

Stereotypes and Prototypes: The Causes and Consequences of Intersectional Invisibility

A Dissertation  
SUBMITTED TO THE FACULTY OF THE  
UNIVERSITY OF MINNESOTA  
BY

Allison L. Williams

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

Christopher M. Federico, Marti Hope Gonzales

June 2018

© Allison L. Williams 2018

## **Acknowledgements**

For me, the graduate school process has been a long and challenging one, with both high highs and low lows. There were several times during the process when I was unsure whether I could finish. I am positive that I could not have done so without the unwavering support of so many people; you all have made me a stronger person and a better social psychologist, and kept me sane when I needed it most.

First and foremost, I am grateful for the help and support of my advisors, Marti Hope Gonzales and Christopher Federico, whose insight, guidance, and patience were instrumental in the development and execution of this project. I am also fortunate to have benefited from the advice and guidance of my other committee members, Eugene Borgida and Howard Lavine, whose thorough and thoughtful feedback on the many iterations of this project helped to make this dissertation something of which I am quite proud.

I also owe a tremendous debt to the researchers and staff at LATIS, particularly Pernu Menheer, Alicia Hofelich Mohr, and Andy Sell, all of whom were incredibly responsive to my many requests for programming support, data wrangling support, and lab space to run my studies.

This dissertation would not have been possible without the help of my tireless Research Assistants, Nikki Degeneffe and Victoria Blakeborough, who helped me think through the project during its infancy, ran participants, and handled any and all issues that came up with ease.

And, finally, I want to thank all of my friends and family who supported me throughout graduate school and the dissertation process. In particular, I am incredibly grateful to my cohort-mate Allie Farrell, with whom I spent many nights commiserating over nachos and happy hour drinks, my officemates Alex Maki and Rafael Aguilera, who made Elliot Hall a happier place for me, and Pierce Ekstrom, who has been my best friend through all of it.

## **Dedication**

To those who have ever felt they were unheard or unseen.

## Abstract

Although sociologists and legal scholars have posited that the marginalization of Black women stems from disadvantage that emerges at the intersection of race and gender (Crenshaw, 1989), psychologists have only recently begun to generate individual-level theories to help explain this phenomenon. One such theory is the intersectional invisibility model (Purdie-Vaughns & Eibach, 2008), which suggests that the non-prototypicality of Black women, in terms of both race and gender, leads to invisibility and subsequent marginalization. Newer research, however, suggests that non-prototypicality should be considered not only with respect to race or gender, but in terms of the relationship *between* these two social categories, as Black individuals are considered more masculine than—and Asian individuals more feminine than—White individuals (Galinsky, Hall, & Cuddy, 2013). Indeed, studies have found support for the invisibility of Black women, who are non-prototypical in terms of their gendered-race prototype (Sesko & Biernat, 2010) and for the invisibility of Asian men, who are similarly non-prototypical (Schug, Alt, & Klauer, 2015). The proposed studies are an attempt to reconcile the intersectional invisibility model with gendered race theory by examining whether it is the perceptions of non-prototypicality that lead to invisibility (Study 1), identifying possible mechanisms for this relation (Study 2), and finally, examining whether non-prototypicality and subsequent invisibility indeed lead to marginalization as predicted by the model (Study 3).

## Table of Contents

List of Tables .....	vi
List of Figures .....	ix
Introduction.....	1
Study 1: Non-Prototypicality as a Predictor of Intersectional Invisibility .....	21
Study 2: Cognitive Correlates of Intersectional Invisibility .....	43
Study 3: Testing the Intersectional Invisibility Model.....	66
General Discussion .....	86
References.....	93
Tables.....	96
Figures .....	124
Appendix A.....	140
Appendix B.....	150
Appendix C.....	158

## List of Tables

Table 1.1. Descriptive statistics for continuous measures, Study 1 .....	111
Table 1.2. Descriptive statistics for facial images, Study 1 .....	112
Table 1.3. Response latency as a function of target incongruence and social-identity complexity: Model estimates, Study 1 .....	113
Table 1.4. Response latency as a function of target incongruence and gender-specific system justification: Model estimates, Study 1 .....	114
Table 1.5. Response latency as a function of target incongruence and need for closure: Model estimates, Study 1 .....	115
Table 1.6. Hit Rates, False Alarms, and $d'$ scores by subgroup, Study 1 .....	116
Table 1.7. $D'$ as a function of target incongruence and relative non-prototypicality: Model estimates, Study 1 .....	117
Table 2.1. Descriptive statistics for continuous measures, Study 2 .....	118
Table 2.2. Descriptive statistics for the warmth and competence indices, overall and by subgroup: Study 2 .....	119
Table 2.3. Descriptive statistics for the dehumanization index, overall and by subgroup: Study 2 .....	120
Table 2.4. Descriptive statistics for the agency and experience indices, overall and by subgroup: Study 2 .....	121
Table 2.5. Summary statistics and correlations of invisibility measures, overall and by subgroup: Study 2 .....	122

Table 2.6. Invisibility as a function of target incongruence and relative non-prototypicality: Model estimates, Study 2 .....	123
Table 2.7. Invisibility as a function of target incongruence and relative perceived warmth: Model estimates, Study 2 .....	124
Table 2.8. Invisibility as a function of target incongruence and relative perceived competence: Model estimates, Study 2 .....	125
Table 2.9. Invisibility as a function of target incongruence and relative dehumanization: Model estimates, Study 2 .....	126
Table 2.10. Invisibility as a function of target incongruence and relative perceived agency: Model estimates, Study 2 .....	127
Table 2.11. Invisibility as a function of target incongruence and relative perceived experience: Model estimates, Study 2 .....	128
Table 3.1. Descriptive statistics for continuous measures, Study 3 .....	129
Table 3.2. Summary statistics and correlations of invisibility measures, overall and by subgroup: Study 3 .....	130
Table 3.3 Descriptive statistics and correlations for issue marginalization, sponsor marginalization, and resource marginalization .....	131
Table 3.4. Response latency as a function of target incongruence and social-identity complexity: Model estimates, Study 3 .....	132
Table 3.5. Response latency as a function of target incongruence and gender-specific system justification: Model estimates, Study 3 .....	133

Table 3.6. Response latency as a function of target incongruence and need for closure: Model estimates, Study 3 .....	134
Table 3.7. Invisibility as a function of target incongruence and relative non- prototypicality: Model estimates, Study 3 .....	135
Table 3.8. Issue marginalization as a function of target incongruence and relative invisibility: Model estimates, Study 3 .....	136
Table 3.9. Sponsor marginalization as a function of target incongruence and relative invisibility: Model estimates, Study 3 .....	137
Table 3.10. Resource marginalization as a function of target incongruence and relative invisibility: Model estimates, Study 3 .....	138

## List of Figures

Figure 1. Effects of Target Race and Target Gender on Gender Categorization Response

Latencies, Study 1 .....139

## **Stereotypes and Prototypes: The Causes and Consequences of Intersectional Invisibility**

The United States is a diverse country, and becoming increasingly so with each passing year. Racial population estimates from the most recent two United States Census reports indicate that aggregating across minority populations to include all non-White individuals, the growth attributable to non-White individuals and non-Hispanic White individuals was 91.7% and 8.3%, respectively (Pew Hispanic Center, 2011). As a result of this growth, the proportion of non-White individuals living in the country has now surpassed one in four: 28%. Furthermore, U.S. Census projection estimates suggest that the proportion of non-White individuals will continue to increase, doubling in size to comprise 57% of the population, a majority, by the year 2060 (U.S. Census Bureau, 2012). This massive increase is driven, for the most part by the growth within the Hispanic population, which accounted for over half of the total population increase between 2000 and 2010. In addition, the number of individuals describing themselves as belonging to two or more races increased by 32%, rising slightly from fewer than 7 million to slightly over 9 million individuals between 2000 and 2010 (U.S. Census Bureau, 2011). The consequences of this shift in the racial composition of the United States, however, have normative implications in addition to those that are descriptive. That is, taking into account race and poverty jointly, although the 2010 census found a significant increase in the proportion of Hispanic individuals in poverty, there was not a comparable increase for any other racial or ethnic group (U.S. Census Bureau, 2012). Insofar as particular demographics or groups of individuals are more likely than others to

enter into or to experience poverty, the perception that these two characteristics are linked is likely to grow, stereotypes grounded in these perceptions are likely to be reinforced, and discrimination or marginalization on the basis of these stereotypes are likely to become more commonplace.

Such an increase in demographic heterogeneity mandates a broader understanding of what contributes to and affects discrimination and marginalization, especially as those who identify as multi-racial or as disadvantaged along another dimension (i.e., individuals of a lower socioeconomic status) may be more likely to experience these negative outcomes. Crenshaw (1989) labels these individuals who are disadvantaged with respect to multiple dimensions (e.g., race, class, gender, or sexual orientation) as “intersectionally marginalized.” For example, low-income women may be discriminated against as a result of being either female or poor, or both female *and* poor. Disadvantaged individuals are most likely to require the advocacy efforts of interest groups, given that they lack the power or resources to engage with the political system (Gaventa, 1980; Strolovitch, 2006, 2007). Indeed, research suggests that some women of color (particularly Black and Latina women) are less likely than their Asian-American and White female counterparts, who are often relatively more advantaged (Brown, 2015), to engage in either traditional political participation, such as attending a political rally or contributing money to a political campaign, or nontraditional political participation, such as signing a petition or participating in a boycott.. Consequently, a greater understanding of how intersectional differences may contribute to differences in power and social influence that may perpetuate inequality, is essential.

## **An Intersectionality Framework**

The study of intersectional marginalization originated in the fields of sociology and legal studies as a way to examine and explain the broader effects of group differences, such as the disparities between Black and White women, at the aggregate or population level. For example, Crenshaw (1989, 1991) cited intersectional differences as a reason why Black women were often unable to successfully navigate the legal system for discrimination cases. That is, given that a case for gender discrimination requires evidence that a policy negatively affects women of all racial groups disproportionately relative to men, and that a case for racial discrimination requires evidence that a policy negatively affects Black individuals, regardless of gender, relative to non-Black individuals, Black women were often unable to satisfy either criterion (Crenshaw, 1989; Hancock, 2007). Essentially, discrimination cases brought by Black female defendants were considered neither sufficiently sexist nor sufficiently racist to merit a verdict in their favor.

This is not to say, however, that outcomes related to the intersection of race and gender are the only ones that matter, or that the legal system is the only place in which the study of intersectional differences is consequential. Examining the policy agendas of various interest groups that advocate for social and economic outcomes for marginalized groups, Strolovitch (2006, 2007) classified policy issues in terms of who was affected by the issue, differentiating between universal issues that affect all group members (e.g., social security is an issue that affects all women, regardless of race, class, or sexual orientation), issues that affect the majority of group members (e.g., violence against

women affects the majority of all women), advantaged-subgroup issues that primarily affect group members who are relatively advantaged (e.g., affirmative action in higher education primarily affects women of higher socioeconomic status, who have the resources available to pursue higher education), and disadvantaged-subgroup issues that primarily affect group members who are relatively disadvantaged (e.g., welfare primarily affects women of color or women of lower socioeconomic status). She found that interest groups allocated relatively more resources to advocate for advantaged-subgroup issues that favored those who were relatively advantaged compared to other members of their group than to disadvantaged-subgroup issues that primarily affected those who were relatively disadvantaged compared to other members of their group, or even universal or majority issues. Moreover, when trying to predict the amount of resources dedicated to particular issues, Strolovitch (2006) found that although interest groups were likely to dedicate resources toward advocating for advantaged-subgroup issues regardless of how many people were affected, issues affecting *disadvantaged* subgroups were only likely to receive support to the extent that these issues affected a large number of group members. Evidence of intersectional marginalization exists in legislative settings as well. Hawkesworth (2003) examined legislative practices within the U. S. Congress, finding that the institution was hierarchically structured, such that the efforts of Congresswomen of color were often minimized or marginalized, through the types of issues that were brought to a vote or through exclusion from the decision-making process. Taken together, these findings suggest that in terms of support and protection, individuals who are disadvantaged along multiple dimensions are likely to experience discrimination and

invisibility, even from organizations and institutions purportedly dedicated to advancing their interests.

Although an interest in intersectionality and the examination of research questions using an intersectional framework is a relatively recent addition to social psychology (e.g., Cole, 2009; McCall, 2005; Syed, 2010), it is nonetheless an important one. Whereas sociologists and political scientists have used an intersectionality framework to explain experiences and outcomes at a broader, mass public level, and to document whether and when these dynamics occur, the application of an intersectionality framework to social-psychological research can allow for an understanding of these experiences and outcomes at the individual level, which is essential for understanding *why* they occur. For example, examining intersectional disadvantage at an individual level of analysis can lead to a greater understanding of the types of individuals who may be predisposed to engage in intersectionally marginalizing practices, and the types of consequences that might arise from these practices. Ultimately, by identifying the causes and consequences of intersectional marginalization, a better understanding of the factors contributing to or the mechanisms underlying inequality in such a complex system may yield insight into how to effectively reduce such inequality. One promising model with the potential to identify and examine intersectional marginalization is the intersectional invisibility model (Purdie-Vaughns & Eibach, 2008), which proposes that the marginalization of particular groups of people (e.g., Black women) results from the perception that they are not prototypical group members; this non-prototypicality is theorized to lead to discrimination in the form of invisibility.

## **The Intersectional Invisibility Model**

When thinking about racial discrimination, often the more active forms of discrimination, such as police brutality or disparities in criminal sentencing for Black men (e.g., Steffensmeier, Ulmer, & Kramer, 1998) come to mind. However, Purdie-Vaughns and Eibach (2008) argue that individuals who are considered to be members of non-prototypical groups experience social invisibility, a more passive form of oppression that is qualitatively distinct, though no less problematic, than that experienced by more prototypical group members, and generally manifests as an omission of the narratives and perspectives of non-prototypical groups in historical, cultural, and political contexts. The idea of prototypicality is adapted from cognitive psychology, and refers to the extent to which an object is a clear or typical example of a particular category and is thus perceived to be most representative (Rosch, 1975; Rosch & Mervis, 1975). Objects that represent a good example of a category are considered prototypical, whereas objects that represent a poor example of a category are considered non-prototypical. When assessing whether a novel target object is a member of a particular category, the extent to which the object is similar to the category prototype is taken into account (Rosch, 1974). Given that prototypical example of a category often more easily comes to mind, information about non-prototypical targets is processed less efficiently (Fiske, Neuberg, Neattie, & Millberg, 1979), and is subsequently remembered more slowly (Brewer, Dull, & Lui, 1981) and less well (Silvera, Krull, & Sassler, 2002) than are prototypical targets.

In the intersectional invisibility model, prototypicality is defined with respect to societal standards for gender, race, and sexual orientation. According to these standards,

androcentrism reflects the dominant gender ideology, such that men are perceived to be prototypical in terms of gender (Bem, 1994; Eagly & Kite, 1987). Ethnocentrism defines norms related to race, such that White individuals are perceived as prototypical (e.g., Bonilla-Silva, 2000; Devos & Banaji, 2005). Finally, heterosexism asserts that heterosexual individuals are seen as prototypical in terms of sexual orientation (Hegarty & Pratto, 2001, 2004). Proponents of the intersectional invisibility model recognize that perceptions of non-prototypicality may shift as a function of the social context, as in domains—such as nursing or teaching—that are traditionally feminine. As a result, the model clarifies that intersectional invisibility should result only when the non-prototypical identity is also perceived to be subordinate.

According to the model, individuals who are multiply non-prototypical are relegated to social invisibility, which leads to marginalization (Fryberg & Townsend, 2008; Purdie-Vaughns & Eibach, 2008). As Black women are non-prototypical in terms of both gender and race (e.g., Hamilton, 1991; Zarate & Smith, 1990), they are likely to experience this social invisibility (e.g., Fryberg & Townsend, 2008). This invisibility is intended as a contrast to the more active form of oppression experienced by individuals who are considered prototypical on one dimension but non-prototypical on another, such as Black men, who align with societal norms related to gender, but not to race (Purdie-Vaughns & Eibach, 2008) and who are increasingly likely to experience bias as stereotypicality also increases (Blair, Judd, Sadler, & Jenkins, 2002; Eberhardt, Davies, Purdie-Vaughns, & Johnson, 2006; Eberhardt, Goff, Purdie, & Davies, 2004; Maddox, 2004). The invisibility experienced by individuals who are perceived to be non-

prototypical on multiple dimensions (e.g., Black women) may be qualitatively distinct, though no less damaging, and can take the form of historical, cultural, or political invisibility, all of which lead to the exclusion and suppression of non-prototypical narratives, cultural practices, and political needs. Social-psychological research illustrates this idea of social invisibility, as, for example, non-prototypical group members are less likely to become leaders of their group or to influence other members of their group (Hogg, 2001), suggesting that the needs or opinions of these non-prototypical group members are less likely to be heard and more likely to be ignored or disregarded.

Although a large body of research has contributed to understanding how stereotypes or beliefs about groups lead to bias and discrimination (e.g., Allport, 1954; Devine, 1989), as well as the types of strategies or conditions that might successfully reduce such bias (e.g., Gaertner, Mann, Murrell, & Dovidio, 1989; Pettigrew & Tropp, 2006), much of this work is predicated on the idea that these beliefs and stereotypes exist in the first place.

This line of research may be less applicable for non-prototypical group members relegated to invisibility, for whom relevant stereotypes or individuating information are possibly more scarce. A more complete understanding of invisibility, including what it means for how individuals are perceived and why it might lead to marginalization, therefore, still is lacking.

### **Non-Prototypicality and Gendered Races**

Impression formation and person-perception processes are complex. They rely on the incorporation of both top-down information, which includes information about category membership, and bottom-up information, which consists of information about

specific target attributes, with category-based information generally being processed first and automatically (Brewer, 1988; Fiske & Neuberg, 1990), though more recent models suggest that the processing of top-down and bottom-up information occurs in a more integrative and dynamic manner (Freeman & Ambady, 2011). Indeed, the ability to categorize other individuals on the basis of group membership is evident even among infants and young children, who are able to differentiate between adults on the basis of accent or race (e.g., Kinzler & Spelke, 2011). In terms of top-down processing, the encoding of category-related information about individuals is not limited to a single dominant category, such as race or gender. Instead, individuals are able to encode and react on information about other people in terms of multiple categories (such as race *and* gender), and subsequently rely on information from both categories when making social judgments (Stangor, Lynch, Duan, & Glass, 1992; Taylor, Fiske, Etcoff, & Ruderman, 1978).

As a result, perceptions of what is non-prototypical should also extend beyond the consideration of a single social category, such as race or gender, to include the relationship *between* two social categories. In fact, recent research suggests that there are different types of social categories that tend to coexist. For example, upon examining the extent to which stereotypes about race and gender overlap, Galinsky, Hall, and Cuddy (2013) found that the content of racial stereotypes about particular groups of people were systematically gendered as a function of the race of that group. Whereas racial stereotypes about Black individuals contained mainly masculine content, racial stereotypes about Asian individuals contained mainly feminine content (relative to White

individuals; see Galinsky et al., 2013), a finding consistent across both explicit and implicit stereotypes (Donovan, 2011; Johnson, Freeman, & Pauker, 2012). The noteworthy idea that race is gendered has far-reaching real-world implications in diverse domains such as romantic attraction and personnel selection. For example, whereas female participants rated Black male targets as more attractive than Asian male targets, male participants rated Asian female targets as more attractive than Black female targets (Galinsky et al., 2013), an effect consistent with the idea that heterosexual men have a preference for femininity and heterosexual women a preference for masculinity (e.g., Buss, 2000). Indeed, a preference for masculinity mediated the link between participants' gender and ratings of attractiveness for Black targets relative to Asian targets (Galinsky et al., 2013).

In terms of personnel selection, Galinsky and colleagues (Galinsky et al., 2013; Hall, Galinsky, & Phillips, 2015) found that congruence between a person's gender profile (i.e., the gendered perceptions of different racial groups) and his or her biological sex lead to a person-position fit, which impacted perceptions of candidate hireability or promotion likelihood within occupations that typically correspond to feminine traits (e.g., a librarian) or masculine traits (e.g., a security patrol officer). For example, whereas Asians were perceived to be more hireable for a feminine position (i.e., librarian) relative to Black or White targets, they were perceived to be less hireable for the masculine position (i.e., security patrol officer; Hall et al., 2015). Participants were also less likely to nominate an Asian candidate for leadership positions within those masculine occupational roles (Galinsky et al., 2013). A related line of research suggests that the

influence of gendered person-position-fit perceptions also extends to how individuals are treated once they have assumed a leadership role. That is, although both Black male and White female leaders were evaluated negatively for displaying dominant or agentic behavior in the workplace, the same penalty was not applied to Black female leaders (Livingston, Rosette, & Washington, 2012), a finding consistent with the idea that the nature of the invisibility experienced by Black women affords them protection from the more direct forms of discrimination that target (and are experienced by) prototypical group members. These results suggest that the correspondence between gender and race has the potential to influence not only the types of individuals most likely to enter a particular occupation, but also those who are most likely to succeed once they have done so.

### **Person Perception and the Consequences of Non-Prototypicality**

The links among race, gender, and non-prototypicality that result from an incongruent race and gender pairing also have direct effects on person-perception processes. In terms of social judgments, information about individuals who are non-prototypical is processed less efficiently and less accurately. For example, Black women are incorrectly categorized more frequently, compared to Black men, White men, or White women, in terms of both gender (Goff, Thomas, & Jackson, 2008) and race (Thomas, Dovidio, & West, 2014). Moreover, individuals are slower to categorize race-gender incongruent targets, even when these social judgments are accurate (Carpinella, Chen, Hamilton, & Johnson, 2015; Johnson et al., 2012). The congruency between race and gender also affects expectations about the likelihood of particular outcomes. That is,

Schug, Alt, and Klauer (2015) found that when asked to generate a short story about a target individual (specified as White, Black, or Asian), participants were more likely to write about a female protagonist than a male protagonist in the Asian condition, relative to the White condition, and more likely to write about a male protagonist than a female protagonist in the Black condition, relative to the White condition. Taken together, these results suggest that a complete understanding of non-prototypicality should reflect the convergence of race and gender, instead of maintaining race and gender as distinct and uncorrelated categories. The addition of a gendered-race perspective to intersectional invisibility model may therefore be an important qualification to the original model.

### **Moderators of Non-Prototypicality**

According to the intersectional invisibility model, invisibility should occur to the extent that subordinate group members are perceived to be non-prototypical. It naturally follows, then, that factors that influence whether a target is likely to be perceived as non-prototypical should also influence whether invisibility is likely to result. The tendency to perceive group boundaries or to enforce group roles is one such factor. Group boundaries are especially salient for entitative groups, which are coherent and tight-knit, with collective group interests (Campbell, 1958; Hamilton & Sherman, 1996) and more clearly defined prototypes (Hogg, 2004). A clear definition of what *is* prototypical makes it easier to determine when a target does not fit that definition and is therefore *not* prototypical. Indeed, consistent with the idea that non-prototypicality may be related to discrimination and marginalization, perceptions of group entitativity have been implicated in intergroup bias. Individuals who perceive their ingroup to be more

entitative (compared to those who perceive their ingroup to be less entitative) are more likely to make harsher, more competitive choices when playing economic games such as the Prisoner's Dilemma (Insko, Wildschut, & Cohen, 2013) and to show a willingness to display outgroup prejudice, especially if already high in implicit prejudice (Effron & Knowles, 2015). Consequently, individuals who perceive their ingroup as more, versus less, entitative, may also be more likely to engage in subtler forms of prejudice and discrimination, and tend toward relegating non-prototypical groups to invisibility.

Individuals who perceive their ingroup identities to overlap and converge toward homogeneity (i.e., individuals low in social-identity complexity) may be especially likely to perceive groups as entitative. For these individuals, the ingroup is more narrowly defined and differentiated from the outgroup. In contrast, individuals high in social-identity complexity perceive less overlap between their identities and recognize that these identities are cross-cutting and not necessarily convergent. Prior research has found that social-identity complexity is an important predictor of intergroup attitudes, as the recognition that one's own social identities may only partially overlap on any one dimension leads to a less well-defined sense of where the ingroup ends and where the outgroup begins, thus reducing the magnitude of ingroup-outgroup comparisons (Roccas & Brewer, 2002). Consequently, individuals high in social-identity complexity have been shown to demonstrate greater tolerance for outgroup members (Roccas & Brewer, 2002), lower levels of ingroup bias (Schmid, Hewstone, Tausch, Cairns, & Hughes, 2009), and increased support for social policies such as affirmative action (Brewer & Pierce, 2005). To the extent that social-identity complexity influences how individuals perceive their

own ingroup boundaries—with individuals higher in social-identity complexity perceiving boundaries that are less well defined, and, therefore, an ingroup that is less entitative—these perceptions should also relate to the perception that social groups more broadly are less differentiated. Indeed, consistent with this hypothesis, individuals high in social-identity complexity, who perceive category memberships for outgroup members (e.g., the race and gender of a target individual) to be more cross-cutting, also demonstrate lower levels of intergroup bias (Crisp, Turner, & Hewstone, 2010). In contrast, individuals low in social-identity complexity, for whom ingroup boundaries *are* more differentiated and therefore perceive their ingroup as more entitative, should therefore be more likely to perceive and respond to group boundaries and differentiate among outgroup members on the basis of group categories, and therefore more likely to perceive category non-prototypicality.

Second, individuals motivated to view social groups as distinct and defined by group roles should also be more likely to evaluate others as a function of group categorization. For example, individuals who are high in gender-specific system justification, and are therefore motivated to endorse a system that prescribes gender roles and to maintain the status quo for gender roles and gender relations (Jost & Kay, 2005) may be especially likely to perceive non-prototypicality as suggested by gendered race theory. Insofar as members of non-prototypical groups violate the alignment of racial and gendered stereotypes, (e.g., Donovan, 2011; Galinsky et al., 2013), they are simultaneously undermining the structure of traditional gender roles and norms, thereby threatening a system predicated on these differences. Consequently, members of non-

prototypical groups may be especially likely to elicit biased judgments from individuals higher in gender-specific system justification, who are motivated to defend the status quo.

A third factor that is likely to influence perceptions of non-prototypicality is the tendency to rely on heuristics when making social judgments. Heuristic thinking is characterized by the use of shortcuts that rely on category attribute information in order to conserve cognitive effort (e.g., Gigerenzer & Gaissmaier, 2011; Kahneman & Frederick, 2002). Although the use of heuristics can lead to quicker judgments, heuristics are also implicated in a number of decision-making biases. For example, the use of heuristics may lead individuals to succumb to the conjunction bias, which occurs when, given two categories, membership in both categories (i.e., Category A *and* B) is judged to be more representative and therefore more probable than membership in either category (i.e., Category A *or* B; Kahneman & Tversky, 1973; Tversky & Kahneman, 1983). Given the overlap between race and gender, the use of heuristics might lead individuals to assume that race-gender incongruent social categories (i.e., Black women and Asian men) are especially improbable and therefore more non-prototypical.

The need for cognitive closure, which reflects the tendency to avoid ambiguity and uncertainty, is an individual difference shown to relate to heuristic thinking (Webster & Kruglanski, 1994). Individuals high in need for closure tend to “seize” and “freeze” on information, thereby reaching a decision quickly and unwaveringly (Kruglanski & Webster, 1996). Individuals high in need for closure are less likely to use individuating information and more likely to rely on heuristic thinking when making social judgments (De Dreu, Koole, & Oldersma, 1999; Webster & Kruglanski, 1994). In addition,

individuals high in need for closure are more likely to gravitate toward groups and group norms (Kruglanski, Pierro, Mannetti, & De Grada, 2006), especially those that are homogenous (Kruglanski, Shah, Pierro, & Mannetti, 2002). To the extent that race-gender incongruent individuals are inconsistent with the group norms that link race and gender, individuals high in need for closure may be especially likely to recognize this inconsistency, and to use this perceived non-prototypicality in social judgments.

### **The Nature of Intersectional Invisibility**

The intersectional invisibility model predicts that individuals who are multiply subordinate and non-prototypical will experience invisibility. In the model, invisibility as a construct is defined, through the use of historical examples, as an outcome that is experienced by non-prototypical individuals, instead of as a process that occurs in the mind of the perceiver and that subsequently leads to invisibility. For example, the narratives of individuals with multiple subordinate identities are often omitted from the cultural record or are limited to circumscribed race or gender roles. This is evident in content analyses showing that commercial media portrayals include non-White (Mastro & Behm-Morawitz, 2005; Mastro & Stern, 2003) and female (Collins, 2011) characters at a lower rate than their White male counterparts, and often reflect traditional stereotypes, as with female characters who are homemakers or wives (Collins, 2011) or non-White characters who are heavily accented (Mastro & Behm-Morawitz, 2005).

Although the vagueness in the description of invisibility may be a rhetorical intention, as a focus on the *outcome* of invisibility ensures that the experiences of marginalized individuals remain visible and active, this approach is nonetheless

problematic. An incomplete understanding of the process by which invisibility arises or of how stereotypes or other group-based attributions enable and contribute to the emergence of invisibility only guarantees that invisibility is perpetuated. Determining *how* individuals perceive those who are intersectionally invisible is therefore an important step in understanding what invisibility is and why it occurs. Even though the intersectional invisibility model does not specify how invisibility is expressed in the mind of the perceiver, social-psychological research focusing on the underlying content of stereotypic beliefs may yield some insight into this process.

Stereotypes are cognitive representations of the attributes and characteristics associated with social categories (Macrae & Bodenhausen, 2001) that aid in forming impressions about other individuals (e.g., Allport, 1954; Brewer, 1988; Fiske & Neuberg, 1990) and that help to conserve mental resources when making social judgments (Bodenhausen & Lichtenstein, 1987; Macrae, Milne, & Bodenhausen, 1994). Although the specific stereotypes about particular groups may vary widely, the nature of these stereotypes all reflect a common ground and are rooted in basic social judgments of warmth and competence (Fiske, Cuddy, Glick, & Xu, 2002). Warmth reflects perceptions of intent, such that warm individuals have positive intentions toward the self and/or one's ingroup, and individuals low in warmth have correspondingly negative intentions. Ingroup members, who share resources with other group members, are therefore perceived to be high in warmth, whereas individuals or groups that compete for resources with one's ingroup or receive special treatment are perceived to be low in warmth (Fiske et al., 2002). In contrast, competence reflects perceptions of the ability to enact those

intentions. High competence reflects perceptions of intelligence and confidence, whereas low competence is reserved for individuals who are unskilled or unintelligent. Status confers perceptions of high competence, with individuals who or groups that are high in status, and therefore have a demonstrated record of achievement, perceived to be competent, and low-status individuals or groups perceived to be less competent (Fiske et al., 2002).

These perceptions of high versus low warmth and competence translate into behavioral responses as well (Cuddy, Fiske, & Glick, 2007). Warmth is related to behaviors that are *passive* and *avoidant* in nature (either facilitative for high warmth or harmful for low warmth), and competence is related to behaviors that are *active* and *direct* in nature (either facilitative for high competence or harmful for low competence). Consequently, individuals who are high in both warmth and competence experience both active and passive facilitation (i.e., helping and convenient cooperation), whereas individuals who are low in both warmth and competence experience both active and passive harm (i.e., attack and neglect). Pitied individuals, who are high in warmth but low in competence, receive active helping and passive neglect, whereas envied individuals, who are low in warmth but high in competence, receive passive helping and active harm (Cuddy et al., 2007). Although the stereotype content model has not been implicated explicitly in the intersectional invisibility model, it should be noted that the two share some similarities. In particular, the description of invisibility as an indirect form of oppression that stands in direct contrast to the more active form experienced by members of prototypical groups echoes the language of neglect and passive harm that can be

experienced by individuals who are perceived to be high in warmth but low in competence. Given the importance of perceptions of warmth and competence in social perception, it is likely that they also contribute to the invisibility that is derived from social judgments.

Invisibility is also likely related to other group-based stereotypes and attributions. For example, the perception of others as less than human has been implicated in intergroup bias and discrimination related to race and gender (Haslam, 2006). Metaphors of various racial groups can contain animal-related content, as in the description of Black individuals as ape-like (e.g., Jahoda, 1999) or immigrants as animal-like (O'Brien, 2003). The association between Black individuals and apes is evident at the implicit level as well, with Black male primes and ape primes facilitating the identification of ape images and Black male faces, respectively, and increasing the likelihood that participants would view the police beating of a Black (but not White) suspect as justified (Goff, Eberhardt, Williams, & Jackson, 2008). In terms of dehumanization related to gender, Rudman and Mescher (2012) found that men who automatically associated women with animals or objects were more willing to rape or sexually harass women. Similarly, power was shown to relate to dehumanization, with individuals in powerful positions showing a tendency to dehumanize others (Gwinn, Judd, & Park, 2013; Lammers & Stapel, 2011), which suggests that dehumanizing others can bias not only person perception, but also actual behaviors (or at least the endorsement of behaviors). Although the precise nature of dehumanization may vary (i.e., Black individuals and immigrants are both dehumanized, although not in the same way), the consequence, regardless, is the denial of human

qualities to the target group (Haslam, 2006). One way to deny human qualities is to believe that individuals do not possess such characteristics as conscientiousness or openness to experience, which are seen as essential to human nature (Haslam, Bain, Douge, Lee, & Bastian, 2005; Hodson & Costello, 2007).

A second way to deny human qualities is to deny that members of a group have agency and the capacity for feeling and doing (Gray, Gray, & Wegner, 2007; Gray, Knobe, Sheskin, Bloom, & Barrett, 2011; Waytz, Gray, Epley, & Wegner, 2010). As with other group-based assessments and evaluations, these attributions of agency and experience often reflect an ingroup-outgroup divide. For example, individuals with similar political beliefs are judged to be more mindful (Kennedy & Pronin, 2008), as are individuals who are well liked, compared to those who are disliked (Kozak, Marsh, & Wegner, 2006), or are part of the outgroup (Cortes, Demoulin, Rodriguez, & Leyens, 2005). Indeed, the threshold for perceiving minds (and therefore humanity) is higher for outgroup members than for ingroup members (Hackel, Looser, & Van Bavel, 2014), which suggests that understanding the role played by perceiving minds in social perception is important for developing a complete understanding of intergroup bias, and the role that it plays in intersectional invisibility.

### **Overview of Studies**

Although the application of an intersectional approach to social perception and intergroup relations has increased within social psychology in recent years, this area of research is still limited in several important ways. First, although prior work has demonstrated that individuals from race-gender incongruent groups are more likely to

experience invisibility (Schug et al., 2015; Sesko & Biernat, 2010), the conditions that make this outcome more or less likely to occur, and indeed, whether invisibility in fact results from non-prototypicality, remain underexplored. Second, research examining intersectional invisibility has considered invisibility primarily as an outcome rather than as a predictor of marginalizing behaviors. Given that marginalization is theorized, according to the intersectional invisibility model, to result from invisibility, the fact that this relation has yet to be empirically tested is problematic. The purpose of this dissertation is to integrate the intersectional invisibility model with gendered race theory and to provide an empirical test of the model by addressing these two main limitations. To do this, I ask three main questions. First, in Study 1, what kinds of characteristics are more likely to incline individuals to perceive members of race-gender incongruent groups as non-prototypical, and to what extent is perceived non-prototypicality related to invisibility? Second, in Study 2, what types of group-based attitudes and stereotypes are associated with invisibility? Finally, in Study 3, what are the broader implications of intersectional invisibility in terms of its relation to behaviors that marginalize particular race-gender incongruent subgroups? Taken together, these studies may provide a richer understanding of the causes and consequences of intersectional invisibility, thereby contributing individual-level explanations for phenomena that have to date largely been considered mainly at a societal level.

### **Study 1: Non-Prototypicality as a Predictor of Intersectional Invisibility**

The purpose of Study 1 is to replicate and extend prior work on the intersectional invisibility model by conducting an empirical test of the idea that non-prototypicality

leads to invisibility. Prior research has documented the findings that Black women and Asian men are perceived as non-prototypical in terms of both their race and gender (Carpinella et al., 2015; Goff et al., 2008b; Johnson et al., 2012; Schug et al., 2015; Thomas et al., 2014), and that targets from non-prototypical categories are more “invisible” in that they are remembered less well (Schug et al., 2015; Sesko & Biernat, 2010). However, a more direct test of the first path in the intersectional invisibility model—namely, that perceptions of non-prototypicality lead to invisibility—is still lacking. Study 1 seeks to fill this gap in the literature and to integrate the intersectional invisibility model with gendered race theory in order to examine the extent to which individual differences in the perceptions of Black women and Asian men (i.e., targets from race-gender incongruent groups) *as* non-prototypical are related to invisibility. As in prior work examining intersectional invisibility (e.g., Goff et al., 2008b; Sesko & Biernat, 2010), invisibility is operationalized here as facial memory for targets of different race and gender combinations, with the idea that targets who are remembered less well are therefore more invisible.

It is important to clarify that although a well-established body of research has found that individuals are generally less accurate at identifying different-race faces compared to same-race faces (e.g., Brigham, Maass, Snyder, & Spaulding, 1982; Meissner & Brigham, 2001) the predictions that are derived from the intersectional invisibility model and are examined in this dissertation are meant to be interpreted as distinct from this cross-race effect literature. That is, although the cross-race effect framework would predict that White individuals would have poorer memory for Black

faces, it would not predict that this bias would differ as a function of the gender of the target, or that perceptions of non-prototypicality would exacerbate the bias in facial recognition. As a result, although the cross-race effect may help to explain general patterns in facial recognition, it does not preclude the application of the intersectional invisibility model to develop a more nuanced understanding of how race, gender, and non-prototypicality interact to bias social judgments.

### **Overview of Hypotheses**

Consistent with the predictions put forth by the intersectional invisibility model (Purdie-Vaughns & Eibach, 2008) and research examining intersectional invisibility (e.g., Carpinella et al., 2015; Goff et al., 2008b; Johnson et al., 2012; Schug et al., 2015), groups that differ in terms of race and gender should vary in the extent to which they are perceived as non-prototypical. Participants are also expected to vary in the extent to which they are sensitive to non-prototypicality, with individual differences in the tendency to engage in categorical or stereotypical thinking increasing the likelihood that participants will perceive race-gender incongruent targets as non-prototypical of their gender. Moreover, consistent with the intersectional invisibility model, perceived non-prototypicality is expected to lead to greater invisibility (i.e., poorer facial memory) for race-gender incongruent targets. To examine these expectations, Study 1 employed a 2 (target gender: male, female) x 3 (target race: Asian, Black, White) research design, with both factors manipulated within subjects, and all other independent variables (e.g., social-identity complexity, need for closure) measured between subjects. Hypotheses that detail specific predictions are provided below.

**Hypothesis 1.** Targets for whom their race and gender profile is incongruent in the framework of gendered race theory (i.e., Black women and Asian men) will be perceived as less prototypical of their gender than will targets for whom the race and gender profile is consistent in the context of gendered race theory (i.e., White men and women, Black men, and Asian women).

**Hypothesis 2.** Participants who are low in social-identity complexity will be more likely to perceive race-gender incongruent targets as non-prototypical of their gender than will participants who are high in social-identity complexity.

**Hypothesis 3.** Participants who are high in gender-specific system justification will be more likely to perceive race-gender incongruent targets as non-prototypical of their gender compared to participants who are low in gender-specific system justification.

**Hypothesis 4.** Participants who are high in the need for closure will be more likely to perceive race-gender incongruent targets as non-prototypical of their gender than will participants who are low in the need for closure.

**Hypothesis 5.** Participants who perceive race-gender incongruent targets as non-prototypical will have poorer facial memory for those targets, compared to participants who do not perceive race-gender incongruent targets as non-prototypical and will have better facial memory for those targets.

## **Method**

### **Participants**

Undergraduate students were recruited from the University's undergraduate psychology participant pool and compensated with extra course credit in exchange for

participating in a two-part study that consisted of an initial online survey and a subsequent in-person laboratory session. Two hundred five students completed the initial online survey; 161 returned to complete the in-person laboratory session, which is equivalent to a 79% retention rate. Of the participants who completed both parts of the study, 73% identified as female, and 27% identified as male. A majority (61%) identified as White, 30% identified as Asian, and 2.5% identified as other. The average age of the final sample, which was used for analyses, was 20.11 years ( $SD = 3.34$  years, range = 18-52).

Given that several of my hypotheses posit the moderation of a two-way interaction, I used G\*Power to estimate the sample size necessary, given a repeated-measures ANOVA design, to find a significant interaction equal in size to that reported by Thomas et al. (2014, Study 1) in their gender categorization task. The sample size necessary to find an equivalent effect (i.e.,  $\eta^2 = .08$ ) using two groups (i.e., one standard deviation above and below the mean of the moderator) and four measurements with .80 power was estimated to be  $N = 94$ . This would correspond to a total sample size of 294, given that one standard deviation above the mean approximates 16% of the sample. The number of participants recruited for this study is somewhat lower than the target sample size, due to difficulties in recruiting students and higher than expected attrition between the online survey and the in-person laboratory session.

## **Materials**

See Table 1.1 for descriptive statistics (means, standard deviations, and correlations) of all continuous measures in Study 1. The full text of the items and stimuli used in Study 1 can be found in Appendix A.

**Social-identity complexity.** Social-identity complexity was measured using the procedure followed by Brewer and Pierce (2005), in which participants first generated a list of four groups to which they belonged and that were important to them. Participants then used an 11-point scale [0 = there are no members of Group A (or Group B, C, or D) that overlap with Group B (or Group A, C, or D); 5 = about half of the group members overlap; and 10 = there is total overlap between the two groups] to estimate the amount of member overlap reflected in the proportion of members in one group who are also members of each of the other three groups. Participants completed these overlap ratings for all possible group pairings and orders (e.g., the proportion of Group A members that is also in Group B as well as the proportion of Group B members that is also in Group A), for a total of 12 ratings. These ratings were then averaged to compute a system-identity complexity score for each participant, with higher scores indicating greater identity overlap (i.e., lower social-identity complexity). The averaged items formed a reliable scale ( $\alpha = .90$ ).

**Gender-specific system justification.** Gender-specific system justification was measured using the 8-item measure developed by Jost and Kay (2005), which includes items such as, “Gender roles need to be radically restructured,” and “In general, relations between men and women are fair” (the latter reverse-scored). All items were measured using a 9-point Likert-type scale format, ranging from 1 (“strongly agree”) to 9 (“strongly

disagree”). Responses were averaged to compute a gender-specific system justification score for each participant, with higher scores indicating stronger gender-specific system-justifying beliefs. The averaged items formed a reliable scale ( $\alpha = .85$ ).

**Need for closure.** Need for closure was measured using a short 14-item version (Pierro & Kruglanski, 2006) of the scale originally developed by Webster and Kruglanski (1994), in order to minimize participant fatigue. The short scale includes items such as, “In case of uncertainty, I prefer to make an immediate decision, whatever it may be.” All items were measured using a 6-point Likert-type scale format, ranging from 1 (“Strongly disagree”) to 6 (“Strongly agree”), with intermediate points labeled “Moderately disagree,” “Slightly disagree,” “Slightly agree,” and “Moderately agree.” Responses were averaged to compute a need for closure score for each participant, with higher scores indicating a stronger need for closure. The averaged items formed a reliable scale ( $\alpha = .81$ ).

**Facial stimuli.** A set of facial images including male and female Asian, Black, and White faces, were drawn from the Chicago Face Database 2.0 (Ma, Correll, & Wittenbrink, 2015), a large database of facial images and norming data that has been used in previous studies examining intersectionality (e.g., Todd, Simpson, Thiem, & Neel, 2016). All faces were roughly the same size, wearing the same clothing (i.e., a gray t-shirt), and had a neutral facial expression. Norming data, included in the database for all facial images, were analyzed to ensure that the ratings for the various race and gender groups did not differ significantly in terms of attractiveness, unusualness, and prototypicality for that particular race and gender group (i.e., the extent to which Black

female faces were rated as prototypical Black women), in order to avoid biasing the recollection of faces in favor of those that are particularly memorable (Brandt, Macrae, Schloerscheidt, & Milne, 2003). See Table 1.2 for descriptive statistics related to the facial images used in this study.

**Symbolic racism.** In order to ensure that participants' views about race were not driving differences in perceived non-prototypicality, participants completed an 8-item measure of symbolic racism (Henry & Sears, 2002). Participants responded to items such as, "It's really a matter of some people not trying enough; if blacks would only try harder they could be just as well off as whites" (reverse-scored) using a 6-point Likert-scale format, with response options labeled as 1 ("strongly agree"), 2 ("somewhat agree"), 3 ("somewhat disagree"), and 4 ("strongly disagree"). Item responses were averaged to compute a single symbolic racism index for participants, with higher values indicating more racist beliefs. The averaged items formed a reliable scale ( $\alpha = .84$ ).

**Ambivalent sexism.** In order to ensure that participants' views about gender were not driving differences in perceived non-prototypicality, participants completed a 22-item measure of ambivalent sexism (Glick & Fiske, 1996). Participants responded to items such as, "Most women interpret innocent remarks or acts as being sexist" using a 6-point Likert-type format, with response options labeled as 0 ("disagree strongly"), 1 ("disagree somewhat"), 2 ("disagree slightly"), 3 ("agree slightly"), 4 ("agree somewhat"), 5 ("agree strongly"). Item responses were averaged to form a single ambivalent sexism index for participants, with higher values indicated more sexist beliefs. The averaged items formed a reliable scale ( $\alpha = .92$ ).

**Intergroup contact.** In order to ensure that participants' ability to remember and differentiate among faces of different racial groups is not a function of the increased familiarity that accompanies higher levels of intergroup contact, participants completed measures of direct and extended cross-group friendships (Sharp, Vico, & Hewstone, 2011). Participants used a 7-point scale (with points labeled *None*, *A few*, *Less than half*, *About half*, *More than half*, *Most*, and *All*) to indicate how many of their friends are Black or Asian as well as how many of their friends have friends who are Black or Asian. Responses for each race were averaged separately in order to compute an index of intergroup contact with Black individuals and Asian individuals, with higher values indicating greater intergroup contact. The averaged items formed reliable scales ( $IC_{\text{Black}} \alpha = .69$ ,  $IC_{\text{Asian}} \alpha = .77$ ).

**Demographic measures.** Participants were also asked to complete a number of demographic measures, including race, gender, age, education (i.e., the number of semesters of university education completed), income (11 ordered categories, ranging from "Less than \$10,000" to "\$100,000 or greater"), sexual orientation, and social and economic ideology.

### **Procedure**

Data collection for Study 1 occurred in two stages, in order to reduce the likelihood that completing the individual-difference measures would lead participants to focus on gender- or group-based differences during the facial memory task. In Stage 1, participants completed an online survey, programmed using the online platform Qualtrics, which included measures of social-identity complexity, gender-specific system

justification, and need for closure, as well as items assessing symbolic racism, ambivalent sexism, group contact, and demographic information. The order of the social-identity complexity, gender-specific system justification, and need for closure measures was randomized between participants. Next, all participants completed the symbolic racism and ambivalent sexism measures (order counterbalanced), intergroup contact measures (order counterbalanced), and finally the demographic items. In Stage 2, approximately three days after completing Stage 1, participants came into the computer laboratory and were told that we are interested in studying first impressions and how people categorize and subsequently remember faces during first impressions (instructions adapted from Sesko & Biernat, 2010). Using Inquisit 4 Web from Millisecond Software (Draine, 2014), participants viewed 10 facial images from each gender (male, female) by race (Asian, Black, White) subgroup, presented in a randomized order, for a total of 60 trials. Each trial began with a red “X” in the center of the computer screen for one second and then showed one of the randomized facial images. For each image, participants were asked to indicate, as quickly as possible and using one of two pre-marked keys on the computer keyboard, whether the face was male or female. A new trial began once the participant had made a gender judgment for each face, and continued until all 60 trials had been completed. After completing this phase, participants completed a brief filler task, in which they were asked to name as many cities as possible during a 3-minute period (Sesko & Biernat, 2010). Following the filler task, participants were shown the 60 facial images viewed previously as well as 60 new facial images (10 per gender by race subgroup), for a total of 120 trials. The order of these images was randomized, with the

constraint that not more than three old or new images appeared consecutively. For each of the 120 trials, participants indicated whether the image on the computer screen was “old” (i.e., that they had seen it previously) or “new” (i.e., that they had not seen it previously). After completing this task, participants were thanked and debriefed about the purpose of the study.

## **Results**

### **Analysis Overview and Variable Construction**

The analyses for this study focus on two primary constructs, non-prototypicality and invisibility.

**Non-prototypicality.** Non-prototypicality is operationalized using participants’ response times for categorizing each facial image trial by gender, and is treated as a dependent variable when examining Hypotheses 1 through 4, and as a predictor variable when examining Hypothesis 5. As a dependent variable, participant response times for each race-by-gender subgroup were aggregated across like targets to create a separate score for each subgroup, with higher values on these aggregate scores indicating that participants were slower, on average, to categorize targets from particular subgroups by gender, which suggests that those subgroups were perceived to be less prototypical of their gender. As a predictor variable, aggregate scores were combined separately for race-gender incongruent subgroups and race-gender congruent subgroups. The ratio of the gender categorization response times for race-gender incongruent subgroups to race-gender congruent subgroups represents the extent to which participants perceived targets from race-gender incongruent subgroups as more non-prototypical than race-gender

congruent subgroups, with higher values indicating that this is especially true. In order to minimize the effect of outliers, and in line with other research examining reaction time data (e.g., Johnson et al., 2012), trials for which response latencies were less than 100 ms or  $\pm 3$  SDs from participants' overall mean latency score were excluded from analysis (2.46% of trials, which ranged from 2.11% of Black male trials to 2.86% of Black female trials). Excluded trials did not significantly differ as a function of race-gender subgroup ( $\chi^2(5) = 2.41, p = .79$ ).

**Invisibility.** Invisibility is operationalized using participants' sensitivity threshold for distinguishing between old and new faces (e.g., Sesko & Biernat, 2010; Thomas et al., 2014). First, the number of hits (i.e., old faces correctly identified as old) and false alarms (i.e., new faces incorrectly identified as old) were calculated separately for each race-by-gender target group and converted into proportions. False alarm and hit rate proportions that were either 0 or 1 were recoded to .05 and .95, respectively, in order to enable z-transformations. In Study 1, 10 hit rate proportions were recoded from 0 to .05 (1.04%), 21 hit rate proportions were recoded from 1 to .95 (2.17%), and 126 false alarm proportions were recoded from 0 to .05 (13.04%). These values were then standardized and subtracted from each other (i.e.,  $Z_{\text{hits}} - Z_{\text{false alarms}}$ ) to create a sensitivity index, or  $d'$ , that represents how well participants were able to discriminate between previously-presented faces and new faces of a particular race and gender group. Lower values indicate that participants were less able to distinguish between old and new faces; that is, that the faces of a particular race-by-gender target group were less memorable and therefore more invisible. To the extent that members of race-gender incongruent

subgroups are perceived to be more invisible than members of race-gender congruent groups, it should be harder for individuals to differentiate among them and to correctly indicate whether these faces were old or new.

**Model specifications.** In the models for Hypotheses 2 through 5 described below, most continuous predictors were rescaled to run from 0-1 in order to aid in the interpretation of coefficients. Age remained naturally coded in years, and education remained coded in terms of the number of semesters completed, instead of on a 0-1 scale. Although the analysis descriptions listed below focus on the interactions and main effects of interest, all models will also include the control (i.e., symbolic racism, ambivalent sexism, and intergroup contact) and demographic variables outlined in the method section (i.e., race, gender, age, education, income, sexual orientation, and political ideology) as level 2 predictors. In all multilevel models, the intercept and the dummy variable for target incongruence are specified as random factors.

### **Non-Prototypicality as a Function of Race and Gender (Hypothesis 1)**

According to Hypothesis 1, targets for whom their race and gender profile is incongruent with gendered race theory (i.e., Black women and Asian men) should be perceived as less prototypical of their gender than would targets for whom their race and gender profile is consistent with gendered race theory (i.e., White men and women, Black men, and Asian women). To examine this hypothesis, I subjected participant non-prototypicality scores (i.e., log-transformed response latencies for all target subgroups) to 3 (Target Race: Asian, White, Black) x 2 (Target Gender: Male, Female) repeated-measures analysis of variance (ANOVA). Results revealed a significant main effect of

Target Gender,  $F(1,320) = 22.44, p < .001, \eta_p^2 = .12$ , and a significant Target Gender x Target Race interaction,  $F(2,320) = 24.30, p < .001, \eta_p^2 = .13$  (see Figure 1 for a graphical representation). Simple effects analyses revealed a significant effect of race among male targets, such that on average, participants categorized Black male targets by gender ( $M = 6.44, SD = .27$ ) more quickly than they did either White male targets ( $M = 6.47, SD = .29$ ) or Asian male targets ( $M = 6.48, SD = .28$ ); response latencies for White male targets and Asian male targets did not significantly differ from each other. This suggests that Black male targets were perceived as *more* prototypical of their gender than either White male or Asian male targets. There was also a significant effect of race among female targets, such that, as expected, participants were slower to categorize Black female targets by gender ( $M = 6.53, SD = .32$ ) compared to both White female targets ( $M = 6.49, SD = .29$ ) and Asian female targets ( $M = 6.47, SD = .31$ ). Response latencies for White female targets and Asian female targets did not differ significantly from each other. This suggests that Black female targets were perceived as less prototypical of their gender than were White female or Asian female targets.

### **The Moderating Effect of Social-identity complexity on Non-Prototypicality (Hypothesis 2)**

According to Hypothesis 2, compared to participants high in social-identity complexity, participants low in social-identity complexity should be more likely to perceive race-gender incongruent targets as non-prototypical of their gender. To examine this hypothesis and account for the nested structure of the data (i.e., perceptions of non-prototypicality for all six subgroups are nested within participant), I used a two-level

multilevel model to examine differences in perceived non-prototypicality as a function of target race-gender incongruence and participant social-identity complexity. In the model, participants' response latencies were regressed on target incongruence (dummy coded, congruent targets (Asian female, Black male, White male, and female targets) = 0, and incongruent targets (Asian male and Black female targets) = 1; level 1 predictor), social-identity complexity (level 2 predictor), and the cross-level interaction between those variables. Demographic and control variables were also included as level 2 predictors. Consistent with the model used to test Hypothesis 1, participants had larger response latencies for incongruent targets ( $b = .04$ ,  $SE = .01$ , 95% CI [.01, .06],  $p < .01$ ). However, this effect was not moderated by social-identity complexity ( $p = .95$ ). See Table 1.3 for full model estimates.

### **The Moderating Effect of Gender-Specific System Justification on Non-Prototypicality (Hypothesis 3)**

According to Hypothesis 3, compared to participants low in gender-specific system justification, participants high in gender-specific system justification should be more likely to perceive race-gender incongruent targets as non-prototypical of their gender. To examine this hypothesis, I again used a two-level multilevel model to examine how target incongruence and gender-specific system justification influenced perceived target non-prototypicality. In the model, participants' response latencies were regressed on target incongruence (level 1 predictor), gender-specific system justification (level 2 predictor), and the cross-level interaction between those variables. Demographic and control variables were also included as level 2 predictors. Consistent with results of the

model used to test Hypotheses 1 and 2, participants had larger response latencies for incongruent targets ( $b = .05$ ,  $SE = .02$ , 95% CI [.01, .10],  $p < .02$ ). However, this effect was not moderated by gender-specific system justification,  $p > .47$ . See Table 1.4 for full model estimates.

#### **The Moderating Effect of Need for Closure on Non-Prototypicality (Hypothesis 4)**

According to Hypothesis 4, compared to participants low in need for closure, participants high in need for closure should be more likely to perceive race-gender incongruent targets as non-prototypical of their gender. To examine this hypothesis, I used a two-level multilevel model. In the model, participants' response latencies were regressed on target incongruence (congruent = 0, incongruent = 1; level 1 predictor), and need for closure (level 2 predictor), and the cross-level interaction between those variables. Demographic and control variables were also included as level 2 predictors. Consistent with the model used to test Hypotheses 1-3, participants had larger response latencies for incongruent targets ( $b = .06$ ,  $SE = .03$ , 95% CI [.00, .12],  $p < .04$ ). Need for closure, however, did not moderate this effect,  $p > .42$ . See Table 1.5 for full model estimates.

#### **The Relationship Between Non-Prototypicality and Invisibility (Hypothesis 5)**

Finally, according to Hypothesis 5, compared to participants who do not perceive race-gender incongruent targets as non-prototypical, participants who perceive race-gender incongruent targets as non-prototypical should be more likely to engage in intersectional invisibility. To examine this hypothesis, I used a two-level multilevel model to conduct a multivariate regression analysis of the differences in participants'

sensitivity threshold scores as a function of target incongruence and relative non-prototypicality. The model included target incongruence as a level 1 predictor, the non-prototypicality ratio as a level 2 predictor, and the higher-order interaction between these variables (see Table 1.6 for a summary of hit rate, false alarm, and  $d'$  scores overall and broken down by subgroup). As with previous models, demographic and control variables were included as level 2 predictors. Results indicated higher sensitivity scores ( $d'$ ) for incongruent targets relative to congruent targets ( $b = 0.83$ ,  $SE = 0.11$ , 95% CI [.61, 1.04],  $p < .001$ ). However, although there was a marginal effect of relative non-prototypicality ( $b = 1.85$ ,  $SE = 1.06$ , 95% CI [-.24, 3.94],  $p = .08$ ), relative non-prototypicality did not moderate the relationship between target incongruence and  $d'$ ,  $p = .56$ . See Table 1.7 for full model estimates.

### **Robustness Checks**

In order to ensure that the moderating effects of social-identity complexity, gender-specific system justification, and need for closure were not being obscured by categorizing both Asian male and Black female targets as incongruent (instead of categorizing only Black female targets as incongruent, as the results for Hypothesis 1 might suggest), the models testing Hypotheses 2, 3, and 4 were rerun to include an indicator for Black female targets instead of the target incongruence variable. For the model examining the moderating effect of social-identity complexity (Hypothesis 2), there was a stronger effect of Black female target on non-prototypicality ( $b = .06$ ,  $SE = .02$ , 95% CI [.03, .10],  $p < .001$ ) than in the model for Hypothesis 2 described earlier, but social-identity complexity remained a non-significant predictor of target non-

prototypicality, either as a main effect or in interaction with non-prototypicality ( $ps > .15$ ). For the model examining the moderating effect of gender-specific system justification (Hypothesis 3), there was a marginally significant effect of Black female target on non-prototypicality ( $b = .05$ ,  $SE = .03$ , 95% CI [-.01, .11],  $p = .09$ ), but not a significant effect of gender-specific system justification ( $ps > .13$ ). Finally, for the model examining the moderating effect of need for closure (Hypothesis 4), there was not a significant effect of Black female target on non-prototypicality ( $p = .019$ ) nor a significant effect of need for closure ( $ps > .69$ ). These additional analyses suggest that there do seem to be differences in the rates at which participants categorize race-gender incongruent targets by gender (regardless of whether race-gender incongruence is defined to include both Asian male and Black female targets or only Black female targets) compared to congruent targets, but that these differences are not affected by one's tendency toward categorical or stereotypical thinking. As with Hypotheses 2 through 4, Hypothesis 5 was retested by including an indicator for Black female targets instead of the race-gender incongruence variable. As in the original model, there was a significant effect of Black female target on  $d'$  ( $b = 1.69$ ,  $SE = .13$ , 95% CI [1.44, 1.95],  $p < .001$ ), and a marginally significant effect of relative non-prototypicality ( $b = 1.92$ ,  $SE = 1.02$ , 95% CI [-.08, 3.93],  $p = .06$ ). These findings are not substantively different from what was discussed earlier, and suggest that although participants perceived Black female targets as non-prototypical, relative non-prototypicality seemed to heighten intersectional visibility, instead of translating into intersectional invisibility.

## Discussion

Study 1 was designed as an initial step in an empirical test of the intersectional invisibility model, focusing on the link between non-prototypicality and invisibility. It was hypothesized that participants would show individual-level variation in the speed with which they could accurately classify, by gender, the faces of race-gender incongruent relative to race-gender congruent targets (i.e., the tendency to perceive race-gender incongruent as non-prototypical). In this study, participants were significantly slower to categorize Black female faces, a result consistent with what the intersectional invisibility model would predict (Purdie-Vaughns & Eibach, 2008), as well as what findings from past research indicate (Carpinella et al., 2015; Goff et al., 2008b; Sesko & Biernat, 2010; Thomas et al., 2014), and supports Hypothesis 1. However, participants were not also slower to categorize Asian male faces by gender, which is in contrast to what gendered race theory (Galinsky et al., 2013) might suggest, as well as what some past research has found (Carpinella et al., 2015; Schug et al., 2015). Taken together, these findings partially support Hypothesis 1, and suggest that more work is needed to examine the extent to which various race and gender categories are perceived as non-prototypical. For example, even though Asian men might be considered non-prototypical to the extent that they are generally perceived as more feminine, perhaps the fact that they are still *men*, and therefore prototypical along one dimension, mitigates any perceptual consequences. Past research has focused on examining non-prototypicality and invisibility by comparing perceptions of men and women from two different races, either Asian and White (Carpinella et al., 2015; Schug et al., 2015) or black and white (e.g., Goff et al., 2008b; Sesko & Biernat, 2010); the current study assesses perceptions of male and female targets

from all three racial groups. Accordingly, perhaps it is the case that Asian men are perceived generally as non-prototypical, but relatively less so compared to Black women, and as such, this perceived non-prototypicality is only relevant under certain conditions, such as when compared to a group that is clearly more prototypical.

It was also hypothesized that individual differences in the tendency toward categorical or stereotypical thinking would influence the speed with which participants would be able to categorize different target faces by gender. That is, participants lower in social-identity complexity, higher in gender-specific system justification, or higher in need for closure would be slower to categorize race-gender incongruent targets by gender than race-gender congruent targets, but that participants higher in social-identity complexity, lower in gender-specific system justification, or lower in need for closure would show less of a difference in response times as a function of target race and gender, or no difference at all. Although participants varied in the speed with which they were able to categorize target faces by gender, this effect was not moderated by social-identity complexity, gender-specific system justification, or need for closure; Hypotheses 2, 3, and 4 were therefore not supported. This was true regardless of whether non-prototypicality was operationalized Black woman and Asian men, as would be predicted by gendered race theory (Galinsky et al., 2013) or simply as Black women, as would be predicted by both the intersectional invisibility model (Purdie-Vaughns & Eibach, 2008) and the results of analyses testing Hypothesis 1.

Finally, it was also hypothesized, consistent with the intersectional invisibility model, that perceptions of non-prototypicality would be related to engaging in

intersectional invisibility. That is, individuals who perceive race-gender incongruent targets as less prototypical of their gender should also be less sensitive in distinguishing between old and new instances of those targets (i.e., perceive them as invisible). However, although participants did perceive race-gender incongruent targets as non-prototypical, and there was a significant effect of relative non-prototypicality, results were in the opposite direction; participants were in fact *more* sensitive in distinguishing between old and new targets (i.e., had higher  $d'$  scores) for incongruent targets. This was contrary to both expectations and past research (e.g., Schug et al., 2015; Sesko & Biernat, 2010). Hypothesis 5 was therefore not supported.

Although the intersectional invisibility model proposes that individuals are relegated to invisibility because they are perceived as non-prototypical, studies to date have only examined whether particular social categories (e.g., Black women; Thomas et al., 2014) or social category combinations (e.g., Black women and Asian men; Galinsky et al., 2013) are perceived generally as non-prototypical, or whether these social categories or combinations are perceived as invisible (Schug et al., 2015; Sesko & Biernat, 2010). The extent to which non-prototypicality (from the point of view of the perceiver) *leads* to invisibility has not yet been explored. Study 1 seeks to fill this gap in the literature and to elucidate how non-prototypicality is related to invisibility by examining whether individual-level variation in perceived non-prototypicality is related to invisibility, and whether individual differences (i.e., social-identity complexity, gender-specific system justification, or need for closure) related to categorical or

stereotypical thinking increase the likelihood that the perceiver will engage in intersectional invisibility.

Although Study 1 is an important initial step in an empirical test of the intersectional invisibility model, it is nonetheless limited. One important limitation concerns how “invisibility” is operationalized. That is, although the approach adopted in Study 1 is consistent with other studies that have examined the relationship between intersectionality and invisibility (e.g., Goff et al., 2008b; Sesko & Biernat, 2010), it is likely, and in fact so argued by the proponents of the intersectional invisibility model, that invisibility is less a perceptual consequence (i.e., the perceiver is literally unable to see a non-prototypical target) than a type of historical or cultural invisibility in which non-prototypical individuals are ignored or underrepresented in historical accounts or cultural practices (Purdie-Vaughns & Eibach, 2008). As such, invisibility operationalized as memory for conversation involving non-prototypical targets (i.e., source memory for conversation statements using a “Who said what?” task; Taylor et al., 1978) may be a closer proxy than memory for the faces of non-prototypical targets. That perceivers might pay less attention to words spoken by non-prototypical targets is consistent with Purdie-Vaughns and Eibach’s (2008) idea of historical and cultural invisibility as well as the way in which recent work on invisibility has attempted to measure such an outcome (e.g., Schug et al., 2015; Sesko & Biernat, 2010). Study 2 will employ this attentional measure of invisibility in addition to the facial memory task used in the previous study, in order to directly and conceptually replicate past research and to examine the extent to which

analyses using these two distinct operationalizations of invisibility provide convergent results.

A second limitation of Study 1 concerns the lack of clarity of invisibility as a construct. The intersectional invisibility model proposes a type of social (not literal) invisibility, and prior research has attempted to measure invisibility through the use of memory tasks and attention tasks (e.g., Schug et al., 2015; Sesko & Biernat, 2010). However, the model does not specify what invisibility means in the minds of the perceivers. Consequently, Study 2 builds on the results of Study 1 by clarifying invisibility as a construct through examination of the types of group-based judgments and attributions that are related, thereby providing a better understanding of the mechanisms by which invisibility might lead to marginalization.

### **Study 2: Cognitive Correlates of Intersectional Invisibility**

Study 1 was designed to provide empirical support for the first path in the intersectional invisibility model: that individual-level variation in the tendency to see members of race-gender incongruent subgroups as non-prototypical (measured using response times from a gender categorization task) would be related to the tendency to relegate these same individuals to invisibility. The purpose of Study 2 is to replicate and extend the results of Study 1. Study 2 attempts a direct and conceptual replication by including an additional measure of invisibility (i.e., source memory for conversation statements in addition to facial memory of various target groups) and examining whether both operationalizations of invisibility are related to non-prototypicality in a similar manner. In addition, Study 2 attempts to extend research on the intersectional invisibility

model by refining the construct of invisibility proposed by Purdie-Vaughns and Eibach (2008). In particular, Study 2 documents the types of group-based attitudes and stereotypes that may be associated with intersectional invisibility. A great deal of research in social psychology has examined how people think about and judge others, finding that perceptions of warmth and competence generally underlie these social judgments and stereotypes, with high levels of warmth and competence being reserved for one's ingroup, and lower levels of warmth and competence, or high levels on one dimension but not the other, characterizing outgroup members (Fiske et al., 2002). These perceptions have also been implicated in behavioral responses, such that individuals who are perceived as warm but not competent (i.e., pitied individuals) receive active helping and passive neglect, and individuals who are neither warm nor competent receive active and passive harm (Cuddy et al., 2007). To the extent that the intersectional invisibility model characterizes invisibility as an experience of marginalization and neglect, this language echoes the experience of neglect by pitied individuals, and suggests that invisibility may be linked to perceptions of high warmth and low competence.

Intergroup bias and discrimination have also been shown to related to the perception that some individuals are less than human (Haslam, 2006). Dehumanization has been implicated in a range of behaviors, including a willingness to rape or sexually harass women (Rudman & Mescher, 2010), or to justify police beatings of Black suspects (Goff et al., 2008), and is more common among those who are more powerful (Gwinn et al., 2013; Lammers & Stapel, 2011). Individuals from race-gender incongruent target groups, who are perceived as non-prototypical and therefore as less powerful, should also

be denied human qualities more frequently than those who are seen as more prototypical group members. In the current study, human qualities are operationalized in two different ways. First, to deny human qualities is to deny that certain individuals possess certain characteristics or traits, such as conscientiousness or openness to experience, which are seen as essential to human nature (Haslam et al., 2005; Hodson & Costello, 2007).

Denying that individuals have minds, in that they have agency and are capable of feeling and doing, is a second way of denying that they have human qualities (Gray et al., 2007; Gray et al., 2011; Waytz et al., 2010). Similar to the research on the content of stereotypes about others, which describes social perception as judgments about ingroup and outgroup members (e.g., Fiske et al., 2002), findings suggest that perceiving minds is also rooted in groups, such that people are less likely to perceive minds in outgroup members, compared to ingroup members. Individuals from race-gender incongruent target groups should therefore be perceived as possessing fewer human qualities (e.g., conscientiousness, openness to experience, agency, and experience) than members from prototypical target groups.

### **Overview of Hypotheses**

The purpose of Study 2 is two-fold. First, Study 2 will attempt to replicate Study 1 findings by examining the hypothesis that perceptions of non-prototypicality are related to invisibility. In addition, Study 2 will extend this line of work by examining possible mechanisms that might help to explain the relation between non-prototypicality and invisibility, focusing on group-based attitudes and stereotypes related to warmth and

competence, agency and experience, and mind perception. Full descriptions of these hypotheses are provided below.

**Hypothesis 1.** Participants who perceive race-gender incongruent targets as non-prototypical will have poorer facial memory and more statement source memory errors than will participants who do not perceive race-gender incongruent targets as non-prototypical.

**Hypothesis 2.** Invisibility for race-gender incongruent targets will be related to stereotypes about warmth and competence, such that individuals who perceive race-gender incongruent targets as relatively high in warmth and relatively low in competence (compared to race-gender congruent targets) will be more likely to perceive those targets as invisible.

**Hypothesis 3.** Invisibility for race-gender incongruent targets will be related to dehumanization, such that individuals who perceive race-gender incongruent targets as relatively less likely to possess uniquely human traits (compared to race-gender congruent targets) will be more likely to perceive those targets as invisible.

**Hypothesis 4.** Invisibility for race-gender incongruent targets will be related to mind perception and attributions of agency and experience, such that individuals who perceive race-gender incongruent targets as relatively low in agency and relatively low in experience (compared to race-gender congruent targets) will be more likely to perceive those targets as invisible.

## **Method**

### **Participants**

Adult participants were recruited from Amazon's Mechanical Turk (MTurk), an online forum through which participants can sign up to complete tasks called HITs (e.g., surveys) in exchange for monetary compensation. Prior research has demonstrated that MTurk samples are more heterogeneous and more representative of the United States population than are university student samples (Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011; Mason & Suri, 2012). An MTurk sample is therefore an appropriate complement to the student sample collected in Study 1, which was somewhat restricted in terms of age, and with an unequal gender and race distribution (i.e., a majority female and majority White sample). Participants consented to participate in a two-part study that consisted of two online surveys, and were compensated \$0.50 for completing the first survey, and an additional \$1.00 for completing the second survey. Three hundred twenty five participants completed the first survey, and 105 returned to complete the second survey, which is equivalent to a 32.3% retention rate. Of the participants who completed both parts of the study, 59.8% identified as female and 40.2% identified as male. A majority (73.5%) identified as White, 12.8% identified as Asian, 9.8% identified as Latino, 2.9% identified as Black, and 1.0% identified as "other." The average age of the final sample, which was used for analyses, was 42.51 years ( $SD = 14.15$  years, range = 21-70).

Given that several of my hypotheses posit the moderation of the two-way interaction between the race and gender of target individuals, I used G\*Power to estimate the sample size necessary, given a repeated-measures ANOVA design, to find a significant interaction equal in size to that reported by Sesko and Biernat (2010, Study 2)

in their “Who said what?” task. The sample size necessary to find an equivalent effect (i.e.,  $\eta^2 = .06$ ) using two groups (i.e., one standard deviation above and below the mean of the moderator) and two measurements with .90 power was estimated to be  $N = 54$ . This would correspond to a total sample size of 168, given that one standard deviation above the mean approximates 16% of the sample. In order to mitigate the effects of sample attrition and inattentive participants (e.g., Berinsky, Margolis, & Sances, 2014), and having experienced the difficulty of embedding Inquisit tasks (i.e., for recording response times on the gender categorization task) I therefore targeted an initial sample of 325 participants. The number of participants recruited for this study is somewhat lower than the target sample size.

## **Materials**

See Table 2.1 for descriptive statistics, including means, standard deviations, and correlations, for all continuous measures used in Study 2. See Appendix B for a complete list of measures introduced in Study 2.

**Social-identity complexity.** Participants’ social-identity complexity was measured using the same procedure developed by Brewer and Pierce (2005) and used in Study 1.

**Gender-specific system justification.** Participants’ gender-specific system justification was measured using the same 8-item scale developed by Jost and Kay (2005) and used in Study 1.

**Need for closure.** Participants’ need for closure was measured using the 14-item short scale developed by Pierro and Kruglanski (2006) and used in Study 1.

**Facial stimuli.** A set of facial images, include male and female, as well as Asian, Black, and White faces, were drawn from the Chicago Face Database 2.0 (Ma et al., 2015). These facial images included the same 120 facial images (20 each per race-gender subgroup) from Study 1 that were used for the gender categorization and memory task, as well as an additional set of facial images that were used for the “Who Said What?” tasks.

**Conversation stimuli.** Two sets of 32 statements about neutral topics free from gender- or race-based associations were adapted from prior research using this paradigm (attending a picnic, Schug et al., 2015; applying and interviewing jobs, Sesko & Biernat, 2010). Of each set of 32 statements, half (i.e., 16) were presented to participants during the first part of the task as “target” sentences, and the remaining half were reserved for “distractor” statements that only appeared in the recall part of the task, after participants had observed the entire group conversation.

**Warmth and competence.** Perceptions of warmth and competence were assessed using the procedure used by Fiske et al. (2002), which includes six items about warmth and six items about competence. Participants were asked to respond to the following prompt, “As viewed by society, how [adjective] are members of this group?” using a 5-point Likert-type scale, ranging from 1 (“not at all”) to 5 (“extremely”). Adjectives used to assess warmth included friendly, well-intentioned, trustworthy, warm, good-natured, and sincere. Adjectives used to assess competence included competent, confident, capable, efficient, intelligent, and skillful. Participants completed this battery for all the race-gender target subgroups included in the “Who said what?” tasks (i.e., Black, White and Asian males and females). Responses were averaged separately for warmth and

competence for each race-gender subgroup, with higher scores on these indices representing greater perceptions of warmth or competence for that particular subgroup. Finally, perceptions of warmth and competence were aggregated separately across subgroups by taking the ratio of perceptions of race-gender incongruent subgroups (averaged for Black women and Asian men) to perceptions of race-gender congruent subgroups (averaged for White women, White men, Black men, and Asian women). This yielded two final indices that represented perceptions of *relative warmth* and *relative competence*, or the extent to which participants perceived individuals from race-gender incongruent subgroups as warmer (or more competent) than individuals from race-gender congruent subgroups. See Table 2.2 for a summary of descriptive statistics of warmth and competence by race and gender subgroup, as well as well as for the relative warmth and relative competence indices.

**Dehumanization.** Dehumanization was measured using the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003). Prior work has found that these traits vary in how applicable they are to animals and humans (Gosling & John, 1999), such that the traits of Openness to Experience and Conscientiousness are perceived to be the most uniquely human and that Neuroticism and Agreeableness are perceived to be the least uniquely human (Hodson & Costello, 2007). Participants were asked to indicate the extent to which each personality trait applies to each race-by-gender subgroup. Responses for each subgroup for the most-human traits and the least-human traits were averaged separately, and the scores for the most-human traits were then subtracted from the scores for the least-human traits, such that higher scores indicated that participants viewed a

particular subgroup as less human, and lower scores indicated that a particular subgroup was viewed as more human. The resulting scores for race-gender congruent subgroups (i.e., White men and women, Black men, and Asian women) were averaged together, as were the scores for the race-gender incongruent subgroups (i.e., Black women and Asian men). The final index, perceptions of *relative dehumanization*, was calculated using the ratio of humanness perceptions for the race-gender incongruent subgroups to the perceptions for the race-gender congruent subgroups, indicates the relative degree to which participants perceived members of race-gender incongruent subgroups to be less human, relative to members of race-gender congruent groups. See Table 2.3 for a summary of descriptive statistics of dehumanization by race and gender subgroup, as well as for the relative dehumanization index.

**Mind perception.** Agency and experience, the two aspects of mind perception, were measured using the procedure used by Gray et al. (2011). Participants were asked to respond to the following prompt, “Compared to the average person, how much are [White men/White women/Black men/Black women/Asian men/Asian women] capable of...?” for six items related to agency and six items related to experience, using a 5-point Likert-type scale with “1” labeled “much less capable,” “3” labeled “equally as capable” and “5” labeled “much more capable.” Items referring to agency included self-control, acting morally, planning, communication, memory, and thought. Items referring to experience included feeling pain, feeling pleasure, feeling desire, feeling fear, feeling rage, and feeling joy. Participants completed this battery for all subgroups denoted in brackets. Responses for perceptions of agency and experience were averaged separately

for each subgroup, with higher scores on these indices representing the perception that subgroup members are more agentic or are more capable of feeling. Perceptions of agency and experience were next averaged separately for race-gender congruent subgroups and race-gender incongruent subgroups, and then aggregated by calculating the ratio of agency (or experience) perceptions of race-gender congruent subgroups to those for race-gender incongruent subgroups. The final indices represented *relative agency* and *relative experience*, in terms of the extent to which participants perceived individuals from race-gender incongruent subgroups as less agentic and less capable of feeling relative to individuals from race-gender congruent subgroups, with higher values indicating that this is especially true. See Table 2.4 for a summary of descriptive statistics of agency and experience by race and gender subgroup, as well as well as for the relative agency and relative experience indices.

**Control and demographic variables.** As in Study 1, participants were asked to complete a number of demographic measures, including race, gender, age, education, income, sexual orientation, and social and economic ideology. In order to ensure that participants' views about race were not driving any effects, an 8-item measure of symbolic racism (Henry & Sears, 2002), a 22-item measure of ambivalent sexism (Glick & Fiske, 1996), and a measure of intergroup contact in the form of direct and extended cross-group friendships (Sharp et al., 2011) were also included.

## **Procedure**

As in Study 1, data collection occurred in two stages in order to minimize participant fatigue and to prevent participant responses about attitudes toward race- and gender-related issues from affecting performance on the “Who said what?” tasks.

The procedure for Stage 1 mirrored that of Stage 1 in Study 1. Participants completed an initial online survey that included measures of social-identity complexity, gender-specific system justification, need for closure, symbolic racism, ambivalent sexism, group contact, and demographic information. All randomization and counterbalancing between sets of items described in Study 1 was preserved.

In Stage 2, approximately one week following completion of Stage 1, participants were sent an email through the MTurk system alerting them to the existence of a new HIT. Participants who accepted the HIT and consented to participate in this second part of the study were told that the researchers were interested in how people form impressions about other individuals, and that in order to examine this research question, they would be asked to complete several tasks. First, participants completed the same gender categorization task and facial memory task described in Study 1. Next, participants were told that they would be observing a group conversation and that should try to form an impression about the entire group. Participants then watched the group conversation on a computer, which consisted of 16 statements, presented in a fixed order across participants. Consistent with the procedure described by Klauer, Ehrenberg, and Wegener (2003), each statement appeared on the screen for 6 seconds, at which time the program automatically advanced to the next statement. Each of 16 statements was paired with one of eight speakers, such that the facial image of the speaker appeared on the

screen above the statement. All speakers were paired with two statements. The order of the speakers was randomized for each participant, with the constraints that each speaker appeared once during the first set of eight statements and once during the second set of eight statements, and that the same speaker did not appear for back-to-back statements (e.g., the same speaker did not appear for both statement 8 and statement 9).

Following the group conversation, participants were presented with all 32 statements (i.e., the 16 statements shown during the group conversation task as well as the 16 distracter statements) in a random order. For each statement, participants were asked to indicate, by clicking a button, whether the statement was “old” (i.e., that the statement had been presented previously during the group conversation task) or “new” (i.e., that the statement had not been presented during the group conversation task). When participants indicated that a statement was “old,” they were then directed to a screen that presented the facial images of all eight speakers in two rows of four images, and were asked to indicate who had spoken the statement. The order of the images on this last screen was randomized for each participant, with the constraint that the facial images in each of the rows alternated by gender.

Participants completed this conversation task twice, with each task using separate conversation and facial stimuli. One task included male and female speakers who were White and Black, whereas the other task included male and female speakers who were White and Asian; the order of the two tasks was counterbalanced. After completing both “Who said what?” tasks, participants completed measures of warmth and competence, dehumanization, and mind perception for all race-by-gender subgroups that appeared in

the “who said what?” tasks. The order of these tasks was randomized, as was the subgroup order within each task. Finally, participants were debriefed about the purpose of the study.

## Results

### Analysis overview and variable construction

The analyses for this study focus on two primary dependent variables, non-prototypicality and invisibility.

**Non-prototypicality.** As in Study 1, response latencies for the gender categorization task were used to indicate non-prototypicality; the more slowly participants are to categorize a facial image as male or female, the less that image is perceived to be a prototypical exemplar for that gender category. Response latencies were averaged separately for race-gender incongruent targets and race-gender congruent targets. The ratio of these two scores (latencies for race-gender incongruent targets to race-gender congruent targets) was used as a measure of *relative non-prototypicality*, with higher values indicating that participants are especially likely to perceive race-gender incongruent targets as non-prototypical, relative to race-gender congruent targets. . As in Study 1, in order to minimize the effect of outliers, trials for which response latencies were less than 100 ms or  $\pm 3$  SDs from participants’ overall mean latency score were excluded from analysis (5.24% of trials, which ranged from 4.37% of Asian male trials to 6.21% of Black female trials). Excluded trials did not significantly differ as a function of race-gender subgroup ( $\chi^2(5)=4.81, p = .44$ ).

**Invisibility.** In contrast to Study 1, however, the current study included two different operationalizations of invisibility. As in Study 1, invisibility was operationalized as participants' ability to distinguish between old and new facial images from the gender categorization task (i.e.,  $d'$ ; Sesko & Biernat, 2010; Thomas et al., 2014), and was calculated as in Study 1.

In addition, participant responses from the "Who said what?" task were also used to represent invisibility (e.g., Sesko & Biernat, 2010; Schug et al., 2015). To the extent that participants are unable to correctly attribute a sentence to its speaker, the less that speaker was heard in the context of the conversation. Although participants can misattribute a statement in a number of ways (e.g., a statement spoken by a Black woman can be attributed to a Black man, a White woman, or a White man), the variable of interest here is on the total number of errors, regardless of the *type* of error. There are two reasons for this. First, although the intersectional invisibility model posits that the confluence of multiple subordinate non-prototypical identities will result in invisibility, the model is less specific about what invisibility means in a comparative sense. That is, whether statements by Black women are attributed to a White woman or a Black man (both of whom are prototypical on one dimension but non-prototypical on the other) is of less interest theoretically. Second, aggregating across error types to create a single error score will increase the variance in the dependent variable, thereby decreasing the likelihood that the results can be attributed to a ceiling or floor effect in the data. See Table 2.5 for a summary of participant accuracy on the facial recognition and "Who said

what?” tasks as well as the correlations between the two measures, overall as well as for each of the race-by-gender subgroups.

**Model specifications.** As in Study 1, all predictors in the multilevel models described below were rescaled to run from 0-1. In addition to the effects of interest described in the models below, the control (i.e., symbolic racism, ambivalent sexism, and intergroup contact) and demographic variables (i.e., race, gender, age, education, income, and political ideology) were also included in all models as level 2 predictors. In the multilevel models described below, the intercept and the dummy variable for target incongruence are included as random effects.

### **The Relationship Between Non-Prototypicality and Invisibility (Hypothesis 1)**

According to Hypothesis 1, participants who perceive race-gender incongruent targets to be non-prototypical will perceive these targets as more invisible than participants who do not perceive race-gender incongruent targets as non-prototypical. In order to examine this hypothesis, I used two-level multilevel models to conduct a multivariate regression analysis of differences in target invisibility. The models included target incongruence as a level 1 predictor, and relative non-prototypicality as well as demographic and control variables were included as level 2 predictors. Full model estimates are shown in Table 2.6, with results for  $d'$  scores presented as Model 1 and results for statement source attribution errors from the “Who Said What?” tasks presented as Model 2. Contrary to Study 1, in Model 1 there was a non-significant effect of target incongruence on  $d'$  scores ( $p = .42$ ) and target incongruence was not further moderated by relative non-prototypicality ( $p = .19$ ). In Model 2, although there was no difference in

source attribution errors between congruent and incongruent targets ( $p = .16$ ), there was a significant effect of relative non-prototypicality on source attribution errors ( $b = -1.66$ ,  $SE = .81$ , 95% CI [-3.24, -.07],  $p < .05$ ). This effect, however, was in the opposite direction from what was hypothesized, such that relative non-prototypicality predicted *fewer* source attribution errors.

### **The Relationships Among Invisibility, Warmth, and Competence (Hypothesis 2)**

According to Hypothesis 2, invisibility should be related to perceptions of warmth and competence, such that greater invisibility for race-gender incongruent targets should occur among participants who perceive race-gender incongruent targets as relatively less warm and/or less competent. In order to examine this hypothesis, I used multilevel regression models to examine the effect of warmth and competence on  $d'$  scores and statement source attribution errors. The models included target incongruence as a level 1 predictor, either relative warmth or relative competence as a level 2 predictor, and the higher order interaction between the variables. Model estimates for the effect of target incongruence and relative warmth on  $d'$  scores (Model 1) and source attribution errors (Model 2) are shown in Table 2.7. Model estimates for the effect of target incongruence and relative competence on  $d'$  scores (Model 1) and source attribution errors (Model 2) are shown in Table 2.8.

**Relative warmth.** For the models examining the effect of target incongruence and relative warmth, target incongruence was not a significant predictor of either  $d'$  scores ( $b = -.27$ ,  $SE = .58$ , 95% CI [-1.41, .87],  $p = .64$ ) or source attribution errors ( $b = -.37$ ,  $SE = .57$ , 95% CI [-1.49, .76],  $p = .52$ ). Although relative warmth was a significant

predictor of  $d'$  scores ( $b = -1.30$ ,  $SE = .60$ , 95% CI [-2.47, -.11],  $p < .03$ ), it was unrelated to the number of source attribution errors ( $b = -.42$ ,  $SE = .88$ , 95% CI [-2.14, 1.31],  $p = .64$ ), and did not moderate the effect of target incongruence on either  $d'$  scores ( $b = .56$ ,  $SE = .58$ , 95% CI [-.57, 1.69],  $p = .33$ ) or source attribution errors ( $b = .30$ ,  $SE = .57$ , 95% CI [-.82, 1.41],  $p = .60$ ).

**Relative competence.** For the models examining the effect of target incongruence and relative competence on invisibility, target incongruence was not a significant predictor of either  $d'$  scores ( $b = -.08$ ,  $SE = .77$ , 95% CI [-1.60, 1.43],  $p = .92$ ) or source attribution errors ( $b = -.46$ ,  $SE = .76$ , 95% CI [-1.96, 1.03],  $p = .55$ ). Neither was relative competence a significant predictor of  $d'$  scores ( $b = -.98$ ,  $SE = .81$ , 95% CI [-2.56, .61],  $p = .23$ ) or the number of source attribution errors ( $b = -.12$ ,  $SE = 1.17$ , 95% CI [-2.41, 2.17],  $p = .92$ ), and did not moderate the effect of target incongruence on either  $d'$  scores ( $b = .36$ ,  $SE = .76$ , 95% CI [-1.12, 1.85],  $p = .63$ ) or source attribution errors ( $b = .39$ ,  $SE = .75$ , 95% CI [-1.08, 1.85],  $p = .61$ ).

### **The Relationship Between Invisibility and Dehumanization (Hypothesis 3)**

According to Hypothesis 3, invisibility should be related to dehumanization, such that greater invisibility for race-gender incongruent targets should occur among participants who perceive race-gender incongruent targets as relatively more dehumanized. To examine this hypothesis, I used two-level multilevel regression models to examine the effect of target incongruence and relative dehumanization on  $d'$  scores and statement source attribution errors. The models included target incongruence as a level 1 predictor, relative dehumanization as a level 2 predictor, and the higher order

interaction between the variables. Model estimates for the effect of target incongruence and relative dehumanization on  $d'$  scores (Model 1) and source attribution errors (Model 2) are shown in Table 2.9. Target incongruence significantly predicted  $d'$  scores ( $b = .28$ ,  $SE = .09$ , 95% CI [.11, .45],  $p < .001$ ) but not source attribution errors ( $b = -.07$ ,  $SE = .08$ , 95% CI [-.23, .09],  $p = .39$ ). Relative dehumanization was not a significant predictor of  $d'$  scores ( $b = .02$ ,  $SE = .03$ , 95% CI [-.04, .07],  $p = .56$ ) or the number of source attribution errors ( $b = .05$ ,  $SE = .04$ , 95% CI [-.03, .12],  $p = .23$ ), and did not further moderate the effect of target incongruence on either  $d'$  scores ( $b = .01$ ,  $SE = .03$ , 95% CI [-.05, .06],  $p = .82$ ) or statement-source-attribution errors ( $b = .00$ ,  $SE = .03$ , 95% CI [-.06, .05],  $p = .86$ ).

#### **The Relationships Among Invisibility, Agency, and Experience (Hypothesis 4)**

Finally, according to Hypothesis 4, invisibility should be related to mind perception and attributions of agency and experience, such that greater invisibility for race-gender incongruent targets should occur for participants who perceive race-gender incongruent targets as relatively less agentic or relatively less capable of feeling. To examine this hypothesis, I used multilevel regression models to examine the effect of perceived agency and experience on  $d'$  scores and statement source attribution errors. The models included target incongruence as a level 1 predictor, either relative agency or relative experience as a level 2 predictor, and the higher order interaction between the variables. Model estimates for the effect of target incongruence and relative agency on  $d'$  scores (Model 1) and source attribution errors (Model 2) are shown in Table 2.10. Model

estimates for the effect of target incongruence and relative experience on  $d'$  scores (Model 1) and source attribution errors (Model 2) are shown in Table 2.11.

**Relative agency.** For the models examining the effects of target incongruence and relative agency, target incongruence was not a significant predictor of either  $d'$  scores ( $b = -.32$ ,  $SE = 1.03$ , 95% CI [-2.34, 1.70],  $p = .76$ ) or source attribution errors ( $b = -.77$ ,  $SE = .99$ , 95% CI [-2.71, 1.17],  $p = .44$ ). Neither did relative agency significantly predict  $d'$  scores ( $b = -1.61$ ,  $SE = 1.04$ , 95% CI [-3.65, .43],  $p = .12$ ) or the number of source attribution errors ( $b = 1.93$ ,  $SE = 1.50$ , 95% CI [-1.01, 4.86],  $p = .20$ ), and relative agency did not further moderate the effect of target incongruence on either  $d'$  scores ( $b = .63$ ,  $SE = 1.02$ , 95% CI [-1.37, 2.63],  $p = .54$ ) or source attribution errors ( $b = .70$ ,  $SE = .98$ , 95% CI [-1.22, 2.62],  $p = .48$ ).

**Relative experience.** For the models examining the effects of target incongruence and relative experience, target incongruence was not a significant predictor of either  $d'$  scores ( $b = .69$ ,  $SE = 1.18$ , 95% CI [-1.62, 3.01],  $p = .56$ ) or source attribution errors ( $b = .19$ ,  $SE = 1.14$ , 95% CI [-2.05, 2.43],  $p = .87$ ). Relative experience was not a significant predictor of  $d'$  scores ( $b = -1.80$ ,  $SE = 1.12$ , 95% CI [-3.99, .38],  $p = .11$ ) but it was a significant predictor of the number of source attribution errors ( $b = 4.76$ ,  $SE = 1.54$ , 95% CI [1.74, 7.78],  $p < .001$ ). Relative experience, however, did not moderate the effect of target incongruence on either  $d'$  scores ( $b = -.38$ ,  $SE = 1.17$ , 95% CI [-2.68, 1.92],  $p = .75$ ) or source attribution errors ( $b = -.26$ ,  $SE = 1.13$ , 95% CI [-2.48, 1.97],  $p = .82$ ).

## Discussion

In addition to replicating the results hypothesized in Study 1, the purpose of Study 2 was to clarify the nature of invisibility by examining the types of group-based attributes and stereotypes associated with invisible groups. In particular, Study 2 focused on perceptions of warmth and competence, dehumanization, and agency and experience as possible mechanisms that could help explain the relation between non-prototypicality and invisibility. I hypothesized that invisibility would be characterized by high levels of warmth and low levels of competence, low levels of uniquely human traits, and low levels of both agency and experience. Although the intersectional invisibility model suggests that perceptions of non-prototypicality lead to invisibility, the process by which this happens is not specified. Study 2 attempts to fill this gap in the literature by examining whether group-based stereotypes and attributions might help explain the types of cognitions that give rise to intersectional invisibility. Linking the intersectional invisibility model to the well-established areas of social cognition and social perception can therefore provide a foundation from which to specify what invisibility means in the mind of the perceiver and to explain how non-prototypicality might lead to greater invisibility.

Unfortunately, the hypotheses described in Study 2 were largely unsupported. Results pointed to no difference in participants' ability to differentiate among old and new targets (i.e., greater visibility) when they were race-gender incongruent or congruent, in contrast with the findings from Study 1. Similarly, target incongruence was unrelated to participants' ability to recall which targets were paired with particular sentences. The effects of group-based attitudes and perceptions also appeared to be inconsistently related

to invisibility. For example, although relative warmth was a significant predictor of participants' ability to differentiate between old and new targets, it was unrelated to participants' source attribution errors. Perceived relative experience, on the other hand, significantly predicted source attribution errors, but only marginally predicted old versus new target differentiation. Taken together, these analyses suggest that further exploration of the types of group-based attitudes and perceptions that might be associated with perceptions of invisibility is needed. Additional research into what might constitute invisibility is needed as well. That is, at the aggregate level, target differentiation and source attribution errors were only modestly correlated ( $r = -.21$ ; see Table 2.4), although this relation differed by subgroup. Whereas the two measures of invisibility were most strongly correlated for Black female targets ( $r = -.29, p < .01$ ), the two measures were unrelated for Black male targets ( $p > .10$ ). This suggests that although both outcomes were conceptualized as "invisibility," they may instead not actually be tapping the same underlying construct.

There are a number of limitations, however, that should be taken into account when interpreting the results from Study 2. The first concerns the study design. Although the use of an MTurk sample was intended to build upon the use of a student sample in Study 1 to provide results that were more generalizable, the reality is that there are a number of elements inherent in an online research design that are problematic. Although the student sample completed the gender categorization and facial recognition task in the laboratory, which allowed for the troubleshooting of any software problems, the online MTurk sample lacked this capability. Consequently, it is possible that computer errors, in

terms of installing or using Inquisit software, may limit the generalizability of these results. Relatedly, although the student participants were only able to complete the study tasks during their session, MTurk participants had no oversight. It is therefore impossible to verify the extent to which MTurk paid attention to what they were doing in this study and conscientiously completed this task.

A second limitation of Study 2 concerns the length of the study. As part of Study 2, participants were asked to complete measures of warm and competence, dehumanization, and agency and experience for each of the six subgroups of focus in this dissertation. In practice, this amounted to a total of 34 items per subgroup, which was likely a tedious experience. Indeed, of the participants who initially tried to complete the second survey, only about one third answered questions that occurred after the gender categorization and memory task, suggesting that participant boredom and fatigue may have limited the ability of obtaining a sufficiently-powered sample for analysis, as well as limited the generalizability of the participants who persevered through the entire survey. Future research would do well to limit the number of items asked or types of attitudes and evaluations examined, or to design a study that spans a larger number of shorter, more manageable sessions.

Finally, a third limitation of Study 2 is inherent in the tasks that participants were asked to complete. That is, to the extent that participants were asked to complete the same set of questions for six different target groups, it is possible that they experienced some reactance in answering these questions or became suspicious about the nature of the study. Indeed, about 25% of participants recorded the exact same response for each of the

warmth-related questions for each of the six subgroups. As this pattern of responding could be considered an act of satisficing or reactance, future research may want to look into ways of assessing group-based attitudes and perceptions that are less obviously trying to compare one group to another, in order to better assess participants' true attitudes about members of these groups.

Taken together, the results from Study 1 and Study 2 seek to clarify and refine the intersectional invisibility model by introducing mechanisms for the processes put forth in the model, and demonstrating that recent evidence for the invisibility of Asian men (Schug et al., 2015) is not at odds with the idea of non-prototypicality described by Purdie-Vaughns and Eibach (2008). Rather, the assumption that norms of maleness, Whiteness, and heterosexuality govern perceptions of non-prototypicality should be updated to reflect the non-orthogonality of these norms (e.g., Galinsky et al., 2013). As perceptions of race and gender are intertwined, integrating the idea of race as a gendered construct into the concept of intersectional invisibility will serve to enhance the descriptive and predictive capabilities of the model.

However, although Study 1 and Study 2 focused on examining the conditions under which individuals might be more or less likely to perceive non-prototypicality, and the processes by which non-prototypicality might lead to invisibility, these studies are still an incomplete test of the intersectional invisibility model. Study 3 builds on the results from Study 1 and Study 2 to provide a complete test of the model by linking perceptions of non-prototypicality and invisibility to actual marginalizing behaviors. In addition to providing empirical support for the model, documenting whether non-

prototypicality and invisibility in fact lead to marginalization is important for a larger reason. As much of the research that examines race and gender disparities in contexts such as the legal system (e.g., Crenshaw, 1989) or Congress (Hawkesworth, 2003) focus on these disparities at the group level (e.g., as experienced by Black women), they fail to take into account and to capitalize on individual-level explanations that may help to account for these outcomes. Moreover, among psychologists who examine invisibility, studies have tended to focus on the perceptual or cognitive responses to non-prototypicality or to simply document the existence of intersectional invisibility as a phenomenon. Although both approaches are necessary, a comprehensive understanding of invisibility mandates an inclusion of both why it occurs as well as why it matters. Study 1 and Study 2 were designed to examine why invisibility occurs, whereas Study 3 is intended to examine why it matters. Specifically, the purpose of Study 3 is to test whether invisibility, a product of perceived non-prototypicality, leads individuals to engage in marginalizing behaviors, a key prediction from the intersectional invisibility model.

### **Study 3: Testing the Intersectional Invisibility Model**

Thus far, this dissertation has explored ideas and relationships that follow from Purdie-Vaughns and Eibach's (2008) intersectional invisibility model. Study 1 tested the first path of the model: the idea that non-prototypicality renders individuals more invisible. Although study participants did perceive Black female targets as more non-prototypical, in line with both the intersectional invisibility model and past research (e.g., Goff et al., 2008), this non-prototypicality did not translate to increased invisibility;

participants were instead *more* accurate in distinguishing between old and new faces for race-gender incongruent targets, suggesting that perhaps hypervisibility may be a more likely outcome than invisibility. Study 2 also found that race-gender incongruent targets were better remembered than their congruent counterparts. Building on these findings, Study 2 was also designed to examine the types of group-based attitudes and beliefs that might be correlated with intersectional invisibility. Additional research is necessary, however, as attitudes and beliefs related to warmth and competence, dehumanization, and agency and experience, were either inconsistently related to invisibility or completely unrelated.

The purpose of Study 3 is to connect non-prototypicality and invisibility to the real world behavioral outcomes suggested in the intersectional invisibility model. Here, I focus on behaviors related to providing support for members of marginalized groups: allocating financial resources toward advocating for social issues and policies. Past research has found that interest groups are most likely to dedicate financial resources toward issues that affect advantaged group members compared to issues that affect a group majority or even all group members (Strolovich, 2006, 2007). The current study draws on these findings to examine advocacy behaviors in the context of a fictitious interest group that is in the process of deciding how to allocate their annual budget. Participants are asked to allocate the full budget amount across a list of social issues proposed by interest group employees that are members of either race-gender congruent groups or race-gender incongruent groups. Marginalizing behaviors, in this case, are defined as a preference (in terms of dollars allocated) to social issues proposed by race-

gender congruent targets over race-gender incongruent targets. Study 3 therefore provides a full test of the intersectional invisibility model, that non-prototypicality leads to marginalization via invisibility. In line with this body of research, it is hypothesized that participants for whom race-gender incongruent targets are invisible (i.e., those with low  $d'$  scores and higher numbers of source attribution errors) should be more likely to engage in marginalizing behaviors. And, finally, it is hypothesized that the relationship between perceiving targets as non-prototypical and engaging in marginalizing behaviors should be mediated by invisibility.

### **Overview of Hypotheses**

The purpose of Study 3 is to provide a full test of the intersectional invisibility model, which proposes that perceptions of non-prototypicality lead to invisibility, and that this invisibility consequently leads to marginalizing behaviors. Accordingly, Study 3 is designed to test four specific hypotheses, which are described below.

**Hypothesis 1.** Individual differences in the tendency toward categorical or stereotypical thinking should increase the likelihood that participants will perceive race-gender incongruent targets as non-prototypical, relative to race-gender congruent targets, such that:

***Hypothesis 1a.*** Participants low in social-identity complexity will be more likely to perceive race-gender incongruent targets as non-prototypical of their gender, compared to participants high in social-identity complexity.

**Hypothesis 1b.** Participants high in gender-specific system justification will be more likely to perceive race-gender incongruent targets as non-prototypical of their gender, compared to participants low in gender-specific system justification.

**Hypothesis 1c.** Participants high in need for closure will be more likely to perceive race-gender incongruent targets as non-prototypical of their gender, compared to participants low in need for closure.

**Hypothesis 2.** Participants who perceive race-gender incongruent targets as non-prototypical will have poorer facial memory and statement source memory for those targets, compared to participants who do not perceive race-gender incongruent targets as non-prototypical.

**Hypothesis 3.** Participants who demonstrate intersectional invisibility will be more likely to engage in behaviors that marginalize race-gender incongruent targets (but not race-gender congruent targets), than will participants who do not demonstrate intersectional invisibility.

**Hypothesis 4.** Participants who perceive race-gender incongruent targets to be non-prototypical will be more likely to engage in behaviors that marginalize race-gender incongruent targets (but not race-gender congruent targets), and this relation will be mediated by invisibility.

## **Method**

### **Participants**

As in Study 2, adult participants were recruited from Amazon's Mechanical Turk (MTurk) to participate in this study in exchange for monetary compensation. Participants

consented to participants in a two-part study that consisted of two online surveys, and received \$0.50 for completing the first survey, and an additional \$1.00 for completing the second survey. Three hundred fifty-two participants completed the first survey, and 105 returned to complete the second survey, which is equivalent to a 29.8% retention rate. Of the 105 participants who completed both parts of the survey, 68.6% identified as female, and 31.4% as male. In terms of race and ethnicity, 81.9% identified as White, 8.6% as Asian, 3.8% as Black, 1.0% as Latino, and 3.8% as other. The average age of the final sample used for analyses was 40.62 years ( $SD = 14.0$  years, range = 19-82).

### **Materials**

See Table 3.1 for descriptive statistics, including means, standard deviations, and correlations, for all continuous measures used in Study 3. See Appendix C for a complete list of measures introduced in Study 3.

**Social-identity complexity.** Participants' social-identity complexity was measured using the same procedure developed by Brewer and Pierce (2005) and used in Studies 1 and 2.

**Gender-specific system justification.** Participants' gender-specific system justification was measured using the same 8-item scale developed by Jost and Kay (2005) and used in Studies 1 and 2.

**Need for closure.** Participants' need for closure was measured using the 14-item short scale developed by Pierro and Kruglanski (2006) and used in Studies 1 and 2.

**Facial stimuli.** A set of facial images, including male and female Asian, Black, and White faces, was drawn from the Chicago Face Database 2.0 (Ma et al., 2015). These

facial images included the same 120 facial images (20 each per race-gender subgroup) used for the gender categorization and memory tasks in Studies 1 and 2, and the set facial images used for the “Who Said What?” tasks in Study 2. A new set of six facial images (one per each race-gender subgroup) were used in the budget allocation task in Study 3 and paired randomly with the policy proposals. Thus, the facial images used in this study were distinct for each separate task that participants completed.

**Conversation stimuli.** The conversation stimuli were comprised of the two sets of 32 statements about neutral topics (Schug et al., 2015; Sesko & Biernat, 2010) used in Study 1.

**Social issue policy proposals.** A set of six social issue policy proposals was created for this study. All proposals were described as potential social policies that a fictitious non-profit organization, the American Disability Advocacy Group (ADAG), might pursue in the upcoming year. All proposals focused on issues related to individuals with disabilities, and were unrelated to race and gender. These issues included: improving access to public buildings, reducing housing discrimination, reducing employment discrimination, reducing educational discrimination, improving access to vocational rehabilitation programs, and criminal justice reform related to hate crimes committed against individuals with disabilities. All proposals were 95 words in length and followed a similar sentence structure: First, the issue was introduced as one that ADAG should support in the upcoming year, second, the proposal referred to a law that had made steps toward improvement with respect to the issue but suggested that more effort was still needed, third, the proposal included a rationale for the issue by describing a study that

described the ways in which individuals with disabilities were still adversely affected, and finally, the proposal ended with a plea for ADAG to advocate for this issue on behalf of individuals with disabilities. For example, the proposal for improving access to public buildings was as follows:

This year, ADAG should advocate for improved access to public buildings for disabled individuals. Although the passage of Americans with Disabilities Act (ADA) has improved access to public buildings by increasing accommodations, such as ramps and elevators, there is still room for improvement. For example, a recent study of the city's public transit system found that only a small number of transit stations were fully disabled-accessible and had functioning ramps, elevators, and escalators. ADAG's resources should therefore go toward advocating for improved access to public transit facilities and other public buildings for individuals with disabilities.

**Social issue policy proposal evaluations.** For each social issue policy proposal, participants were asked to evaluate the proposal and the organization employee who has ostensibly proposed it. To do so, participants indicated their responses to the following four questions: "How important is this issue?", "How knowledgeable do you think the person who suggested this policy issue is about this issue?", "How likeable is the person who suggested this policy issue?", and "How credible is the person who suggested this policy issue?" All items were on a 5-point Likert-type response scale, ranging from 1 to 5 (e.g., *Not at all important, slightly important, moderately important, very important, and extremely important*).

**Control and demographic variables.** As in Studies 1 and 2, participants were asked to complete a number of demographic measures, including race, gender, age, education, income, sexual orientation, and social and economic ideology. In order to ensure that participants' views about race were not driving any effects, an 8-item measure

of symbolic racism (Henry & Sears, 2002), a 22-item measure of ambivalent sexism (Glick & Fiske, 1996), and a measure of intergroup contact in the form of direct and extended cross-group friendships (Sharp et al., 2011) were also included. Finally, as Study 3 asked participants to evaluate a set of social issue policy proposals, participants were asked to complete measures of political interest and political knowledge. Political interest was measured with a single item, “About how interested would you say you are in politics and political issues?” Participants indicated their response using a 5-point Likert-type scale (with points labeled *Not at all interested*, *Slightly interested*, *Moderately interested*, *Interested*, and *Extremely Interested*). Political knowledge was measured using a 10-item multiple-choice scale that assessed participants’ knowledge of contemporary political figures (e.g., the job held by John Roberts), current political realities (e.g., the political party holding the majority in the House of Representatives), and regulations related to political institutions (e.g., the term length for a U.S. Senator). Items were first scored as correct or incorrect, and the number of correct responses was summed to create a measure of participants’ political knowledge ( $M = 8.22$ ,  $SD = 2.00$ ).

### **Procedure**

The procedure for Study 3 closely followed that of Studies 1 and 2, with data collection occurring in two stages in order to prevent participant responses to the questions assessing attitudes and beliefs about race- and gender-related issues from influencing responses to the categorization and memory tasks in the second part of the study.

Participants completed the same initial online survey as described in Study 2. Approximately one week after completing the initial survey, participants were sent an email through the MTurk system indicating that a new HIT containing the second part of the study was ready to complete. In this second survey, participants completed the same gender categorization task and facial memory task as in Studies 1 and 2, and the “Who said what?” tasks as in Study 2. After the “Who said what?” tasks, participants were instructed to imagine that they had recently started working for a non-profit interest group organization, the American Disability Advocacy Group (ADAG; a fictitious group made up for the purposes of this study), which advocates for changes to policies on behalf of individuals with disabilities. Participants were told that their job was to help set the organization’s policy agenda for the upcoming year by deciding how the organization’s budget should be spent. Participants were asked to read six short proposals of potential policy issues that ADAG might support, the order of which was randomized. Each proposal was also paired with a randomly selected facial photograph (i.e., selected from among the six images used for this particular task) of the employee who ostensibly proposed the issue. After reading each proposal, participants were asked to complete the social issue policy proposal evaluation questions. After evaluating all issues, participants were asked to decide how ADAG should spend their budget by indicating how much of the total \$50,000 amount should be allocated toward each proposed issue. Participants were told that they could choose to allocate the entire budget amount to a single issue, or that they could spread it out over multiple issues.

Finally, participants were asked to complete measures of political interest and political knowledge. After completing these measures, participants were thanked and debriefed about the purpose of the study.

## Results

### Analysis Overview and Variable Construction

The constructs of interest in this third study are non-prototypicality, invisibility, and marginalization.

**Non-prototypicality.** As in Study 1 and Study 2, non-prototypicality was used as both a dependent variable (Hypotheses 1a through 1c) and an independent variable (Hypotheses 2 through 4), and defined as a function of participant responses to the gender categorization task. Response latencies for the gender categorization task were averaged for each subgroup, with higher values (i.e., greater response latencies) indicating that participants were slower to categorize targets from a particular race-gender subgroup by gender, which suggests that they are perceived as less prototypical. When non-prototypicality was used as a dependent variable, response latencies were aggregated, separately, for race-gender incongruent targets (Black female targets and Asian male targets) and race-gender congruent targets. To use non-prototypicality as an independent variable, the ratio of averaged response latencies for race-gender incongruent targets to the response latencies for race-gender congruent targets was calculated as a measure of *relative non-prototypicality*, or the extent to which participants saw targets from race-gender incongruent subgroups as more non-prototypical of their gender than targets from race-gender congruent subgroups; higher values indicated that this was especially true.

As in Studies 1 and 2, steps were taken to minimize the effect of response latency outliers (see Johnson et al., 2012). Trials for which response latencies were less than 100 ms or  $\pm 3$  SDs from participants' overall mean latency score were excluded from analysis (2.19% of total trials, which ranged from 1.32% of Black female trials to 3.02% of Black male trials). Excluded trials did not significantly differ as a function of race-gender subgroup ( $\chi^2(5) = 7.45, p = .19$ ).

**Invisibility.** As in Study 2, invisibility was operationalized in two ways, in terms of participants' ability to distinguish between old and new target faces ( $d'$ ) on the gender categorization task, and in terms of the number of statement source attribution errors on the "Who said what?" tasks. Both instantiations of invisibility were calculated as described in Study 2; see Table 3.2 for a summary of participant accuracy on the facial recognition and "Who said what?" tasks, as well as the correlations between the two measures, overall and separately for each race-gender subgroup. For Hypothesis 2, in which invisibility is used as an outcome, participant  $d'$  scores and statement source attribution errors will each be averaged separately for race-gender congruent and race-gender incongruent targets and entered as level 1 predictors in the multilevel model (described in more detail below). For Hypotheses 3 and 4, in which invisibility is treated as an independent variable, the ratio of scores for race-gender incongruent targets and race-gender congruent targets will be calculated separately for  $d'$  and the statement source attribution errors, and used as a measure of *relative invisibility*. Lower relative invisibility values (calculated using  $d'$ ) indicate that participants are more likely to perceive race-gender incongruent targets as invisible than race-gender congruent targets,

and higher relative invisibility values (calculated using statement source attribution errors) indicate that participants are more likely to perceive race-gender incongruent targets as invisible than race-gender congruent targets.

**Marginalization.** Marginalization was operationalized in three ways, based on the participants' evaluations of the issue, the individual who proposed it, and their distribution of budgetary resources across the various issues. Participant responses to the issue evaluation question "How important is this issue?" were aggregated separately for race-gender congruent targets and race-gender incongruent targets. The inverse of the ratio of evaluations for issues proposed by race-gender incongruent targets will be used as a measure of *issue marginalization*, with higher values representing the extent to which participants evaluate issues proposed by race-gender incongruent targets less positively than issues proposed by race-gender congruent targets. Similarly, participant responses to the sponsor evaluation questions were aggregated separately for race-gender incongruent targets and race-gender congruent targets. The inverse of the ratio of evaluations for race-gender incongruent sponsors to race-gender congruent sponsors was used as a measure of *sponsor marginalization*, with higher values representing the tendency for participants to evaluate sponsors from race-gender incongruent groups more negatively than sponsors from race-gender congruent groups. Finally, the budget allocation amounts were averaged separately for issues proposed by race-gender incongruent sponsors and race-gender congruent sponsors. The budget allocation amounts for issues proposed by race-gender incongruent sponsors were used as a measure of *resource marginalization*. Due to the ipsative nature of the budget allocation task (i.e.,

participants are asked to distribute a finite amount of money across a set number of issues, which means that allocating more money to one issue necessarily results in less money for the remaining issues), only the amount of money allocated to the race-gender incongruent sponsors was used. Low values represent the tendency for participants to favor issues proposed by race-gender congruent sponsors over issues proposed by race-gender incongruent sponsors when allocating budgetary resources. See Table 3.3 for descriptive statistics and correlations among the types of marginalization.

**Model specifications.** Consistent with Study 1 and Study 2, all predictors in the multilevel models described below (Hypotheses 1 through 3) were rescaled to run from 0-1. In addition to the effects of interest described in the models below, the control (i.e., symbolic racism, ambivalent sexism, and intergroup contact) and demographic variables (i.e., race, gender, age, education, and income) were also included in all models as level 2 predictors. As Hypothesis 3 asked participants to evaluate social policy proposals, political interest and political knowledge were also included as level 2 predictors. In the multilevel models described below, only the intercept is included as a random effect.

### **The Relationship Between the Tendency Toward Stereotypical or Categorical Thinking and Non-Prototypicality (Hypothesis 1)**

According to Hypothesis 1, race-gender incongruent targets should be especially perceived as non-prototypical among individuals with demonstrated tendencies toward stereotypical or categorical thinking. Models examining the effects of participant social-identity complexity, gender-specific system justification, and need for closure are described below.

**Hypothesis 1a: The moderating effect of social-identity complexity on non-prototypicality perceptions.** Per Hypothesis 1a, participants low in social-identity complexity should be especially likely to perceive race-gender incongruent targets as non-prototypical, compared to participants high in social-identity complexity. To examine this hypothesis, I used a two-level multilevel model to examine differences in perceived non-prototypicality as a function of target race-gender incongruence and social-identity complexity. Participant's response latencies were regressed on target incongruence (level 1 predictor), social-identity complexity (level 2 predictor), the cross-level interaction between target incongruence and social-identity complexity, as well as control and demographic variables (level 2 predictors). Results indicated that participants had marginally larger response latencies for incongruent targets ( $b = .03$ ,  $SE = .02$ , 95% CI [-.002, .07],  $p < .10$ ) but that the moderating effect of participant social-identity complexity was non-significant ( $p > .27$ ). See Table 3.4 for full model estimates.

**Hypothesis 1b: The moderating effect of gender-specific system justification on non-prototypicality perceptions.** Hypothesis 1b suggests that participants high in gender-specific system justification should be especially likely to perceive race-gender incongruent targets as non-prototypical, compared to participants low in gender-specific system justification. To examine this hypothesis, I used a two-level multilevel model to examine differences in perceived non-prototypicality as a function of target race-gender incongruence and gender-specific system justification. Participant's response latencies were regressed on target incongruence (level 1 predictor), gender-specific system justification (level 2 predictor), the cross-level interaction between target incongruence

and gender-specific system justification, and relevant control and demographic variables (level 2 predictors). Results indicated a non-significant effect of target incongruence ( $p > .35$ ) and a non-significant moderating effect of gender-specific system justification ( $p > .73$ ). See Table 3.5 for full model estimates.

**Hypothesis 1c: The moderating effect of need for closure on non-prototypicality perceptions.** According to Hypothesis 1c, participants high in need for closure should be especially likely to perceive race-gender incongruent targets as non-prototypical, compared to participants low in need for closure. To examine this hypothesis, I used a two-level multilevel model. In the model, participants' response latencies were regressed on target incongruence (level 1 predictor), need for closure (level 2 predictor), the cross-level interaction between target incongruence and need for closure; control and demographic variables were included as level 2 predictors. Consistent with the model used to test Hypothesis 1b, there was no difference in response latencies for incongruent and congruent targets ( $p > .68$ ). Need for closure, however, had a fully significant impact on response latency ( $b = .91$ ,  $SE = .36$ , 95% CI [.20, 1.62],  $p < .01$ ), but did not moderate the effect of target incongruence ( $p > .95$ ). These results suggest that participants higher in need for closure tended to be slower to categorize targets by gender than participants lower in need for closure. See Table 3.6 for full model estimates.

### **The Relation Between Non-Prototypicality Perceptions and Target Invisibility (Hypothesis 2)**

According to Hypothesis 2, participants who perceive race-gender incongruent targets to be non-prototypical will perceive these targets as more invisible than participants who do not perceive race-gender incongruent targets as non-prototypical. In order to examine this hypothesis, I used two-level multilevel models to conduct a multivariate regression analysis of differences in target invisibility. The models included target incongruence as a level 1 predictor, relative non-prototypicality (level 2 predictor), and the cross-level interaction between target incongruence and relative non-prototypicality, as well as demographic and control variables (level 2 predictors). Full model estimates are shown in Table 3.7, with results for  $d'$  presented as Model 1 and results for statement source attribution errors from the “Who Said What?” tasks presented as Model 2. In Model 1 there was a non-significant effect of target incongruence on  $d'$  ( $p > .76$ ), a non-significant effect of relative non-prototypicality, ( $p > .81$ ), and a non-significant interaction between the two variables ( $p > .64$ ). In Model 2, there was also no difference in source attribution errors between congruent and incongruent targets ( $p = .96$ ), no effect of relative non-prototypicality on source attribution errors ( $p = .40$ ), and no interaction between the two variables ( $p = .93$ ).

### **The Relation Between Target Invisibility and Participant Marginalizing Behaviors (Hypothesis 3)**

According to Hypothesis 3, participants who demonstrate intersectional invisibility will be more likely to engage in behaviors that marginalize race-gender incongruent targets (but not race-gender congruent targets), than will participants who do not demonstrate intersectional invisibility. Models examining the effect of relative

invisibility on issue marginalization, sponsor marginalization, and resource marginalization are described below.

**Issue marginalization.** In order to examine this hypothesis, I used two-level multilevel regression models to examine the effect of relative invisibility on issue marginalization. The models included target incongruence as a level 1 predictor, and relative invisibility, demographic, and control variables as level 2 predictors. Full model estimates are shown in Table 3.8, with results for relative invisibility as  $d'$  presented in Model 1 and results for relative invisibility as statement source attribution errors presented in Model 2. In Model 1 there was a non-significant effect of target incongruence on issue marginalization ( $p = .19$ ), a non-significant effect of relative invisibility ( $p = .93$ ), and a non-significant interaction between the two variables ( $p > .52$ ). Similarly, in Model 2, there was no difference in issue marginalization between congruent and incongruent targets ( $p = .34$ ), no effect of relative invisibility on issue marginalization ( $p = .87$ ), and a non-significant higher-order interaction between the two variables ( $p > .58$ ).

**Sponsor marginalization.** In order to examine this hypothesis, I used two-level multilevel regression models to examine the effect of relative invisibility on sponsor marginalization. The models included target incongruence as a level 1 predictor, relative invisibility (level 2 predictor), the higher-order cross-level interaction between target incongruence and relative invisibility, and demographic, and control variables as level 2 predictors. Full model estimates are shown in Table 3.9, with results for relative invisibility as  $d'$  presented in Model 1 and results for relative invisibility as statement

source attribution errors presented in Model 2. In Model 1 there was a non-significant effect of target incongruence on sponsor marginalization ( $p = .60$ ), a non-significant effect of relative invisibility ( $p = .45$ ), and a non-significant interaction between the two variables ( $p = .69$ ). Similarly, in Model 2, there was no difference in sponsor marginalization between congruent and incongruent targets ( $p = .13$ ), no effect of relative invisibility on issue marginalization ( $p = .78$ ), and no interaction between the two variables ( $p = .16$ ).

**Resource marginalization.** In order to examine this hypothesis, I regressed the amount of money participants allocated to race-gender incongruent sponsors on relative invisibility, as well as all control and demographic variables. Full model estimates are shown in Table 3.10, with results for relative invisibility as  $d'$  presented in Model 1 and results for relative invisibility as statement source attribution errors presented in Model 2. In Model 1 relative invisibility was non-significant ( $b = .17$ ,  $SE = .32$ , 95% CI [-.46, .80],  $p = .59$ ). Similarly, in Model 2, there was also no effect of relative invisibility on issue marginalization ( $b = .31$ ,  $SE = 3.43$ , 95% CI [-6.50, 7.13],  $p = .93$ ).

#### **The Mediating Effect of Invisibility on the Relation Between Non-Prototypicality and Marginalizing Behaviors (Hypothesis 4)**

According to Hypothesis 4, the relation between perceiving race-gender congruent targets as non-prototypical and engaging in marginalizing behaviors should be mediated by the extent to which race-gender targets are invisible. To test this hypothesis, I conducted a series of mediation analyses using the PROCESS 2.16 macro in SPSS (Hayes, 2013) in which relative non-prototypicality was entered as the independent

variable, relative invisibility (both the  $d'$  calculation and the statement source attribution error calculation) as the mediator, and marginalization as the dependent variable.

Analyses were conducted using 1,000 bootstrapped samples to calculate 95% bias-corrected confidence intervals for the indirect effect, and included all relevant controls. Mediation analyses are discussed below, separately, for each operationalization of marginalization.

**Issue marginalization.** Analyses examining the relation between relative non-prototypicality and issue marginalization via relative invisibility found non-significant indirect effects for relative invisibility, regardless of whether calculated with  $d'$  scores ( $IE = .05$ ,  $SE = .05$ , 95% CI [-.02, .20],  $p = .36$ ) or calculated with statement-source-attribution-error scores ( $IE = .01$ ,  $SE = .07$ , 95% CI [-.04, .15],  $p = .83$ ).

**Sponsor marginalization.** Analyses examining the relation between relative non-prototypicality and sponsor marginalization via relative invisibility found non-significant indirect effects for relative invisibility, regardless of whether calculated with  $d'$  scores ( $IE = .01$ ,  $SE = .03$ , 95% CI [-.02, .11],  $p = .36$ ) or calculated with statement-source-attribution-error scores ( $IE = -.02$ ,  $SE = .04$ , 95% CI [-.13, .03],  $p = .46$ ).

**Resource marginalization.** Finally, analyses examining the relation between relative non-prototypicality and resource marginalization via relative invisibility found non-significant indirect effects for relative invisibility, regardless of whether calculated with  $d'$  scores ( $IE = .83$ ,  $SE = 4.24$ , 95% CI [-5.78, 10.68],  $p = .74$ ) or calculated with statement-source-attribution-error scores ( $IE = .01$ ,  $SE = 1.83$ , 95% CI [-3.56, 4.24],  $p = .99$ ).

## Discussion

Study 3 built on the findings from the first two studies to provide a full test of the intersectional invisibility model. In particular, Study 3 sought to examine whether the individual-level tendencies toward categorical or stereotypical thinking would increase the likelihood of perceiving race-gender incongruent targets as non-prototypical of their gender (Hypotheses 1a-1c), whether the tendency to perceive race-gender incongruent targets as more non-prototypical of their gender than race-gender congruent targets was directly related to invisibility (Hypothesis 2), and the extent to which non-prototypicality and invisibility were related to marginalization (Hypotheses 3 and 4). Overall, hypotheses were largely unsupported.

When examining the relation between target race-gender incongruence and non-prototypicality, Study 3 found that race-gender incongruent targets were marginally more likely to be perceived as non-prototypical. However, individual-level tendencies toward categorical or stereotypical thinking showed inconsistent effects on perceived non-prototypicality; whereas participants higher in social-identity complexity were, on average, marginally slower to categorize targets (contrary to hypothesis), gender-specific system justification had no effect on non-prototypicality. Participants higher in need for closure were, on average, slower to categorize targets by gender, which is in the hypothesized direction, however.

When examining the relation between relative non-prototypicality and invisibility, participants showed no difference in their ability to discriminate between old and new faces for race-gender incongruent and congruent targets. These results are inconsistent

with Studies 1 and 2, which found evidence for a hypervisibility for race-gender incongruent targets. As in Study 2, the number of errors participants made when attempting to identify who had “spoken” the sentences they were shown was unrelated to the race and gender of the target speaker.

Finally, when examining the relationship between invisibility and marginalization, analyses revealed mostly null results. Regardless of whether invisibility was conceptualized as a function of the ability to differentiate between old and new targets or the number of statement-source-attribution errors, or whether marginalization was conceptualized in terms of how participants evaluated the issue at hand, the sponsor who proposed it, or the amount of financial resources allocated to it, results did not seem to support the intersectional invisibility model.

### **General Discussion**

Although a large body of research within social psychology has been dedicated to examining discrimination and prejudice and the ways in which they can be reduced, the use of an intersectional approach to examining these concepts is a relatively recent addition to the field. Such an approach is essential to understanding the nuanced nature of marginalization, given the complexities of social perception (Cole, 2009; Syed, 2010). Here, an intersectional approach was applied to the study of invisibility, a subtle and indirect form of discrimination reserved for individuals who are perceived to be non-prototypical of their group. Whereas prototypical group members often experience active forms of oppression, non-prototypical group members are instead theorized to be relegated to obscurity (Purdie-Vaughns & Eibach, 2008). Although this model of

intersectional invisibility has received some preliminary support (e.g., Schug et al., 2015; Sesko & Biernat, 2010), a complete empirical test of the model is still lacking to date. The studies presented here are an attempt to conduct an empirical test of the model and to specify the nature of intersectional invisibility, in terms of the factors that lead individuals to perceive non-prototypical targets as invisible, the types of group-based attributions associated with invisibility, and the relationship between non-prototypicality, invisibility and marginalization.

The purpose of this dissertation is to take an initial step toward examining the causes and consequences of intersectional invisibility by focusing on marginalization at the intersection of race and gender. Across three studies that use two different measures of invisibility (i.e., facial memory and statement source attribution errors for targets that vary by race and gender) and two different types of samples (i.e., an undergraduate student sample and a more representative online adult sample), the intent was to develop a clearer understanding of the intersectional invisibility phenomenon. In particular, in Study 1, I hoped to demonstrate that there were particular individual differences—social-identity complexity, gender-specific system justification, or need for closure—that make individuals more likely to perceive members of particular race and gender subgroups (i.e., Black women and Asian men) as non-prototypical, and that it is this perceived non-prototypicality leads to invisibility for these types of targets. Although participants did tend to perceive race-gender incongruent targets as non-prototypical, these tendencies toward stereotypical or categorical thinking were mostly unrelated.

Study 2 was intended to investigate the extent to which invisibility could be conceptualized as related to particular patterns of group-based stereotypes and attributions, such as high levels of warmth and low levels of competence (e.g., Fiske et al., 2002), low levels of humanness (Hodson & Costello, 2007), or low levels of agency and experience (Gray et al., 2011). However, analyses yielded inconclusive results. Although participants who perceived race-gender incongruent targets as relatively higher in warmth tended to see targets as more invisible, this was only when invisibility was defined in terms of the ability to differentiate between old and new targets; the number of statement source attribution errors was unrelated to relative warmth as well as any of the other group-based stereotypes and attributions measured.

Finally, in Study 3, I integrated the psychological study of the individual-level correlates of invisibility with the more sociological study of the macro-level consequences of intersectionality by attempting to show that perceived non-prototypicality predicts lower levels of support for policies proposed by members of race-gender incongruent groups, and that this relationship was mediated by invisibility. However, additional research is still needed, as the indirect effect of invisibility was non-significant for all types of marginalization. Ultimately the findings presented in these studies do little to show empirical support for the intersectional invisibility model. Although participants did tend to see race-gender incongruent targets as more non-prototypical, this non-prototypicality translated neither to invisibility or marginalization.

The studies presented here are an important initial step in understanding the nature of intersectional invisibility; however, this approach is nonetheless limited in two

important ways. First, research examining the extent to which various race and gender combinations are more or less prototypical has thus far mainly been limited to men and women of Asian, Black, and White racial origins (e.g., Carpinella et al., 2015; Galinsky et al., 2013; Schug et al., 2015; Sesko & Biernat, 2010). Although recent research has begun to examine the gendered content of the stereotypes applied to other racial groups as well (e.g., Latinos and Middle Eastern Americans; Ghavami & Peplau, 2013), how prototypicality functions both within other races as well as for other race-gender pairings, has not yet been explored. This line of research is especially important in light of census projections suggesting that Latinos comprise the fastest growing group in the country (U.S. Census Bureau, 2012). As the racial composition of the United States gradually shifts from majority White to majority non-White (e.g., U.S. Census Bureau, 2011), perceptions of what is prototypical may also shift. To the extent that the growing proportion of individuals entering poverty (e.g., Latinos; U.S. Census Bureau, 2012) might actually be a reflection of intersectional invisibility and the marginalization that occurs as a result, an understanding of how the intersectional invisibility model can be applied to macro-level racial or ethnic dynamics may also aid researchers in understanding how current structural and institutional inequalities are perpetuated.

Second, that the intersectional invisibility model to date has primarily been examined within the interaction of race and gender should not be construed as evidence that these two dimensions are the most important or the most consequential. Indeed, there are many other demographic or group-identity based dimensions that should be taken into account when considering how discrimination and marginalization might have

quantitatively and/or qualitatively distinct effects, depending on the target. Prior research has demonstrated that race and gender are aligned with a variety of group dimensions, for example. That is, gendered facial cues are taken as an indicator of sexual orientation (Freeman, Johnson, Ambady, & Rule, 2010), with the accuracy of judgments about sexual orientation impaired for targets who are non-prototypical in terms of race and gender (Johnson & Ghavami, 2011). In addition, race has been shown to relate to social class, with Black targets perceived to be of lower status compared to White targets (Freeman, Penner, Saperstein, Scheutz, & Ambady, 2011; Penner & Saperstein, 2008). Extending research utilizing the intersectional invisibility model to understand how non-prototypicality and invisibility might increase the likelihood that individuals experience marginalization and discrimination on the basis of sexual orientation, age, or ability, is therefore an important next step.

In addition to correcting for the limitations mentioned above, there are a number of future directions for this line of research. First, the intersectional invisibility model, as well as the studies proposed here, do not take into consideration the fact that social perception and social interaction involve both a perceiver and a target. Consequently, the model does not examine the extent to which invisibility is the product of or exacerbated by dyadic interaction. Although the studies proposed here include intergroup contact as a covariate in all models that estimate invisibility, this measure can be considered only a proxy of dyadic interaction, and not an accurate representation of the real-time dynamics inherent in interpersonal interaction situations. A large body of research has documented the existence of self-fulfilling prophecies (e.g., Jussim, 1986) and stereotype-based

behavioral confirmation (e.g., Chen & Bargh, 1997; Hamilton, Sherman, & Ruvulo, 1990; Word, Zanna, & Cooper, 1974) as phenomena that lead perceiver's beliefs about a target to ultimately shape the behavior of that target. Whether these confirmatory processes are also at play within the context of intersectional invisibility has important implications for the ways in which intersectional invisibility is perpetuated.

Second, the studies presented here treat invisibility as an individual difference, without exploring the extent to which invisibility can be "moved around." If it is true that individual differences shown to exacerbate intersectional invisibility have motivational components (e.g., gender-specific system justification), an important future direction in this line of research is to generate theoretically grounded hypotheses about the situations or contexts in which intersectional invisibility is most likely to occur. For example, as system-justifying beliefs generally increase when the system is threatened (Jost & Banaji, 1994; Jost & Hunyady, 2002), the extent to which the changing racial landscape of the United States constitutes such a threat, and therefore affects the expression or intensity of intersectional invisibility, is a logical extension of this model.

Third, and finally, the consequences of intersectional invisibility for those who experience invisibility, both the immediate and the long term, have yet to be explored. Prior research has found that stress for Black women is comprised of both race-related and gender-related stress (Woods-Giscombé & Lobel, 2008), that Black women are more likely to give birth to infants of low birth weight and to experience a higher infant mortality rate compared to White women (Rosenthal & Lobel, 2011), and that Black women were more likely to experience complications during childbirth (Al-Ostad,

Kezouh, Spence, & Abenhaim, 2015). To the extent that the marginalizing behaviors associated with invisibility likely disregard the needs of non-prototypical individuals, whether the intersectional invisibility model can explain the types of stress experienced by Black women should be explored. Moreover, given the important role that stress plays in outcomes such as depressed immune system functioning (Segerstrom & Miller, 2004), susceptibility to chronic medical conditions such as cardiovascular disease (Cohen, Janicki-Deverts, & Miller, 2007), and aging (Epel et al., 2004), an understanding of the contribution of intersectional differences and invisibility to stress, and consequently levels of general health and well-being, is essential.

The application of an intersectional approach to the study of marginalization and discrimination has yielded important insight into how the influence of social categorization on person perception can lead to negative outcomes, such as invisibility (Purdie-Vaughns & Eibach, 2008). Although the studies presented here are an initial step in empirically testing the intersectional invisibility model, additional research is needed to clarify the conditions under which invisibility is likely to occur or be suppressed, and how both the perceiver and the target experience invisibility, knowledge from which can aid in the development of programs or interventions that target and lessen the effects of these negative outcomes. Ultimately, exploring the nature of intersectional invisibility and the generalizability of this model has the potential to improve our understanding of the processes by which bias pervades social judgment and the real world consequences of this bias.

## References

- Al-Ostad, G., Kezouh, A., Spence, A. R., & Abenhaim, H. A. (2015). Incidence and risk factors of sepsis mortality in labor, delivery, and after birth: Population-based study in the USA. *Journal of Obstetrics and Gynecology Research, 41*, 1201-1206.
- Allport, G. W. (1954). *The nature of prejudice*. Oxford, England: Addison-Wesley
- Bem, S. L. (1994). *The lenses of gender: Transforming the debate on sexual inequality*. New Haven, CT: Yale University Press.
- Berinsky, A. J., Huber, G. A., & Lenz, G. S. (2012). Evaluating online labor markets for experimental research: Amazon.com's Mechanical Turk. *Political Analysis, 20*, 351–368.
- Berinsky, A., Margolis, M., & Sances, M. (2014). Separating the shirkers from the workers? Making sure respondents pay attention on Internet surveys. *American Journal of Political Science, 58*, 739-753. doi:10.1111/ajps.12081
- Blair, I. V., Judd, C. M., Sadler, M. S., & Jenkins, C. (2002). The role of Afrocentric features in person perception: Judging by features and categories. *Journal of Personality & Social Psychology, 83*, 5–25.
- Bodenhausen, G. V., & Lichtenstein, M. (1987). Social stereotypes and information-processing strategies: The impact of task complexity. *Journal of Personality and Social Psychology, 52*, 871-880.
- Bonilla-Silva, E. (2000). “This is a White Country”: The racial ideology of the Western nations of the world-system. *Sociological Quarterly, 70*, 188–214.

- Brandt, K. R., Macrae, C. N., Schloerscheidt, A. M., & Milne, A. B. (2003). Remembering or knowing others? Person recognition and recollective experience. *Memory, 11*, 89–100.
- Brewer, M. B. (1988). A dual process model of impression formation. In T. K. Scrull & R. S. Wyer (Eds.). *Advances in social cognition* (Vol. 1, pp. 1–36). Hillsdale, NJ: Erlbaum.
- Brewer, M. B., Dull, V., & Lui, L. (1981). Perceptions of the elderly: Stereotypes as prototypes. *Journal of Personality and Social Psychology, 41*, 656–670.
- Brewer, M. B., & Pierce, K. P. (2005). Social identity complexity and outgroup tolerance. *Personality and Social Psychology Bulletin, 31*, 428–437.
- Brigham, J. C., Maas, A., Snyder, L. D., & Spaulding, K. (1982). Accuracy of eyewitness identifications in a field setting. *Journal of Personality and Social Psychology, 42*, 673–681.
- Brown, N. E. (2014). Political participation of women of color: An intersectional analysis, *Journal of Women, Politics, & Policy, 35*, 315-348.
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon’s Mechanical Turk: A new source of inexpensive, yet high quality, data? *Perspectives on Psychological Science, 6*, 3–5.
- Buss, D. M. (2000). *The dangerous passion*. New York, NY: Free Press.
- 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.

- Carpinella, C. M., Chen, J. M., Hamilton, D. L., & Johnson, K. L. (2015). Gendered facial cues influence race categorizations. *Personality and Social Psychology Bulletin, 41*, 405-419.
- Chen, M., & Bargh, J. (1997). Nonconscious behavioral confirmation processes: The self-fulfilling consequences of automatic stereotype activation. *Journal of Experimental Social Psychology, 33*, 541–560.
- Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *Journal of the American Medical Association, 298*, 1685–1687.
- Cole, E. R. (2009). Intersectionality and research in psychology. *American Psychologist, 64*, 170–180. doi: 10.1037/a0014564
- Collins, R. L. (2011). Content analysis of gender roles in media: Where are we now and where should we go? *Sex Roles, 64*, 290–298. doi:10.1007/s11199-010-9929-5.
- Cortes, B.P., Demoulin, S., Rodriguez, R.T., Rodriguez, A.P., & Leyens, J.P. (2005). Infrahumanization or familiarity?: Attribution of uniquely human emotions to the self, the ingroup, and the outgroup. *Personality and Social Psychology Bulletin, 31*, 243–253.
- Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics. *University of Chicago Legal Forum, 139–67*.
- Crenshaw, K. (1991). Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color. *Stanford Law Review, 43*,1241–79.

- Crisp, R. J., Turner, R. N., & Hewstone, M. (2010). Common ingroups and complex identities: Routes to reducing bias in multiple category contexts. *Group Dynamics: Theory, Research, and Practice, 14*, 32-46. doi: 10.1037/a0017303
- Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2007). The BIAS map: Behaviors from intergroup affect and stereotypes. *Journal of Personality and Social Psychology, 92*, 631–648.
- De Dreu, C. K. W., Koole, S., & Oldersma, F. L. (1999). On the seizing and freezing of negotiator inferences: Need for cognitive closure moderates the use of heuristics in negotiation. *Personality and Social Psychology Bulletin, 25*, 348-362.
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56*, 5-18.
- Devos, T., & Banaji, M. R. (2005). American=White? *Journal of Personality and Social Psychology, 88*, 447-466.
- Donovan, R. (2011). Tough or tender: (Dis)similarities in White college students' perceptions of Black and white women. *Psychology of Women Quarterly, 35*, 458–468.
- Eagly, A. H., & Kite, M. E. (1987). Are stereotypes of nationalities applied to both women and men? *Journal of Personality and Social Psychology, 53*, 451-462.
- 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.

- Eberhardt, J. L., Goff, P. A., Purdie, V. J., & Davies, P. G. (2004). Seeing black: Race, crime, and visual processing. *Journal of Personality and Social Psychology*, *87*, 876–963.
- Effron, D. A., & Knowles, E. D. (2015). Entitativity and intergroup bias: How belonging to a cohesive group allows people to express their prejudices. *Journal of Personality and Social Psychology*, *108*, 234–253. doi:10.1037/pspa0000020
- Epel, E. S., Blackburn, E. H., Lin, J., Dhabhar, F. S., Adler, N. E., Morrow, J. D., & Cawthon, R. M. (2004). Accelerated telomere shortening in response to life stress. *Proceedings of the National Academy of Sciences USA*, *101*, 17312–17315.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression-formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 23, pp. 1–74). San Diego, CA: Academic Press.
- Fiske, S. T., Cuddy, A. J. C., Glick, P., and Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, *82*, 878–902.
- Fiske, S. T., Neuberg, S. L., Beattie, A. E., & Milberg, S. J. (1987). Category-based and attribute-based reactions to others: Some informational conditions of stereotyping and individuating processes. *Journal of Experimental Social Psychology*, *23*, 399–427. doi: 10.1016/0022-1031(87)90038-2

- Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review, 118*, 247-279.
- Freeman, J. B., Johnson, K. L., Ambady, N., Rule, N. (2010). Sexual orientation perception involves gendered facial cues. *Personality and Social Psychology Bulletin, 36*, 1318–1331.
- Freeman, J. B., Penner, A. M., Saperstein, A., Scheutz, M., Ambady, N., 2011. Looking the part: Social status cues shape race perception. *PLoS ONE, 6*, e25107.
- Fryberg, S. A., & Townsend, S. S. M. (2008). The psychology of invisibility. In G. Adams, M. Biernat, N.R. Branscombe, C.S. Crandall, & L.S. Wrightsman (Eds.), *Commemorating Brown: The social psychology of racism and discrimination* (pp. 173–193). Washington, DC, US: American Psychological Association.
- Gaertner, S. L., Mann, J. A., Murrell, A. J., & Dovidio, J. F. (1989). Reducing intergroup bias: The benefits of recategorization. *Journal of Personality and Social Psychology, 57*, 239–249.
- Galinsky, A. D., Hall, E. V., & Cuddy, A. J. C. (2013). Gendered races: Implications for interracial marriage, leadership selection, and athletic participation. *Psychological Science, 24*, 498-506. doi:10.1177/0956797612457783
- Gaventa, J. (1980). *Power and powerlessness*. Urbana: University of Illinois Press.
- Ghavami, N., & Peplau, L. A. (2013). An intersectional analysis of gender and ethnic stereotypes: Testing three hypotheses. *Psychology of Women Quarterly, 37*, 113–127. doi:10.1177/0361684312464203

- Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision making. *Annual Review of Psychology*, *62*, 451–482. doi:10.1146/annurevpsych-120709-145346
- Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology*, *70*, 491–512.
- Goff, P. A., Eberhardt, J. L., Williams, M. J., & Jackson, M. C. (2008). Not yet human: Implicit knowledge, historical dehumanization, and contemporary consequences. *Journal of Personality and Social Psychology*, *94*, 292-306.
- Goff, P. A., Thomas, M. A., & Jackson, M. C. (2008). “Ain’t I a woman?”: Towards an intersectional approach to person perception and group-based harms. *Sex Roles*, *59*, 392–403. doi:10.1007/s11199-008-9505-4
- Gosling, S. D., & John, O. P. (1999). Personality dimensions in nonhuman animals: A cross-species review. *Current Directions in Psychological Science*, *8*, 69–75.
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B., Jr. (2003). A very brief measure of the big-five personality domains. *Journal of Research in Personality*, *37*, 504-528.
- Gray, H. M., Gray, K., & Wegner, D. M. (2007). Dimensions of mind perception. *Science*, *315*, 619.
- Gray, K., Knobe, J., Sheskin, M., Bloom, P., & Barrett, L. F. (2011). More than a body: Mind perception and objectification. *Journal of Personality and Social Psychology*, *101*, 1207– 1220.

- Gwinn, J. D., Judd, C. M., & Park, B. (2013). Less power = less human? Effects of power differentials on dehumanization. *Journal of Experimental Social Psychology, 49*, 464-470.
- Hackel, L. M., Looser, C. E., & Van Bavel, J. J. (2013). Group membership alters the threshold for mind perception: The role of social identity, collective identification, and intergroup threat. *Journal of Experimental Social Psychology, 52*, 15–23.
- Hall, E. V., Galinsky, A. D., & Phillips, K. W. (2015). Gender profiling: A gendered race perspective on person-position fit. *Personality and Social Psychology Bulletin, 41*, 853-868.
- Hamilton, D., & Sherman, S. (1996). Perceiving persons and groups. *Psychological Review, 103*, 336–355.
- Hamilton, M. C. (1991). Masculine bias in the attribution of personhood: People= male, male= people. *Psychology of Women Quarterly, 15*, 393–402. doi:10.1111/j.1471-6402.1991.tb00415.x.
- Hamilton, D. L., Sherman, S. J., & Ruvolo, C. M. (1990). Stereotype-based expectancies: Effects on information processing and social behavior. *Journal of Social Issues, 46*, 35–60.
- Hancock, A. M. (2007). When multiplication doesn't equal quick addition: Examining intersectionality as a research paradigm. *Perspectives on Politics, 5*, 63–79.
- Haslam, N. (2006). Dehumanization: An integrated review. *Personality and Social Psychology Review, 10*, 252 – 264.

- Haslam, N., Bain, P., Douge, L., Lee, M., & Bastian, B. (2005). More human than you: Attributing humanness to self and others. *Journal of Personality and Social Psychology, 89*, 937–950.
- Hawkesworth, M. (2003). Congressional enactments of race-gender: Toward a theory of race-gendered institutions. *American Political Science Review, 97*, 529-550.
- Hayes, A. F. (2013). *An introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Hegarty, P., & Pratto, F. (2001). The effects of category norms and stereotypes on explanations for intergroup differences. *Journal of Personality and Social Psychology, 80*, 723–735. doi:10.1037//0022-3514.80.5.723
- Hegarty, P., & Pratto, F. (2004). The differences that norms make: Empiricism, social constructionism and the interpretation of group differences. *Sex Roles, 50*, 445–453.
- Henry, P. J., & Sears, D. O. (2002). The Symbolic Racism 2000 Scale. *Political Psychology, 23*, 253–283.
- Hodson, G., & Costello, K. (2007). Interpersonal disgust, ideological orientations, and dehumanization as predictors of intergroup attitudes. *Psychological Science, 18*, 691–698.
- Hogg, M. A. (2001). A social identity theory of leadership. *Personality and Social Psychology Review, 5*, 184–200.
- Hogg, M. A. (2004). Uncertainty and extremism: Identification with high entitativity groups under conditions of uncertainty. In V. Yzerbyt, C. M. Judd, & O. Corneille

- (Eds.), *The psychology of group perception: Perceived variability, entitativity, and essentialism* (pp. 401–418). New York: Psychology Press.
- Insko, C. A., Wildschut, T., & Cohen, T. R. (2013). Interindividual intergroup discontinuity in the prisoner's dilemma game: How common fate, proximity, and similarity affect intergroup competition. *Organizational Behavior and Human Decision Processes*, *120*, 168–180.
- Jahoda, G. (1999). *Images of savages: Ancient roots of modern prejudice in western culture*. London: Routledge & Kegan Paul.
- Johnson, K. L., & Ghavami, N. (2011). At the crossroads of conspicuous and concealable: What race categories communicate about sexual orientation. *PLoS ONE*, *6*, e18025.
- Johnson, K. L., Freeman, J. B., & Pauker, K. (2012). Race is gendered: How covarying phenotypes and stereotypes bias sex categorization. *Journal of Personality and Social Psychology*, *102*, 116–131. doi:10.1037/a0025335.
- Jost, J. T., & Banaji, M. R. (1994). The role of stereotyping in system-justification and the production of false-consciousness. *British Journal of Social Psychology*, *33*, 1–27.
- Jost, J. T., & Hunyady, O. (2002). The psychology of system justification and the palliative function of ideology. *European Review of Social Psychology*, *13*, 111–153.

- Jost, J. T., & Kay, A. C. (2005). Exposure to benevolent sexism and complementary gender stereotypes: Consequences for specific and diffuse forms of system justification. *Journal of Personality and Social Psychology, 88*, 498–509.
- Jussim, L. (1986). Self-fulfilling prophecies: A theoretical and integrative review. *Psychological Review, 93*, 429–445.
- Kahneman D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgement. In *Heuristics and Biases: The Psychology of Intuitive Judgment*, ed. T Gilovich, D Griffin, D Kahneman, pp. 49–81. Cambridge, UK: Cambridge Univ. Press.
- Kahneman D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review, 80*, 237–51.
- Kennedy, K. A., & Pronin, E. (2008). When disagreement gets ugly: Perceptions of bias and the escalation of conflict. *Personality and Social Psychology Bulletin, 34*, 833-848.
- Kinzler, K. D., & Spelke, E. (2011). Do infants show social preferences for people differing in race? *Cognition, 119*, 1–9. doi:10.1016/j.cognition.210.10.019.
- Klauer, K. C., Ehrenberg, K., & Wegener, I. (2003). Crossed categorization and stereotyping: Structural analyses, effect patterns, and dissociative effects of context relevance. *Journal of Experimental Social Psychology, 39*, 332–354. doi:10.1016/ S0022-1031(03)00017-9.

- Kozak, M. J., Marsh, A. A., & Wegner, D. M. (2006). What do I think you're doing? Action identification and mind attribution. *Journal of Personality and Social Psychology, 90*, 543–555.
- Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: “Seizing” and “freezing.” *Psychological Review, 103*, 263-283.
- Kruglanski, A. W., Pierro, A., Mannetti, L., & De Grada, E. (2006). Groups as epistemic providers: Need for closure and the unfolding of group centrism. *Psychological Review, 113*, 84-100.
- Kruglanski, A. W., Shah, J. Y., Pierro, A., & Mannetti, L. (2002). When similarity breeds content: Need for closure and the allure of homogeneous and self-resembling groups. *Journal of Personality and Social Psychology, 83*, 648–662.
- Lammers, J., & Stapel, D. A. (2011). Power increases dehumanization. *Group Processes & Intergroup Relations, 14*, 113–126.
- Livingston, R. W., Rosette, A. S., & Washington, E. F. (2012). Can an agentic Black woman get ahead? The impact of race and interpersonal dominance on perceptions of female leaders. *Psychological Science, 23*, 354–358.  
doi:10.1177/0956797611428079
- Ma, D. S., Correll, J., & Wittenbrink, B. (2015). The Chicago face database: A free stimulus set of faces and norming data. *Behavior Research Methods, 47*, 1122-1135.
- Macrae, C. N., & Bodenhausen, G. V. (2001). Social cognition: Categorical person perception. *British Journal of Psychology, 92*, 239–255.

- Macrae, C. N., Milne, A. B., & Bodenhausen, G. V. (1994). Stereotypes as energy-saving devices: A peek inside the cognitive toolbox. *Journal of Personality and Social Psychology, 66*, 37-47.
- Maddox, K. B. (2004). Perspectives on racial phenotypicality bias. *Personality and Social Psychology Review, 8*, 383–401.
- Mason, W. & Suri, S. (2012). Conducting behavioral research on Amazon’s Mechanical Turk. *Behavioral Research Methods, 44*, 1–23.
- Mastro, D., & Behm-Morawitz, E. (2005). Latino representation on primetime television: A content analysis. *Journalism & Mass Communication Quarterly, 82*, 110–130.
- Mastro, D. E., & Stern, S. R. (2003). Representations of race in television commercials: A content analysis of prime-time advertising. *Journal of Broadcasting & Electronic Media, 47*, 638–647.
- McCall, L. (2005). The complexity of intersectionality. *Signs, 30*, 1771–1800.
- Meissner, C. A., & Brigham, J. C. (2001). Thirty years of investigating the own-race bias in memory for faces: A meta-analytic review. *Psychology, Public Policy, and Law, 7*, 3–35.
- O’Brien, G. V. (2003). Indigestible food, conquering hordes, and waste materials: Metaphors of immigrants and the early immigration restriction debate in the United States. *Metaphor and Symbol, 18*, 33–47.
- Penner, A. M., & Saperstein, A. (2008). How social status shapes race. *Proceedings of the National Academy of Sciences USA, 105*, 19628–19630.

- Pettigrew, T., & Tropp, L. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology, 90*, 751–783.
- Pew Hispanic Center. (2011). *Census 2010: 50 million Latinos: Hispanics account for more than half of nations growth in past decade*. Retrieved from: <http://www.pewhispanic.org/files/reports/140.pdf>
- Pierro, A. & Kruglanski, A. W. (2006). Validation of a revised need for cognitive closure scale. Unpublished data, Universita di Roma, “La Sapienza”.
- Purdie-Vaughns, V., & Eibach, R. P. (2008). Intersectional invisibility: The distinctive advantages and disadvantages of multiple subordinate-group identities. *Sex Roles, 59*, 377–391. doi:10.1007/s11199-008-9424-4.
- Roccas, S., & Brewer, M. B. (2002). Social identity complexity. *Personality and Social Psychology Review, 6*, 88–106.
- Rosch, E., & Mervis, C. B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology, 573–605*. doi:10.1016/0010-0285(75)90024-9
- Rosch, E. (1975). Cognitive representations of semantic categories. *Journal of Experimental Psychology: General, 104*, 192–223.
- Rosenthal, L., & Lobel, M. (2011). Explaining racial disparities in adverse birth outcomes: Unique sources of stress for Black American women. *Social Science & Medicine, 72*, 977-83.

- Rudman, L. A., & Mescher, K. (2012). Of animals and objects: Men's implicit dehumanization of women and male sexual aggression. *Personality and Social Psychology Bulletin*, *38*, 734–746. doi:10.1177/0146167212436401
- Schmid, K., Hewstone, M., Tausch, N., Cairns, E., & Hughes, J. (2009). Antecedents and consequences of social identity complexity: Intergroup contact, distinctiveness threat and outgroup attitudes. *Personality and Social Psychology Bulletin*, *35*, 1085– 1098.
- Schug, J., Alt, N. P., & Klauer, K. C. (2015). Gendered race prototypes: Evidence for the non-prototypicality of Asian men and black women. *Journal of Experimental Social Psychology*, *56*, 121-125.
- Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin*, *130*, 601–630.
- Sesko, A. K., & Biernat, M. (2010). Prototypes of race and gender: The invisibility of black women. *Journal of Experimental Social Psychology*, *46*, 356–360. doi:10.1016/j.jesp.2009.10.016.
- Sharp, M., Voci, A., & Hewstone, M. (2011). Individual difference variables as moderators of the effect of extended cross-group friendship on prejudice: Testing the effects of public self-consciousness and social comparison. *Group Processes & Intergroup Relations*, *14*, 207-221. doi: 10.1177/1368430210391122
- Silvera, D. H., Krull, D. S., & Sessler, M. A. (2002). Typhoid Pollyanna: The effect of category valence on retrieval order of positive and negative category members.

*European Journal of Cognitive Psychology*, 14, 227–236. doi:

10.1080/09541440143000041

Stangor, C., Lynch, L., Duan, C., & Glass, B. (1992). Categorization of individuals on the basis of multiple social features. *Journal of Personality and Social Psychology*, 62, 207–218.

Steffensmeier, D., Ulmer, J., & Kramer, J. (1998). The interaction of race, gender, and age in criminal sentencing: The punishment cost of being young, black, and male. *Criminology*, 36, 763-798.

Strolovitch, D. Z. (2006). Do interest groups represent the disadvantaged? Advocacy at the intersections of race, class, and gender. *Journal of Politics*, 68, 894-910.

Strolovitch, D. Z. (2007). *Affirmative advocacy: Race, class, and gender in interest group politics*. Chicago, IL: University of Chicago Press.

Syed, M. (2010). Disciplinarity and methodology in intersectionality theory and research. *American Psychologist*, 65, 61–62.

Taylor, S. E., Fiske, S. T., Etcoff, N. L., & Ruderman, A. J. (1978). Categorical and contextual bases of person memory and stereotyping. *Journal of Personality and Social Psychology*, 36, 778–793

Thomas, E. L., Dovidio, J. F., & West, T. V. (2014). Lost in the categorical shuffle: Evidence for the social non-prototypicality of black women. *Cultural Diversity and Ethnic Minority Psychology*, 20, 370-376. doi: 10.1037/a0035096

- Todd, A. R., Simpson, A. J., Thiem, K. C., & Neel, R. (2016). The generalization of implicit racial bias to young black boys: Automatic stereotyping or automatic prejudice? *Social Cognition, 34*, 306-323. DOI: 10.1521/soco.2016.34.4.306
- Tversky, A., & Kahneman, D. (1983). Extensional vs. intuitive reasoning: The conjunction fallacy in probability judgment. *Psychological Review, 90*, 293–315.
- U.S. Census Bureau. (2011). Overview of race and Hispanic origin: 2010. Report C2010BR-02. Retrieved from:  
<http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf>.
- U.S. Census Bureau. (2012). U.S. Census Bureau projections show a slower growing, older, more diverse nation a half century from now. Press Release: CB12-243. Retrieved from:  
<http://www.census.gov/newsroom/releases/archives/population/cb12-243.html>.
- Waytz, A., Gray, K., Epley, N., & Wegner, D. M. (2010). Causes and consequences of mind perception. *Trends in Cognitive Sciences, 14*, 383–388.
- Webster, D., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology, 67*, 1049-1062.
- Woods-Giscombe, C. L., & Lobel, M. (2008). Race and gender matter: A multidimensional approach to conceptualizing and measuring stress in African American women. *Cultural Diversity and Ethnic Minority Psychology, 14*, 173-182.

Word, C., Zanna, M., & Cooper, J. (1974). The nonverbal mediation of self-fulfilling prophecies in interracial interaction. *Journal of Experimental Social Psychology*, *10*, 109–120.

Zárate, M. A., & Smith, E. R. (1990). Person categorization and stereotyping. *Social Cognition*, *8*, 161-185.

Table 1.1. Descriptive statistics for continuous measures, Study 1

Measure	1	2	3	4	5	6	7	8	9	10
1. Latency: Gender Incongruent <sup>a</sup>	--									
2. Latency: Gender Congruent <sup>b</sup>	0.94*	--								
3. System Identity Complexity	0.15*	0.15*	--							
4. Gender-Specific System Justification	0.05	0.07*	0.04	--						
5. Need for Closure	-0.04	-0.03	0.19*	0.21*	--					
6. Intergroup Contact: Black	0.09*	0.11*	-0.11*	-0.17*	-0.27*	--				
7. Intergroup Contact: Asian	0.12*	0.09*	0.23*	-0.04	0.07*	-0.12*	--			
8. Ambivalent Sexism	0.03	0.03	0.08*	0.53*	0.29*	-0.13*	0.14*	--		
9. Symbolic Racism	-0.05	-0.05	0.02	0.56*	0.24*	-0.23*	0.06	0.41*	--	
10. Ideology	-0.04	-0.02	0.09*	0.53*	0.17*	-0.14*	-0.08*	0.52*	0.55*	--
Mean	738.47	707.37	0.33	0.51	0.48	0.29	0.43	0.59	0.32	0.40
Standard Deviation	281.83	254.61	0.23	0.17	0.13	0.20	0.26	0.16	0.19	0.25

Note: \*  $p < .05$ .

<sup>a</sup> Gender Incongruent groups are Black women and Asian men; this variable represents the mean latency (within-person) for those groups.

<sup>b</sup> Gender Congruent groups are White men and women, Black men and Asian women; this variable represents the mean latency (within-person) for those groups.

Table 1.2. Descriptive statistics for facial images, Study 1

Target	Number of Images	Attractive		Prototypical		Unusual	
		Mean	SD	Mean	SD	Mean	SD
Asian Female	20	3.63	0.57	3.34	0.59	2.15	0.35
Asian Male	20	3.22	0.47	3.19	0.90	2.02	0.36
Black Female	20	3.40	0.49	3.55	0.37	2.25	0.34
Black Male	20	3.47	0.41	3.54	0.60	2.22	0.35
White Female	20	3.45	0.61	3.61	0.63	2.09	0.42
White Male	20	3.35	0.64	3.44	0.83	2.20	0.42
Overall	120	3.42	0.54	3.45	0.68	2.15	0.38
ANOVA: Race Main Effect		$F(2,114) = 0.05, p = .95$		$F(2,114) = 2.11, p = .13$		$F(2,114) = 1.72, p = .18$	
ANOVA: Gender Main Effect		$F(1,114) = 2.19, p = .14$		$F(1,114) = 0.78, p = .38$		$F(1,114) = 0.05, p = .83$	
ANOVA: Race x Gender Interaction		$F(2,114) = 2.05, p = .13$		$F(2,114) = 0.16, p = .85$		$F(2,114) = 1.04, p = .36$	

Table 1.3. Response latency as a function of target incongruence and social-identity complexity: Model estimates, Study 1

	<i>b</i>	<i>SE</i>	Sig.	95% CI Lower Bound	95% CI Upper Bound
Fixed Effects					
Level 1 units ( <i>N</i> = 918)					
Incongruent <sup>a</sup>	0.04	0.01	0.01**	0.01	0.06
Level 2 units ( <i>N</i> = 153)					
SIC	0.15	0.10	0.16	-0.06	0.35
IC: Black	0.08	0.12	0.50	-0.16	0.32
IC: Asian	0.03	0.10	0.77	-0.16	0.22
Ambivalent Sexism	0.03	0.18	0.89	-0.33	0.38
Symbolic Racism	-0.04	0.15	0.77	-0.33	0.25
Ideology	-0.01	0.12	0.96	-0.25	0.23
Education	0.00	0.01	0.98	-0.02	0.02
Income	-0.18	0.08	0.02*	-0.33	-0.03
Race	-0.03	0.03	0.40	-0.09	0.03
Age	0.00	0.01	0.86	-0.02	0.02
Gender	-0.06	0.05	0.25	-0.17	0.04
Sexual Orientation	0.02	0.06	0.73	-0.09	0.14
Cross-level Interaction					
Incongruent x SIC	0.00	0.03	0.95	-0.06	0.07
Intercept	6.72	0.28	0.001***	6.17	7.27
Random Effects					
$\sigma^2$ (Intercept)	0.08	0.01		0.06	0.10
$\sigma^2$ (Target Incongruence)	0.001	0.001		0.00	0.00
-2 x LL			-2 X 445.41		
Wald X <sup>2</sup> (df)			39.50 (14)***		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0;

Incongruent targets (Asian male, Black female) = 1.

SIC = Social Identity Complexity, IC = Intergroup Contact.

Table 1.4. Response latency as a function of target incongruence and gender-specific system justification: Model estimates, Study 1

	<i>b</i>	<i>SE</i>	Sig.	95% CI Lower Bound	95% CI Upper Bound
Fixed Effects					
Level 1 units ( <i>N</i> = 918)					
Incongruent <sup>a</sup>	0.05	0.02	0.02*	0.01	0.10
Level 2 units ( <i>N</i> = 153)					
GSSJ	0.29	0.18	0.11	-0.07	0.65
IC: Black	0.04	0.12	0.71	-0.19	0.28
IC: Asian	0.05	0.09	0.60	-0.14	0.24
Ambivalent Sexism	-0.02	0.18	0.90	-0.39	0.34
Symbolic Racism	-0.13	0.16	0.39	-0.44	0.17
Ideology	-0.01	0.12	0.95	-0.24	0.23
Education	0.00	0.01	0.72	-0.02	0.03
Income	-0.18	0.07	0.01**	-0.33	-0.04
Race	-0.03	0.03	0.39	-0.09	0.03
Age	0.00	0.01	0.91	-0.02	0.02
Gender	-0.04	0.05	0.47	-0.15	0.07
Sexual Orientation	0.04	0.06	0.53	-0.08	0.15
Cross-level Interaction					
Incongruent x GSSJ	-0.03	0.04	0.47	-0.12	0.05
Intercept	6.60	0.29	0.001***	6.04	7.16
Random Effects					
$\sigma^2$ (Intercept)	0.07	0.01		0.06	0.09
$\sigma^2$ (Target Incongruence)	0.001	0.001		0.00	0.00
-2 x LL			-2 X 450.96		
Wald X <sup>2</sup> (df)			38.81 (14)***		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0;

Incongruent targets (Asian male, Black female) = 1.

GSSJ = Gender-Specific System Justification, IC = Intergroup Contact.

Table 1.5. Response latency as a function of target incongruence and need for closure:  
Model estimates, Study 1

	<i>b</i>	<i>SE</i>	Sig.	95% CI Lower Bound	95% CI Upper Bound
Fixed Effects					
Level 1 units ( <i>N</i> = 924)					
Incongruent <sup>a</sup>	0.06	0.03	0.04*	0.00	0.12
Level 2 units ( <i>N</i> = 154)					
NFC	0.02	0.20	0.91	-0.37	0.42
IC: Black	0.07	0.12	0.54	-0.16	0.31
IC: Asian	0.06	0.10	0.52	-0.13	0.25
Ambivalent Sexism	0.02	0.19	0.92	-0.34	0.38
Symbolic Racism	-0.06	0.15	0.67	-0.36	0.23
Ideology	0.01	0.12	0.94	-0.23	0.25
Education	0.00	0.01	0.97	-0.02	0.02
Income	-0.18	0.08	0.02*	-0.33	-0.03
Race	-0.02	0.03	0.45	-0.08	0.04
Age	0.00	0.01	0.89	-0.02	0.02
Gender	-0.07	0.06	0.23	-0.18	0.04
Sexual Orientation	0.02	0.06	0.77	-0.10	0.13
Cross-level Interaction					
Incongruent x NFC	-0.05	0.06	0.42	-0.17	0.07
Intercept	6.75	0.29	0.001***	6.17	7.32
Random Effects					
$\sigma^2$ (Intercept)	0.08	0.01		0.06	0.10
$\sigma^2$ (Target Incongruence)	0.001	0.001		0.00	0.00
-2 x LL			-2 X 448.09		
Wald $X^2$ (df)			37.46 (14)***		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0;

Incongruent targets (Asian male, Black female) = 1.

NFC = Need for Closure, IC = Intergroup Contact.

Table 1.6. Hit Rates, False Alarms, and  $d'$  scores by subgroup, Study 1

Target	Hit rate		False alarm		$d'$	
	M	SD	M	SD	M	SD
Asian Female	0.54	0.21	0.30	0.19	-0.15	1.03
Asian Male	0.50	0.23	0.26	0.19	-0.07	0.99
Black Female	0.70	0.19	0.33	0.18	0.45	1.07
Black Male	0.52	0.23	0.37	0.22	-0.54	1.02
White Female	0.51	0.22	0.21	0.16	0.22	1.04
White Male	0.48	0.21	0.21	0.16	0.10	0.95
Overall	0.54	0.23	0.28	0.20	0.00	1.06

Table 1.7.  $D'$  as a function of target incongruence and relative non-prototypicality: Model estimates, Study 1

	<i>b</i>	<i>SE</i>	Sig.	95% CI Lower Bound	95% CI Upper Bound
Fixed Effects					
Level 1 units ( <i>N</i> = 924)					
Incongruent <sup>a</sup>	0.83	0.11	0.001***	0.61	1.04
Level 2 units ( <i>N</i> = 154)					
RN	1.85	1.06	0.08†	-0.24	3.94
IC: Black	0.20	0.54	0.71	-0.86	1.27
IC: Asian	-0.98	0.43	0.02*	-1.83	-0.13
Ambivalent Sexism	-0.90	0.83	0.28	-2.52	0.73
Symbolic Racism	-0.50	0.67	0.45	-1.81	0.81
Ideology	0.25	0.55	0.65	-0.83	1.33
Education	-0.02	0.05	0.63	-0.12	0.07
Income	-0.59	0.34	0.08†	-1.26	0.08
Race	0.12	0.14	0.38	-0.15	0.40
Age	0.07	0.04	0.07†	-0.01	0.15
Gender	-0.02	0.25	0.95	-0.51	0.47
Sexual Orientation	0.32	0.27	0.23	-0.20	0.84
Cross-level Interaction					
Incongruent x RN	0.62	1.08	0.56	-1.48	2.73
Intercept	-1.07	1.27	0.40	-3.56	1.42
Random Effects					
$\sigma^2$ (Intercept)	1.16	0.19		0.84	1.60
$\sigma^2$ (Incongruent)	0.001	0.001		0.00	0.00
-2 x LL			-2 X -1842.51		
Wald $X^2$ (df)			82.15 (14)***		

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0;

Incongruent targets (Asian male, Black female) = 1.

RN = Relative Non-Prototypicality, IC = Intergroup Contact.

Table 2.1. Descriptive statistics for continuous measures, Study 2

Measure	1	2	3	4	5	6	7	8	9	10	11	12
1. Latency: Incong <sup>a</sup>	--											
2. Latency: Cong <sup>b</sup>	0.95*	--										
3. Rel. Warmth	0.11*	0.04	--									
4. Rel. Competence	0.19*	0.17*	0.68*	--								
5. Rel. Dehumanization	-0.21*	-0.22*	-0.05	-0.12*	--							
6. Rel. Agency	0.05	-0.04	0.59*	0.65*	0.05	--						
7. Rel. Experience	0.04	0.02	0.40*	0.64*	-0.14*	0.56*	--					
8. IC: Black	-0.04	-0.03	0.24*	0.18*	0.11*	0.09*	0.07	--				
9. IC: Asian	0.03	0.02	0.12*	0.13*	0.19*	0.09*	0.07	0.20*	--			
10. Amb. Sexism	0.02	0.06	-0.24*	-0.21*	-0.14*	-0.26*	-0.13*	-0.01	0.04	--		
11. Sym. Racism	-0.05	-0.02	-0.32*	-0.28*	-0.10*	-0.22*	-0.11*	-0.08	-0.05	0.74*	--	
12. Ideology	0.13*	0.18*	-0.16*	-0.16*	-0.14*	-0.22*	0.02	0.01	0.03	0.51*	0.55*	--
Mean	724.62	700.80	1.00	1.01	0.21	1.01	1.00	0.31	0.26	0.58	0.37	0.39
Standard Deviation	288.22	261.82	0.13	0.10	3.05	0.07	0.06	0.21	0.23	0.20	0.22	0.27

Note: \*  $p < .05$ .

<sup>a</sup> Gender Incongruent groups are Black women and Asian men; this variable represents the mean latency (within-person) for those groups.

<sup>b</sup> Gender Congruent groups are White men and women, Black men and Asian women; this variable represents the mean latency (within-person) for those groups

Table 2.2. Descriptive statistics for the warmth and competence indices, overall and by subgroup: Study 2

Target	Warmth		Competence	
	M	SD	M	SD
Asian Female	4.82	1.22	5.18	1.08
Asian Male	4.82	1.14	5.36	1.01
Black Female	4.72	1.33	4.91	1.14
Black Male	4.68	1.32	4.87	1.17
White Female	4.91	1.14	5.07	1.08
White Male	4.67	1.17	5.16	1.07
Relative Index	1.00	0.13	1.01	0.10

Table 2.3. Descriptive statistics for the dehumanization index, overall and by subgroup: Study 2

Target	Dehumanization	
	M	SD
Asian Female	.16	.78
Asian Male	.16	.64
Black Female	.42	.76
Black Male	.23	.68
White Female	.36	.63
White Male	.29	.79
Relative Index	.21	3.06

Table 2.4. Descriptive statistics for the agency and experience indices, overall and by subgroup: Study 2

Target	Agency		Experience	
	M	SD	M	SD
Asian Female	3.19	.57	3.07	.39
Asian Male	3.23	.43	3.07	.37
Black Female	2.99	.37	3.17	.44
Black Male	2.93	.37	3.11	.31
White Female	3.16	.48	3.16	.48
White Male	3.11	.41	3.10	.37
Relative Index	1.01	.07	1.00	.06

Table 2.5. Summary statistics and correlations of invisibility measures, overall and by subgroup: Study 2

Target	$d'$		Source Memory Errors		$r$
	M	SD	M	SD	M
Asian Female	-.13	.92	3.10	1.06	-.18†
Asian Male	.11	.88	2.92	1.19	-.25*
Black Female	.23	1.03	2.73	1.22	-.29**
Black Male	-.39	.93	2.84	1.18	-.15
White Female	.10	1.01	2.73	1.08	-.22*
White Male	.09	.85	2.85	1.14	-.16†
Overall	0.00	.96	2.86	1.15	-.21***

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 2.6. Invisibility as a function of target incongruence and relative non-prototypicality: Model estimates, Study 2

	Model 1 ( $d'$ Scores)					Model 2 (Source Attribution Errors)				
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI
Fixed Effects										
Level 1 units (Model 1 <i>N</i> = 612; Model 2 <i>N</i> = 606)										
Incongruent <sup>a</sup>	-0.45	0.55	0.42	-1.54	0.64	-0.73	0.52	0.16	-1.74	0.29
Level 2 units (Model 1 <i>N</i> = 102; Model 2 <i>N</i> = 101)										
RN	0.51	0.57	0.37	-0.60	1.62	-1.66	0.81	0.04*	-3.24	-0.07
IC: Black	0.51	0.31	0.10†	-0.09	1.12	-0.84	0.45	0.06†	-1.73	0.05
IC: Asian	-0.03	0.29	0.93	-0.59	0.54	-0.46	0.42	0.27	-1.29	0.37
Ambivalent Sexism	-0.09	0.48	0.85	-1.02	0.84	0.17	0.70	0.81	-1.20	1.54
Symbolic Racism	-0.29	0.44	0.51	-1.15	0.57	0.25	0.64	0.70	-1.02	1.51
Ideology	-0.06	0.29	0.85	-0.63	0.52	-0.50	0.43	0.25	-1.34	0.35
Education	-0.01	0.06	0.84	-0.13	0.11	-0.06	0.09	0.52	-0.23	0.12
Income	-0.01	0.02	0.79	-0.05	0.04	-0.04	0.03	0.26	-0.10	0.03
Race	-0.11	0.07	0.11	-0.24	0.02	0.03	0.10	0.80	-0.17	0.22
Age	0.01	0.00	0.05*	0.00	0.02	0.00	0.01	0.99	-0.01	0.01
Gender	0.06	0.13	0.66	-0.20	0.32	-0.45	0.20	0.02*	-0.83	-0.06
Sexual Orientation	0.00	0.13	0.99	-0.25	0.25	-0.04	0.19	0.82	-0.41	0.33
Cross-level Interaction										
Incongruent x RN	0.70	0.54	0.19	-0.35	1.75	0.65	0.50	0.19	-0.33	1.64
Intercept	-0.59	0.82	0.47	-2.20	1.02	6.07	1.19	0.00***	3.73	8.40
Random Effects										
$\sigma^2$ (Intercept)	0.27	0.06		0.18	0.41	0.71	0.12		0.51	0.99
$\sigma^2$ (Target Incongruence)	0.01	0.07		0.00	746.64	0.00	0.00		0.00	0.00
-2 x LL				-2 X -787.17					-2 X -793.07	
Wald $X^2$ (df)				32.66 (14)**					23.57 (14)†	

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

RN = Relative Non-prototypicality, IC = Intergroup Contact.

Table 2.7. Invisibility as a function of target incongruence and relative perceived warmth: Model estimates, Study 2

	Model 1 ( $d'$ Scores)					Model 2 (Source Attribution Errors)					
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	
Fixed Effects											
Level 1 units (Model 1 $N = 528$ ; Model 2 $N = 528$ )											
Incongruent <sup>a</sup>	-0.27	0.58	0.64	-1.41	0.87	-0.37	0.57	0.52	-1.49	0.76	
Level 2 units (Model 1 $N = 88$ ; Model 2 $N = 88$ )											
RW	-1.29	0.60	0.03*	-2.47	-0.11	-0.42	0.88	0.64	-2.14	1.31	
IC: Black	1.00	0.33	0.001***	0.35	1.65	-1.22	0.50	0.01**	-2.20	-0.25	
IC: Asian	0.06	0.29	0.85	-0.52	0.63	-0.34	0.44	0.44	-1.20	0.53	
Ambivalent Sexism	-0.37	0.54	0.50	-1.44	0.70	-0.13	0.82	0.87	-1.74	1.48	
Symbolic Racism	-0.24	0.49	0.62	-1.19	0.71	0.26	0.73	0.72	-1.17	1.69	
Ideology	-0.37	0.30	0.22	-0.95	0.22	-0.07	0.45	0.87	-0.95	0.81	
Education	-0.09	0.06	0.17	-0.21	0.04	-0.01	0.09	0.94	-0.19	0.17	
Income	0.00	0.02	0.89	-0.04	0.05	-0.04	0.03	0.26	-0.10	0.03	
Race	-0.12	0.06	0.08†	-0.24	0.01	-0.01	0.10	0.92	-0.20	0.18	
Age	0.02	0.00	0.001***	0.01	0.03	0.00	0.01	0.53	-0.02	0.01	
Gender	0.12	0.13	0.37	-0.14	0.38	-0.52	0.20	0.01**	-0.91	-0.12	
Sexual Orientation	0.03	0.13	0.81	-0.22	0.28	0.01	0.20	0.94	-0.37	0.40	
Cross-level Interaction											
Incongruent x RW	0.56	0.58	0.33	-0.57	1.69	0.30	0.57	0.60	-0.82	1.41	
Intercept	1.18	0.79	0.14	-0.37	2.72	4.89	1.17	0.001***	2.60	7.18	
Random Effects											
$\sigma^2$ (Intercept)	0.24	0.06		0.15	0.38	0.68	0.13		0.47	0.98	
$\sigma^2$ (Target Incongruence)	0.01	0.07		0.00	4206290.00	0.00	0.00		0.00	0.00	
-2 x LL				-2 X -687.23					-2 X -714.16		
Wald $X^2$ (df)				43.43 (14)***					18.37 (14)		

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

RW = Relative Warmth, IC = Intergroup Contact.

Table 2.8. Invisibility as a function of target incongruence and relative perceived competence: Model estimates, Study 2

	Model 1 ( <i>d'</i> Scores)					Model 2 (Source Attribution Errors)					
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	
Fixed Effects											
Level 1 units (Model 1 <i>N</i> = 528; Model 2 <i>N</i> = 528)											
Incongruent <sup>a</sup>	-0.08	0.77	0.92	-1.60	1.43	-0.46	0.76	0.55	-1.96	1.03	
Level 2 units (Model 1 <i>N</i> = 88; Model 2 <i>N</i> = 88)											
RC	-0.98	0.81	0.23	-2.56	0.61	-0.12	1.17	0.92	-2.41	2.17	
IC: Black	0.91	0.33	0.01**	0.26	1.55	-1.27	0.49	0.01**	-2.22	-0.31	
IC: Asian	0.05	0.30	0.87	-0.53	0.63	-0.35	0.44	0.43	-1.21	0.52	
Ambivalent Sexism	-0.35	0.55	0.53	-1.43	0.74	-0.12	0.82	0.88	-1.73	1.49	
Symbolic Racism	-0.16	0.49	0.75	-1.12	0.80	0.30	0.73	0.68	-1.13	1.72	
Ideology	-0.35	0.30	0.25	-0.94	0.25	-0.07	0.45	0.88	-0.95	0.81	
Education	-0.07	0.06	0.25	-0.19	0.05	0.00	0.09	0.97	-0.18	0.18	
Income	0.00	0.02	0.95	-0.04	0.04	-0.04	0.03	0.24	-0.10	0.02	
Race	-0.11	0.07	0.09†	-0.24	0.02	0.00	0.10	0.97	-0.20	0.19	
Age	0.02	0.00	0.001***	0.01	0.03	-0.01	0.01	0.48	-0.02	0.01	
Gender	0.11	0.14	0.41	-0.16	0.38	-0.52	0.20	0.01**	-0.92	-0.13	
Sexual Orientation	0.03	0.14	0.83	-0.24	0.30	0.00	0.20	0.99	-0.40	0.40	
Cross-level Interaction											
Incongruent x RC	0.36	0.76	0.63	-1.12	1.85	0.39	0.75	0.61	-1.08	1.85	
Intercept	0.89	0.95	0.35	-0.97	2.75	4.62	1.38	0.00***	1.91	7.33	
Random Effects											
σ <sup>2</sup> (Intercept)	0.25	0.06		0.16	0.40	0.68	0.13		0.47	0.99	
σ <sup>2</sup> (Target Incongruence)	0.01	0.07		0.00	2.57e+9	0.00	0.00		0.00	0.00	
-2 x LL				-2 X -688.25					-2 X -713.67		
Wald X <sup>2</sup> (df)				39.48 (14)***					18.20 (14)		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

RC = Relative Competence, IC = Intergroup Contact.

Table 2.9. Invisibility as a function of target incongruence and relative dehumanization: Model estimates, Study 2

	Model 1 ( $d'$ Scores)					Model 2 (Source Attribution Errors)					
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	
Fixed Effects											
Level 1 units (Model 1 <i>N</i> = 432; Model 2 <i>N</i> = 432)											
Incongruent <sup>a</sup>	0.28	0.09	0.00***	0.11	0.45	-0.07	0.08	0.39	-0.23	0.09	
Level 2 units (Model 1 <i>N</i> = 72; Model 2 <i>N</i> = 72)											
RD	0.02	0.03	0.56	-0.04	0.07	0.05	0.04	0.23	-0.03	0.12	
IC: Black	0.80	0.41	0.05*	-0.01	1.60	-1.75	0.62	0.01**	-2.97	-0.53	
IC: Asian	0.08	0.35	0.81	-0.59	0.76	-0.22	0.52	0.68	-1.24	0.81	
Ambivalent Sexism	-0.11	0.63	0.86	-1.34	1.12	-0.09	0.95	0.93	-1.95	1.77	
Symbolic Racism	-0.21	0.53	0.69	-1.25	0.83	0.24	0.80	0.77	-1.33	1.81	
Ideology	-0.73	0.35	0.04*	-1.42	-0.05	0.18	0.53	0.73	-0.85	1.22	
Education	-0.10	0.07	0.14	-0.24	0.03	0.03	0.11	0.81	-0.18	0.23	
Income	-0.02	0.03	0.51	-0.07	0.03	-0.06	0.04	0.10†	-0.14	0.01	
Race	-0.10	0.08	0.19	-0.25	0.05	0.02	0.11	0.84	-0.20	0.25	
Age	0.02	0.01	0.001***	0.01	0.03	0.00	0.01	0.73	-0.02	0.01	
Gender	0.08	0.16	0.60	-0.23	0.39	-0.81	0.24	0.001***	-1.28	-0.35	
Sexual Orientation	-0.07	0.15	0.61	-0.36	0.21	0.09	0.22	0.70	-0.34	0.52	
Cross-level Interaction											
Incongruent x RD	0.01	0.03	0.82	-0.05	0.06	0.00	0.03	0.86	-0.06	0.05	
Intercept	0.09	0.61	0.88	-1.11	1.29	4.68	0.93	0.001***	2.86	6.49	
Random Effects											
$\sigma^2$ (Intercept)	0.25	0.07		0.14	0.42	0.72	0.15		0.48	1.09	
$\sigma^2$ (Target Incongruence)	0.05	0.09		0.00	1.91	0.00	0.00		0.00	0.00	
-2 x LL				-2 X -580.95					-2 X -590.15		
Wald $X^2$ (df)				33.93 (14)**					22.97 (14)†		

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

RD = Relative Dehumanization, IC = Intergroup Contact.

Table 2.10. Invisibility as a function of target incongruence and relative perceived agency: Model estimates, Study 2

	Model 1 ( $d'$ Scores)					Model 2 (Source Attribution Errors)					
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	
Fixed Effects											
Level 1 units (Model 1 <i>N</i> = 534; Model 2 <i>N</i> = 528)											
Incongruent <sup>a</sup>	-0.32	1.03	0.76	-2.34	1.70	-0.77	0.99	0.44	-2.71	1.17	
Level 2 units (Model 1 <i>N</i> = 89; Model 2 <i>N</i> = 88)											
RA	-1.61	1.04	0.12	-3.65	0.43	1.93	1.50	0.20	-1.01	4.86	
IC: Black	0.87	0.32	0.01**	0.23	1.50	-1.26	0.48	0.01**	-2.20	-0.33	
IC: Asian	0.00	0.30	0.99	-0.58	0.59	-0.39	0.44	0.38	-1.25	0.48	
Ambivalent Sexism	-0.48	0.56	0.39	-1.59	0.62	0.19	0.83	0.82	-1.44	1.81	
Symbolic Racism	-0.04	0.48	0.94	-0.99	0.91	0.16	0.71	0.82	-1.23	1.56	
Ideology	-0.39	0.30	0.19	-0.99	0.20	0.03	0.44	0.95	-0.84	0.90	
Education	-0.10	0.06	0.11	-0.22	0.02	0.03	0.09	0.73	-0.15	0.21	
Income	0.00	0.02	0.99	-0.04	0.04	-0.04	0.03	0.17	-0.11	0.02	
Race	-0.11	0.07	0.09†	-0.24	0.02	0.02	0.10	0.83	-0.17	0.21	
Age	0.02	0.00	0.001***	0.01	0.03	-0.01	0.01	0.47	-0.02	0.01	
Gender	0.11	0.14	0.43	-0.16	0.37	-0.52	0.20	0.01**	-0.91	-0.13	
Sexual Orientation	0.04	0.13	0.79	-0.22	0.30	-0.07	0.20	0.71	-0.46	0.31	
Cross-level Interaction											
Incongruent x RA	0.63	1.02	0.54	-1.37	2.63	0.70	0.98	0.48	-1.22	2.62	
Intercept	1.72	1.29	0.18	-0.81	4.25	2.27	1.87	0.23	-1.40	5.93	
Random Effects											
$\sigma^2$ (Intercept)	0.25	0.06		0.15	0.39	0.66	0.12		0.46	0.96	
$\sigma^2$ (Target Incongruence)	0.04	0.07		0.00	1.97	0.00	0.00		0.00	.	
-2 x LL				-2 X -685.79						-2 X -710.86	
Wald $X^2$ (df)				42.52 (14)***						21.02 (14)	

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

RA = Relative Agency, IC = Intergroup Contact.

Table 2.11. Invisibility as a function of target incongruence and relative perceived experience: Model estimates, Study 2

	Model 1 (d' Scores)					Model 2 (Source Attribution Errors)					
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	
Fixed Effects											
Level 1 units (Model 1 <i>N</i> = 534; Model 2 <i>N</i> = 528)											
Incongruent <sup>a</sup>	0.69	1.18	0.56	-1.62	3.01	0.19	1.14	0.87	-2.05	2.43	
Level 2 units (Model 1 <i>N</i> = 89; Model 2 <i>N</i> = 88)											
RE	-1.80	1.12	0.11	-3.99	0.38	4.76	1.54	0.001***	1.74	7.78	
IC: Black	0.87	0.32	0.01**	0.25	1.50	-1.28	0.45	0.01**	-2.17	-0.39	
IC: Asian	0.01	0.30	0.97	-0.57	0.59	-0.42	0.42	0.31	-1.25	0.40	
Ambivalent Sexism	-0.40	0.54	0.47	-1.46	0.67	0.16	0.77	0.84	-1.35	1.67	
Symbolic Racism	-0.11	0.48	0.82	-1.04	0.83	0.25	0.67	0.71	-1.07	1.57	
Ideology	-0.28	0.30	0.36	-0.86	0.31	-0.21	0.42	0.62	-1.04	0.62	
Education	-0.08	0.06	0.17	-0.20	0.03	0.01	0.09	0.89	-0.15	0.18	
Income	0.00	0.02	0.93	-0.04	0.04	-0.04	0.03	0.16	-0.10	0.02	
Race	-0.12	0.07	0.08†	-0.24	0.01	0.05	0.09	0.62	-0.14	0.23	
Age	0.02	0.00	0.001***	0.01	0.03	-0.01	0.01	0.45	-0.02	0.01	
Gender	0.13	0.14	0.33	-0.13	0.40	-0.58	0.19	0.001***	-0.96	-0.21	
Sexual Orientation	0.04	0.13	0.79	-0.22	0.29	-0.12	0.18	0.52	-0.48	0.24	
Cross-level Interaction											
Incongruent x RE	-0.38	1.17	0.75	-2.68	1.92	-0.26	1.13	0.82	-2.48	1.97	
Intercept	1.74	1.25	0.16	-0.71	4.20	-0.34	1.74	0.84	-3.75	3.07	
Random Effects											
σ <sup>2</sup> (Intercept)	0.24	0.06		0.15	0.38	0.59	0.11		0.41	0.86	
σ <sup>2</sup> (Target Incongruence)	0.03	0.07		0.00	4.22	0.00	0.00		0.00	0.00	
-2 x LL				-2 X -685.09					-2 X -714.65		
Wald X <sup>2</sup> (df)				44.17(14)***					29.91 (14)**		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

RE = Relative Experience, IC = Intergroup Contact.

Table 3.1. Descriptive statistics for continuous measures, Study 3

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. RL: Incong <sup>a</sup>	--													
2. RL: Cong <sup>b</sup>	1.00*	--												
3. Iss. Marg.	0.29*	0.28*	--											
4. Spon. Marg.	0.33*	0.33*	0.38*	--										
5. Res. Marg.	0.02	0.01	0.14	0.04	--									
6. SIC	0.05	0.06	-0.09	-0.08	-0.27*	--								
7. GSSJ	-0.04	-0.03	0.02	0.00	0.12	0.00	--							
8. NFC	0.19	0.19	0.12	0.11	-0.10	0.16	0.24*	--						
9. IC: Black	0.04	0.03	-0.16	-0.10	-0.16	0.23*	0.02	0.12	--					
10. IC: Asian	-0.01	-0.01	-0.26*	-0.05	-0.09	0.12	0.07	0.19	0.36*	--				
11. Amb. Sexism	0.08	0.09	0.01	0.01	-0.06	0.05	0.43*	0.52*	0.12	0.09	--			
12. Sym. Racism	0.01	0.02	0.05	0.05	0.07	0.03	0.58*	0.36*	-0.13	-0.07	0.59*	--		
13. Ideology	0.00	0.01	0.02	-0.05	0.13	-0.07	0.59*	0.30*	-0.07	0.05	0.55*	0.70*	--	
14. Pol. Know	-0.05	-0.05	0.01	0.06	0.39*	-0.07	0.09	-0.22*	-0.22*	-0.18	-0.22*	-0.12	-0.13	--
Mean	851.88	848.50	1.04	1.02	17.26	0.37	0.50	0.47	0.35	0.24	0.57	0.37	0.44	0.79
SD	1056.31	1062.13	0.16	0.12	8.75	0.23	0.20	0.14	0.22	0.21	0.20	0.23	0.28	0.25

Note: \*  $p < .05$ .

<sup>a</sup> Gender Incongruent groups are Black women and Asian men; this variable represents the mean latency (within-person) for those groups.

<sup>b</sup> Gender Congruent groups are White men and women, Black men and Asian women; this variable represents the mean latency (within-person) for those groups

SIC = Social-identity complexity, GSSJ = Gender-Specific System Justification, IC = Intergroup Contact, RL = Response Latency, NFC = Need for Closure.

Table 3.2. Summary statistics and correlations of invisibility measures, overall and by subgroup: Study 3

Target	<i>d'</i>		Source Memory Errors		<i>r</i>
	M	SD	M	SD	M
Asian Female	-.19	1.03	2.70	1.08	-.19*
Asian Male	-.06	1.00	2.71	1.04	.07
Black Female	.28	1.05	2.37	1.20	-.22*
Black Male	-.22	1.01	2.58	1.21	.06
White Female	.17	1.09	2.50	0.97	-.21*
White Male	.05	1.11	2.53	0.98	-.24*
Overall	0.00	1.06	2.57	1.09	-.14***

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 3.3 Descriptive statistics and correlations for issue marginalization, sponsor marginalization, and resource marginalization

Target	Issue Marginalization (IM)		Sponsor Marginalization (SM)		Resource Marginalization (RM)		Correlations		
	Mean	SD	Mean	SD	Mean	SD	IM/ SM	IM/RM	SM/RM
Asian Female	3.68	0.89	3.62	0.66	8.60	6.73	.59***	.17†	.08
Asian Male	3.57	0.88	3.60	0.74	8.74	6.43	.58***	-.03	.06
Black Female	3.56	0.94	3.50	0.77	9.34	7.28	.55***	-.14	-.12
Black Male	3.71	0.85	3.58	0.73	8.34	5.32	.44***	-.11	.02
White Female	3.61	0.93	3.55	0.71	7.51	5.60	.59***	.20*	.02
White Male	3.62	0.90	3.51	0.65	7.88	6.10	.53***	.14	.15
Incongruent	3.56	0.78	3.55	0.69	8.95	4.08	.65***	-.25*	-.07
Congruent	3.65	0.70	3.57	0.61	8.40	4.63	.67***	.21*	.00
Relative Index	1.04	0.16	1.02	0.12	--	--	.38***	--	--

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 3.4. Response latency as a function of target incongruence and social-identity complexity: Model estimates, Study 3

	<i>b</i>	<i>SE</i>	Sig.	95% CI Lower Bound	95% CI Upper Bound
Fixed Effects					
Level 1 units ( <i>N</i> = 618)					
Incongruent <sup>a</sup>	0.03	0.02	0.07†	0.00	0.07
Level 2 units ( <i>N</i> = 103)					
SIC	0.34	0.20	0.09†	-0.05	0.74
IC: Black	-0.06	0.23	0.80	-0.51	0.39
IC: Asian	-0.05	0.24	0.84	-0.51	0.42
Ambivalent Sexism	0.32	0.30	0.30	-0.28	0.91
Symbolic Racism	-0.03	0.30	0.91	-0.62	0.55
Ideology	0.01	0.22	0.95	-0.42	0.44
Education	0.05	0.04	0.18	-0.02	0.13
Income	-0.01	0.02	0.43	-0.04	0.02
Race	-0.13	0.07	0.06†	-0.26	0.00
Age	0.00	0.00	0.45	0.00	0.01
Gender	-0.06	0.10	0.54	-0.25	0.13
Sexual Orientation	0.01	0.06	0.92	-0.12	0.13
Cross-level Interaction					
Incongruent x SIC	-0.04	0.04	0.27	-0.12	0.03
Intercept	6.57	0.47	0.001***	5.66	7.48
Random Effects					
$\sigma^2$ (Intercept)	0.17	0.03		0.13	0.23
$\sigma^2$ (Target Incongruence)	0.00	0.00		0.00	0.00
-2 x LL			-2 X 264.01		
Wald X <sup>2</sup> (df)			17.70 (14)		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0;

Incongruent targets (Asian male, Black female) = 1.

SIC = Social Identity Complexity, IC = Intergroup Contact.

Table 3.5. Response latency as a function of target incongruence and gender-specific system justification: Model estimates, Study 3

	<i>b</i>	<i>SE</i>	Sig.	95% CI Lower Bound	95% CI Upper Bound
Fixed Effects					
Level 1 units ( <i>N</i> = 618)					
Incongruent <sup>a</sup>	0.02	0.02	0.35	-0.03	0.07
Level 2 units ( <i>N</i> = 103)					
GSSJ	-0.04	0.29	0.89	-0.60	0.52
IC: Black	0.00	0.23	0.99	-0.46	0.45
IC: Asian	-0.04	0.24	0.87	-0.51	0.43
Ambivalent Sexism	0.31	0.31	0.31	-0.29	0.92
Symbolic Racism	0.05	0.31	0.87	-0.56	0.67
Ideology	-0.03	0.23	0.89	-0.48	0.41
Education	0.04	0.04	0.27	-0.03	0.12
Income	-0.01	0.02	0.52	-0.04	0.02
Race	-0.14	0.07	0.03*	-0.27	-0.01
Age	0.00	0.00	0.46	0.00	0.01
Gender	-0.07	0.10	0.50	-0.27	0.13
Sexual Orientation	0.02	0.07	0.80	-0.11	0.15
Cross-level Interaction					
Incongruent x GSSJ	-0.02	0.05	0.73	-0.11	0.07
Intercept	6.78	0.49	0.001***	5.82	7.73
Random Effects					
$\sigma^2$ (Intercept)	0.18	0.03		0.13	0.24
$\sigma^2$ (Target Incongruence)	0.00	0.00		0.00	0.00
-2 x LL			-2 X 262.61		
Wald $X^2$ (df)			13.61 (14)		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0;

Incongruent targets (Asian male, Black female) = 1.

GSSJ = Gender-Specific System Justification, IC = Intergroup Contact.

Table 3.6. Response latency as a function of target incongruence and need for closure:  
Model estimates, Study 3

	<i>b</i>	<i>SE</i>	Sig.	95% CI Lower Bound	95% CI Upper Bound
Fixed Effects					
Level 1 units ( <i>N</i> = 618)					
Incongruent <sup>a</sup>	0.01	0.03	0.68	-0.05	0.07
Level 2 units ( <i>N</i> = 103)					
NFC	0.91	0.36	0.01**	0.20	1.62
IC: Black	0.01	0.22	0.97	-0.43	0.45
IC: Asian	-0.16	0.24	0.49	-0.63	0.30
Ambivalent Sexism	-0.04	0.33	0.91	-0.68	0.61
Symbolic Racism	-0.01	0.29	0.98	-0.57	0.56
Ideology	-0.02	0.21	0.91	-0.44	0.39
Education	0.06	0.04	0.12	-0.02	0.13
Income	-0.01	0.01	0.43	-0.04	0.02
Race	-0.14	0.06	0.03*	-0.27	-0.01
Age	0.00	0.00	0.52	0.00	0.01
Gender	-0.13	0.10	0.20	-0.32	0.07
Sexual Orientation	0.01	0.06	0.93	-0.12	0.13
Cross-level Interaction					
Incongruent x NFC	0.00	0.06	0.95	-0.12	0.13
Intercept	6.64	0.45	0.001***	5.76	7.52
Random Effects					
$\sigma^2$ (Intercept)	0.17	0.02		0.12	0.22
$\sigma^2$ (Target Incongruence)	0.00	0.00		0.00	0.00
-2 x LL			-2 X 266.25		
Wald $X^2$ (df)			20.61 (14)		

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0;

Incongruent targets (Asian male, Black female) = 1.

NFC = Need for Closure, IC = Intergroup Contact.

Table 3.7. Invisibility as a function of target incongruence and relative non-prototypicality: Model estimates, Study 3

	Model 1 ( $d'$ Scores)					Model 2 (Source Attribution Errors)				
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI
Fixed Effects										
Level 1 units ( $N = 618$ )										
Incongruent <sup>a</sup>	-0.30	0.97	0.76	-2.20	1.60	0.05	1.01	0.96	-1.93	2.03
Level 2 units ( $N = 103$ )										
RN	0.26	1.11	0.81	-1.91	2.44	-1.00	1.17	0.40	-3.29	1.30
IC: Black	0.30	0.42	0.48	-0.53	1.12	0.10	0.45	0.83	-0.78	0.98
IC: Asian	-0.10	0.43	0.82	-0.95	0.75	0.35	0.46	0.45	-0.55	1.25
Ambivalent Sexism	-1.14	0.55	0.04*	-2.22	-0.05	0.03	0.59	0.97	-1.13	1.18
Symbolic Racism	0.35	0.54	0.52	-0.71	1.40	0.77	0.57	0.18	-0.34	1.89
Ideology	-0.04	0.40	0.92	-0.82	0.74	-0.40	0.42	0.35	-1.23	0.43
Education	-0.08	0.07	0.27	-0.21	0.06	-0.13	0.07	0.09†	-0.27	0.02
Income	0.00	0.03	0.88	-0.05	0.06	0.01	0.03	0.83	-0.05	0.06
Race	0.12	0.12	0.33	-0.12	0.35	-0.03	0.13	0.83	-0.28	0.22
Age	0.00	0.01	0.79	-0.01	0.01	0.00	0.01	0.98	-0.01	0.01
Gender	-0.33	0.18	0.07†	-0.68	0.03	0.08	0.19	0.68	-0.30	0.46
Sexual Orientation	-0.04	0.12	0.76	-0.26	0.19	0.00	0.12	0.97	-0.25	0.24
Cross-level Interaction										
Incongruent x RN	0.45	0.95	0.64	-1.41	2.31	-0.08	0.99	0.93	-2.03	1.86
Intercept	0.52	1.33	0.70	-2.09	3.13	3.84	1.41	0.01***	1.08	6.61
Random Effects										
$\sigma^2$ (Intercept)	0.46	0.09		0.32	0.67	0.54	0.10		0.38	0.77
$\sigma^2$ (Target Incongruence)	0.00	0.00		0.00	0.00	0.05	0.08		0.00	1.13
-2 x LL			-2 X -848.42				-2 X -855.90			
Wald $X^2$ (df)			14.59 (14)				7.07 (14)			

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

RN = Relative Non-prototypicality, IC = Intergroup Contact.

Table 3.8. Issue marginalization as a function of target incongruence and relative invisibility: Model estimates, Study 3

	Model 1 (d' Scores)					Model 2 (Source Attribution Errors)					
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	
Fixed Effects											
Level 1 units (N = 583)											
Incongruent <sup>a</sup>	-0.08	0.06	0.19	-0.19	0.04	-0.20	0.20	0.34	-0.60	0.20	
Level 2 units (N = 98)											
Relative Invisibility (RI)											
IC: Black	0.66	0.39	0.09†	-0.10	1.42	0.67	0.39	0.09†	-0.09	1.42	
IC Asian	0.55	0.41	0.19	-0.26	1.36	0.55	0.41	0.19	-0.26	1.35	
Ambivalent Sexism	0.73	0.50	0.15	-0.25	1.71	0.73	0.50	0.15	-0.26	1.71	
Symbolic Racism	-0.42	0.48	0.39	-1.36	0.53	-0.42	0.48	0.39	-1.37	0.53	
Ideology	-0.33	0.37	0.38	-1.06	0.40	-0.33	0.37	0.37	-1.06	0.40	
Education	0.03	0.06	0.59	-0.09	0.15	0.03	0.06	0.59	-0.09	0.16	
Income	0.02	0.03	0.45	-0.03	0.07	0.02	0.02	0.45	-0.03	0.07	
Race	-0.05	0.11	0.63	-0.26	0.16	-0.05	0.11	0.63	-0.26	0.16	
Age	0.00	0.01	0.65	-0.01	0.01	0.00	0.01	0.66	-0.01	0.01	
Gender	0.40	0.17	0.02*	0.06	0.73	0.39	0.18	0.03*	0.04	0.74	
Sexual Orientation	-0.03	0.10	0.75	-0.23	0.17	-0.03	0.10	0.77	-0.24	0.17	
Political Interest	0.49	0.26	0.06	-0.02	0.99	0.48	0.26	0.07†	-0.03	1.00	
Political Knowledge	-0.02	0.38	0.97	-0.77	0.74	-0.02	0.38	0.96	-0.77	0.73	
Cross-level Interaction											
Incongruent x RI	-0.01	0.02	0.52	-0.05	0.03	0.11	0.20	0.58	-0.28	0.49	
Intercept	2.29	0.81	0.01**	0.69	3.88	2.34	0.88	0.01**	0.62	4.06	
Random Effects											
σ <sup>2</sup> (Intercept)	0.36	0.07		0.25	0.52	0.36	0.07		0.25	0.52	
σ <sup>2</sup> (Target Incongruence)	0.00	0.00		0.00	.	0.00	0.00		0.00	.	
-2 x LL				-2 X -652.65						-2 X -648.00	
Wald X <sup>2</sup> (df)				28.86 (16)*						28.76 (16)*	

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001. <sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1. IC = Intergroup Contact.

Table 3.9. Sponsor marginalization as a function of target incongruence and relative invisibility: Model estimates, Study 3

	Model 1 ( <i>d'</i> Scores)					Model 2 (Source Attribution Errors)				
	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI	<i>b</i>	<i>SE</i>	Sig.	Lower CI	Upper CI
Fixed Effects										
Level 1 units ( <i>N</i> = 580)										
Incongruent <sup>a</sup>	-0.02	0.03	0.60	-0.09	0.05	-0.19	0.12	0.13	-0.43	0.05
Level 2 units ( <i>N</i> = 98)										
Relative Invisibility (RI)	-0.02	0.02	0.45	-0.07	0.03	0.08	0.27	0.78	-0.45	0.60
IC: Black	0.49	0.37	0.19	-0.24	1.22	0.52	0.37	0.17	-0.21	1.25
IC: Asian	0.24	0.40	0.55	-0.54	1.02	0.20	0.40	0.61	-0.58	0.98
Ambivalent Sexism	-0.04	0.48	0.93	-0.99	0.90	-0.01	0.48	0.98	-0.96	0.94
Symbolic Racism	-0.36	0.46	0.44	-1.27	0.55	-0.42	0.47	0.37	-1.34	0.50
Ideology	0.26	0.36	0.47	-0.44	0.96	0.25	0.36	0.48	-0.45	0.95
Education	-0.02	0.06	0.77	-0.13	0.10	-0.02	0.06	0.76	-0.14	0.10
Income	0.03	0.02	0.24	-0.02	0.08	0.02	0.02	0.33	-0.02	0.07
Race	-0.08	0.10	0.45	-0.28	0.12	-0.08	0.10	0.46	-0.28	0.13
Age	0.00	0.01	0.92	-0.01	0.01	0.00	0.01	0.99	-0.01	0.01
Gender	0.35	0.16	0.03*	0.03	0.67	0.36	0.17	0.03*	0.03	0.70
Sexual Orientation	-0.09	0.10	0.36	-0.28	0.10	-0.10	0.10	0.34	-0.29	0.10
Political Interest	0.42	0.25	0.09†	-0.06	0.90	0.43	0.25	0.09†	-0.07	0.93
Political Knowledge	-0.03	0.37	0.93	-0.76	0.69	-0.05	0.37	0.90	-0.77	0.68
Cross-level Interaction										
Incongruent x RI	0.00	0.01	0.69	-0.03	0.02	0.17	0.12	0.16	-0.07	0.40
Intercept	2.90	0.78	0.001***	1.37	4.44	2.81	0.84	0.001***	1.15	4.46
Random Effects										
σ <sup>2</sup> (Intercept)	0.37	0.06		0.27	0.51	0.37	0.06		0.27	0.52
σ <sup>2</sup> (Target Incongruence)	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00
-2 x LL			-2 X -404.05				-2 X -398.67			
Wald X <sup>2</sup> (df)			13.94 (16)				15.23 (16)			

†*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001. <sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1. IC = Intergroup Contact.

Table 3.10. Resource marginalization as a function of target incongruence and relative invisibility: Model estimates, Study 3

	Model 1 ( $d'$ Scores)					Model 2 (Source Attribution Errors)				
	<i>b</i>	<i>SE</i>	Sig.	95% Confidence Intervals		<i>b</i>	<i>SE</i>	Sig.	95% Confidence Intervals	
				Lower	Upper				Lower	Upper
Relative Invisibility	0.17	0.32	0.59	-0.46	0.80	0.31	3.43	0.93	-6.50	7.13
IC: Black	-4.97	4.88	0.31	-14.67	4.73	-5.22	4.86	0.29	-14.89	4.46
IC: Asian	-0.28	5.19	0.96	-10.59	10.04	-0.05	5.18	0.99	-10.34	10.25
Ambivalent Sexism	-2.61	6.29	0.68	-15.12	9.89	-2.67	6.32	0.67	-15.23	9.90
Symbolic Racism	-1.81	6.06	0.77	-13.87	10.24	-1.66	6.10	0.79	-13.80	10.48
Ideology	7.61	4.67	0.11	-1.67	16.90	7.78	4.67	0.10†	-1.52	17.07
Education	1.09	0.78	0.17	-0.46	2.64	1.06	0.79	0.18	-0.51	2.63
Income	-0.42	0.32	0.19	-1.05	0.21	-0.40	0.31	0.21	-1.02	0.23
Race	0.43	1.35	0.75	-2.26	3.12	0.40	1.35	0.77	-2.29	3.09
Age	0.02	0.07	0.75	-0.12	0.17	0.02	0.07	0.81	-0.12	0.16
Gender	2.06	2.13	0.34	-2.19	6.31	2.22	2.23	0.32	-2.23	6.66
Sexual Orientation	0.96	1.27	0.45	-1.57	3.49	0.88	1.31	0.50	-1.73	3.50
Political Interest	1.09	3.22	0.74	-5.32	7.49	1.29	3.30	0.70	-5.26	7.85
Political Knowledge	7.84	4.83	0.11	-1.75	17.44	8.07	4.83	0.10†	-1.54	17.68
Constant	1.70	10.22	0.87	-18.64	22.03	1.34	10.99	0.90	-20.51	23.19
-2 x LL	-2 X -1897.33					-2 X -1894.96				
Wald $X^2$ (df)	$X^2(15) = 4.04, p > .99$					$X^2(15) = 4.02, p > .99$				

Model 1 Level 1 units:  $N = 612$ , level 2 units:  $N = 102$ ; Model 2 Level 1 units:  $N = 606$ , level 2 units:  $N = 101$ .

<sup>a</sup>Congruent targets (Asian female, Black male, White female, White male) = 0; Incongruent targets (Asian male, Black female) = 1.

IC = Intergroup Contact.

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

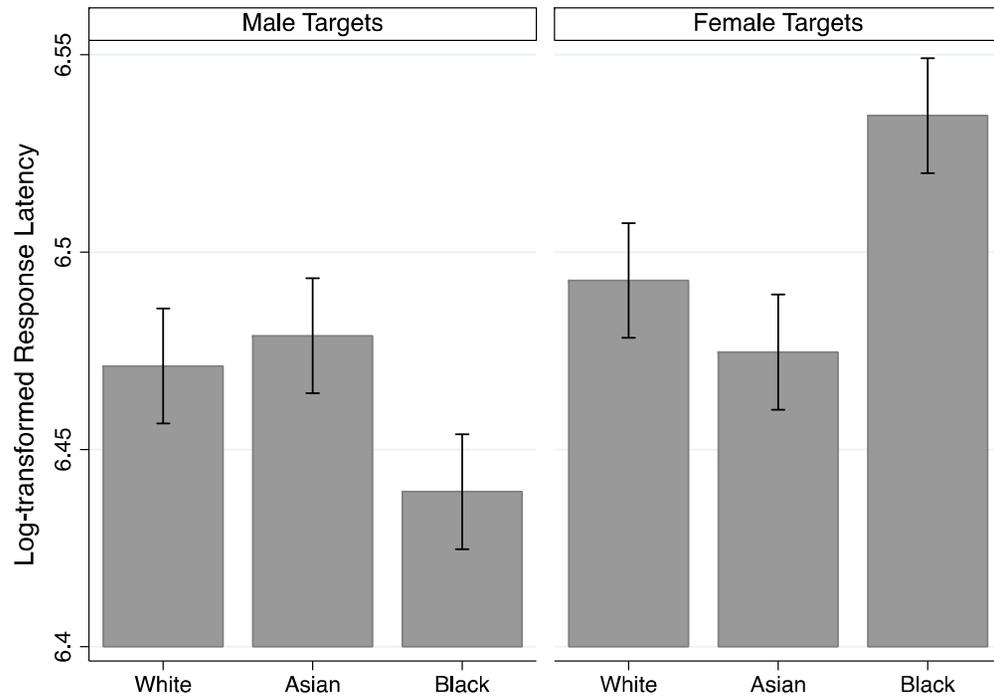


Figure 1. Effects of Target Race and Target Gender on Gender Categorization Response Latencies, Study 1

## Appendix A

### Measures Used in Study 1

#### **Social identity complexity (Brewer & Pierce, 2005)**

1. People often belong to a number of groups. For example, might belong to religious groups, political organizations, social groups, fraternal organizations, work-related organizations, recreational or sports groups, or ethnic/national groups. We'd like to know a little more about the groups to which you belong. Please spend a few minutes thinking about all of these groups, and list the four that are most important to you.

Group 1: \_\_\_\_\_

Group 2: \_\_\_\_\_

Group 3: \_\_\_\_\_

Group 4: \_\_\_\_\_

2. Sometimes members of one group also belong to other groups. I'd like you to rate how much the membership of the different groups overlaps on a scale from 0 to 10. If no members of the first group are also members of the second group, then rate the overlap as 0. If about half of the members of the first group are also members of the second group, then rate the overlap as 5. And if all of the members of the first group are also members of the second group, then rate the overlap as 10. You can use any number from 0 to 10 to rate the amount of overlap between the two groups as you think about them.

How many members of [piped text from Group 1 entry] are also members of [piped text from Group 2 entry]?

*Note.* Participants will complete the overlap item for all pairwise group combinations (e.g., the overlap between Group 1 and Group 2 as well as the overlap between Group 2 and Group 1).

**Gender-specific system justification (Jost & Kay, 2005)**

1. In general, relations between men and women are fair.
2. The division of labor in families generally operates as it should.
3. Gender roles need to be radically restructured. \*
4. For women, the United States is the best country in the world to live in.
5. Most policies relating to gender and the sexual division of labor serve the greater good.
6. Everyone (male or female) has a fair shot at wealth and happiness.
7. Sexism in society is getting worse every year. \*
8. Society is set up so that men and women usually get what they deserve.

*Note.* Gender-specific system justification items assessed using a 9-point Likert-type scale, ranging from 1 (“strongly disagree”) to 9 (“strongly agree”). Items marked with an asterisk (\*) are reverse-scored.

**Need for closure (Webster & Kruglanski, 1994)**

*Instructions.* Read each of the following statements and decide how much you would agree with each according to your attitudes, beliefs and experiences. Please respond according to the following scale, using only one number for each statement.

- |                         |                      |
|-------------------------|----------------------|
| 1 = Strongly disagree   | 4 = Slightly agree   |
| 2 = Moderately disagree | 5 = Moderately agree |

3 = Slightly disagree

6 = Strongly agree

1a	In case of uncertainty, I prefer to make an immediate decision, whatever it may be.	1 2 3 4 5 6
2a	When I find myself facing various, potentially valid, alternatives, I decide in favor of one of them quickly and without hesitation.	1 2 3 4 5 6
3a	I prefer to decide on the first available solution rather than to ponder at length what decision I should make.	1 2 3 4 5 6
4b	I get very upset when things around me aren't in their place.	1 2 3 4 5 6
5b	Generally, I avoid participating in discussions on ambiguous and controversial problems.	1 2 3 4 5 6
6a	When I need to confront a problem, I do not think about it too much and I decide without hesitation	1 2 3 4 5 6
7a	When I need to solve a problem, I generally do not waste time in considering diverse points of view about it.	1 2 3 4 5 6
8b	I prefer to be with people who have the same ideas and tastes as myself.	1 2 3 4 5 6
9a	Generally, I do not search for alternative solutions to problems for which I already have a solution available.	1 2 3 4 5 6
10b	I feel uncomfortable when I do not manage to give a quick response to problems that I face.	1 2 3 4 5 6
11b	Any solution to a problem is better than remaining in a state of uncertainty.	1 2 3 4 5 6
12b	I prefer activities where it is always clear what is to be done and how it need to be done.	1 2 3 4 5 6
13a	After having found a solution to a problem I believe that it is a useless waste of time to take into account diverse possible solutions.	1 2 3 4 5 6
14b	I prefer things to which I am used to those I do not know, and cannot predict.	1 2 3 4 5 6

**Intergroup contact (Sharp, Voci, & Hewstone, 2011)**

1. How many of your friends are black?

2. How many of your friends have friends who are black?
3. How many of your friends are Asian?
4. How many of your friends have friends who are Asian?

*Note.* Intergroup contact items will be assessed using a 7-point Likert-type scale with all points fully labeled (1=None, 2=A few, 3=Less than half, 4=About half, 5=More than half, 6=Most, 7=All).

### **Symbolic racism (Henry & Sears, 2002)**

1. It's really a matter of some people not trying hard enough; if blacks would only try harder they could be just as well off as whites. \*

- <1> Strongly agree
- <2> Somewhat agree
- <3> Somewhat disagree
- <4> Strongly disagree

2. Irish, Italian, Jewish and many other minorities overcame prejudice and worked their way up. Blacks should do the same. \*

- <1> Strongly agree
- <2> Somewhat agree
- <3> Somewhat disagree
- <4> Strongly disagree

3. Some say that black leaders have been trying to push too fast. Others feel that they haven't pushed fast enough. What do you think? \*

<1> Trying to push very much too fast

<2> Going too slowly

<3> Moving at about the right speed

4. How much of the racial tension that exists in the United States today do you think blacks are responsible for creating? \*

<1> All of it

<2> Most

<3> Some

<4> Not much at all

5. How much discrimination against blacks do you feel there is in the United States today, limiting their chances to get ahead?

<1> A lot

<2> Some

<3> Just a little

<4> None at all

6. Generations of slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class.

<1> Strongly agree

<2> Somewhat agree

<3> Somewhat disagree

<4> Strongly disagree

7. Over the past few years, blacks have gotten less than they deserve.

- <1> Strongly agree
- <2> Somewhat agree
- <3> Somewhat disagree
- <4> Strongly disagree

8. Over the past few years, blacks have gotten more economically than they deserve. \*

- <1> Strongly agree
- <2> Somewhat agree
- <3> Somewhat disagree
- <4> Strongly disagree

Note. Symbolic racism will be assessed using a 4-point Likert-type scale with all points fully labeled for items 1-2 and 4-8, and a 3-point Likert-type scale for item 3. Items marked with an asterisk (\*) will be reverse-scored.

### **Ambivalent Sexism Inventory (Glick & Fiske, 1996)**

*Instructions.* Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the degree to which you agree or disagree with each statement using the following scale: 0 = disagree strongly; 1 = disagree somewhat; 2 = disagree slightly; 3 = agree slightly; 4 = agree somewhat; 5 = agree strongly.

1. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.

2. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."
3. In a disaster, women ought not necessarily to be rescued before men. \*
4. Most women interpret innocent remarks or acts as being sexist.
5. Women are too easily offended.
6. People are often truly happy in life without being romantically involved with a member of the other sex. \*
7. Feminists are not seeking for women to have more power than men. \*
8. Many women have a quality of purity that few men possess.
9. Women should be cherished and protected by men.
10. Most women fail to appreciate fully all that men do for them.
11. Women seek to gain power by getting control over men.
12. Every man ought to have a woman whom he adores.
13. Men are complete without women. \*
14. Women exaggerate problems they have at work.
15. Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.
16. When women lose to men in a fair competition, they typically complain about being discriminated against.
17. A good woman should be set on a pedestal by her man.
18. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances. \*

19. Women, compared to men, tend to have a superior moral sensibility.
20. Men should be willing to sacrifice their own well being in order to provide financially for the women in their lives.
21. Feminists are making entirely reasonable demands of men. \*
22. Women, as compared to men, tend to have a more refined sense of culture and good taste.

*Note.* Ambivalent sexism will be assessed using a 5-point Likert-type scale with all points fully labeled (0 = disagree strongly; 1 = disagree somewhat; 2 = disagree slightly; 3 = agree slightly; 4 = agree somewhat; 5 = agree strongly). Items marked with an asterisk (\*) are reverse-scored.

### **Demographic characteristics**

1. What is your age? \_\_\_\_\_
2. Your gender? Male                      Female
3. Please indicate your race/ethnicity.
  - \_\_\_\_\_ Latino/Hispanic
  - \_\_\_\_\_ Black/African American
  - \_\_\_\_\_ Asian/Asian American
  - \_\_\_\_\_ White/Caucasian
  - \_\_\_\_\_ Native American
  - \_\_\_\_\_ Other (please specify): \_\_\_\_\_
4. Are you a U.S. citizen?              Yes                      No

5. Were you born in the U.S.A?
6. If you were not born in the U.S.A., where were you born?
- \_\_\_\_\_
7. What is your total family (including parent income if dependent on parents) income?

- \_\_\_\_\_ Less than \$10,000
- \_\_\_\_\_ \$10,000-\$19,999
- \_\_\_\_\_ \$20,000-\$29,999
- \_\_\_\_\_ \$30,000-\$39,999
- \_\_\_\_\_ \$40,000-\$49,999
- \_\_\_\_\_ \$50,000-\$59,999
- \_\_\_\_\_ \$60,000-\$69,999
- \_\_\_\_\_ \$70,000-\$79,999
- \_\_\_\_\_ \$80,000-\$89,999
- \_\_\_\_\_ \$90,000-\$99,999
- \_\_\_\_\_ \$100,000 or greater

8. How many semesters of university education have you completed?
- \_\_\_\_\_

**Next, we'd like you to respond to the following questions about your political beliefs.**

9. How would you describe your **political party preference** (indicate one)?
- 1 Strong Democrat
- 2 Weak Democrat
- 3 Independent/Lean Democrat
- 4 Independent

- 5 Independent/Lean Republican
- 6 Weak Republican
- 7 Strong Republican

10. How would you describe your ideological preference **in general** (indicate one)?

1	2	3	4	5	6	7
Very liberal	Liberal	Slightly Liberal	Moderate	Slightly Conservative	Conservative	Very Conservative

## Appendix B

### Measures Introduced in Study 2

#### **“Who Said What?” Task #1 Target Sentences (16 total; adapted from Schug et al., 2015)**

1. It's so great to have everyone here for the picnic today.
2. The weather is so amazing – just look at those clear skies and feel the bright sun.
3. Yeah, it makes me want to play soccer or go bike riding.
4. I think there is actually a place where you can rent bikes for pretty cheap around here.
5. Before we start thinking about running around we should first find a place to set-up our blankets and food.
6. How about those benches over there? Or maybe even the trees?
7. There are a lot of squirrels by the trees and they might try and get our food, so let's head over to the benches.
8. Wow, there is so much food! Everything looks incredibly delicious.
9. I'm going to start with some of those sandwiches.
10. We also have some soda and water for people who might get thirsty.
11. Fall is such a nice season, it is cool, however warm enough to still be outside and enjoy oneself.
12. And the leaves on the trees are all changing colors, they look so pretty.
13. It reminds me of when we would gather leaves in a pile and jump in them.
14. Look, I brought a Frisbee and a volleyball we could play with.
15. There is also a deck of cards and some board games for people who don't want to be too active.
16. Let's set down the blanket and then we can dig into this food, so much planning and not enough doing.

#### **Task #1 Filler Sentences (16 total)**

1. This kind of weather makes me want to take a walk through the pretty trees.
2. Does anyone know if there is a lake nearby that we could swim in?
3. I used to have picnics like this with my family when I was younger.
4. I'm glad we came out today, I think it's supposed to rain tomorrow.
5. Let's eat! All this planning is making me really hungry.
6. It's starting to get a little cool outside, I'm glad I brought a jacket with me.
7. Who brought the chocolate chip cookies? I want one of those!
8. Sitting under the trees would be good since it's pretty sunny and some shade would be nice.
9. The tree leaves have turned so many different colors, the red ones are my favorite.
10. What kind of sandwich do you want? There's turkey and ham and cheese.
11. I'm getting thirsty, can you pass me a soda?
12. This picnic is a lot of fun, thanks for suggesting it!
13. It looks like there's a volleyball net set up over there, maybe we can play after we eat.

14. Should we set the blankets down near that grassy spot over there?
15. I'm ready to play a game. Maybe volleyball? Does anyone want to play with me?
16. Fall is definitely my favorite season. It's not too hot and not too cold. And there are so many things to do outside!

**Task #2 Target Sentences (16 total; adapted from Sesko & Biernat, 2010)**

1. So I've been going to a lot of interviews lately, they always ask the same questions.
2. Yeah they do, "tell me a little about yourself," is always the first question.
3. I've been asked a few times what I would do if I had a problem with a co-worker.
4. Sometimes people try to tailor their answers to the job, but I was told to always answer honestly.
5. Either way, I find it is important to know answers without taking too much time to think about them.
6. That's why I love phone interviews, you can have notes on how to answer and they never know!
7. Yeah but phone interviews are so awkward; you never know what they think of you when you are done with it.
8. At least you can hide any nervousness. I do sometimes think it is hard to make a good impression on the phone though.
9. The same with in-person interviews. You can think you are good at something but sometimes it doesn't show in the interview.
10. I found good eye-contact to help me come across as competent and confident in my abilities...even if I'm not!
11. There is a fine line between confident and arrogant though. It's a toss-up, you don't want to be shy either.
12. A friend of mine just told me he didn't get a job because he liked the company too much and seemed too desperate.
13. Wouldn't it be nice if there was a formula for how to act and what to say...it would make things so much easier.
14. I'm so ready to graduate and find a job, but the whole interview thing is so stressful.
15. My friends that have graduated though, say they wish they were still in school...so I say no rush!
16. I thought I wasn't in a rush, but then I started interviewing and now I just want someone to hire me.

**Task #2 Filler Statements (16 total)**

1. I've been asked how much I really want this job before. It was hard to sound sincere even though I did want it.
2. I definitely would prefer an in-person interview over a phone interview; I can show my true personality better.
3. I always spill something on myself before I go to an interview, and there goes my confidence.
4. A friend of mine just got hired because he knew the owner; I wish I had that kind of connection.
5. I always write out a list of possible answers and questions before I go into an interview.
6. I am definitely in a rush to graduate. This semester has been so stressful.

7. I wish just graduating gave you a pass to automatically get a job...wouldn't that be nice.
8. I've been going to a lot of interviews lately and I haven't gotten any calls back, I am starting to get worried.
9. I heard it sometimes can take weeks before you hear back from a company to see if you got the job or not.
10. I consider myself an outgoing person, but sometimes in the actual interview I feel like I come across as too shy cause I am so nervous.
11. I just try to be as close to myself as possible. I go in thinking I am going to talk to a friend's parent or something.
12. I always get the question, "What do you think you can bring to this company?"
13. Last time I had an interview, five people were in the room asking me questions.
14. I haven't even gone to an interview yet! I have been kind of putting it off.
15. I feel like I am constantly updating my resume to tailor it to each job I am applying for.
16. I am having a hard time finishing school work, interviewing, and having time to go out once and a while.

**Warmth and competence assessments (Cuddy, Fiske, Glick, & Xu, 2002)**

*Instructions.* Next, we are interested in your thoughts about different groups of people.

Here, we would like your opinions about [white men/white women/black men/black women/Asian men/Asian women] in particular as a group. In general, how...are [white men/white women/black men/black women/Asian men/Asian women]?

1. competent
2. confident
3. capable
4. efficient
5. intelligent
6. skillful
7. friendly
8. well-intentioned

9. trustworthy
10. warm
11. good-natured
12. sincere

*Note.* Warmth and competence evaluations will be assessed using a 7-point Likert-type scale ranging from 1 (“not at all [adjective]”) to 7 (“extremely [adjective]”). Participants will complete this battery of items for all groups denoted in brackets, with the group presentation order randomized between participants.

### **Dehumanization (Gosling, Rentfrow, & Swann, 2003)**

*Instructions.* Here are a number of personality traits that may or may not apply to [white men/white women/black men/black women/Asian men/Asian women]. Please select a number for each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to [white men/white women/black men/black women/Asian men/Asian women], even if one characteristic applies more strongly than the other.

I see [white men/white women/black men/black women/Asian men/Asian women] as:

1. \_\_\_\_\_ Extraverted, enthusiastic.
2. \_\_\_\_\_ Critical, quarrelsome. \*
3. \_\_\_\_\_ Dependable, self-disciplined.
4. \_\_\_\_\_ Anxious, easily upset. \*
5. \_\_\_\_\_ Open to new experiences, complex.

6. \_\_\_\_\_ Reserved, quiet. \*
7. \_\_\_\_\_ Sympathetic, warm.
8. \_\_\_\_\_ Disorganized, careless. \*
9. \_\_\_\_\_ Calm, emotionally stable.
10. \_\_\_\_\_ Conventional, uncreative. \*

*Note.* Dehumanization items will be assessed using a 7-point Likert-type scale, ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). Items marked with an asterisk (\*) are reverse-scored. Participants will complete this battery of items for all groups denoted in brackets, with the group presentation order randomized between participants.

### **Mind perception (Gray, Knobe, Sheskin, Bloom, & Barrett, 2011)**

Compared to the average person, how much are [white men/white women/black men/black women/Asian men/Asian women] capable of...

1. ...self-control?
2. ...acting morally?
3. ...planning?
4. ...communication?
5. ...memory?
6. ...thought?
7. ...feeling pain?
8. ...feeling pleasure?
9. ...feeling desire?

10. ...feeling fear?

11. ...feeling rage?

12. ...feeling joy?

Note. Mind perception items will be assessed using a 5-point Likert-type scale ranging from 1 (“much less capable”) to 5 (“much more capable”), with the midpoint of the scale labeled “equally as capable.” Participants will complete this battery of items for all groups denoted in brackets, with the group presentation order randomized between participants.

### **Demographic Information**

*Note.* Demographic information from Study 1 will be retained here, with the exception of a revised item (listed below) assessing participants’ educational status and the addition of an item assessing participants’ MTurk activity level.

1. What is the highest level of education that you have completed?
  - a. Less than High School
  - b. High School/GED
  - c. Some College
  - d. 2-Year College Degree (Associate’s)
  - e. 4-Year College Degree (B.A., B.S.)
  - f. Post-graduate degree (e.g., M.A., M.D., J.D., Ph.D.)
2. Finally, we're interested in how many survey HITs you've completed on Amazon Mechanical Turk besides this one. In the past, we've found that some MTurk

employees have done only 1 or 2 surveys in the past, whereas others have done 500 or more. And, of course, lots of MTurk employees have completed a number of surveys between 1 and 500 or more. About how many **survey** HITs have you completed *since becoming an MTurk employee*?

- a. None
- b. 1-5
- c. 6-10
- d. 11-25
- e. 26-50
- f. 51-75
- g. 76-100
- h. 101-200
- i. Over 200

## Appendix C

### Measures Introduced in Study 3

#### **Budgetary Allocation task instructions:**

Imagine that you have recently started working for a non-profit organization, the American Disability Advocacy Group (ADAG), which advocates for changes to policies on behalf of disabled individuals. Your job is to help set the policy agenda for the upcoming year.

More specifically, your job is to decide how the organization's budgetary resources should be spent. The firm has a budget of \$50,000 for the year. Six members of the organization have worked to put together a list of potential social policies to support.

On the following screens, you will see six different social issues, along with a picture of the issue sponsor. After evaluating all of the issues, you will be asked to provide your recommendation for how to allocate the \$50,000 budget.

Please click the ">>" button when you are ready to proceed.

#### **Issue 1 (Improved access to public buildings; 95 words):**

This year, ADAG should advocate for improved access to public buildings for disabled individuals. Although the passage of Americans with Disabilities Act (ADA) has improved access to public buildings by increasing accommodations, such as ramps and elevators, there is still room for improvement. For example, a recent study of the city's public transit system found that only a small number of transit stations were fully disabled-accessible and had functioning ramps, elevators, and escalators. ADAG's resources should therefore go toward advocating for improved access to public transit facilities and other public buildings for individuals with disabilities.

#### **Issue 2 (Reduced housing discrimination; 95 words):**

ADAG should advocate for policies that reduce housing discrimination among disabled individuals. Although the Fair Housing Act (FHA) prohibits discrimination on the basis of disability, housing discrimination is still a problem. For example, a recent study found evidence of discrimination against people who are deaf or hard of hearing when they were searching for a new home, in terms of being able to make appointments with housing providers or being shown available units. ADAG should use its resources this year to advocate for fairer communication regulations in the housing search process for individuals with disabilities.

#### **Issue 3 (Reduced employment discrimination; 95 words):**

Employment discrimination should be the issue that ADAG fights for this year. Although the Americans with Disabilities Act (ADA) has reduced employment discrimination against individuals with disabilities, more can and should still be done. For example, a recent study found that job applicants with a disability (such as a spinal cord injury or

Asperger's Syndrome) were less likely to receive a call back for a job interview than applicants without a disability, even with equivalent qualifications. This year, ADAG should use its resources to advocate for a fairer employment application process for individuals with disabilities.

**Issue 4 (Reduced education discrimination; 95 words):**

This year, ADAG should fight for reducing education discrimination for disabled individuals. Although the Americans with Disabilities Act (ADA) has reduced public school discrimination for individuals with disabilities, there is still more to do. For example, recent studies found that college students received less information about disability accommodations if they reported having certain disabilities, and that some higher education programs (such as medical schools) did not provide appropriate student accommodations as indicated in the ADA. This year, ADAG should put its resources toward advocating for equal access to education and accommodations for individuals with disabilities.

**Issue 5 (Criminal justice reform; 95 words):**

ADAG should fight for criminal justice reform related to hate crimes against disabled individuals. Although the Hate Crimes Prevention Act considers crimes motivated by a victim's disability status as hate crimes, we can still do more. For example, a recent study found that individuals with disabilities are at a greater risk of abuse and assault, and that because crimes against individuals with disabilities more often involve individuals who know the victim, these crimes are less frequently recognized and treated as hate crimes. ADAG should put its resources toward advocating for criminal justice reform this year.

**Issue 6 (Vocational rehabilitation; 95 words):**

ADAG should fight for improved support for individuals with disabilities in transitioning from adult basic education and literacy programs to postsecondary education or the workforce. Even though the Workforce Investment Act (WIA) has been expanded to include access for individuals with disabilities, advocacy is still needed. A recent study found that individuals with disabilities were only about half as likely to successfully complete vocational rehabilitation programs and enter postsecondary education or the workforce, compared to individuals without disabilities. ADAG should therefore put its resources toward advocating for improved vocational rehabilitation support for individuals with disabilities.

[Participants will complete the following questions after reading about each issue]

1. How important do you think this issue is?
2. How much do you care about this issue?
3. How knowledgeable do you think [Sponsor] is about this proposal?

4. How well written do you think this proposal is?

*Allocation task.*

1. How should ADAG spend their \$50,000 budget? Use the following boxes below to indicate how much money (in thousands) should go to each issue. You can choose to give the entire budget to one issue or spread it out over multiple issues. The total amount of money you spend must total 50 (for a total of \$50,000).
  - a. Improving access to public buildings
  - b. Reducing housing discrimination
  - c. Reducing employment discrimination
  - d. Reducing education discrimination
  - e. Criminal justice reform
  - f. Improved support for vocational rehabilitation
  
2. Why or why not did you decide to allocate money toward these issues? What kinds of groups of people come to mind when you think about who would benefit from advocacy efforts for these issues?
  - a. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Political interest and engagement**

1. About how interested would you say you are in politics and political issues?

1	2	3	4	5
Not at all Interested	Slightly Interested	Moderately Interested	Interested	Extremely Interested

**Political knowledge**

*Instructions.* Now we have a set of questions concerning the government and various public figures. We want to see how much information about them gets out to the public from television, newspapers, and the like.

Note: Correct responses are indicated in bold.

1. What job or political office does **Mike Pence** currently hold?
  - a. Attorney General
  - b. Vice President**
  - c. Secretary of State
  - d. Speaker of the House
  - e. Governor of New Hampshire
  
2. What job or political office does **John Roberts** currently hold?
  - a. Secretary of Defense
  - b. Attorney General
  - c. Senate Majority Leader
  - d. Secretary of the Interior
  - e. Chief Justice of the Supreme Court**
  
3. What job or political office does **Theresa May** currently hold?
  - a. Speaker of the United Nations' General Assembly
  - b. Prime Minister of the United Kingdom**
  - c. Prime Minister of Australia
  - d. U.S. envoy to the United Nations
  - e. Head of the European Commission
  
4. What job or political office does **Paul Ryan** currently hold?
  - a. Speaker of the House**
  - b. Secretary Treasury
  - c. Secretary of Homeland Security
  - d. White House Chief of Staff
  - e. Attorney General
  
5. In what country does **Kim Jong-un** serve in a leadership role?
  - a. China
  - b. North Korea**
  - c. South Korea
  - d. Thailand
  - e. Vietnam
  
6. Which political party currently has the most members in the Senate in Washington?
  - a. Democrats
  - b. Republicans**
  - c. Same number

7. Which political party currently has the most members in the House of Representatives in Washington?
  - a. Democrats
  - b. Republicans**
  - c. Same number
  
8. How long is the term of office for a U.S. Senator?
  - a. 2 years
  - b. 4 years
  - c. 5 years
  - d. 6 years**
  - e. 8 years
  
9. Whose responsibility is it to nominate judges to the Federal Courts?
  - a. The President**
  - b. Congress
  - c. The Supreme Court
  - d. Senate
  - e. Department of Justice
  
10. How many members are in the United States Senate?
  - a. 50
  - b. 435
  - c. Depends on the most recent Census
  - d. 100**