux (Eds.), *Improving intergroup relations: Building on the legacy of Thomas F. Pettigrew* (pp. 91–106). Blackwell. https://doi.org/10.1002/9781444303117.ch7

Tropp, L. R. (2021). Crossing to safety: Attachment processes in intergroup contact. *Journal of Social Issues*, *77*(1), 86–104. https://doi.org/10.1111/josi.12426

Tropp, L. R., & Prenovost, M. A. (2008). The role of intergroup contact in predicting children's interethnic attitudes: Evidence from meta-analytic and field studies. In S. R. Levy, & M. Killen (Eds.), *Intergroup attitudes and relations in childhood through adulthood* (pp. 236–248). Oxford University Press.

Van den Stock, J., Righart, R., & de Gelder, B. (2007). Body expressions influence recognition of emotions in the face and voice. *Emotion*, *7*(3), 487–494. https://doi.org/10.1037/1528-3542.7.3.487

Vazire, S. (2010). Who knows what about a person? The self-other knowledge asymmetry (SOKA) model. *Journal of Personality and Social Psychology*, *98*(2), 281–300. https://doi.org/10.1037/a0017908

Vazire, S., & Carlson, E. N. (2011). Others sometimes know us better than we know ourselves. *Current Directions in Psychological Science*, *20*(2), 104–108. https://doi.org/10.1177/0963721411402478

Voci, A. (2006). The link between identification and in-group favouritism: Effects of threat to social identity and trust-related emotions. *British Journal of Social Psychology*, *45*(2), 265–284. https://doi.org/10.1348/014466605X52245

Wallbott, H. G. (1988). Big girls don't frown, big boys don't cry—Gender differences of professional actors in communicating emotion via facial expression. *Journal of Nonverbal Behavior*, *12*(2), 98–106. https://doi.org/10.1007/BF00986928

Westfall, J., Judd, C. M., & Kenny, D. A. (2015). Replicating studies in which samples of participants respond to samples of stimuli. *Perspectives on Psychological Science*, *10*(3), 390–399. https://doi.org/10.1177/1745691614564879

Willis, J., & Todorov, A. (2006). First impressions: Making up your mind after a 100-ms exposure to a face. *Psychological Science*, *17*(7), 592–598. https://doi.org/10.1111/j.1467-9280.2006.01750.x

Wilson, J. P., & Rule, N. O. (2015). Facial trustworthiness predicts extreme criminal-sentencing outcomes. *Psychological Science*, *26*(8), 1325–1331. https://doi.org/10.1177/0956797615590992

Wood, A., Rychlowska, M., Korb, S., & Niedenthal, P. (2016). Fashioning the face: Sensorimotor simulation contributes to facial expression recognition. *Trends in Cognitive Sciences*, *20*(3), 227–240. https://doi.org/10.1016/j.tics.2015.12.010

Xie, S. Y., Flake, J. K., Stolier, R. M., Freeman, J. B., & Hehman, E. (2021). Facial impressions are predicted by the structure of group stereotypes. *Psychological Science*, *32*(12), 1979–1993. https://doi.org/10.1177/09567976211024259

Young, S. G., & Hugenberg, K. (2010). Mere social categorization modulates identification of facial expressions of emotion. *Journal of Personality and Social Psychology*, *99*(6), 964–977. https://doi.org/10.1037/a0020400

Young, S. G., Slepian, M. L., & Sacco, D. F. (2015). Sensitivity to perceived facial trustworthiness is increased by activating self-protection motives. *Social Psychological and Personality Science*, *6*(6), 607–613. https://doi.org/10.1177/1948550615573329

Zaalberg, R., Manstead, A., & Fischer, A. (2004). Relations between emotions, display rules, social motives, and facial behaviour. *Cognition and Emotion*, *18*(2), 183–207. https://doi.org/10.1080/02699930341000040

Zahavi, A. (1975). Mate selection—A selection for a handicap. *Journal of Theoretical Biology*, *53*(1), 205–214. https://doi.org/10.1016/0022-5193(75)90111-3

Received February 14, 2023
Revision received February 29, 2024
Accepted March 13, 2024 ■