



Registered Report

The effects of category and physical features on stereotyping and evaluation[☆]Debbie S. Ma^{a,*}, Joshua Correll^b, Bernd Wittenbrink^c^a California State University Northridge, USA^b University of Colorado at Boulder, USA^c University of Chicago Booth School of Business, USA

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ABSTRACT

Stereotyping and prejudice researchers have provided numerous demonstrations that the greater a target's prototypicality, the more similar attitudes and inferences will be to the attitudes and stereotypes perceivers have about the group. However, research to date has yet to also test for a possible quadratic association relating target prototypicality to judgment. The current research offers an extension of existing research by testing for both linear and quadratic relationships between target prototypicality and stereotyping using an implicit measure of stereotyping. In Study 1, we tested for linear and quadratic associations between racial prototypicality and stereotyping of Black and White males, while also manipulating the valence of the stereotypes. Study 2 offered a conceptual replication of Study 1 and tested for linear and quadratic associations between gender prototypicality and stereotyping of White males and White females, while again manipulating the valence of these gender stereotypes. Across both studies we replicated previous research showing a positive, linear effect of prototypicality on stereotyping, such that targets greater in prototypicality elicited greater stereotyping. We also found evidence of a quadratic effect of prototypicality, such that average prototypic targets elicited the most stereotyping. Finally, we observed that negative, rather than positive, stereotypes drove both the linear and quadratic effects we report.

1. The effects of category membership and physical features on stereotyping and evaluation

In Florida, like many states in the U.S., active attempts to mitigate racial discrimination in prison sentencing have resulted in statutes clearly outlining appropriate sentence lengths given legitimate factors like crime severity and previous criminal record. Prior to the development of these statutes, Blacks received harsher sentences than Whites, even after controlling for lawful predictors of sentence length (Bales, 1997). By and large, these statutes have been touted as successful. The Florida Department of Corrections, for example, has stated that since implementing these objective sentencing standards and limiting judges' discretion in sentencing, there is no evidence for a measurable effect of race (Bales, 1997). A reanalysis of these data corroborated that a defendant's identification as Black or White did indeed not influence sentencing. However, the defendant's physical appearance did impact their sentence. Individuals – both Black and White – who had more “Afrocentric” features (e.g., darker skin tone, wider nose, thicker lips)

received harsher prison sentences (Blair, Judd, & Chapleau, 2004). The effect was nontrivial – when comparing those who were 1 standard deviation below the mean to those who were 1 standard deviation above the mean in perceived Afrocentricity, a 7–8 month difference in sentence length was found – even after controlling for criminal record and race. Similar results have been found examining death penalty-eligible cases in Pennsylvania (Eberhardt, Davies, Purdie-Vaughns, & Johnson, 2006). Here, researchers found that, when Black defendants committed a crime against a White individual, the likelihood of a death sentence increased as a function of the defendant's “stereotypical” looks, as judged by a convenience sample of participants from a photograph.

2. Feature effects on prejudice and stereotyping over and above category membership

Laboratory studies confirm this pattern of covariation. Research generally reveals a positive, linear relationship between target

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prototypicality and category-consistent judgments. The greater an individual's prototypicality (be it operationalized by a set of features or just skin tone in the context of judgments of Blacks), the more that person is stereotyped or evaluated in a manner consistent with the group stereotypes and evaluations. The argument is that, if, as a category, Blacks are disliked (or perceived as athletic), then the more prototypic a person is of Blacks, the more disliked (athletic) the individual should seem (e.g., Blair & Judd, 2010; Maddox, 2004). This linear relationship between features and judgment has been demonstrated across a variety of attitude-related domains: evaluation/prejudice, explicit stereotyping, and implicit stereotyping.

In the domain of prejudice, individuals expressed greater negativity toward darker-skinned Blacks than lighter-skinned Blacks and also rated them as less attractive (Maddox & Gray, 2002; see also Hagiwara, Kashy, & Cesario, 2012). Similar skin tone results have been demonstrated in American Hispanics' and Chileans' attitudes toward lighter- and darker-complected Latinos (Uhlmann, Dasgupta, Elgueta, Greenwald, & Swanson, 2002). Convergent evidence using functional magnetic resonance imaging (fMRI) has revealed that exposure to dark-skinned White males (non-prototypic Whites) elicited greater amygdala activation (often taken as an index of threat perception) relative to light-skinned White males (Ronquillo et al., 2007). Finally, Livingston and Brewer (2002) investigated the extent to which Black prototypicality impacted implicit prejudice over and above race. They showed that highly prototypic Black targets elicited more prejudice than less prototypic targets on an implicit measure of prejudice. Across all of these studies, researchers compared targets that were low versus high in prototypicality and showed that targets who were high in prototypicality were judged in a manner more consistent with group attitudes.

In addition to evaluation, research supports a positive, linear link between prototypicality and stereotyping. For example, with regard to explicitly measured stereotypes, Anderson and Cromwell (1977) showed that darker-complected individuals were viewed as less intelligent, consistent with the cultural stereotype that Blacks are not smart. In a more recent study, Maddox and Gray (2002) asked participants to list stereotypic traits that characterize dark- and light-skinned Blacks. Using Devine's (1989) Black stereotype trait list, they coded participants' responses and found that people listed significantly more Black stereotypic traits in response to darker-skinned Blacks than lighter-skinned Black. Conversely, participants listed fewer counter-stereotypic traits when describing dark-skinned versus lighter-skinned Blacks. Among these traits, there was also an effect for the valence of traits participants listed for the two groups of Blacks, such that they listed more positive traits when describing lighter-skinned Black and more negative traits when describing darker-skinned Blacks.

Likewise, Blair, Judd, Sadler, and Jenkins (2002) employed an impression formation paradigm in which participants were presented with a description of an individual that varied in terms of stereotypically

Black behavior and valence. Participants were then given photographs of Blacks and Whites who varied in Afrocentricity and were asked to rate the probability that each photograph was the individual being described. Researchers found that more Afrocentric targets were rated as more likely to be the person in the stereotypically Black descriptions (see also Blair, Judd, & Fallman, 2004). Moreover, racial prototypicality has been found to moderate the decision to shoot using a computer video game in which participants are asked to execute shoot/don't shoot decisions in response to armed and unarmed Black and White males. Ma and Correll (2011) replicated previous research showing racial bias in shoot decisions (e.g., more false alarms in response to unarmed Blacks than Whites; Correll, Park, Judd, & Wittenbrink, 2002), and observed that this racial bias increased linearly with the targets' prototypicality. Unlike some of the previously documented research, these studies included targets that varied continuously in terms of prototypicality. However, these studies only report tests for positive, linear associations between prototypicality and judgment (but see the General Discussion). The current research tests another possibility—features also relate to judgment in a curvilinear fashion. In the next section, we explain the rationale for our research.

3. Perspectives on category structure

The idea that categories are graded, that the members of a category vary in the extent to which they fit the category, has been a central topic of research in cognitive psychology. Researchers agree that in many cases different members of a category are not equivalently examples of the category (Rips, Shoben, & Smith, 1973; Rosch, 1973). Although robins, chickens, and flamingoes all belong to the category, *bird*, participants rate these animals differently in terms of the goodness with which they represent the category (Barsalou, 1983). The question of how graded categories are structured and what makes members more or less typical, however, remains up for debate. Two perspectives that are especially relevant to the current discussion are the *family resemblance* and *ideals* perspectives. According to the former model, an exemplar's typicality depends on its similarity to the category's central tendency (Rosch & Mervis, 1975; Smith, Shoben, & Rips, 1974). A category's most representative exemplar is therefore closest to the category's central tendency. Imagine, for example, Black faces that have been rated in terms of prototypicality. Family resemblance models would suggest that the most representative exemplar is one close to the mean or median of the sample. By contrast, the category ideal perspective suggests that the most representative exemplar exists at the periphery of the category: it is the extreme, rather than the average. For a visual depiction of the family resemblance and ideal perspectives, see Fig. 1. The ideal view is consistent with the idea that more extreme faces are better representations of the category and thus elicit stronger activation of category judgments (this is consistent with the linear effects observed in race-related work). But the family-resemblance

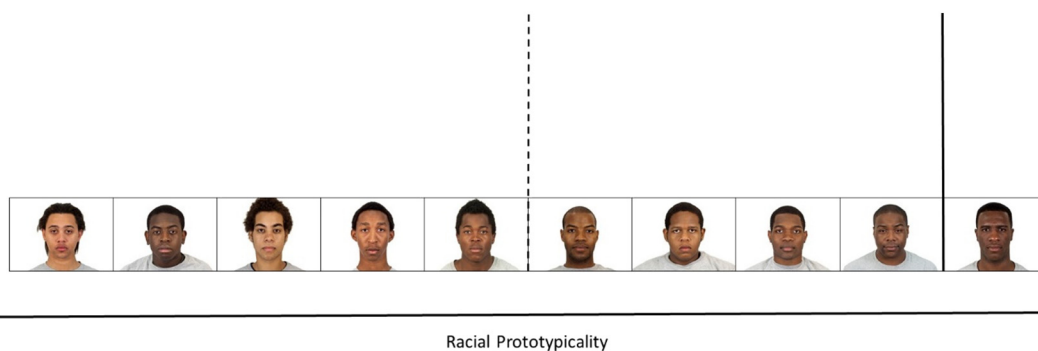


Fig. 1. Visual depiction of the family resemblance and ideal perspectives. Faces assembled in order of least to most racially prototypic (left to right). The dotted line represents a theoretical average. Faces within the average range are prototypic, as defined by the family resemblance perspective. The solid line represents a theoretical category ideal. Faces toward the right of the distribution are more prototypic, as defined by the ideal.

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