Journal of Experimental Psychology: Applied

From Similitude to Success: The Effects of Facial Resemblance on Perceptions of Team Effectiveness

Ze Wang, Xin He, and Fan Liu

From Similitude to Success: The Effects of Facial Resemblance on Perceptions of Team Effectiveness

Ze Wang and Xin He
University of Central Florida

Fan Liu
Adelphi University

Scant empirical research has focused on how impressions of teams are formed based on members' collective appearance, even though team photos are omnipresent in visual communications and teamwork is a common theme to elicit positive responses. Across 4 studies, we show that a subtle increase in the facial resemblance among team members enhances observers' evaluations of team effectiveness. This resemblance effect is mediated by perceived cooperative intent among team players. Furthermore, we demonstrate a reversal of the resemblance effect through the moderating role of information valence and extend the finding from team perception to behavioral intention. These results hold across different manipulations, contexts, stimuli, and sample characteristics. Collectively, this research presents the first empirical evidence that inferences based on facial morphology persist well beyond evaluations of individuals to influence the way a team, as a whole, is perceived.

Keywords: facial resemblance, team perception, face-based inferences, first impressions

Facial imagery is omnipresent in visual communications. Human faces contain exceptionally rich information and are an integral part of communication effort. People have evolved to be adept readers of these facial cues and rely on them to make social judgments (Engell, Haxby, & Todorov, 2007). Evidence suggests that people spontaneously evaluate the faces of others to infer numerous social qualities, such as trustworthiness, competence, and warmth (Berry & McArthur, 1986; Chen, Jing, & Lee, 2014; Petrican, Todorov, & Grady, 2014; Rule, Krendl, Ivcevic, & Ambady, 2013; Zebrowitz & Montepare, 2008) and that such inferences matter in a variety of applied contexts, including perceptions of an organization and its leadership (Gorn, Jiang, & Johar, 2008; Wong, Ormiston, & Haselhuhn, 2011), evaluations of political candidates (Hoegg & Lewis, 2011; Olivola, Sussman, Tsetsos, Kang, & Todorov, 2012), preference for salespeople (Tanner & Maeng, 2012), and tendency toward charitable contributions and prosocial behaviors (Fisher & Ma, 2014; Small & Verrochi, 2009).

While it is well known that the way people look can affect how they are perceived as *individuals*, little is known about the role of face-based inferences in the perception of *groups*. Nevertheless, presentations of team images are prevalent in people's daily lives. For example, the American Funds' home page features pictures of mul-

tiple investment professionals, university brochures include department portraits of faculty members, and National Basketball Association (NBA) websites routinely present group photos of their best players. A common theme in these communications is the promotion of team effectiveness. Although facial imagery can influence observers' judgment and decision making, prior research has not examined the effect of facial images on social perception of the *team*. We address this issue in this research. Specifically, we argue that subtle changes in facial resemblance among team players can influence people's perception of a team's effectiveness and subsequent behavioral intent to engage or interact with the team. In four studies, we examine the role of facial resemblance in team perceptions and its underlying mechanism using different manipulations (direct and indirect morphing), contexts (NBA team, attorneys, real estate agents, and entrepreneurs on Kickstarter), and stimuli (familiar stars and zero-acquaintance strangers). Collectively, these studies represent the first attempt to extend the facial processing literature from perceptions of individuals to evaluations of teams.

Conceptual Background

Face-Based Inferences

In social perceptions, the human face represents rich social cues about one's mental states (e.g., to approach or avoid) and social motives (intention to be friendly or hostile; Todorov, Said, Engell, & Oosterhof, 2008). Extant literature has documented the prevalence of face-based inferences (Hall, Goren, Chaiken, & Todorov, 2009; Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015; Zebrowitz, 1996). Research suggests that such inferences bias one's judgment and choices in numerous domains and contexts, such as mate choice (Little, Burt, & Perrett, 2006), leadership (Chen et al., 2014; Mueller & Mazur, 1996), politics (Lenz & Lawson, 2011; Olivola et al., 2012), litigations (Eberhardt, Davies, Purdie-

Ze Wang and Xin He, Department of Marketing, College of Business Administration, University of Central Florida; Fan Liu, Department of Decision Sciences and Marketing, Robert B. Willumstad School of Business, Adelphi University.

Correspondence concerning this article should be addressed to Ze Wang, College of Business Administration, University of Central Florida, 4000 Central Florida Boulevard, Orlando, FL 32816. E-mail: Ze.Wang@ucf.edu

Vaughns, & Johnson, 2006; Porter, ten Brinke, & Gustaw, 2010), and business (Gorn et al., 2008; Naylor, 2007). For example, Olivola et al. (2012) demonstrate that a candidate's facial cues can bias voters' inference of the candidate's political affiliation and influence voters' choice in the election. Eberhardt et al. (2006) show that a defendant's facial appearance can influence judiciary outcomes, such as verdict and sentencing. As another example of face-based inferences, Gorn et al. (2008) demonstrate that people perceived a company's chief executive officer with a babyish face (rather than a mature face) as more trustworthy, which further influenced their evaluations of the company.

It is important to note that prior research on face-based inferences has focused on the perceptions of *individuals*. In contrast, very little research has examined the role of these inferences in the perception of *groups* (of individuals). We argue that it is important to examine how the facial images of team members influence how the entire group is perceived. Groups are perceived and treated differently from individuals (Hamilton & Sherman, 1996; O'Laughlin & Malle, 2002). The way a team is evaluated is not just a sum of the ways individual members are assessed (Dasgupta, Banaji, & Abelson, 1999; Pemberton, Insko, & Schopler, 1996); rather, people perceive and judge groups in a holistic manner (Bruner, 1956; Hamilton, Sherman, & Maddox, 1999). This begs the question of how facial cues of individual members might collectively affect evaluations of the team as a whole. As the first attempt to examine group-level face processing, this research addresses a central question: Will one single facial cue, facial resemblance in particular, influence the perception of a team?

Facial Resemblance

Facial resemblance refers to the extent to which an individual's facial features resemble another's (Verosky & Todorov, 2010). It is a salient perceptual cue that can influence impression formation and judgment of others (Bailenson, Iyengar, Yee, & Collins, 2008; Gawronski & Quinn, 2013; Günaydin, Zayas, Selcuk, & Hazan, 2012). For example, research has shown that how strangers are evaluated can be influenced by the extent to which their facial appearances resemble those of known individuals (Kraus & Chen, 2010; Verosky & Todorov, 2010). Tanner and Maeng (2012) demonstrate that evaluation of individual salespersons is influenced by the trustworthiness of the celebrities whom they resemble. Nevertheless, existing literature has mainly focused on the perceptions of *individuals*. In contrast, we focus on the perceptions of *groups*—specifically, how facial resemblance among team members affects perceptions of the group, as a whole.

The resemblance between human faces often signals the relatedness among individuals (Alvergne et al., 2009; DeBruine, Jones, Little, & Perrett, 2008). People assess interpersonal relatedness through comparison of others' appearance cues, such as their facial similarity (DeBruine, 2002; Platek & Thomson, 2007). For example, when approaching unfamiliar others, people have the ability to detect the degree of relatedness between strangers according to their facial resemblance (Alvergne, Faurie, & Raymond, 2007). Moreover, human beings are sensitive to the benefits of interpersonal relatedness (DeBruine, 2005) and are positively disposed to collaborative others (Laham, Gonsalkorale, & von Hippel, 2005; Leider, Möbius, Rosenblat, & Do, 2009). For example, relatedness among others may lead to inferences such as who is likely to

provide assistance to another or who is likely to band together and form a collective action (Lieberman, Oum, & Kurzban, 2008). It is therefore conceivable that facial resemblance, as a cue for relatedness between individuals, may affect inferences about their cooperative intent—team members' inclination to react in an adjoined manner and work toward a common goal (Weingart, Brett, Olekalns, & Smith, 2007).

The association between facial resemblance and perceived cooperative intent is also supported by the social categorization literature (Campbell, 1958; Williams & O'Reilly, 1998). The collective appearance of team members may influence how observers infer the group's properties and dynamics and perceptual similarity among group members may lead to observers' subjective impression of unity and entitativity of the group (Dasgupta et al., 1999; Ip, Chiu, & Wan, 2006). While prior research has examined overall physical characteristics such as body color (Dasgupta et al., 1999) and behavioral characteristics such as body movement (Ip et al., 2006), our research focuses on facial cues, specifically facial resemblance among group members. Notwithstanding these differences, we build on this line of research, which suggests that individuals in an entitative group are perceived as being bonded in a cohesive manner (Campbell, 1958; Lickel et al., 2000) and are more likely to take collective actions consistent with one another (Abelson, Dasgupta, Park, & Banaji, 1998; McConnell, Sherman, & Hamilton, 1997). As such, we argue that facial resemblance enhances perceptual similarity among group members and thereby strengthens observers' perceptions of a strong bond between individuals and increases perceived cooperative intent among team members.

Furthermore, we reason that stronger perceived cooperative intent leads to greater perceived team effectiveness. Indeed, evidence suggests that cooperation is an important factor that influences team performance (Carron & Brawley, 2000; Mulvey & Klein, 1998). Members' cooperative intent improves team effectiveness by enhancing the team's commitment to the task and collective exertions toward achieving success (Hackman & Vidmar, 1970). Cooperative teams also tend to communicate efficiently and to be united while working toward a common goal (Hollingshead, 1998, 2000; Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). These qualities can result in lower turnover (Wagner, Pfeffer, & O'Reilly, 1984) and higher performance (Murnighan & Conlon, 1991). It is also common to hear anecdotal accounts of how cooperation affects team effectiveness (e.g., "In union, there is strength—Aesop"), which fosters the association between perceived cooperative intent and evaluations of team effectiveness. Although the actual link between group composition and team performance can be complex (Beal, Cohen, Burke, & McLendon, 2003), lay theory suggests that members with strong cooperative intent form a strong and efficacious team. Synthesizing the previous logic, we predict that (a) facial resemblance enhances the perceived effectiveness of a team and (b) this resemblance effect is mediated by perceived cooperative intent among team members.

Overview of Studies

We test the hypotheses in a series of four studies, by subtly varying the degree of facial resemblance among team members using digital morphing. We digitally combine the facial images of two (or more) individuals to produce a composite picture that

represents a weighted average of the features of all input faces (Figure 1). By controlling how much each input face contributes to the composite picture, we can precisely (and objectively) manipulate the degree of facial resemblance among team members in our stimuli, while holding other extraneous variables (e.g., facial expressions) constant.[1]

In Study 1, we provide evidence that subtly increasing the facial resemblance between well-known basketball stars boosts an NBA team's perceived effectiveness and this resemblance effect is shown to be mediated by perceived cooperative intent among players. We replicate these findings in Study 2, in which we examine the facial resemblance among strangers. In Study 3, we demonstrate a reversal of the resemblance effect by manipulating information valence. We also expand our inquiry from perception of team effectiveness to behavioral intention. Finally, in Study 4, we use a different manipulation of facial resemblance (third-party morphing) and extend the scope of the resemblance effect from dyads to multimember teams.

Study 1: Resemblance Among Stars

Participants, Design, and Procedure

The purpose of this study is to provide initial support for our hypothesis that facial resemblance enhances perceived team effectiveness. Fifty-eight respondents from the United States were recruited through Amazon Mechanical Turk (MTurk) crowdsourcing service (M_{age} = 29.14 years, SD = 8.30, range = 18–55; 59% male) and were paid $0.25 for participating. We excluded one respondent, who failed to follow the instructions, from the analyses.

Respondents were presented with the photos of two famous professional basketball players from the Miami Heat—LeBron James and Dwyane Wade. This study took place the day before Game 7 of the 2013 NBA finals between the Miami Heat and the San Antonio Spurs. The timing was ideal because both teams were tied (with three wins each) at the time. Thus, respondents' perceptions of team effectiveness were unlikely to be biased by prior performance in the finals. To develop the experimental stimuli, we first followed the three-stage guideline by Calder, Young, Perrett, Etcoff, and Rowland (1996) and carefully outlined each player's

|	Study 2	Study 3
Low Facial Resemblance (10%)		
High Facial Resemblance (30%)		
Morphing Methodology	Direct morphing	Direct morphing

Figure 1. Manipulation of facial resemblance (these individuals have volunteered their photos for research purposes). See the online article for the color version of this figure.

internal facial features (e.g., eyes, eyebrows, pupil, nose, mouth) and external head features (e.g., hairline, face shape, chin shape, hair). We then subtly increased facial resemblance by digitally mixing the two original photos together, using Morph Age Pro 4.0 software (Sebbe, 2008). In the high-resemblance condition, each player's facial photo contained 30% of the other player's face (and 70% of the player's original facial image). In the low-resemblance condition, only 10% of the other's face was blended in. Finally, Photoshop software was applied to fix the blurry hair or the shirt collar caused by the morphing.

We randomly assigned respondents to either the low-resemblance condition (10% morphing) or the high-resemblance condition (30% morphing) in a between-subjects design. To verify the manipulation of facial resemblance, we conducted a separate pretest with 31 respondents from the United States and recruited through MTurk (M_{age} = 33.52 years, SD = 9.30, range = 22–59; 61.3% male). Respondents in one of the two conditions viewed the pictures and reported the extent to which they thought the two Heat players look similar (1 = *very dissimilar*, 7 = *very similar*). We subjected the score of perceived similarity to a one-way analysis of variance (ANOVA) with the facial resemblance condition as the independent variable. The results showed that the respondents perceived the players as more similar in the high-resemblance condition than in the low-resemblance condition (M = 5.47 vs. 3.88); $F(1, 29)$ = 8.96, $p < .01$, η^2 = .24. Thus, our manipulation was successful.

We measured the perceived team effectiveness of the Miami Heat using a 3-item scale adapted from Cuddy, Fiske, and Glick (2008) and Aaker, Vohs, and Mogilner (2010). Respondents evaluated the competency, the capability, and competitiveness of the Miami Heat, on a 1 (*not at all*) to 7 (*very much so*) scale (α = .93). In addition, they assessed perceived cooperative intent using three items adapted from Dobbins and Zaccaro (1986) and Carless and De Paola (2000): (1) "The team members want to have a good relationship with others," (2) "The team members relate to each other well," and (3) "The team members like to work together," with each item rated on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (α = .94). They also evaluated the perceived warmth and sincerity of the Miami Heat, on a 1 (*not at all*) to 7 (*very much so*) scale (Aaker et al., 2010; Cuddy et al., 2008; r = .72). Finally, we asked respondents to indicate whether they would prefer the Miami Heat to win the NBA championship (on a 7-point scale), and we assessed (1) their knowledge of NBA games, (2) how often they watched NBA games, and (3) how important NBA games were to them (α = .92, for these last 3 measures).

Results

Perception of team effectiveness. Consistent with our predictions, respondents in the high-resemblance condition rated the Miami Heat team as more effective (N = 28; M = 5.99, SD = 1.00) than those in the low-resemblance condition (N = 29; M = 5.29, SD = 1.47); $F(1, 55)$ = 4.38, $p < .05$, η^2 = .07. Figure 2 depicts the effect of facial resemblance on perceived team effectiveness.
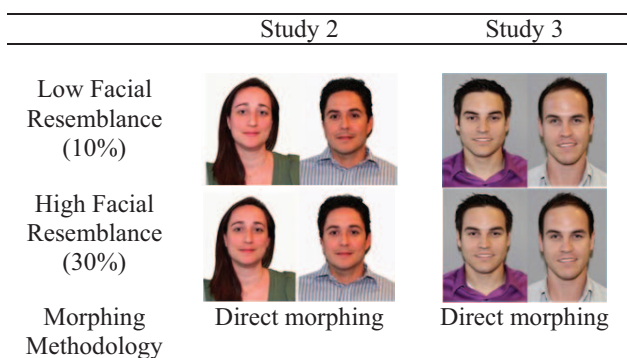
---

[1] All experimental stimuli used in this research are available from authors upon request.

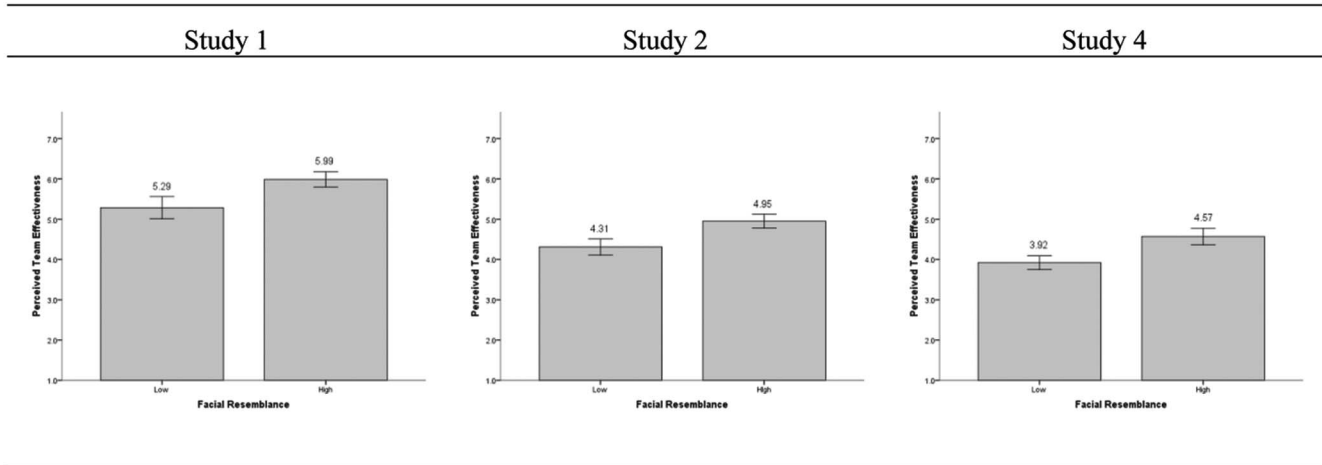| Study 1	Study 2	Study 4

Figure 2.   The effect of facial resemblance on perceived team effectiveness. Error bars represent *SEM*.

Mediation role of perceived cooperative intent.   To ensure the discriminant validity between the mediator (perceived cooperative intent) and the dependent variable (perceived team effectiveness), we conducted confirmatory factor analyses following the recommendations by Zhao, Lynch, and Chen (2010). Results showed that the two-factor model provided a significant better fit to the data than the one-factor model (in which the mediator and the dependent variable were combined into one factor, $\Delta\chi^2$ (1) = 69.14, $p < .01$, thus supporting the discriminant validity between the two variables. We examined the mediating role of perceived cooperative intent using Preacher and Hayes's (2008) bootstrapping procedures. As mentioned previously, increasing facial resemblance enhanced the perception of team effectiveness ($b = .70$, $t = 2.09$, $p < .05$). Increasing facial resemblance also enhanced perceived cooperative intent ($b = 1.00$, $t = 2.71$, $p < .01$). Perceived cooperative intent, in turn, was positively associated with perceived team effectiveness ($b = .62$, $t = 6.90$, $p < .01$). Finally, when we simultaneously added both facial resemblance and perceived cooperative intent to a regression model (with perceived team effectiveness as the dependent variable), the effect of facial resemblance on perceived team effectiveness turned nonsignificant ($b = .08$, $t < .31$). Furthermore, there was a significant indirect effect through perceived cooperative intent (indirect effect = .62, $Z = 2.55$, $p = .01$; 95% confidence interval [CI]: .18, 1.39). Thus, perceived cooperative intent fully mediated the effect of facial resemblance on perceived team effectiveness (Figure 3), in support of the underlying mechanism we proposed.

Alternative explanations.   One alternative explanation for our results, especially given the popularity of the target team members in this study, might be that perceptions of team warmth, rather than (or in addition to) team competence, drove the effect of facial resemblance. However, we did not observe a significant effect of facial resemblance on judgments of warmth, $F(1, 55) = 1.45$, *ns*. Another possibility was that our results could have been driven by respondents' own preference for a particular NBA team—Heat fans would be hard-pressed to believe that their team was ineffective. While this was a plausible alternative explanation, random assignment in our study should mitigate the potential concern. Indeed, the results showed that our manipulation of facial resem-

blance did not influence how strongly participants wanted the Miami Heat to win ($F < 1$) or how relevant they considered these games to be ($F < 1$). Furthermore, the effect of facial resemblance on perceived team effectiveness remained significant, $F(1, 52) = 4.00$, $p = .05$, $\eta^2 = .07$, after we controlled for perceptions of team warmth, whether participants were fans of the Miami Heat, and how relevant they considered NBA games to be (by incorporating these variables in the model as covariates).

Discussion

Study 1 provided initial support for our hypothesis that facial resemblance enhances perceived team effectiveness. With increased facial resemblance between LeBron James and Dwyane Wade, people predicted the Heat team to more competent, capable, and competitive. We also found that this resemblance effect was mediated by perceived cooperative intent, which provided support for our proposed mechanism for the effect. Importantly, our findings cannot be attributed to perceptions of warmth, respondents' preexisting preferences for the Miami Heat, or the relevance of NBA games in general. Although we demonstrate the resemblance effect through well-known stars, we conduct Study 2 to replicate these findings in a different context—zero acquaintance—in which the evaluation targets are complete strangers to participants (Hirschmüller, Egloff, Nestler, & Back, 2013).
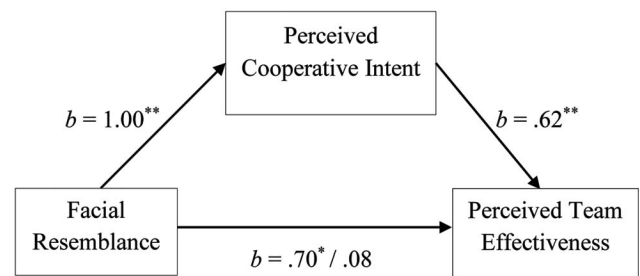

Figure 3.   The mediating role of perceived cooperative intent (Study 1). * $p < .05$. ** $p < .01$.

Study 2: Resemblance Among Strangers

Participants, Design, and Procedure

Eighty-nine undergraduate students (M_{age} = 22.99 years, SD = 5.61, range = 18–51; 55% male) from a large southeastern university participated in this study in exchange for course credit. The study was conducted in a behavioral lab. We dropped three participants from the sample because they did not follow the instructions and/or provided incomplete responses.

Participants were told about two fictional real estate brokers, Jennifer and Shawn, who owned a local real estate firm and worked as a team. Participants were shown pictures that were (ostensibly) photos of these two brokers. To develop the facial stimuli representing these two team members, we recruited and took photos of several laypersons of both genders who had no prior acting experience. They were instructed to look directly at the camera, and we carefully controlled for the direction of their gaze and facial expressions. From these photos, we selected two models (one of each gender) of similar age. Following the morphing technique in Study 1, we manipulated the facial resemblance of these photos to be high (30% morph) or low (10% morph; Figure 1). We conducted a separate pretest to verify the facial resemblance manipulation (N = 40; M_{age} = 32.83 years, SD = 8.62, range = 19–59; 55.0% male). Participants who took part in the pretest were exposed to one of the two resemblance conditions and assessed the perceived facial similarity between the two members (1 = *very dissimilar*, 7 = *very similar*). The results confirmed the success of the resemblance manipulation, such that participants perceived the high-resemblance faces as more similar than the low-resemblance faces (M = 5.65 vs. 3.50); $F(1, 38)$ = 30.52, $p <$ .001, η^2 = .45.[2]

To measure perceived team effectiveness, participants in the main survey evaluated the extent to which they thought Jennifer and Shawn were (a) likely to succeed in the real estate business and (b) build a long-lasting business relationship. Each item was measured on a 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). We combined the two items to form an overall measure of perceived team effectiveness (r = .77). To examine the underlying mechanism, participants assessed perceived cooperative intent using the same three-item scale as in Study 1 (α = .89).

Results

Perception of team effectiveness. Replicating the main finding in Study 1, we found that participants in the high-resemblance condition rated the team as more effective (N = 44; M = 4.95, SD = 1.15) than those in the low-resemblance condition (N = 42; M = 4.31, SD = 1.30); $F(1, 84)$ = 5.94, $p <$ .05, η^2 = .06 (Figure 2). Thus, our prediction was supported.

Mediation role of perceived cooperative intent. In subsequent mediation analyses, we found that facial resemblance improved both the perception of team effectiveness (b = .65, t = 2.44, $p <$ .05) and cooperative intent (b = .54, t = 2.11, $p <$ .05).[3] Perceived cooperative intent was positively associated with perceived team effectiveness (b = .49, t = 4.89, $p <$ .01). When we added perceived cooperative intent to the regression model (in which perceived effectiveness was regressed onto the facial re-

semblance condition), the effect of facial resemblance on perceived team effectiveness was no longer significant (b = .38, t = 1.58, nonsignificant [ns]), and there was a significant indirect effect through perceived cooperative intent (indirect effect = .26, Z = 1.95, p = .05; 95% confidence interval [CI]: .03, .64). Consistent with our proposed underlying mechanism, perceived cooperative intent mediated the effect of facial resemblance on the perception of team effectiveness (Figure 4).

Discussion

Our first two studies provided consistent support for the resemblance hypothesis. With a different context and stimuli, participants predicted that the real estate team with increased facial resemblance would be more likely to succeed in business and that its members would be more likely to develop a long-lasting business relationship. Consistent with our proposed mechanism and replicating the results in Study 1, we found that cooperative intent mediated the effect of facial resemblance on perceived team effectiveness.

Will the facial resemblance always enhance perceived team effectiveness? We investigate this issue in Study 3 and identify conditions under which the resemblance effect may be reversed.

Facial appearance often biases one's inference about the target's characteristics and behaviors (Fisher & Ma, 2014; Gorn et al., 2008). Specifically, people may attribute the situational performance information to a team's internal, dispositional causes (Chiu, Morris, Hong, & Menon, 2000; Van Overwalle, 2003). We argue that facial resemblance influences how such an attribution is made about the team. When facial resemblance is high and the team is perceived as cooperative, people would be more likely to attribute performance information (for better or for worse) to the team itself because members of a collaborative team are viewed and judged as one entity (O'Laughlin & Malle, 2002).

Imagine that people are exposed to positive information about a team. Because facial resemblance enhances the perceived cooperative intent, it would facilitate attribution of the positive information to the team's internal qualities—the team must be good given that members are highly cooperative, which is why they have such a positive outcome. As such, we predict that facial resemblance will accentuate perceived team effectiveness. Conversely, when there is negative information about the team, perceptions of strong cooperative intent stemming from facial resemblance may prompt observers to attribute the negative information to the team itself— the team must be especially incompetent given members' high

---

[2] Because we used a cross-gender team for this study, the manipulation of facial resemblance could potentially influence perceived dominance (we thank an anonymous reviewer for this point). To examine this possibility, we recruited 50 respondents from MTurk (M_{age} = 36.64, SD = 13.20, range = 19–68; 36% male) and randomly assigned them to the high- and low-resemblance conditions using the same stimuli described above. Perceived dominance of the team, measured with a four-item, 7-point scale adopted from Knutson (1996) (α = .81), was not significantly different between the two conditions (M_{low} = 4.73, M_{high} = 4.80, t = .28, ns).

[3] Following similar procedure as in Study 1, we conducted confirmatory factor analyses as Zhao et al. (2010) recommended. In support of the discriminant validity between perceived cooperative intent (the mediator) and perceived team effectiveness (the dependent variable), the two-factor model showed a significantly better fit than the one-factor model, $\Delta\chi^2$ (1) = 57.78, $p <$ .01.
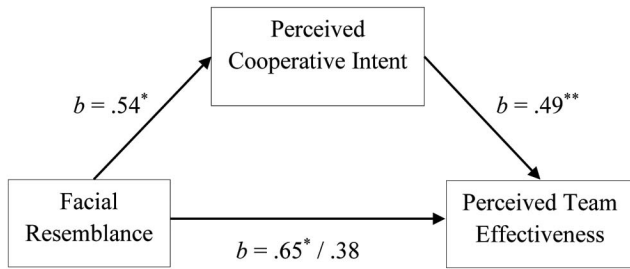
Figure 4. The mediating role of perceived cooperative intent (Study 2).
* $p < .05.$ ** $p < .01.$

cooperative intent, which is why they have such a bad outcome. We predict that under such circumstances, facial resemblance will boomerang and undermine perceived team effectiveness.

In summary, we argue that facial resemblance may amplify both positive and negative perceptions of the team. Because facial resemblance enhances the perceived cooperative intent among team members, such perceptions of increased collaboration and cohesiveness may prompt observers to attribute both positive and negative information to the team itself, which ultimately influences perceptions of team effectiveness. While facial resemblance enhances the perceived team effectiveness in the presence of positive information, facial resemblance reduces the perceived team effectiveness in the presence of negative information.

We test this prediction in Study 3, which is designed to demonstrate the moderating role of information valence and a potential reversal of the resemblance effect. In addition, Study 3 examines an important downstream variable—behavioral intention. This is particularly relevant in applied contexts—team perception matters because it directly influences what people will do in a given situation.

Study 3: Reversal of the Resemblance Effect

Participants, Design, and Procedure

This study employed a 2 (facial resemblance: high vs. low) × 2 (information valence: positive vs. negative) between-subjects design. One hundred thirty undergraduate students (M_{age} = 20.85 years, SD = 2.90, range = 18–37; 50.0% male) from a large southeastern university participated in this study in a behavioral lab. They were randomly assigned to one of the four experimental conditions.

Participants were shown a screenshot from Kickstarter.com (a project-funding website for start-ups), which (ostensibly) presented the fundraising page of a team trying to develop a new technology. The photos of the two team members appeared at the bottom-right of the web page. Unbeknownst to participants, these faces were actually selected from the same pool of laypersons whom we recruited in Study 2 for developing experimental stimuli. Following the morphing technique in Study 2, we manipulated the facial resemblance of the photos to be high (30% morph) or low (10% morph; Figure 1). In addition to facial resemblance, we manipulated the valence of information. The page indicated that this team had either made good progress and raised $12,795 of the

$40,000 needed (positive information) or made slow progress and raised only $210 of the $40,000 needed (negative information).

To pretest the information manipulation, 78 undergraduate students (M_{age} = 22.01 years, SD = 4.46, range = 18–41; 52.6% male) arrived at a behavioral lab and evaluated the extent to which the contextual cue was positive and favorable toward the team and to the team's advantage (α = .90). As expected, participants in the positive condition perceived the information as significantly more favorable than those in the negative condition (M = 4.65 vs. 3.31); $F(1, 74)$ = 18.98, $p < .001$, η^2 = .20. Neither the main effect of facial resemblance nor the interaction between facial resemblance and information valence was significant ($ps > .10$). Therefore, the manipulation of information was successful and not confounded with facial resemblance.

Participants in the main study were asked to estimate the team's likelihood of successfully launching the project and building a long-lasting business relationship (on 7-point scales similar to those employed in Study 2; r = .71). To measure behavioral intention, we asked participants to report their willingness to fund the project on a 7-point scale. Finally, as a manipulation check of facial resemblance, participants reported the extent to which they thought team members differ in their appearances, on a 7-point scale.

Results

Manipulation check. We subjected the manipulation check of facial resemblance to a 2 (facial resemblance) × 2 (information valence) ANOVA. As expected, the results revealed only a main effect of facial resemblance, $F(1, 126)$ = 5.01, $p < .05$, η^2 = .04. Neither the main effect of information valence nor the interaction between the two was significant ($Fs < 1$).

Perceived team effectiveness. We next performed a 2 (facial resemblance) × 2 (information valence) ANOVA on perceived team effectiveness. Given that information was manipulated, there was no main effect of facial resemblance ($F < 1$) but a main effect of information valence on team effectiveness, $F(1, 126)$ = 41.69, $p < .001$, η^2 = .25. Consistent with our prediction, we found a significant interaction between facial resemblance and information valence, $F(1, 126)$ = 12.83, $p < .001$, η^2 = .09 (Figure 5). In the presence of positive information, participants perceived the high-resemblance team as more effective than the low-resemblance team (4.71 vs. 3.90); $F(1, 126)$ = 7.16, $p < .01$, η^2 = .15. However, the resemblance effect was reversed in the presence of negative information, in that participants perceived the high-resemblance team as *less* effective than the low-resemblance team (2.63 vs. 3.30); $F(1, 126)$ = 5.67, $p < .05$, η^2 = .06. These results provide support for our prediction that information valence moderates the effect of facial resemblance on perceived team effectiveness.

Behavioral intention. The results of a similar 2 × 2 ANOVA on behavioral intention revealed a significant interaction effect, $F(1, 126)$ = 11.82, $p = .001$, η^2 = .09 (Figure 5). While participants were more likely to fund the high- than the low-resemblance team in the presence of positive information (3.71 vs. 2.93); $F(1, 126)$ = 4.44, $p < .05$, η^2 = .07, the pattern of results was reversed in the negative condition, in which participants were less likely to fund the high- than the low-resemblance team (1.92 vs. 2.88); $F(1, 126)$ = 7.71, $p < .01$, η^2 = .10.

A. Team Effectiveness
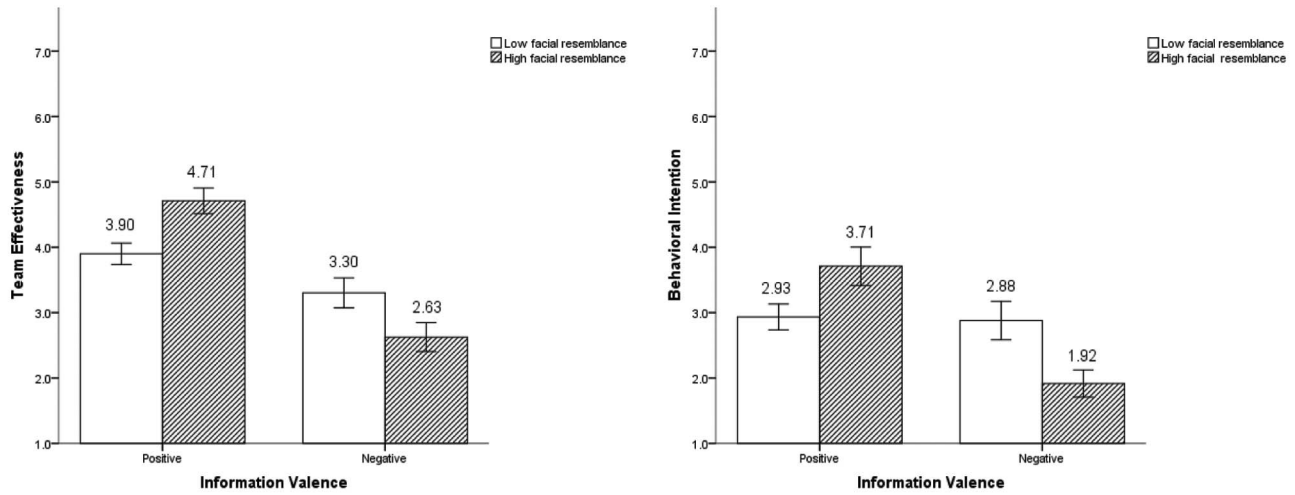
B. Behavioral Intention

Figure 5. The interactive effect of facial resemblance and information valence on perceived team effectiveness and behavioral intention (Study 3). Error bars represent *SEM*.

Mediated moderation. To further test the premise that team perception drives behavioral intention, we constructed a mediated moderation model following Preacher and Hayes's (2008) bootstrapping procedures. As mentioned previously, facial resemblance interacted with information valence to jointly influence both behavioral intention ($b = -1.74$, $t = -3.44$, $p < .001$) and perceived team effectiveness ($b = -1.49$, $t = -3.58$, $p < .001$). Perceived team effectiveness, in turn, increased the behavioral intention to fund the project ($b = .67$, $t = 7.37$, $p < .001$). When we added perceived team effectiveness to the model with behavioral intention as the dependent variable, the facial resemblance $\times$ information valence interaction became nonsignificance ($b = -.74$, $t = -1.67$, $p = .10$), while a significant indirect effect emerged through perceived team effectiveness (indirect effect $= -1.00$; 95% CI: -1.63, $-.47$). Taken together, these results suggest that perceived team effectiveness fully mediated the interactive effects of facial resemblance and information valence on behavioral intention, providing further support for the central role of team perception (Figure 6).

Figure 6. The mediating role of perceived team effectiveness (Study 3). * $p < .05$. ** $p < .01$.

Discussion

Study 3 demonstrated a reversal of the resemblance effect through the moderating role of information valence. While facial resemblance improved the perception of team effectiveness given positive information, it boomeranged amid negative information and resulted in lower perception of team effectiveness. Furthermore, we extended the findings from perceived team effectiveness to behavioral intention. Examining the downstream variable of behavioral intention and the ensuing mediated moderation analysis, we highlighted the behavioral implications of team perception.

It is noteworthy that this study provides evidence to rule out the halo effect as an alternative explanation. Although increasing facial resemblance enhanced perceived team effectiveness, this result could have occurred because the composite images were potentially more attractive (Langlois & Roggman, 1990), leading them to be perceived as more likable (Langlois et al., 2000). It could also be argued that, in line with Gestalt principles, group photos that share similar features are more aesthetically pleasing (Geier, Rozin, & Doros, 2006; Veryzer & Hutchinson, 1998). The results of Study 3, however, suggest that this is not the case. Specifically, the reversal of the resemblance effect in the presence of negative information indicates that facial resemblance can actually reduce perceived team effectiveness—a result contrary to the prediction of the halo effect.

A common feature in the first three studies is that we only examine the role of facial resemblance in dyads, which may limit the generalizability of the results. We address this limitation in Study 4, the main objective of which is to investigate the resemblance effect in multiperson teams. We also include measures of
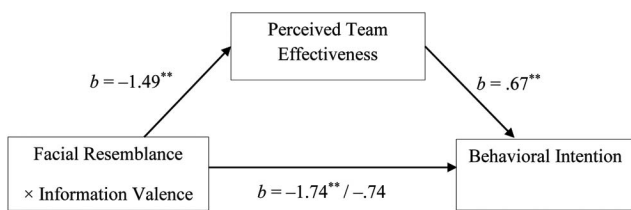
perceived attractiveness in an effort to directly test and rule out the halo effect as an alternative explanation.

Study 4: Resemblance Beyond Dyads

Participants, Design, and Procedure

Sixty respondents from the United States (M_{age} = 33.17 years, SD = 12.41, range = 19–69; 50% male) were recruited through MTurk. They were told about a legal team from the local firm, consisting of Susan, Jacob, Heather, and Daniel, who worked in the Personal Case Office and helped clients obtain compensation. Respondents were shown an advertisement that contained (ostensibly) photos of the four attorneys. Similar to our previous studies, we developed the facial stimuli using photos of several laypersons with no prior acting experience. To improve the generalizability of our findings, we manipulated facial resemblance using a new morphing technique—by digitally blending a third-party (stock model) facial photo into the images of the four team members. Members of the lead team shared either 10% (low resemblance) or 30% (high resemblance) of the third-party image. Through MTurk services, 60 respondents from the United States (M_{age} = 31.18 years, SD = 8.71, range = 21–59; 65.0% male) participated in a pretest. The results showed that the four attorneys were indeed perceived as more similar in the high-resemblance condition than in the low-resemblance condition (M = 3.68 vs. 1.97); $F(1, 58)$ = 15.94, p < .001, η^2 = .22.[4]

We measured perceived team effectiveness with three items. Respondents in the main study evaluated the extent to which they thought the attorneys were likely to (a) successfully complete the task, (b) have a long-lasting business relationship, and (c) be effective in getting things done, anchored by 1 (*strongly disagree*) and 7 (*strongly agree*; α = .90). In an effort to rule out the alternative explanation that facial resemblance works by increasing the attractiveness of the team members, we asked respondents to judge the attractiveness of each attorney and the entire legal team, on a three-item measure adapted from Cuddy et al. (2008). Specifically, respondents rated how attractive, likable, and pleasant they perceived each attorney and the entire team to be, on 7-point scales, ranging from 1 (*not at all*) to 7 (*very much so*; αs > .85). They also reported the perceived self-resemblance and perceived familiarity of each attorney on 7-point scales.

Results

Perception of team effectiveness. The results showed that respondents in the high-resemblance condition rated the team as more effective (N = 31; M = 4.57, SD = 1.10) than those in the low-resemblance condition (N = 29; M = 3.92, SD = 0.88); $F(1, 58)$ = 6.37, p = .01, η^2 = .10 (Figure 2). This finding provided further support to our prediction.

Alternative explanations. To test alternative accounts, we compared the rated attractiveness, self-resemblance, and familiarity of the team photos, across conditions. We found that our facial resemblance manipulation did not significantly affect the perceived attractiveness of each team member or the entire team, nor did it affect perceived resemblance to the self or perceived familiarity. Moreover, when we partialed out the variances associated with perceived attractiveness, self-resemblance, and familiarity

(by entering them as covariates in the original model), the positive effect of facial resemblance on perceived team effectiveness still held, $F(1, 45)$ = 9.81, p < .01, η^2 = .18.

Discussion

Study 4 replicated our main findings in a new setting (perception of multiperson team) and with a new method of manipulation (third-party morphing), while ruling out a number of alternative explanations based on attractiveness, self-resemblance, and familiarity. These results suggest that the effects of facial resemblance on perceived team effectiveness are broad phenomena that can be generalized beyond dyads to a variety of teams.

General Discussion

In this research, we show that face-based inferences extend beyond evaluations of individuals to influence the way teams are perceived. Across four studies, we find consistent evidence that subtle changes in the facial appearances of team members can influence how the entire group is perceived. Specifically, we demonstrate a resemblance effect—increasing the facial resemblance of team players significantly enhances that team's predicted performance and perceived effectiveness. Moreover, we find that this effect is mediated by perceived cooperative intent, which confirms our proposed underlying mechanism—facial resemblance increases the perception of cooperative intent among group members, which in turn boosts evaluations of team effectiveness. Furthermore, through the moderating role of information valence, we demonstrate a reversal of the resemblance effect, such that facial resemblance boomerangs in the presence of negative information and results in lower perception of team effectiveness. In addition to team perception, we show that facial resemblance influences behavioral intention through perceived team effectiveness. The resemblance effect is robust across different team compositions (dyads and multiperson teams), manipulations (direct morphing between two focal photos and indirect morphing through a third image), stimuli (well-known stars and zero-acquaintance strangers), contexts (NBA team, real estate agents, entrepreneurs on Kickstarter, and legal team), and sample characteristics (undergraduate students and MTurk workers).

Our study contributes to an emerging line of research on social perception based on human faces. As social animals, people are prone to draw inferences about others' personalities, intentions, and abilities. Despite the well-known idiom "don't judge a book by its cover," people often rely on facial appearances to infer the characteristics of others, even when these cues have weak validity (Hassin & Trope, 2000; Olivola & Todorov, 2010). While existing literature has repeatedly demonstrated the pervasive and spontaneous nature of face-based inferences in evaluation of individuals (Hassin & Trope, 2000; Olivola & Todorov, 2010), little is known

---

[4] Similar to Study 2, we conducted a separate test to examine perceived dominance in cross-gender teams. Forty-eight respondents from MTurk (M_{age} = 34.08, SD = 10.72, range = 20–60; 65% male) were exposed to the photos used in Study 4 and responded to the measure of perceived dominance adopted from Knutson (1996) (α = .91). We found that perceived dominance of the team was not significantly different between the high- and low-resemblance conditions (M_{low} = 4.15, M_{high} = 4.48, t = .92, *ns*).

about how facial appearance may inform judgments of a team. We demonstrate that looks (or facial morphology) do matter, not only for individuals but also for the way teams are evaluated. Increased facial resemblance, notwithstanding a subtle change to facial features, is sufficient to influence how that team is perceived as a whole.

Another contribution of this research is the investigation of psychological mechanism underlying the effect of facial resemblance on team-level perceptions. To this end, this research demonstrates the mediating role of cooperative intent. Our studies provide consistent evidence that increased facial resemblance leads to higher perceived cooperative intent, which in turn enhances perceptions of team effectiveness. These findings extend group-level research in social psychology—people often exercise stereotypes when evaluating a collection of individuals as a team (Kunda & Thagard, 1996; Tajfel, 1982). Our research introduces facial resemblance as an important social cue that evokes one's intuitive belief of a more cooperative and effective team.

Our research highlights the need to develop a better understanding of collective facial morphology and its role in perceptions of teams. One potential limitation is that we focus on a single perceptual cue—resemblance. Future research might examine how resemblance interacts with other physical cues. Of particular interest is the role of race. Prior research has demonstrated that people are sensitive to physical features (e.g., skin color) that are indicative of one's racial background (Cunningham, Van Bavel, Arbuckle, Packer, & Waggoner, 2012; Dasgupta et al., 1999; Van Bavel & Cunningham, 2009) and that race-related inferences often affect one's judgment and responses (Biernat, 2003; Biernat & Kobrynowicz, 1997). Such race-based inferences may be moderated by facial resemblance because facial similarity could potentially mitigate perceived differences between members of different races and thereby may influence the overall perceptions of the team.

Another fruitful area for future research is to extend this line of inquiry to other dimensions of team perceptions and inferences. As a first step in examining the role of facial cues at the group level, we focus on perceived cooperative intent and team effectiveness in this search. Future work might investigate the role of facial cues in perceived agency of the team and assessment of associated team qualities (Ip et al., 2006). Our findings underscore the importance of going beyond individual-level perceptions; additional work on group-level perceptions would expand understanding of facial morphology and the inferences it generates.

From a practical perspective, our findings have important implications across a variety of applied domains in which teamwork plays a central role. In Study 3, we demonstrate the importance of team perception through the downstream variable of behavioral intention. Organizations should care about people's perception of team effectiveness because it directly influences behavioral outcomes. Team effectiveness is a common theme in many contexts, with team photos often featured prominently in promotional materials. As an essential element in communications, these facial stimuli influence perceptions of teams in management, sales, sports, start-ups, and a wide range of contexts. As our research shows, similar faces often enhance perceptions of team effectiveness, though these can backfire when people are exposed to negative information about the team. More broadly, our research demonstrates that a subtle change in facial cues can result in not-so-subtle changes in perceptions of the team and, ultimately, the willingness to patronize the firm that the team represents.

References

Aaker, J., Vohs, K. D., & Mogilner, C. (2010). Nonprofits are seen as warm and for-profits as competent: Firm stereotypes matter. *Journal of Consumer Research, 37,* 224–237. http://dx.doi.org/10.1086/651566

Abelson, R. P., Dasgupta, N., Park, J., & Banaji, M. R. (1998). Perceptions of the collective other. *Personality and Social Psychology Review, 2,* 243–250. http://dx.doi.org/10.1207/s15327957pspr0204_2

Alvergne, A., Faurie, C., & Raymond, M. (2007). Differential facial resemblance of young children to their parents: Who do children look like more? *Evolution and Human Behavior, 28,* 135–144. http://dx.doi.org/10.1016/j.evolhumbehav.2006.08.008

Alvergne, A., Oda, R., Faurie, C., Matsumoto-Oda, A., Durand, V., & Raymond, M. (2009). Cross-cultural perceptions of facial resemblance between kin. *Journal of Vision, 9,* 1–10. http://dx.doi.org/10.1167/9.6.23

Bailenson, J. N., Iyengar, S., Yee, N., & Collins, N. A. (2008). Facial similarity between voters and candidates causes influence. *Public Opinion Quarterly, 72,* 935–961. http://dx.doi.org/10.1093/poq/nfn064

Beal, D. J., Cohen, R. R., Burke, M. J., & McLendon, C. L. (2003). Cohesion and performance in groups: A meta-analytic clarification of construct relations. *Journal of Applied Psychology, 88,* 989–1004. http://dx.doi.org/10.1037/0021-9010.88.6.989

Berry, D. S., & McArthur, L. Z. (1986). Perceiving character in faces: The impact of age-related craniofacial changes on social perception. *Psychological Bulletin, 100,* 3–18. http://dx.doi.org/10.1037/0033-2909.100.1.3

Biernat, M. (2003). Toward a broader view of social stereotyping. *American Psychologist, 58,* 1019–1027. http://dx.doi.org/10.1037/0003-066X.58.12.1019

Biernat, M., & Kobrynowicz, D. (1997). Gender- and race-based standards of competence: Lower minimum standards but higher ability standards for devalued groups. *Journal of Personality and Social Psychology, 72,* 544–557. http://dx.doi.org/10.1037/0022-3514.72.3.544

Bruner, E. M. (1956). Primary group experience and the processes of acculturation. *American Anthropologist, 58,* 605–623. http://dx.doi.org/10.1525/aa.1956.58.4.02a00030

Calder, A. J., Young, A. W., Perrett, D. I., Etcoff, N. L., & Rowland, D. (1996). Categorical perception of morphed facial expressions. *Visual Cognition, 3,* 81–118. http://dx.doi.org/10.1080/713756735

Campbell, D. T. (1958). Common fate, similarity, and other indices of the status of aggregates of persons as social entities. *Behavioral Science, 3,* 14–25. http://dx.doi.org/10.1002/bs.3830030103

Carless, S. A., & De Paola, C. (2000). The measurement of cohesion in work teams. *Small Group Research, 31,* 71–88. http://dx.doi.org/10.1177/104649640003100104

Carron, A. V., & Brawley, L. R. (2000). Cohesion conceptual and measurement issues. *Small Group Research, 31,* 89–106. http://dx.doi.org/10.1177/104649640003100105

Chen, F. F., Jing, Y., & Lee, J. M. (2014). The looks of a leader: Competent and trustworthy, but not dominant. *Journal of Experimental Social Psychology, 51,* 27–33. http://dx.doi.org/10.1016/j.jesp.2013.10.008

Chiu, C. Y., Morris, M. W., Hong, Y. Y., & Menon, T. (2000). Motivated cultural cognition: The impact of implicit cultural theories on dispositional attribution varies as a function of need for closure. *Journal of Personality and Social Psychology, 78,* 247–259. http://dx.doi.org/10.1037/0022-3514.78.2.247

Cuddy, A. J., Fiske, S. T., & Glick, P. (2008). Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. *Advances in Experimental Social Psychology, 40,* 61–149. http://dx.doi.org/10.1016/S0065-2601(07)00002-0

Cunningham, W. A., Van Bavel, J. J., Arbuckle, N. L., Packer, D. J., & Waggoner, A. S. (2012). Rapid social perception is flexible: Approach and avoidance motivational states shape P100 responses to other-race

faces. *Frontiers in Human Neuroscience, 6,* 140. http://dx.doi.org/10
.3389/fnhum.2012.00140

Dasgupta, N., Banaji, M. R., & Abelson, R. P. (1999). Group entitativity and group perception: Associations between physical features and psychological judgment. *Journal of Personality and Social Psychology, 77,* 991–1003. http://dx.doi.org/10.1037/0022-3514.77.5.991

DeBruine, L. M. (2002). Facial resemblance enhances trust. *Proceedings of the Royal Society of London, Series B: Biological Sciences, 269,* 1307–1312. http://dx.doi.org/10.1098/rspb.2002.2034

DeBruine, L. M. (2005). Trustworthy but not lust-worthy: Context-specific effects of facial resemblance. *Proceedings Biological Sciences, 272,* 919–922. http://dx.doi.org/10.1098/rspb.2004.3003

DeBruine, L. M., Jones, B. C., Little, A. C., & Perrett, D. I. (2008). Social perception of facial resemblance in humans. *Archives of Sexual Behavior, 37,* 64–77. http://dx.doi.org/10.1007/s10508-007-9266-0

Dobbins, G. H., & Zaccaro, S. J. (1986). The effects of group cohesion and leader behavior on subordinate satisfaction. *Group & Organization Studies, 11,* 203–219. http://dx.doi.org/10.1177/105960118601100305

Eberhardt, J. L., Davies, P. G., Purdie-Vaughns, V. J., & Johnson, S. L. (2006). Looking deathworthy: Perceived stereotypicality of Black defendants predicts capital-sentencing outcomes. *Psychological Science, 17,* 383–386. http://dx.doi.org/10.1111/j.1467-9280.2006.01716.x

Engell, A. D., Haxby, J. V., & Todorov, A. (2007). Implicit trustworthiness decisions: Automatic coding of face properties in the human amygdala. *Journal of Cognitive Neuroscience, 19,* 1508–1519. http://dx.doi.org/10.1162/jocn.2007.19.9.1508

Fisher, R., & Ma, Y. (2014). The price of being beautiful: Negative effects of attractiveness on empathy for children in need. *Journal of Consumer Research, 41,* 436–450. http://dx.doi.org/10.1086/676967

Gawronski, B., & Quinn, K. A. (2013). Guilty by mere similarity: Assimilative effects of facial resemblance on automatic evaluation. *Journal of Experimental Social Psychology, 49,* 120–125. http://dx.doi.org/10.1016/j.jesp.2012.07.016

Geier, A. B., Rozin, P., & Doros, G. (2006). Unit bias. A new heuristic that helps explain the effect of portion size on food intake. *Psychological Science, 17,* 521–525. http://dx.doi.org/10.1111/j.1467-9280.2006.01738.x

Gorn, G. J., Jiang, Y., & Johar, G. V. (2008). Babyfaces, trait inferences, and company evaluations in a public relations crisis. *Journal of Consumer Research, 35,* 36–49. http://dx.doi.org/10.1086/529533

Günaydin, G., Zayas, V., Selcuk, E., & Hazan, C. (2012). I like you but I don't know why: Objective facial resemblance to significant others influences snap judgments. *Journal of Experimental Social Psychology, 48,* 350–353. http://dx.doi.org/10.1016/j.jesp.2011.06.001

Hackman, J. R., & Vidmar, N. (1970). Effects of size and task type on group performance and member reactions. *Sociometry, 33,* 37–54. http://dx.doi.org/10.2307/2786271

Hall, C. C., Goren, A., Chaiken, S., & Todorov, A. (2009). Shallow cues with deep effects: Trait judgments from faces and voting decisions. In E. Borgida, C. M. Federico, & J. L. Sullivan (Eds.), *The political psychology of democratic citizenship* (pp. 73–99). New York, NY: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780195335453.003.0004

Hamilton, D. L., & Sherman, S. J. (1996). Perceiving persons and groups. *Psychological Review, 103,* 336–355. http://dx.doi.org/10.1037/0033-295X.103.2.336

Hamilton, D. L., Sherman, S. J., & Maddox, K. B. (1999). Dualities and continua: Implications for understanding perceptions of persons and groups. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 606–626). New York, NY: New York: Guilford Press.

Hassin, R., & Trope, Y. (2000). Facing faces: Studies on the cognitive aspects of physiognomy. *Journal of Personality and Social Psychology, 78,* 837–852. http://dx.doi.org/10.1037/0022-3514.78.5.837

Hirschmüller, S., Egloff, B., Nestler, S., & Back, M. D. (2013). The dual lens model: A comprehensive framework for understanding self-other agreement of personality judgments at zero acquaintance. *Journal of Personality and Social Psychology, 104,* 335–353. http://dx.doi.org/10.1037/a0030383

Hoegg, J., & Lewis, M. V. (2011). The impact of candidate appearance and advertising strategies on election results. *Journal of Marketing Research, 48,* 895–909. http://dx.doi.org/10.1509/jmkr.48.5.895

Hollingshead, A. B. (1998). Retrieval processes in transactive memory systems. *Journal of Personality and Social Psychology, 74,* 659–671. http://dx.doi.org/10.1037/0022-3514.74.3.659

Hollingshead, A. B. (2000). Perceptions of expertise and transactive memory in work relationships. *Group Processes & Intergroup Relations, 3,* 257–267. http://dx.doi.org/10.1177/1368430200033002

Ip, G. W. M., Chiu, C. Y., & Wan, C. (2006). Birds of a feather and birds flocking together: Physical versus behavioral cues may lead to trait- versus goal-based group perception. *Journal of Personality and Social Psychology, 90,* 368–381. http://dx.doi.org/10.1037/0022-3514.90.3.368

Knutson, B. (1996). Facial expressions of emotion influence interpersonal trait inferences. *Journal of Nonverbal Behavior, 20,* 165–182. http://dx.doi.org/10.1007/BF02281954

Kraus, M. W., & Chen, S. (2010). Facial-feature resemblance elicits the transference effect. *Psychological Science, 21,* 518–522. http://dx.doi.org/10.1177/0956797610364949

Kunda, Z., & Thagard, P. (1996). Forming impressions from stereotypes, traits, and behaviors: A parallel-constraint-satisfaction theory. *Psychological Review, 103,* 284–308. http://dx.doi.org/10.1037/0033-295X.103.2.284

Laham, S. M., Gonsalkorale, K., & von Hippel, W. (2005). Darwinian grandparenting: Preferential investment in more certain kin. *Personality and Social Psychology Bulletin, 31,* 63–72. http://dx.doi.org/10.1177/0146167204271318

Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin, 126,* 390–423.

Langlois, J. H., & Roggman, L. A. (1990). Attractive faces are only average. *Psychological Science, 1,* 115–121. http://dx.doi.org/10.1111/j.1467-9280.1990.tb00079.x

Leider, S., Möbius, M. M., Rosenblat, T., & Do, Q. A. (2009). Directed altruism and enforced reciprocity in social networks. *The Quarterly Journal of Economics, 124,* 1815–1851. http://dx.doi.org/10.1162/qjec.2009.124.4.1815

Lenz, G. S., & Lawson, C. (2011). Looking the part: Television leads less informed citizens to vote based on candidates' appearance. *American Journal of Political Science, 55,* 574–589. http://dx.doi.org/10.1111/j.1540-5907.2011.00511.x

Lickel, B., Hamilton, D. L., Wieczorkowska, G., Lewis, A., Sherman, S. J., & Uhles, A. N. (2000). Varieties of groups and the perception of group entitativity. *Journal of Personality and Social Psychology, 78,* 223–246. http://dx.doi.org/10.1037/0022-3514.78.2.223

Lieberman, D., Oum, R., & Kurzban, R. (2008). The family of fundamental social categories includes kinship: Evidence from the memory confusion paradigm. *European Journal of Social Psychology, 38,* 998–1012. http://dx.doi.org/10.1002/ejsp.528

Little, A. C., Burt, D. M., & Perrett, D. I. (2006). What is good is beautiful: Face preference reflects desired personality. *Personality and Individual Differences, 41,* 1107–1118. http://dx.doi.org/10.1016/j.paid.2006.04.015

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology, 85,* 273–283. http://dx.doi.org/10.1037/0021-9010.85.2.273

McConnell, A. R., Sherman, S. J., & Hamilton, D. L. (1997). Target entitativity: Implications for information processing about individual and group targets. *Journal of Personality and Social Psychology, 72,* 750–762. http://dx.doi.org/10.1037/0022-3514.72.4.750

Mueller, U., & Mazur, A. (1996). Facial dominance of West Point cadets as a predictor of later military rank. *Social Forces, 74,* 823–850. http://dx.doi.org/10.1093/sf/74.3.823

Mulvey, P. W., & Klein, H. J. (1998). The impact of perceived loafing and collective efficacy on group goal processes and group performance. *Organizational Behavior and Human Decision Processes, 74,* 62–87. http://dx.doi.org/10.1006/obhd.1998.2753

Murnighan, J. K., & Conlon, D. E. (1991). The dynamics of intense work groups: A study of British string quartets. *Administrative Science Quarterly, 36,* 165–186. http://dx.doi.org/10.2307/2393352

Naylor, R. W. (2007). Nonverbal cues-based first impressions: Impression formation through exposure to static images. *Marketing Letters, 18,* 165–179. http://dx.doi.org/10.1007/s11002-007-9010-5

O'Laughlin, M. J., & Malle, B. F. (2002). How people explain actions performed by groups and individuals. *Journal of Personality and Social Psychology, 82,* 33–48. http://dx.doi.org/10.1037/0022-3514.82.1.33

Olivola, C. Y., Sussman, A. B., Tsetsos, K., Kang, O. E., & Todorov, A. (2012). Republicans prefer Republican-looking leaders: Political facial stereotypes predict candidate electoral success among right-leaning voters. *Social Psychological and Personality Science, 3,* 605–613. http://dx.doi.org/10.1177/1948550611432770

Olivola, C. Y., & Todorov, A. (2010). Fooled by first impressions? Reexamining the diagnostic value of appearance-based inferences. *Journal of Experimental Social Psychology, 46,* 315–324. http://dx.doi.org/10.1016/j.jesp.2009.12.002

Pemberton, M. B., Insko, C. A., & Schopler, J. (1996). Memory for and experience of differential competitive behavior of individuals and groups. *Journal of Personality and Social Psychology, 71,* 953–966. http://dx.doi.org/10.1037/0022-3514.71.5.953

Petrican, R., Todorov, A., & Grady, C. (2014). Personality at face value: Facial appearance predicts self and other personality judgments among strangers and spouses. *Journal of Nonverbal Behavior, 38,* 259–277. http://dx.doi.org/10.1007/s10919-014-0175-3

Platek, S. M., & Thomson, J. W. (2007). Neural correlates of facial resemblance. In S. M. Platek, J. P. Keenan, & T. K. Shackelford (Eds.), *Evolutionary cognitive neuroscience* (pp. 221–243). Cambridge, MA: MIT Press.

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,* 477–491. http://dx.doi.org/10.1080/10683160902926141

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40,* 879–891. http://dx.doi.org/10.3758/BRM.40.3.879

Rule, N. O., Krendl, A. C., Ivcevic, Z., & Ambady, N. (2013). Accuracy and consensus in judgments of trustworthiness from faces: Behavioral and neural correlates. *Journal of Personality and Social Psychology, 104,* 409–426. http://dx.doi.org/10.1037/a0031050

Sebbe, R. (2008). *Morph Age 4.0.* Mons: Creaceed SPRL. Retrieved from http://www.creaceed.com/morphage/about

Small, D. A., & Verrochi, N. M. (2009). The face of need: Facial emotion expression on charity advertisements. *Journal of Marketing Research, 46,* 777–787. http://dx.doi.org/10.1509/jmkr.46.6.777

Tajfel, H. (1982). *Social identify and intergroup relations.* New York, NY: Cambridge University Press.

Tanner, R. J., & Maeng, A. (2012). A tiger and a president: Imperceptible celebrity facial cues influence trust and preference. *Journal of Consumer Research, 39,* 769–783. http://dx.doi.org/10.1086/665412

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,* 519–545. http://dx.doi.org/10.1146/annurev-psych-113011-143831

Todorov, A., Said, C. P., Engell, A. D., & Oosterhof, N. N. (2008). Understanding evaluation of faces on social dimensions. *Trends in Cognitive Sciences, 12,* 455–460. http://dx.doi.org/10.1016/j.tics.2008.10.001

Van Bavel, J. J., & Cunningham, W. A. (2009). Self-categorization with a novel mixed-race group moderates automatic social and racial biases. *Personality and Social Psychology Bulletin, 35,* 321–335. http://dx.doi.org/10.1177/0146167208327743

Van Overwalle, F. (2003). Acquisition of dispositional attributions: Effects of sample size and covariation. *European Journal of Social Psychology, 33,* 515–533. http://dx.doi.org/10.1002/ejsp.160

Verosky, S. C., & Todorov, A. (2010). Generalization of affective learning about faces to perceptually similar faces. *Psychological Science, 21,* 779–785. http://dx.doi.org/10.1177/0956797610371965

Veryzer, R. W., Jr., & Hutchinson, J. W. (1998). The influence of unity and prototypicality on aesthetic responses to new product designs. *Journal of Consumer Research, 24,* 374–385. http://dx.doi.org/10.1086/209516

Wagner, W. G., Pfeffer, J., & O'Reilly, C. A., III. (1984). Organizational demography and turnover in top-management group. *Administrative Science Quarterly, 29,* 74–92. http://dx.doi.org/10.2307/2393081

Weingart, L. R., Brett, J. M., Olekalns, M., & Smith, P. L. (2007). Conflicting social motives in negotiating groups. *Journal of Personality and Social Psychology, 93,* 994–1010. http://dx.doi.org/10.1037/0022-3514.93.6.994

Williams, K. Y., & O'Reilly, C. A. (1998). Demography and diversity in organizations: A review of 40 years of research. *Research in Organizational Behavior, 20,* 77–140.

Wong, E. M., Ormiston, M. E., & Haselhuhn, M. P. (2011). A face only an investor could love: CEOs' facial structure predicts their firms' financial performance. *Psychological Science, 22,* 1478–1483. http://dx.doi.org/10.1177/0956797611418838

Zebrowitz, L. A. (1996). Physical appearance as a basis of stereotyping. In C. N. Macrae, C. Stangor, & M. Hewstone (Eds.), *Stereotypes and stereotyping* (pp. 79–120). New York, NY: Guilford Press.

Zebrowitz, L. A., & Montepare, J. M. (2008). Social psychological face perception: Why appearance matters. *Social and Personality Psychology Compass, 2,* 1497–1517. http://dx.doi.org/10.1111/j.1751-9004.2008.00109.x

Zhao, X., Lynch, J. G., Jr., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research, 37,* 197–206. http://dx.doi.org/10.1086/651257