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Measuring Hypodescent in the Social Categorization of Multiracial Targets

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A Thesis presented to the Graduate Faculty of The College of William & Mary in Candidacy for the Degree of
Master of Arts

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APPROVAL PAGE

This Thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

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COMPLIANCE PAGE

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ABSTRACT

Individuals of multiracial descent are often categorized and perceived as belonging to the socially subordinate (i.e. non-White) racial group, according to the rule of hypodescent, a product of the history of racial discrimination and segregation in the United States. This paper describes two studies of racial categorization which illustrate the importance of hypodescent in the social categorization of ambiguous multiracial targets. Hypodescent was observed among both Black and White observers (Studies 1 and 2), suggesting that societally enforced rules about racial categories affect individuals' decisions about the category membership of others. In Study 2, hypodescent was measured using a self-report questionnaire as well as a behavioral dual categorization procedure, but these measures were not found to correlate. Study 2 also illustrated that hypodescent may be stronger for Black-White multiracials than for Asian-White multiracials in behavioral, but not self-report, measures. Both studies provide mixed evidence regarding the influence of several previously-described personality variables and their relationship to the use of hypodescent. These findings are discussed in the context of broader social cognitive processes and the downstream application of stereotypes associated with marginalized racial categories.

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In the United States, individuals who identify as multiracial comprise one of the fastest-growing segments of the population, and are projected to experience the largest percent growth of all racial categories by 2060 (United States Census Bureau, 2014). As this segment of the American population continues to grow, it is important to understand how persons who identify as biracial or multiracial are perceived by other Americans (see Richeson & Sommers, 2016). The largest group of multiracial Americans have one Black and one White parent, but it is unclear whether such persons are perceived as members of the Black and/or White racial group (Jones & Bullock, 2012). In response to this ambiguity, a rule known as hypodescent often guides perceivers' racial categorization of multiracial individuals (Davis, 1991). The rule of hypodescent is an artifact of the legally and culturally enforced norms of racial segregation and subjugation present in the United States well into the 20th century (Hickman, 1997). According to the principle of hypodescent, also known as the one-drop rule, a person with any Black ancestors (or even one drop of "Black blood") is considered a member of the socially subordinated Black racial category.

A target's perceived racial category has important downstream consequences related to the activation of stereotypes (Allport, 1954). These downstream effects include the allocation of attention (Park et al., 2016) or financial resources (Krosch, Tyler, & Amodio, 2017) as well as social evaluations of trustworthiness (Kubota, Li, Bar-David, Banaji, & Phelps, 2014) and hostility

(Devine, 1989). Such evaluations have important ramifications in diverse social contexts; if multiracial individuals are perceived as members of a subordinated racial category, they may consequently be subject to the negative evaluations associated with membership in those categories. If an individual is perceived to be Black, he is more likely to be seen as untrustworthy or violent, with negative consequences in a job interview or police encounter (Bertrand & Mullainathan, 2003; Eberhardt, Goff, Purdie & Davies, 2004). Accordingly, it is important to empirically describe the processes by which racially ambiguous or multiracial targets are categorized by race, to better understand the ways in which such targets are subject to stereotypes and discrimination; this will contribute to a more complete picture of the social forces that affect the growing population of multiracial Americans.

A large body of research has investigated the perception and social categorization of multiracials in diverse geographic and cultural contexts. Most studies of racial categorization report similar findings: ambiguous multiracial faces are categorized more often into the socially subordinate parent group. For example, Black-White biracial targets are commonly perceived as belonging to the Black racial category, even though they could plausibly be classified as White or another racial category (see e.g. Ho, Sidanius, Cuddy, & Banaji, 2013; Peery & Bodenhausen, 2008). Hypodescent predominates in research conducted with American samples, and has been observed for both Black-White and Asian-White biracial targets, suggesting that hypodescent is a general tendency in the

perception of members of minority racial groups (Chen & Hamilton, 2012; but see Chen & Norman, 2016). Researchers have developed a number of tools to measure the perception of multiracial targets' racial group membership, including self-report inventories of perceivers' tendency to engage in hypodescent (Ho, Kteily, & Chen, 2017) as well as behavioral facial categorization tasks in which perceivers are asked to sort photographs or computer-generated face stimuli into discrete racial categories (Peery & Bodenhausen, 2008). Although hypodescent has been observed across multiple studies of the racial categorization of ambiguous targets, the various measures of hypodescent have never been directly compared, so it remains unclear whether they capture the same underlying phenomenon. More research is needed to determine the factors underlying the use of hypodescent in racial categorization.

Cognitive and Perceptual Accounts of Hypodescent

Early studies of the perception of ambiguous faces suggested that targets that could be perceived as members of two or more races are often disambiguated by reference to a phenotypic marker characteristic of one racial category (Maclin & Malpass, 2001). MacLin and Malpass observed the phenomenon they called the "ambiguous race face effect" in a study of Hispanic perceivers, who categorized racially ambiguous faces with hairstyles stereotypically associated with either Hispanics or Blacks. The faces were ambiguous in that their features were associated with both Hispanic and Black racial categories (e.g. broad nose, wide lips) or were not stereotypically

associated with any racial category, ensuring that the only facial feature diagnostic of racial group membership was the stereotyped hairstyle. Perceivers were instructed to categorize ambiguous targets as either Hispanic or Black, and were observed to rely on hairstyle to disambiguate identical target faces. This effect persisted when controlling several other variables, including visual contrast between faces and background, configural changes to the face associated with different hairstyles, and (importantly) differential contact with outgroup members (MacLin & Malpass, 2003). On the basis of these findings, MacLin and Malpass concluded (2001, 2003) that ambiguous faces are disambiguated perceptually by reference to unique markers of racial group membership such as hairstyle. Other studies have shown that clothing (Freeman, Penner, Saperstein, Scheutz, & Ambady, 2011), environmental context (Freeman et al., 2015), and parentage information (Peery & Bodenhausen, 2008) bias racial categorization of ambiguous targets, suggesting these characteristics may also serve as disambiguating markers of racial group membership.

MacLin and Malpass's (2001, 2003) model, in which perceivers rely on markers of racial group membership to disambiguate targets, is consistent with one cognitive account of hypodescent, which holds that hypodescent may be driven by individuals' relative inexperience with members of racial minorities. According to this hypothesis, inexperience with minority group members motivates increased attention to facial features that indicate minority status (Halberstadt, Sherman, & Sherman, 2011). Perceivers consequently attend more

to an ambiguous target's minority-like features, and this overweighting of minority-associated features biases perceptions of ambiguous targets toward the minority group. Several studies have demonstrated that race is important in the neural processing of faces as early as 100 ms following stimulus presentation (Ito & Bartholow, 2009; Willadsen-Jensen & Ito, 2015). This early attention to target race reflects the usefulness of phenotypic distinctions in determining racial group membership, in line with the cognitive accounts described above. Early attention to target race also indicates that racial categorization takes place preconsciously, which suggests that racial categorization is not entirely motivated by effortful cognition or social psychological considerations (Ito & Urland, 2003). Instead, perceivers appear to use phenotypic cues as well as their theories about the inheritance and determination of race to decide whether to categorize an ambiguous target as a member of a given racial group.

The cognitive account of hypodescent (Halberstadt et al., 2011) predicts that White perceivers, due to their relative lack of contact with Black targets, would devote more attention to the features of a Black-White multiracial target that indicate s/he is Black, and thus categorize the target according to hypodescent. Black perceivers, on the other hand, have relatively more contact with Black targets (as well as a high level of contact with Whites), and thus should exhibit hypodescent to a lesser degree than do White perceivers. However, this pattern has not been observed in comparisons of Black and White participants perceiving multiracial targets. Three sets of studies revealed no

significant differences between Black and White perceivers in their use of hypodescent when categorizing multiracial targets (Gaither, Pauker, Slepian, & Sommers, 2016; Ho et al., 2017; Roberts & Gelman, 2016). That is, multiracial targets are perceived as belonging to the Black racial category more often than to the White racial category, regardless of the perceiver's race. It thus appears that differential exposure to members of racial minorities cannot fully explain the use of hypodescent. This conclusion is consistent with Freeman and Ambady's (2014) dynamic interactive model of person construal. In this model, bottom-up and top-down processes interact to determine a target's ultimate categorization. The model accounts for the influence of perceptual cues like facial features and skin color, as well as higher order cognitive processes like stereotypes and task demands. Under the dynamic interactive model, top-down processes are more influential when bottom-up perceptual inputs are ambiguous or otherwise non-informative. In studies of multiracial categorization, there are few perceptual cues to the target's race, so the influence of hypodescent and theories about race become more important.

One influence on the social categorization of racially ambiguous targets is the effect of social stereotypes about the determination of race. If hypodescent is a behavior learned through experience with individuals of other races, then it should be stronger among adults than children. Roberts and Gelman (2016) observed that children and adults reason differently about the racial categorization of ambiguous targets, likely due to their differing knowledge of

societal theories about race. Adult perceivers relied on a target's parentage to make a decision about his/her racial group membership in line with hypodescent, while children did not. Due to their relatively limited experience with members of racial outgroups, it is to be expected that young children would attend more to target features that indicate outgroup membership, and White children would thus perceive ambiguous targets more often as Black based on perceptual cues, in line with predictions made by Halberstadt et al. (2011). Black children, on the other hand, would perceive ambiguous targets more often as White, after attending to target features that suggest the White racial category. Roberts and Gelman (2016) observed that White children do rely on perceptual features to categorize multiracial targets in the absence of parentage information, while Black children were less likely to categorize multiracial targets as Black overall. Black and White adults were more likely to categorize multiracial targets as Black than as White, irrespective of the presence of parentage information. This pattern of results suggests that children rely mainly on perceptual cues to a multiracial target's group membership, but that adults rely more on societally informed theories about the determination of race based on parentage.

It thus appears that the learning of stereotypes is important to the use of hypodescent in racial categorization by White perceivers. Adults, who have more exposure to positive and negative stereotypes associated with Whites and Blacks, respectively, were more likely to exhibit hypodescent than were children, who have less exposure to such stereotypes. Along these lines, it is possible that

the particularly negative stereotypes associated with the Black racial category play an important role in the use of hypodescent. If multiracial targets are perceived as members of the Black racial category, then they are more likely to be perceived as violent or criminal, in line with negative stereotypes of Blacks. This heightened negative evaluation would make observers more likely to exclude such ambiguous targets from the ingroup, as they are perceived as dangerous or untrustworthy. On the other hand, targets who appear to be members of different, more positively stereotyped groups would be more likely to be categorized as ingroup members. For example, Asian-White biracials may be associated with the Asian racial category and its relatively positive stereotypes. Such targets would be perceived as less dangerous and more likely to be seen as ingroup members, in contrast to the predictions of hypodescent.

Hypodescent Among Non-White Perceivers

Early studies of the perception of multiracial targets focused on ingroup overexclusion as an explanatory mechanism for hypodescent. Derived from research based on social identity theory, ingroup overexclusion is a phenomenon by which targets of uncertain group membership are more often perceived as belonging to an outgroup, rather than to the ingroup (Tajfel & Turner, 1986). Denying ingroup membership to ambiguous targets serves to strengthen the boundaries of one's own group, thus reinforcing the identity derived from ingroup membership. Castano, Yzerbyt, Bourguignon, and Seron (2002) observed ingroup overexclusion among Northern Italian perceivers, who were more likely

to classify ambiguous targets (computer-generated morphs of Northern- and Southern-Italian parent faces) as Southern Italians, a subordinated ethnic outgroup. This overexclusion pattern was especially pronounced for perceivers high in ingroup identification, who also exhibited longer response latencies for targets that were more prototypical of the outgroup. The researchers theorize that these findings reflect a concern with the purity of the ingroup and a motivation to accurately categorize ambiguous targets among highly-identified perceivers (Castano et al., 2002). A more recent study replicates the observed effect of ingroup identification on ingroup overexclusion in a Black-White context; highly-identified White perceivers were more likely than less-identified White perceivers to exclude ambiguous Black-White biracial targets from the ingroup (Gaither et al., 2016). The observed connection between ingroup identification and ingroup overexclusion is consistent with social identity theory; those whose identity depends more on their membership in a group exhibit more selectivity when deciding whether others belong. White perceivers with high ingroup identification would thus be more selective and classify ambiguous targets as outgroup members (i.e. non-White); non-White perceivers with high ingroup identification would also classify ambiguous targets as outgroup members (i.e. White). In this example, we can see that hypodescent is not always a direct result of ingroup overexclusion.

Research has shown that hypodescent is a powerful influence on the racial categorization of biracial targets, consistent with the principle of ingroup

overexclusion. However, early studies were based on largely White samples (e.g. Ho, Sidanius, Levin, & Banaji, 2011; Newton, Dickter, & Gyurovski, 2011), and thus cannot be generalized to non-White observers, for whom the principles of hypodescent and ingroup overexclusion are in conflict. A Black perceiver using hypodescent would make the same decision as a White observer when categorizing ambiguous targets, but a Black perceiver relying on ingroup overexclusion would conclude that an ambiguous target is White, and not Black. Based on this early research, it was thus uncertain how hypodescent and ingroup overexclusion operated for Black observers. More recently, several studies have directly compared Black and White observers in the racial categorization of multiracial targets. One such study found that Black observers did not exhibit hypodescent in a dual categorization task; ambiguous targets were classified more often as White than as Black (Lewis, 2016). The White British observers in this study exhibited the typical pattern of hypodescent. Lewis (2016) suggests that ingroup overexclusion is important for both Black and White observers, leading them to make opposite conclusions about ambiguous targets' racial group membership. It should be noted, however, that the Black participants in Lewis's sample were visiting students from various African nations, and that the Black and White participants had little exposure to people of different races. Furthermore, the racial histories of Britain and Africa are different from that of the United States, so it is unclear whether hypodescent would be as important to the observers in Lewis's (2016) sample as it may be for American observers.

Research involving samples of American perceivers has come to different conclusions. Gaither et al. (2016) observed hypodescent among Black and White American perceivers in a dichotomous categorization task. Participants were presented with a series of biracial targets and asked to indicate whether each appeared to be either Black or White. Ambiguous targets were more often categorized as Black than as White, irrespective of the perceiver's race, suggesting that both Black and White perceivers engaged in hypodescent (Gaither et al., 2016, Study 2b). The finding that Black perceivers engage in hypodescent similarly to White observers was surprising, in that hypodescent is often conceptualized as one result of negative racial stereotypes held implicitly or explicitly by observers. However, Gaither et al. (2016) posit that hypodescent may be beneficial to non-White observers, as including multiracial targets in the ingroup may serve to increase the subordinated group's size, thereby enhancing its social status and power relative to the dominant group. According to this inclusive hypodescent hypothesis, minority perceivers are motivated to bolster their group's size and power by conferring ingroup status to ambiguous targets, while majority perceivers are motivated to protect the privileged identity and status of their dominant group by excluding ambiguous targets. Both Black and White perceivers thus engage in hypodescent when categorizing multiracial targets, but their motivations for doing so differ.

Using a different task, Ho, Kteily, & Chen (2017) also observed hypodescent among Black and White perceivers. Participants indicated that the

children of Black-White interracial couples would be more Black than White in their racial identity, appearance, and typical behaviors, suggesting that hypodescent also plays a role in the perception of Black-White biracial targets. The self-report measure of hypodescent captures perceivers' explicit opinions about the children of interracial couples, and does not rely on photographs or images that would provide phenotypic information about biracial targets. The self-reported tendency toward hypodescent was not moderated by perceiver race (Ho et al., 2017). This finding provides further support to the inclusive model of hypodescent proposed by Gaither et al. (2016). These two studies (Gaither et al., 2016; Ho et al., 2017) employed representative samples of Black and White Americans with similar exposure to persons of other races as well as to the racial dynamics of the United States, thus allowing for more valid and generalizable conclusions about the observed phenomena. They provide strong evidence that American perceivers, both Black and White, rely on hypodescent in the racial categorization of racially ambiguous targets.

Other Variables Affecting Hypodescent

In addition to the evidence that both Black and White Americans engage in hypodescent when categorizing multiracial targets, there is a substantial literature investigating the effects of individual differences on the use of hypodescent. For example, Ho, Roberts, & Gelman (2015) demonstrated that essentialism and racial bias interact to predict observers' reliance on hypodescent when categorizing biracial children. White participants who

endorsed racial essentialist beliefs (i.e. that race is biologically determined) relied on hypodescent in a categorization task, but only when they also held negative views of Blacks in general (Ho et al., 2015). The observed interaction between essentialism and racial bias is likely driven by the negative association between racial bias and contact with racial minorities. Those who hold more negative views of Blacks are less likely to make frequent contact with Blacks, and are consequently more likely to exhibit the perceptual bias that underlies hypodescent in racial categorization (Halberstadt et al., 2011). The direction of this relationship is not presently clear, but Ho and colleagues (2015) showed that inducing racial essentialism increased hypodescent among perceivers holding negative views of Blacks. This suggests that cognitive biases associated with racial essentialism may promote the overweighting of minority-associated features in racial categorization.

Several studies have demonstrated that identification with one's racial or ethnic ingroup motivates hypodescent (e.g. Castano et al., 2002; Gaither et al., 2016). Castano and colleagues (2002) observed that Northern Italian observers who more strongly identified with their ethnic group were more likely than those who were less strongly identified to exhibit hypodescent in a categorization task. From a social identity perspective, the authors speculated that highly-identified perceivers sought to protect the identity they derived from group membership by maintaining a strictly defined group and excluding ambiguous targets (see Tajfel & Turner, 1986). For Northern Italians, as members of the socially dominant

ethnic group, this ingroup overexclusion manifests as hypodescent. A similar pattern of ingroup overexclusion and hypodescent was observed among White Americans in another set of studies (Gaither et al., 2016). However, Black Americans also exhibited hypodescent, contrary to the predictions of ingroup overexclusion. Gaither and colleagues (2016) suggest that, unlike Northern Italians or White Americans, Black Americans occupy a socially subordinate position in society, and are thus motivated to strengthen their ingroup by including ambiguous targets. This inclusive hypodescent hypothesis accounts for the differences in social status and power associated with various racial and ethnic groups, and explains why Black Americans would be motivated to include socially “risky” racially ambiguous targets.

In addition to the established effects of ingroup identification, Gaither and colleagues (2016) examined the relationship between dispositional need to belong and the use of hypodescent in a racial categorization task, for Black and White perceivers. After undergoing a social belonging induction in which they wrote about a time they were either included in or excluded from a social situation, participants indicated whether ambiguous targets were Black or White in a dichotomous categorization task. Participants who recalled social exclusion were more likely to categorize ambiguous faces as Black than as White, irrespective of the perceiver’s race (Gaither et al., 2016), Study 2b). The authors conclude that social exclusion motivates hypodescent, leading White perceivers to exclude ambiguous targets from the ingroup, and Black perceivers to include

ambiguous targets in the ingroup. These findings are also explained in light of social identity theory as contributing to the stability and relative power of perceivers' racial groupings, similarly to the findings regarding ingroup identification.

The use of hypodescent strategies in racial categorization may also be associated with racial and ethnic egalitarianism. Trait egalitarianism appears to be related to the use of hypodescent, but this relationship is moderated by race, such that egalitarian Blacks engage in hypodescent whereas egalitarian Whites do not (Ho et al., 2017). Egalitarian White and Black perceivers included ambiguous targets in the ingroup at higher rates than they excluded them from the ingroup. For egalitarian perceivers, the categorization of ambiguous targets as ingroup members is likely motivated by an egalitarian impulse to view others as equal or more similar to the self. Among Black perceivers, this inclusion was mediated by increased perceptions of discrimination against biracials as well as a stronger feeling of linked fate (Ho et al., 2017). Antiegalitarian perceivers were conversely motivated to exclude others from the ingroup; this exclusion was observed as hypodescent among White, but not Black, perceivers. For antiegalitarian perceivers, the primacy of group hierarchies is desirable, and their categorizations and exclusion of ambiguous targets reflect this belief.

While the various tasks designed to observe racial categorization processes are conceptually related, it is unclear how they may be empirically related, as no study has directly compared any of the measures. Gaither et al.

(2016) employed a dichotomous categorization task, wherein participants were instructed to indicate whether a pictured target was Black or White. Ho et al. (2017) used a self-report measure, consisting of a number of questions regarding the racial identity of a target given his/her parents' race (e.g. "If a Black American and a White American have a kid, would you think of the kid as relatively Black or relatively White?"). These two tasks differ from each other in several important ways. One difference is in the information provided to participants prior to social categorization; in the self-report task, participants are told about targets' parents, but in the behavioral task they are not. In the behavioral task, participants are assumed to be making decisions about social categorization based solely on phenotypic indicators of racial group membership, whereas in the self-report task, participants may be relying on societally-informed theories about parentage and race. Another difference between the two tasks is the speed with which they are completed. Participants are instructed to make racial categorizations quickly in the behavioral task, but there is no time constraint in the self-report task. Peery & Bodenhausen (2008) observed greater use of hypodescent under time constraints relative to an unconstrained measure. Thus, participants may respond more deliberately in the self-report measure than in the behavioral measure, which could affect the way hypodescent is exhibited and observed.

The Present Research

The present research sought to clarify the role of hypodescent in the categorization of ambiguous multiracial targets. A comparison between Black

and White observers' patterns of categorization allowed for a better understanding of the influence of hypodescent and ingroup overexclusion on the racial categorization of ambiguous multiracial targets. Assessments of personality traits and prior experiences with group members also allowed us to test hypotheses about individual differences in the use of hypodescent. Finally, a comparison of categorization processes for Black-White and Asian-White multiracials helped to clarify whether hypodescent processes are driven by specific stereotypes associated with racial groups in the United States. In the first study, I used a behavioral dual categorization task for Black-White biracial targets, testing Black and White observers. In a second study, I examined the racial categorization of Black-White and Asian-White biracial targets, again comparing Black and White observers' categorization patterns as well as self-reported use of the principle of hypodescent. Across both studies, personality traits as well as other relevant variables were measured and correlated with categorization behaviors.

STUDY 1

Study 1 examined the racial categorization of multiracial targets by both Black and White observers, allowing for conclusions regarding the influence of hypodescent and ingroup overexclusion on the determination of racial group membership in a dual categorization task. Previous research used homogenous or largely White samples, and thus could not distinguish between hypodescent and overexclusion processes in the determination of racial group membership.

The present study employed a sample comprising both White and Black participants that was representative of the demographics of the United States, allowing for conclusions about the determination of racial group membership that apply more broadly to American society than those based on studies of college students (e.g. Dickter & Kittel, 2012; Gaither et al., 2016; Lewis, 2016; Peery & Bodenhausen 2008). Additionally, the sample used in the current study was composed of individuals who had more experience with individuals of other races and ethnicities, relative to the sample recruited by Lewis (2016).

The first aim of Study 1 was to probe the relative effects of hypodescent and ingroup overexclusion strategies on racial group determinations in a dual categorization task. If hypodescent is a more influential strategy, then Black and White participants should show no difference in their patterns of responses in the task, as hypodescent would lead to categorizations of Black and not White for ambiguous targets. Conversely, if ingroup overexclusion is a more important strategy, then Black and White participants should differ in their patterns of responses, with Black participants more likely than White participants to categorize ambiguous targets as not Black and White. The second aim of the study was to examine the relationships between racial essentialism, ethnic identification, and the use of hypodescent versus overexclusion strategies. Greater endorsement of essentialist beliefs should predict greater use of hypodescent in racial categorization, such that individuals high in essentialism will categorize ambiguous faces as Black and not White more of the time.

Stronger ethnic identification should predict a greater use of overexclusion in racial categorization, such that individuals who are more strongly identified with their ethnic group will categorize ambiguous faces into the outgroup more of the time. A third aim of the study was to assess the relationships between explicit racial attitudes, contact with racial outgroup members, and the use of hypodescent strategies in social categorization. Research has shown that contact with members of racial minorities can reduce negative attitudes toward outgroup members (Pettigrew & Tropp, 2006). Thus, I predicted that those participants who have more contact with outgroup members would be less likely to endorse negative attitudes toward racial outgroups. Consistent with the findings reported by Ho et al. (2015), I predicted that those individuals with more negative attitudes toward Blacks in general would more strongly exhibit hypodescent when categorizing multiracial targets.

Method

Participants

Participants were 268 Americans, of whom 134 identified as Black or African American and 134 identified as White or Caucasian American, all of whom were recruited online through Qualtrics Panels. Participants who did not follow instructions or obtained outlying scores on the administered scales (n = 24) were excluded from analyses, leaving a final sample of 244 participants. Participants ranged in age from 18 to 84, with a mean age of 46.5 (SD = 18.07) years; four participants did not provide their age. Overall, 54 participants (22.1%)

identified as male and 188 (77.0%) identified as female; 2 (0.8%) identified as transgender or "other." Black participants (*M* = 38.43, *SD* = 16.50 years) in the sample were younger, on average, than White participants (*M* = 54.60, *SD* = 16.32 years), *t*(239) = 7.64 *p* <.001. There was no significant difference in the gender composition of the Black and White samples, $\chi^2(2, N = 242) = .005$, *p* = .945. Participants were provided monetary compensation for their participation in the study. All participants provided their informed consent to participate, and all procedures were approved by the college's Protection of Human Subjects Committee.

Measures

Contact with outgroup members. Participants' social contact with members of racial outgroups was assessed using a self-report measure introduced by Greenwald, McGhee, and Schwartz (1998). Participants were instructed to list the initials of up to 20 friends or acquaintances, then indicate what number of the listed friends and acquaintances belong to particular racial groups. In the current study, participants indicated the number of listed individuals who they considered Black, as well as the number of listed individuals who they considered White. Dividing the number of White and Black individuals by the total number of listed friends or acquaintances yields a ratio used to gauge a participant's contact with racial outgroup members.

Racial identification. The Multigroup Ethnic Identity Measure (MEIM) is a questionnaire measure of ethnic identity that can be used with all ethnic groups

(Phinney, 1992). It is used to assess the degree to which an individual identifies with his/her ethnicity, and the degree to which an individual's ethnicity is integrated into his/her self-concept. The questionnaire consists of 15 items (e.g., " I have a strong sense of belonging to my own ethnic group") to which participants respond using a 4-point scale (1=Strongly disagree to 4=Strongly agree). The mean of participants' responses to the first 12 items serves as an index of ethnic identity. Higher scores indicate a stronger identification with one's ethnic group. The final three items are used for identification and categorization of participants based on reported ethnicity.

Explicit racial attitudes. The Attitudes Towards Blacks (ATB) and Attitudes Towards Whites (ATW) scales are questionnaire measures of self-reported racial attitudes, used to assess individuals' attitudes toward Black and White racial groups, respectively (Brigham, 1993). The questionnaires each consist of 20 items (e.g., "I would rather not have Blacks/Whites live in the same apartment building I live in"), to which participants respond using a 7-point scale (1=Strongly disagree to 7=Strongly agree). After reverse scoring the appropriate items, higher scores indicate more negative views of racial groups. The mean of participants' responses to all 20 items serves as an index of explicit racial attitudes toward the indicated racial group.

Racial essentialism beliefs. The Race Conceptions Scale (RCS) is a questionnaire designed to measure individuals' biological conceptions of race (Williams & Eberhardt, 2008). The questionnaire consists of 22 statements about

the biological nature of racial groups (e.g., “A person's race is fixed at birth”), to which participants indicate their agreement on a 7-point scale (1=strongly disagree to 7=strongly agree). After reverse scoring when appropriate, a higher mean score indicates stronger belief in a biological conception of race, as opposed to cultural or social conceptions. Endorsement of a biological conception of race is interpreted here as an index of racial essentialism, the belief that there is an underlying, unchanging component that defines racial categories.

Dual categorization task. The dual categorization task used in the present study followed the general procedure described by Peery and Bodenhausen (2008). Participants were instructed to quickly and accurately “make a judgment about the racial group membership of a number of individuals” and were encouraged to move quickly and indicate their first impression of two series of face photographs. Participants used the computer mouse to indicate whether a target belonged (or did not belong) to a racial group; either Black or White. Face stimuli for the dual categorization task were selected from a set of head-on facial photographs in which no clothing or jewelry was visible and in which subjects displayed neutral facial expressions (Tottenham et al., 2009). Five photographs each of White and Black male subjects were used, as were 25 Black-White biracial morphs created using Morpheus software (www.morpheussoftware.net). The biracial stimuli were determined to be ambiguous with regard to race in a pilot test, and were categorized into

monoracial categories less than 60% of the time in a free-response task (Dickter & Kittel, 2012). All stimuli had been previously pilot tested to ensure they were neutral in attractiveness and familiarity.

Procedure

The design of the current study closely follows that of Lewis (2016), which allowed us to measure the effects of observer race, ethnic identification, racial essentialism, explicit attitudes, and outgroup familiarity on racial group determination in the dual categorization task. Participants were recruited online using Qualtrics Panels, and were instructed to complete the study in an environment with minimal distractions. All questionnaires and tasks were administered online via a study website. After providing their informed consent, participants completed the dual categorization task. Half completed the Black categorization block first, and the remaining half completed the White categorization block first. Following the dual categorization task, participants completed the MEIM and RCS, as well as either the ATB (White participants) or ATW (Black participants). Participants then provided demographic information. Following completion of the measures, participants read an online debriefing statement and were given the PI's contact information.

Results

The initial sample included 268 participants. Those participants who did not follow instructions (*n* = 13) or obtained outlying scores on the administered scales (*n* = 11) were excluded from analyses, leaving a final sample of 244

participants. The final sample included 121 participants who identified as Black or African-American and 123 who identified as White or Caucasian-American.

Ratios of positive White and Black categorizations were calculated for each participant by dividing the number of biracial targets categorized as White and Black by the total number of biracial targets, resulting in a value between zero and one. These ratios can be interpreted as an index of an individual's tendency to categorize targets as White or Black (versus not White or not Black), respectively. On the whole, participants made fewer positive White categorizations (M = .21, SD = .12) than would be expected by chance, $t(243) = 38.95$, $p < .001$, and more positive Black categorizations (M = .62, SD = .18) than would be expected by chance, $t(243) = 9.69$, $p < .001$. These results indicate that, on average, participants engaged in hypodescent, perceiving multiracial targets more often as Black than as White.

The first hypothesis concerned the relative effects of hypodescent and ingroup overexclusion in the dual categorization task. If hypodescent predominates, then Black and White participants should make similar categorizations of multiracial targets; if ingroup overexclusion is more influential, then there should be differences attributable to the observers' race. Black (M = .21, SD = .11) and White participants (M = .21, SD = .13) did not significantly differ in positive White categorizations, $t(242) = .03$, $p = .975$. Furthermore, Black (M = .60, SD = .19) and White (M = .63, SD = .17) participants did not significantly differ in positive Black categorizations, $t(242) = 1.06$, $p = .292$. These

results suggest that both Black and White participants relied on hypodescent in the dual categorization task.

In order to test the moderation hypotheses, two multiple linear regressions were computed using the PROCESS macro for SPSS (Hayes, 2013). The results of these regressions are summarized below. First, observer race was dummy-coded and all other predictors were mean-centered. We regressed positive White categorizations on observer race, with ethnic identification (MEIM) and essentialist beliefs (RCS) entered as potential moderators. The overall model was not statistically significant, $F(5,238) = .81$, $p = .545$, $R^2 = .02$, see Table 1.

Positive

White categorizations were not predicted by observer race, ethnic identification, or essentialist beliefs. Additionally, there was no evidence for interactions between observer race and either ethnic identification or essentialist beliefs in the prediction of White categorizations. Next, positive Black categorizations were regressed on the same predictor variables. The overall model was not statistically significant, $F(5,238) = 1.77$, $p = .119$, $R^2 = .04$, see Table 2. Positive Black categorizations were not predicted by observer race, ethnic identification, or essentialist beliefs. There was no clear evidence that observer race interacts with either ethnic identification or essentialist beliefs to predict Black categorizations.

An outgroup contact score was calculated for each participant by dividing the number of friends they identified as belonging to the racial outgroup (either

White or Black) by the total number of acquaintances listed. Black participants (*M* = .16 *SD* = .20) had more outgroup friends, on average, than did White participants (*M* = .08, *SD* = .16), *t*(242) = 3.26, *p* = .001. White participants (*M* = .88, *SD* = .21) had more ingroup friends, on average, than did Black participants (*M* = .79, *SD* = .26), *t*(242) = 3.07, *p* = .002. Participants' ratios of ingroup and outgroup friends did not significantly correlate with positive White or Black categorizations (all *p*'s >.05, see Table 3). These results indicate that the number of outgroup friends did not affect social categorization for multiracial targets. Scores on the ATB (for White participants) and ATW (for Black participants) did not significantly correlate with positive Black categorizations, *r* = .05, *p* = .412, or with positive White categorizations, *r* = -.05, *p* = .425, in the full sample. Among Black participants, scores on the ATW, RCS, and MEIM did not significantly predict either positive Black or positive White categorizations (*p*'s >.05, see Table 4). However, among White participants, positive Black categorizations were correlated with scores on the ATB (*r* = .19, *p* = .038), RCS (*r* = .21, *p* = .022), and MEIM (*r* = .19, *p*= .032). Positive White categorizations were not significantly correlated with the ATB, RCS, or MEIM scores of White participants (all *p*'s > .05). These correlations suggest that explicit attitudes, racial essentialism, and ethnic identity are related to social categorization for White, but not Black participants.

Discussion

As regards the first aim of the current research, it appears that hypodescent is a more powerful influence than ingroup overexclusion in the social categorization of multiracial individuals. The results summarized above demonstrate that Black observers do not significantly differ from White observers in their categorization of Black-White multiracial targets as belonging (or not belonging) to the White racial group. It is reasonable to conclude that all participants in this sample were relying on hypodescent in that very few targets were viewed as White, and were thus perceived as members of a socially subordinate racial group. This finding is in line with recent research that shows no difference in the use of hypodescent between Black and White participants (Ho et al., 2017). Ho and colleagues (2017) employed an explicit measure of hypodescent, using a series of questions about the racial group membership of multiracial children given their parents' racial backgrounds. However, it is unclear how hypodescent exhibited in this context relates to behavioral measures of hypodescent such as the dual categorization task. Future research should explore the links between such explicit hypodescent beliefs and behaviorally exhibited hypodescent in social categorization. These concerns are further addressed in Study 2.

The second aim of the current study concerned the interaction of observer race with individual characteristics, including racial essentialist beliefs and ethnic identification, on behavior in the dual categorization task. While neither

essentialism nor ethnic identification significantly interacted with observer race in the regression model, essentialism and ethnic identification weakly correlated with positive Black categorizations of multiracial targets among White participants. These correlations provide some evidence of an effect of these factors on the dual categorization task among White, but not Black observers. Essentialism (the belief that racial categories are biological and immutable) and ethnic identification thus appear to be more influential for White observers than for Black observers in the social categorization of multiracial targets; consistent with findings from prior research (Ho et al., 2015). Ethnic identification has been shown to be positively related to the use of hypodescent (Gaither et al., 2016); this finding was replicated here among White, but not Black, participants. This failure to replicate may be due to the fact that racial identification was not manipulated in the current study, as it was by Gaither et al. (2016). Future research in this area should further investigate the potential relationships among essentialism, ethnic identification, and the determination of racial group membership.

Finally, this research aimed to investigate the potential association of explicit attitudes toward racial groups with the categorization of multiracial faces. While explicit attitudes were not significantly associated with positive Black or White categorizations overall, there was a small but statistically significant correlation between racial attitudes and positive Black categorizations among White participants. This correlation conceptually replicates the findings reported

by Ho et al. (2017), who found an association between hypodescent and social dominance among White but not Black participants. Although the construct of social dominance is not directly measured by the ATB scale, it is likely that individuals exhibiting greater social dominance also endorse more negative explicit attitudes toward Blacks. Study 2 will examine the connection between these two theoretically related constructs as well as their relation to both explicit and behavioral measures of hypodescent.

STUDY 2

In Study 1, I partially replicated prior research which found that White and Black Americans engage in hypodescent similarly when categorizing Black-White multiracials. I also found that among White, but not Black, participants, hypodescent exhibited in a behavioral categorization task was associated with racial essentialism beliefs and ingroup identification. Study 2 was designed to further replicate these findings, and to extend them by directly comparing a self-report measure of hypodescent to the behavioral categorization task. The existing hypodescent literature uses a variety of measures, including self-report items as well as behavioral perceptual tasks. To date, no study has examined the relationships among these measures, and so it is presently unclear whether self-reported hypodescent beliefs are associated with behaviorally exhibited hypodescent. In the current study, participants completed a self-report measure of hypodescent as well as behavioral dual categorization tasks, and several

questionnaire measures assessing ingroup identification, the need to belong, social dominance orientation, and explicit racial attitudes.

The first aim of Study 2 was to clarify the relationships between two measures of racial categorization processes which have not yet been directly compared. A direct comparison between an explicit self-report hypodescent questionnaire and a behavioral racial categorization task allowed for conclusions regarding whether those measures converge on a single construct. The second aim of Study 2 was to investigate the influence of racial ingroup identification, the need to belong, and egalitarianism on the use of hypodescent in racial categorization. Prior research suggests that ingroup identification and the need to belong are associated with the use of hypodescent among both Black and White perceivers, and also that egalitarianism is associated with hypodescent for Black, but not White, perceivers (Gaither et al., 2016; Ho et al., 2017). However, these effects were observed by research groups using different measures of hypodescent. Thus, it is unclear whether these effects will be observed when different measures of racial categorization are used. In the present study, participants completed both a self-reported hypodescent measure and a behavioral facial categorization task, as well as questionnaires assessing ingroup identification, dispositional need to belong, and egalitarianism/social dominance. Regression and correlational analyses explored potential relationships between the measured personality variables and hypodescent exhibited in both tasks. Finally, the third aim of Study 2 was to explore the influence of racial stereotypes

on the use of hypodescent in racial categorization. Asian-Americans are perceived as less stereotypically negative than Black Americans (Fiske et al., 2002), and so it is plausible that Asian-White biracials will be categorized less often according to hypodescent (i.e. more often as White, by White perceivers), relative to the more negatively stereotyped Black-White biracials.

Regarding the first aim, I predicted that the self-report and behavioral measures of hypodescent would be positively correlated. That is, participants who report greater reliance on hypodescent should also behaviorally exhibit hypodescent to a greater degree by categorizing biracial targets as Black more often than as White. This prediction accords with Freeman and Ambady's (2014) dynamic interactive model of person construal, in which racial categorizations are influenced by perceptual as well as cognitive inputs. In the absence of strong perceptual cues to race, perceivers rely on heuristics, stereotypes, or other cognitive shortcuts to make decisions about racial group membership. Furthermore, perceivers who report stronger belief in the rule of hypodescent (as measured by the self-report questionnaire) are more likely to use the less cognitively demanding rule of hypodescent when deciding the racial group membership of an ambiguous multiracial target.

Regarding the second aim, I predicted that ingroup identification and dispositional need to belong will be positively associated with hypodescent, such that participants who are more highly identified with the ingroup or have a greater need to belong will categorize ambiguous faces more often as Black than as

White. This would constitute a conceptual replication of previous findings regarding the relationship between these variables and hypodescent (Gaither et al., 2016). I also hypothesized that social dominance/egalitarianism would be moderated by perceiver race in predicting hypodescent, such that high egalitarianism would predict greater hypodescent among Black, but not White observers, as was observed by Ho et al. (2017). That is, Black observers high in egalitarianism should categorize ambiguous targets more often as Black than as White; this pattern should be reversed for White observers. I did not make specific predictions regarding the differential effects of ingroup identification, need to belong, and egalitarianism on the two hypodescent measures, but exploratory analyses were conducted to identify any such differences.

Regarding the third aim, I predicted that White perceivers would categorize Black-White multiracials in line with hypodescent to a greater extent than they would categorize Asian-White multiracials. Because Black-White biracials are more likely to be perceived as hostile or violent than Asian-White biracials, they should be more often excluded from the ingroup by White perceivers. It is unclear how stereotypes may influence Black perceivers, as categorizing Asian-White biracials does not involve their racial ingroup. Thus, I did not make predictions regarding Black perceivers' relative use of hypodescent in categorizing Asian-White and Black-White biracials. Furthermore, the impact of stereotypes on the use of hypodescent is likely moderated by perceivers' social dominance orientation, such that those who are more dominance oriented should

rely more on stereotypes and thus exhibit greater hypodescent in the categorization tasks.

Method

Participants

A sample of 145 participants was recruited from Qualtrics Panels, providing approximately equal samples of self-identified Black (n = 71) and White (n = 74) Americans. Participants ranged in age from 18 to 75 years, with a mean age of 48 years (*SD* = 16.98); five participants declined to provide their age. The White participants (*M* = 53.77 years, *SD* = 15.49) in this sample were older than the Black participants (*M* = 42.56 years, *SD* = 16.73), $t(138) = 4.12$, $p < .001$. The full sample comprised 31 participants (21.38%) identifying as male and 114 (78.62%) identifying as female. There was no significant difference in the gender composition of the Black and White samples, $\chi^2(1, N = 145) = .78$, $p = .377$. Participants were compensated for their time according to the Qualtrics pay schedule.

Measures and Materials

In Study 2, participants completed the MEIM and ATB/ATW as in Study 1, as well as additional questionnaire measures of collective self-esteem, dispositional need to belong, social dominance orientation, and self-reported hypodescent. These additional measures are described below.

Ingroup identification. In Study 2, participants completed the Collective Self-Esteem Scale (CSE; Luhtanen & Crocker, 1992). The CSE is a

questionnaire measure of ingroup identity, designed to apply to ingroups of any kind. We used the scale with a focus on racial/ethnic groups, to measure the degree to which a participant identifies with his/her racial or ethnic ingroup. The questionnaire consists of 16 items (e.g. “The racial/ethnic group I belong to is an important reflection of who I am”) to which participants respond using a 7-point scale (1=Strongly disagree to 7=Strongly agree). The CSE comprises four subscales; the 4-item Importance to Identity subscale will be used in analyses.

Need to belong. The Need to Belong Scale (NTB; Leary, Kelly, Cottrell, & Schreindorfer, 2012) is a questionnaire measure used to assess individuals’ dispositional desire to maintain interpersonal connections. The questionnaire consists of 10 items (e.g. “I need to feel that there are others I can turn to in times of need”) to which participants respond using a 5-point scale (1=Strongly disagree to 5=Strongly agree). Higher composite scores indicate a greater need to belong to social groups.

Social dominance/egalitarianism. The Social Dominance Orientation Scale (SDO-7; Ho et al., 2015) is a questionnaire measure used to assess respondents’ attitudes and orientation to social dominance. Social dominance orientation is defined as the degree to which an individual prefers group-based hierarchy and inequality in society (Sidanius & Pratto, 1999). Individuals high in social dominance orientation (or low in egalitarianism) prefer maintaining inequalities and hierarchies between groups, while those low in social dominance orientation (or high in egalitarianism) prefer increasing group equality and

diminishing or abolishing hierarchies among various groups. The SDO-7 is a questionnaire composed of 16 items (e.g. “Group equality should not be our primary goal”) to which participants respond using a 7-point scale (1=Strongly disagree to 7=Strongly agree). After reverse-scoring, a composite score is calculated by averaging responses on all items, with higher scores indicating a more socially dominant (vs. egalitarian) orientation.

Hypodescent measures. In Study 2, I employed a self-report measure of hypodescent as well as a behavioral dual categorization task. Participants completed both the self-report and behavioral tasks with a focus on both Black-White and Asian-White biracial targets.

Self-Reported Hypodescent. Participants completed an 8-item self-report measure of hypodescent, as reported by Ho et al. (2017). The items assess an individual’s tendency to engage in hypodescent when presented with statements pertaining to the child of an interracial couple (e.g. “If a White American and a Black American have a kid, would the kid act more like a Black person or more like a White person?”). Participants respond using a 7-point scale (e.g. 1=Relatively Black to 7=Relatively White). All of the items are reverse-scored and then averaged, such that higher scores indicate a greater tendency toward hypodescent in social categorization. Participants responded to this scale twice, once with a focus on Black-White multiracial children and once with a focus on Asian-White multiracial children, the order of which were counterbalanced across participants.

Dual categorization. Participants completed two dual categorization tasks similar to the task used in Study 1, one with Black-White multiracial targets, and one with Asian-White multiracial targets. The order of these tasks was counterbalanced across participants. In each dual categorization task, participants viewed a total of 20 faces, including 10 multiracial morphs and 10 monoracial faces (5 White and 5 Black or Asian), and were instructed to make two successive judgments about the racial category membership of each face using the computer mouse.

Stimuli. Face stimuli for the dual categorization task were selected from a set of head-on facial photographs in which no clothing or jewelry is visible and in which subjects display neutral facial expressions. A number of White, Black, and Asian parent faces were selected from the Face-Place Face Database (Righi, Peissig, & Tarr, 2012). These photographs were then edited and modified using WebMorph, an online tool for constructing morphed and averaged facial stimuli (DeBruine, 2018). First, an average Black and average Asian face were constructed from 8-10 parent faces identified as belonging to each racial category. These average faces were then morphed with 27 individual White parent faces to create the experimental multiracial targets. These stimuli were subjected to pilot testing to ensure they were neutral with regard to attractiveness and familiarity (see Appendix A for a full description of the stimulus creation and pilot testing procedures). A final set of 10 Black-White and 10 Asian-White

morphs, as well as 5 Asian, 5 Black, and 10 White faces were selected for use in the dual categorization tasks.

Procedure

The study proceeded in two parts: one in which participants completed the racial categorization tasks, and another in which they responded to the questionnaires measuring personality factors. The experimental procedure was conducted on a study website programmed using Qualtrics survey software. Participants were instructed to complete the categorization tasks and surveys in a location where they were unlikely to be interrupted. First, participants completed a self-report hypodescent questionnaire with items adapted from Ho et al. (2017), and a dual categorization task modeled after the one developed by Peery & Bodenhausen (2008), in a counterbalanced order. After completing both categorization tasks, participants completed the MEIM, either the ATB (White participants) or ATW (Black participants), as well as the CSE (Luhtanen & Crocker, 1992), the NTB (Leary et al., 2012), the SDO7 (Ho et al., 2015), and a demographic questionnaire. Following completion of all measures, participants read an online debriefing statement and were given the researchers' contact information for follow-up questions.

Results

Six participants were excluded from analyses because their scores on the MEIM, NTB, or SDO-7 questionnaires were outliers (>3 SD above the mean). Two additional participants were excluded for not following directions in the dual

categorization tasks. The final sample thus comprised 137 participants, and did not significantly differ from the full sample in age, gender, or race.

Comparing Behavioral and Self-Report Measures

The first aim of Study 2 was to compare self-report and behavioral tasks designed to measure hypodescent in racial categorization. To test the prediction that the two measures would be positively associated, bivariate correlations between positive categorizations in the behavioral tasks and self-reported hypodescent scores were computed. The correlation coefficients are summarized in Table 5. In the behavioral hypodescent task, positive Black categorizations and positive White categorizations of Black-White targets were negatively correlated, $r = -.41$, $p < .001$, indicating that participants who categorized more targets as Black were unlikely to categorize those same targets as White. However, there was no correlation between the self-reported hypodescent measure and either positive Black categorizations, $r = -.11$, $p = .203$, or positive White categorizations, $r = -.03$, $p = .738$. Positive Asian categorizations and positive White categorizations of Asian-White targets were also negatively correlated, $r = -.45$, $p < .001$, indicating that participants who categorized more targets as Asian were unlikely to categorize those targets as White. Again, there was no correlation between the self-reported hypodescent measure and positive Asian categorizations, $r = -.04$, $p = .611$, or positive White categorizations, $r = -.11$, $p = .184$.

Interestingly, there were strong correlations between categorizations of Black-White and Asian-White targets. Positive White and non-White categorizations of both Black-White and Asian-White targets were significantly intercorrelated (all *p*'s < .05, see Table 5). Furthermore, scores on the self-report measures of hypodescent were correlated, $r = .32$, $p < .001$. These findings suggest that, while the self-report and behavioral tasks do not appear to be related, each task measures hypodescent consistently across target types.

Effects of Personality Variables on Hypodescent

The second aim of Study 2 was to examine the relationships between several personality variables (i.e., ingroup identification, need to belong, and social dominance orientation) and the use of hypodescent in racial categorization. Based on prior findings (Gaither et al., 2016), I predicted that ingroup identification and the need to belong would predict the use of hypodescent (i.e. more non-White and fewer White categorizations of multiracial targets) among both Black and White observers. I also predicted that social dominance orientation moderated by observer race would predict hypodescent, based on a previous observation of this effect (Ho, Kteily & Chen, 2017). Among White observers, those with higher social dominance should use hypodescent to a greater extent than those with lower social dominance; among Black observers, the pattern should be reversed. To test these hypotheses, a series of regression models were tested, with the hypodescent measures as dependent variables

predicted by ingroup identification (CSE, NTB, and MEIM) and the interaction of SDO with observer race.

I tested a series of models where measures of hypodescent toward Black-White targets were regressed on ingroup identification (as measured by the MEIM, CSE, and NTB scales). The model significantly predicted positive Black categorizations, $F(3, 136) = 2.72$, $p = .047$, $R^2 = .06$. Positive Black categorizations were marginally predicted by MEIM scores, $\beta = -.20$, $t = -1.87$, $p = .064$, while CSE and NTB scores did not predict positive Black categorizations. The model did not significantly predict positive White categorizations, $F(3, 136) = 0.98$, $p = .402$, $R^2 = .02$. Finally, the model significantly predicted self-reported hypodescent toward Black-White targets, $F(3, 136) = 3.77$, $p = .012$, $R^2 = .08$; MEIM scores were predictive of self-reported hypodescent, $\beta = -.33$, $t = 3.02$, $p < .003$, but neither of the other predictors reached statistical significance. Interestingly, in these models, higher MEIM scores, which indicate greater ingroup identification, predicted decreased hypodescent for Black-White multiracials. This effect is opposite of what was predicted based on prior findings in similar studies.

Next, I tested a similar series of models with hypodescent toward Asian-White targets regressed on ingroup identification (MEIM, CSE, NTB). The model significantly predicted positive Asian categorizations, $F(3, 136) = 3.91$, $p = .010$, $R^2 = .08$; MEIM scores predicted positive categorizations, $\beta = -.24$, $t = 2.22$, $p = .028$, but NTB and CSE scores were not significant predictors. The model did not

significantly predict positive White categorizations, $F(3, 136) = 0.47$, $p = .702$, $R^2 = .01$. Finally, the model did not significantly predict self-reported hypodescent toward Asian-White targets, $F(3, 136) = 2.06$, $p = .109$, $R^2 = .04$, but CSE scores significantly predicted self-reported hypodescent toward Asian-White targets, $\beta = -.24$, $t = 2.17$, $p = .032$.

Another set of regression models were tested to determine the role played by social dominance orientation in predicting the use of hypodescent. In these models, the hypodescent measures (positive White categorizations, positive non-White categorizations, self-reported hypodescent) were entered as dependent variables, while observer race, SDO, and their interaction were entered as predictors. Our hypothesis was that social dominance orientation would be moderated by observer race to predict hypodescent in the dual categorization task. That is, White observers with high SDO scores should be more likely than White observers with low SDO scores to exhibit hypodescent, while this pattern should be reversed for Black observers. A similar pattern of results was observed by Ho et al. (2017) in a self-report hypodescent task focusing on Black-White multiracials, but has not been observed in a dual categorization task or for hypodescent toward Asian-White multiracials.

As before, I tested a series of models where hypodescent measures were regressed on observer race, SDO, and their interaction. The model marginally predicted positive Black categorizations, $F(3, 136) = 2.48$, $p = .064$, $R^2 = .05$, but none of the predictors reached significance individually. The model also

significantly predicted positive White categorizations, $F(3, 136) = 2.80$, $p = .042$, $R^2 = .06$, primarily driven by observer race, $\beta = -.50$, $t = 2.47$, $p = .015$. White observers made fewer positive White categorizations relative to Black observers. The model also significantly predicted self-reported hypodescent, $F(3, 136) = 4.66$, $p = .004$, $R^2 = .10$. Observer race ($\beta = .63$, $t = 3.20$, $p = .002$), SDO ($\beta = .81$, $t = 2.82$, $p = .005$), and the interaction ($\beta = -.93$, $t = 2.54$, $p = .012$), were all significant predictors of self-reported hypodescent toward Black-White targets. White observers exhibited greater hypodescent than Black observers, and participants with stronger social dominance orientation exhibited greater hypodescent than those with less social dominance. Interestingly, in this sample, the interaction takes the opposite direction from that observed previously (Ho et al., 2017). That is, Black observers exhibited greater hypodescent as social dominance orientation increased, and the reverse was true for White observers. A graph of this interaction is presented in Figure 1.

Next, a similar series of regression models were tested for Asian-White targets. The model did not significantly predict positive Asian categorizations, $F(3, 136) = 2.19$, $p = .092$, $R^2 = .05$, positive White categorizations, $F(3, 136) = .86$, $p = .464$, $R^2 = .02$, or self-reported hypodescent toward Asian-White targets, $F(3, 136) = .04$, $p = .991$, $R^2 = .00$.

Effect of Target Type on Hypodescent

The final aim of Study 2 was to determine whether hypodescent is applied differently when categorizing Asian-White versus Black-White targets. If

hypodescent is motivated in part by negative stereotypes about non-White racial categories, then we should expect White observers to exhibit greater hypodescent in Black-White categorization than in Asian-White categorization. White observers should be hesitant to include in the ingroup targets they perceive as at least partially Black, due to stereotypes of violence and criminality associated with Blacks. This effect should be less pronounced for targets perceived as at least partially Asian, as the stereotypes associated with Asians are less negative (Fiske et al., 2002).

To test this hypothesis, a three-way analysis of variance was computed, with observer race (Black or White) as a between-subjects factor, and target type (Black-White or Asian-White multiracial) and task type (White categorization or non-White categorization) as within-subjects factors. There was no significant main effect of observer race, $F(1, 135) = 0.16$, $p = .686$, indicating that Black and White observers did not differ in their categorizations of the multiracial targets. There was a significant main effect of target type, $F(1, 135) = 60.15$, $p < .001$; Asian-White targets were categorized positively ($M = .45$, $SE = .01$) more often than were Black-White targets ($M = .33$, $SE = .02$). This suggests that Asian-White targets are more likely than Black-White targets to be seen as members of two racial categories. There was a nonsignificant main effect of task type, $F(1, 135) = 3.17$, $p = .077$; observers made slightly more positive White categorizations ($M = .42$, $SE = .02$) than non-White categorizations ($M = .36$, $SE = .02$) across target types. Additionally, there was a significant observer race by

task interaction, $F(1, 135) = 9.528$, $p = .002$. Black observers made fewer positive non-White categorizations ($M = .30$, $SE = .03$) and more positive White categorizations ($M = .47$, $SE = .03$) than did White observers ($M = .42$, $SE = .03$; $M = .37$, $SE = .03$) for both target types. There was also a significant task by target type interaction, $F(1, 135) = 60.73$, $p < .001$. Black-White multiracials were positively categorized as Black ($M = .39$, $SE = .03$) more often than as White ($M = .27$, $SE = .03$); Asian-White multiracials were positively categorized as Asian ($M = .32$, $SE = .02$) less often than as White ($M = .58$, $SE = .03$).

A second analysis of variance was computed, with observer race as a between-subjects factor and target type as a within-subjects factor, to predict hypodescent in the self-report measures. In this model, there was no main effect of observer race $F(1, 135) = 2.72$, $p = .102$, but there was a significant main effect of target type, $F(1, 135) = 34.31$, $p < .001$. When the hypodescent questionnaire focused on Black-White targets, hypodescent scores were lower ($M = 3.72$, $SE = .07$) than when the questionnaire focused on Asian-White targets ($M = 4.16$, $SE = .06$), across observer race. The interaction between observer race and target type was not significant, $F(1, 135) = 2.72$, $p = .102$.

Discussion

The first aim of Study 2 was to examine the relationship between self-report and behavioral measures of hypodescent. Specifically, I tested the extent to which participants' reported tendency toward hypodescent when categorizing hypothetical multiracials (after Ho et al., 2017) was associated with hypodescent

exhibited behaviorally in a dual categorization task modeled after Peery and Bodenhausen (2008). In this sample, the two tasks did not appear to be correlated, whether the targets were Black-White or Asian-White multiracials. Additionally, there was no effect of observer race; the measures were uncorrelated for both Black and White observers. This suggests that the two tasks are either not capturing the same psychological construct or that at least one of the tasks is an invalid measure of hypodescent in racial categorization. The lack of concordance between self-reported and behaviorally observed hypodescent could be caused by participants' reluctance to explicitly report attitudes that may be unacceptable or offensive to others (Amodio, Devine, & Harmon-Jones, 2008). In this way, hypodescent may be similar to racial stereotyping or prejudice, which operate both explicitly and implicitly (Devine, 1989). This hypothesis is also supported by evidence that, among White observers in this sample, there was a strong positive correlation between self-reported hypodescent for Black-White targets and negative attitudes toward Blacks, $r = .47$, $p < .001$. In other words, White participants who expressed highly negative views of Blacks in general also exhibited greater hypodescent when categorizing Black-White multiracials. This finding is also in keeping with previous work showing that negative racial attitudes may predict the use of hypodescent (Ho et al., 2015).

The second aim of this study was to attempt to replicate and extend the findings of previous studies which demonstrated that several personality variables affect the use of hypodescent. Gaither et al. (2016) showed that

ingroup identification and the need to belong motivated hypodescent among Black and White observers when categorizing ambiguous multiracial targets. These results were not replicated here; I found no consistent relationship between measures assessing participants' ingroup identification and the use of hypodescent, in self-report or behavioral measures. None of the personality measures significantly predicted positive White or non-White categorizations of Black-White or Asian-White multiracials. Surprisingly, scores on the MEIM were negatively correlated with self-reported hypodescent for Black-White targets, and CSE scores were negatively correlated with self-reported hypodescent for Asian-White targets -- the opposite of what was predicted.

The failure to replicate the findings of Gaither et al. (2016) could be due in part to methodological differences. In the 2016 study, participants completed a dichotomous categorization task, in which they made a single decision about each target's racial identity - either White or Black. It is possible that making additional decisions about each target biased participants' responses in the present dual categorization task. Changing the nature of the categorization may cause participants to reason differently about targets' racial identity. Furthermore, in the 2016 study, researchers manipulated social belonging by either including or excluding participants from a social grouping. This manipulation may have amplified the effects of ingroup identity and the need to belong on hypodescent in the dual categorization task. Participants in the present study were not subject to this manipulation, which may explain the failure to fully replicate those findings.

I also predicted that social dominance orientation would interact with observer race to motivate hypodescent, as described by Ho et al. (2017). This prediction was partially supported; social dominance orientation and observer race predicted hypodescent in the self-report measures as hypothesized, but their interaction was opposite of what has been observed in previous studies. Earlier studies demonstrating this interaction employed self-report measures of hypodescent, so this finding should be interpreted as a partial replication of those results. However, the effects of social dominance orientation are less clear in the behavioral measures. Observer race was a significant predictor of positive White categorizations of Black-White targets when controlling for social dominance orientation. White participants made fewer positive White categorizations than did Black participants, providing some evidence for a stronger tendency toward hypodescent among White observers.

The final aim of Study 2 was to investigate the differences in hypodescent exhibited toward Asian-White multiracials and Black-White multiracials. It is possible that negative stereotypes about Blacks could decrease White participants' willingness to include Black-White targets as ingroup members. Because the stereotypes associated with Asians are less negative, this mechanism would result in less hypodescent when categorizing Asian-White multiracials. These considerations would likely be less important for Black observers' categorizations, as Asian-White multiracials would never be considered ingroup members. While there is evidence that Black observers engage in hypodescent for Black-White targets, possibly in an attempt to enlarge

or empower their marginalized ingroup (Gaither et al., 2016; Ho et al., 2017), it is unclear whether Black observers categorize Asian-White multiracials similarly to White observers. In this sample, I observed no difference between Black and White observers when categorizing either Asian-White or Black-White targets. Across observer race, Black-White targets were subject to greater hypodescent than Asian-White targets in the dual categorization tasks. Asian-White targets were more likely than Black-White targets to be categorized as belonging to both racial categories. Surprisingly, the opposite was true in the self-report measure – Asian-White targets were categorized according to hypodescent more often than Black-White targets were, irrespective of observer race.

This finding illustrates another divergence between the self-report and behavioral hypodescent measures, and may be due to methodological differences between the tasks. In the self-report measure, participants are not able to see the target, and may imagine what a prototypical target looks like. If this prototype differs across participants, their perceptions of the target's racial group membership might vary in turn. Alternatively, with more control over the targets' appearance, dual categorization measures might better capture categorization by appearance, where decisions about racial group membership in the self-report measure may be driven by other considerations, such as a target's perceived cultural background or interests.

General Discussion

The studies described here provide mixed evidence for the role of a number of individual variables in predicting the use of hypodescent in racial

categorization. Study 1 specifically investigated the role played by the observer's race when categorizing Black-White multiracial targets. Study 2 took a broader approach, including not only the observer's race but also manipulating the target's racial group (either Black-White or Asian-White) and the nature of the categorization task. Across both studies, a number of personality variables were observed to play a role in the use of hypodescent in categorization. In both studies, Black and White observers engaged in hypodescent when categorizing Black-White multiracials. In Study 1, negative attitudes toward Blacks as well as ethnic identification were positively associated with the use of hypodescent among White observers. In Study 2, I observed hypodescent among White and Black observers, as well as some mixed evidence relating ingroup identification and social dominance to hypodescent. Importantly, there was no relationship in the Study 2 sample between self-report measures of hypodescent (based on those described by Ho et al., 2017) and dual categorization measures of hypodescent (based on those described by Peery & Bodenhausen, 2008). In Study 2, I also observed that Black-White targets were subject to greater hypodescent in dual categorization, but Asian-White targets were subject to greater hypodescent in self-report measures.

There were substantial differences in observed hypodescent between Study 1 and Study 2, such that participants in the second study exhibited less hypodescent in the dual categorization tasks, on average, than participants in the first study. These differences may be due to variation in the visual features (e.g. resolution, contrast, etc.) of the stimuli used in the dual categorization tasks. In

both cases, the ambiguous multiracial stimuli were pilot tested to ensure neutrality with regard to attractiveness and familiarity as well as relative ambiguity with regard to race. However, it is possible that the stimuli differed across the studies in a way that systematically biased categorizations toward or away from hypodescent. Furthermore, categorizations in Study 2 may have been biased by a contrast effect not present in Study 1, as the tasks included faces from three distinct racial groupings. Using a larger or more exhaustive set of stimuli would allow researchers to determine whether certain visual features promote or discourage the use of hypodescent in racial categorization. Future research should employ more stimulus sets, as well as stimuli than differ along a continuum of stereotypicality, to better determine the perceptual boundaries of racial categories.

One major finding of the second study was that there is no statistically significant relationship between the self-report and behavioral tasks used to measure hypodescent. As discussed above, there are plausible methodological explanations for this divergence relating to the possible use of mental imagery, reliance on stereotypes about differing cultural groups, or the heightened perception of foreignness for Asian-White versus Black-White targets. It remains unclear whether or how these tasks are related, and future research should seek to determine the specific contextual factors that may contribute to their divergence. For example, participants could be instructed to choose a target that most closely matches a given description (e.g. *the child of a Black person and a White person*) from among several target faces which differ continuously in

stereotypicality. This would for allow a measure of hypodescent analogous to the Likert-type scale currently employed, but which has more in common with the more image-driven behavioral tasks. Participants' choices on such a task could then be compared to their choices on the original self-report measure as well as to their choices in a dual categorization or dichotomous categorization task.

Additionally, the behavioral tasks appear to be consistent across observers and target types. Positive non-White categorizations of both types of targets were positively correlated with one another, and were negatively correlated with positive White categorizations. Additionally, the self-report hypodescent measures were highly positively correlated as well. These strong correlations suggest that each measure captures hypodescent reliably, and that they are robust to changes in target type. While the tasks appear to be reliable in this sample, future studies should more thoroughly investigate their reliability across participant populations, target types, and time points. Furthermore, the relationships between self-report and behavioral measures should be more empirically investigated. In this sample, they appear to be uncorrelated, but it is unclear whether that finding will hold in future similar studies.

While the research described here provides a partial replication of prior findings and a novel extension, it is limited to the categorization of a small subset of ambiguous targets with no other relevant social context. Future research should investigate the cognitive processes underlying the categorization of a wider variety of stimuli (including both male and female targets of varying racial ambiguity), in a wider variety of contexts, before strong conclusions can be

drawn about the role of hypodescent in the perception of multiracial targets. As has been demonstrated in prior research, the categories to which a target is perceived to belong have important ramifications for downstream social cognitive processes and life outcomes for those who exist at the margins of racial categories (Devine, 1989; Fiske et al., 2002; Krosch et al., 2017; Kubota et al., 2014; Park et al., 2016). Future research should more directly examine these downstream effects as they influence multiracial targets, especially the ways in which multiracials are perceived as similar to and/or distinct from members of ethnic and racial minorities more generally. For example, participants could be instructed to provide social evaluations of multiracial targets on the dimensions of warmth and competence (Fiske et al., 2002) or their enjoyment of activities stereotypically associated with monoracial categories, after categorizing those targets by race.

The present research, while limited in some respects, employed a large, nationally representative sample and is the first study to directly compare two different measures of hypodescent. Previous work in this area has included only a single hypodescent measure or a self-report measure of hypodescent. Future studies should investigate multiple measures of racial group categorization to clarify the conditions and mechanisms affecting hypodescent. This study is also the first to compare hypodescent for Asian-White and Black-White targets. Future studies should further investigate the effects of hypodescent on different types of targets to improve our understanding of the boundaries of various racial categories, as well as the social forces affecting individuals who exist at those

boundaries. Our findings are limited in that all of the research activities were administered on the internet, resulting in a lack of control over the environment in which participants completed the activities. The artificiality of the laboratory setting of this research also limits the ecological validity of our findings; it is possible that other external factors may affect the use of hypodescent in social categorization in real-world contexts. Additionally, the stimuli used in this research are morphed images and thus may not accurately represent the variation that exists among real multiracial people. Future studies should investigate categorization processes using photographs of multiracial people or observing categorization in a more naturalistic setting.

As the portion of Americans who identify as multiracial grows, it will be important to understand the social psychological forces affecting the ways in which racially ambiguous individuals are perceived and treated (U.S. Census Bureau, 2014). There is a growing need to describe such forces and communicate a fuller understanding of the processes underlying racial categorization as well as stereotyping and discrimination, such that American society can improve conditions for those who have been marginalized (Richeson & Sommers, 2016). The present research demonstrates that Black and White perceivers are similarly influenced by hypodescent in the social categorization of ambiguous multiracial targets, and also suggests a relationship between ingroup identification, racial essentialism, and hypodescent among White perceivers. Furthermore, this research demonstrates that hypodescent may be applied differently across targets of different racial groups, and across different tasks.

The research described here represents a step toward a fuller account of the perception of race and racial ambiguity. As the United States moves toward a more diverse multiethnic and multiracial future, it is vital that we understand the complexities of race and work to address the lasting psychological effects of segregation and systemic racism as they affect multiracial people and their position in our society.

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Table 1
Predictors of Positive White Categorizations, Study 1

	B	SE	t	p
constant	.00	.01	.28	.782
observer race	-.00	.02	-.24	.814
RCS (essentialism)	-.02	.02	-1.04	.298
MEIM (identification)	.03	.03	-1.14	.255
race X RCS	.01	.03	.33	.742
race X MEIM	.03	.04	.83	.407

Note. N = 244. R^2 = .02, $F(5, 238)$ = .81, p = .545.

Table 2
Predictors of Positive Black Categorizations, Study 1

	B	SE	t	p
constant	-.01	.02	-.59	.558
observer race	.03	.02	1.18	.241
RCS (essentialism)	-.02	.03	-.65	.517
MEIM (identification)	-.02	.04	-.53	.598
race X RCS	.06	.04	1.46	.146
race X MEIM	.08	.06	1.34	.182

Note. N = 244. R^2 = .04, $F(5, 238) = 1.77$, p = .119

Table 3
Summary of Correlations Between Measured Variables, Study 1

	1	2	3	4	5	6
1. positive White	–					
2. positive Black	-.24**	–				
3. ATB/ATW	-.05	.05	–			
4. RCS	-.10	.08	.27**	–		
5. MEIM	-.08	.06	.32**	.31**	–	
6. outgroup friends	.01	.06	-.09	-.12	-.09	–
7. ingroup friends	.00	-.07	.11	.14*	.12	-.80

Note. N = 244. *p <.05, **p<.01.

Table 4
Summary of Correlations Between Measured Variables as a Function of Race, Study 1

	1	2	3	4	5	6	7
1. positive White	–	-.21*	.01	-.14	-.14	.04	-.14
2. positive Black	-.26**	–	.04	-.07	-.06	.12	-.10
3. ATB/ATW	-.10	.19*	–	.24**	.10	-.35**	.41**
4. RCS	-.08	.21*	.30**	–	.25**	-.23**	.27**
5. MEIM	.03	.19*	.40**	.34**	–	-.07	.19*
6. outgroup friends	-.02	.02	-.32**	-.08	-.18*	–	-.80*
7. ingroup friends	.14	-.07	.30**	.09	.12	-.79*	–

Note. Correlations for Black participants (n = 121) appear above the diagonal; correlations for White participants (n = 123) appear below the diagonal. *p <.05, **p<.01.

Table 5
Summary of Correlations Between Hypodescent Measures, Study 2

	1	2	3	4	5
1. pos. Black, B-W target	–				
2. pos. White, B-W target	-.409**	–			
3. exp. hypodescent, B-W target	.109	.029	–		
4. pos. Asian, A-W target	.332**	-.203*	.084	–	
5. pos. White, A-W target	-.172*	.488**	.010	-.454**	–
6. exp. hypodescent, A-W target	-.045	.097	.316**	.044	-.114

Note. N = 137. *p <.05, **p<.01.

Figure 1: Self-reported Hypodescent, by Social Dominance Orientation and Observer Race

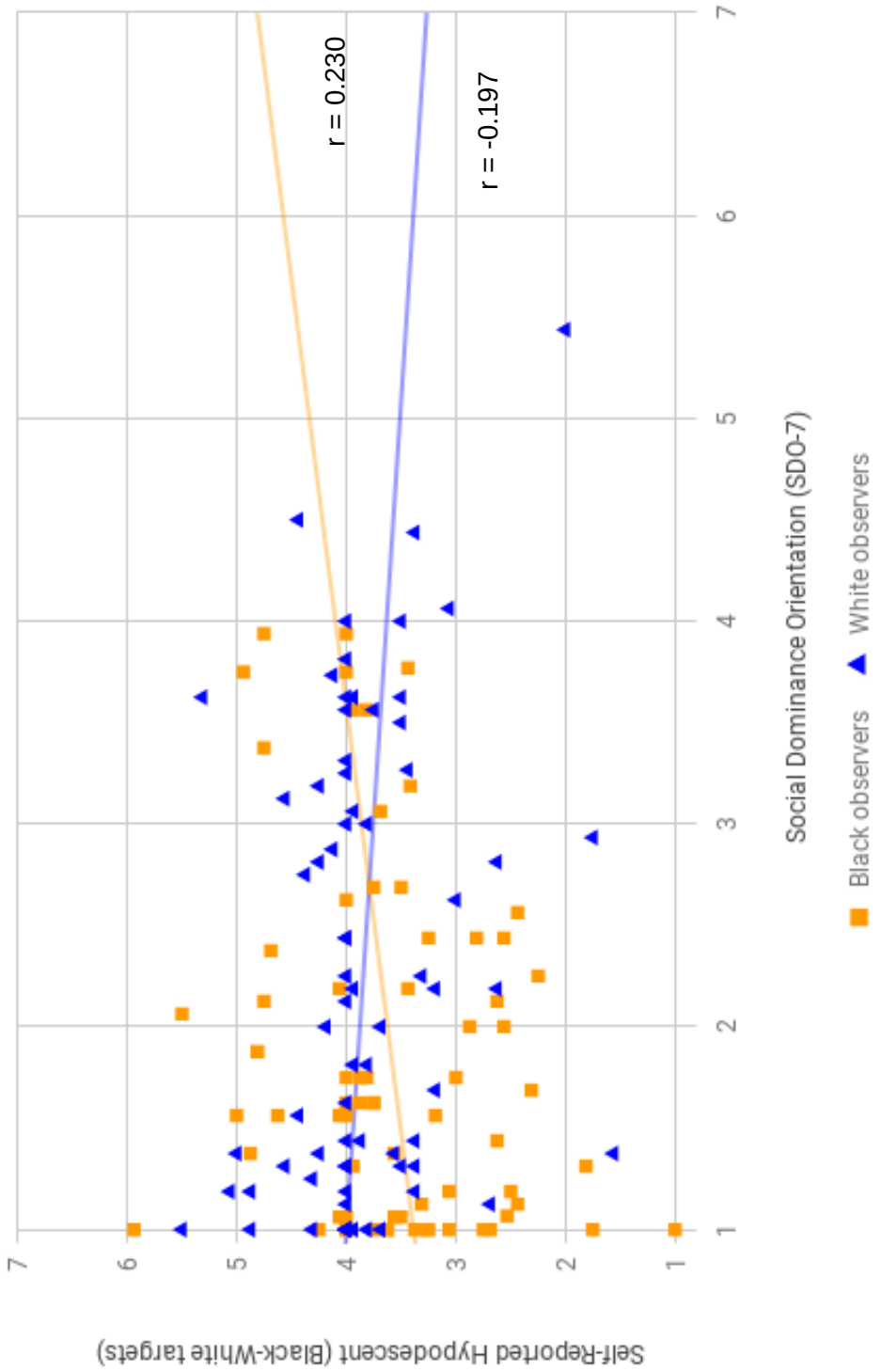
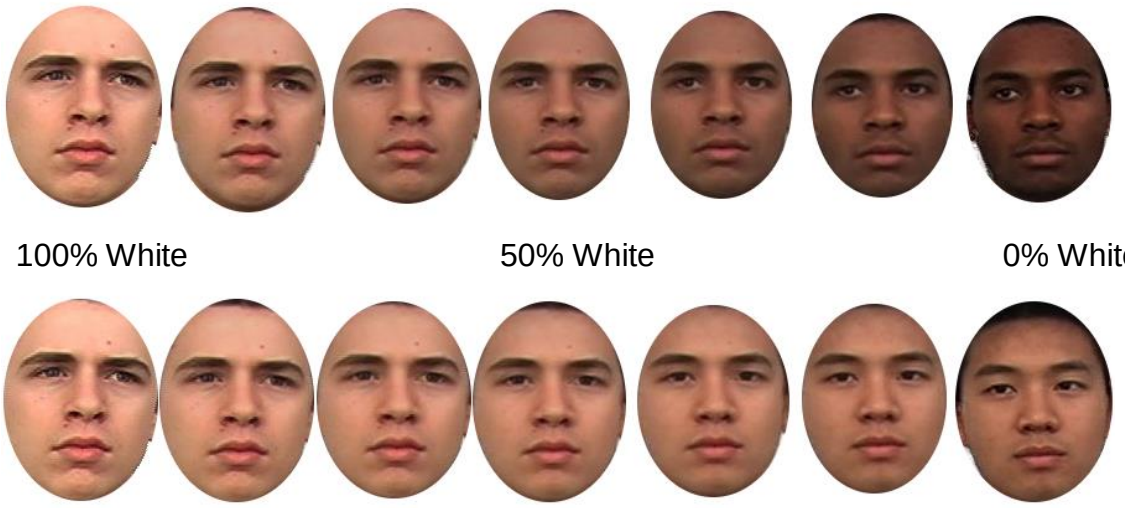


Figure 2: Example stimuli for dual categorization, Study 2



Appendix A: Description of pilot-testing procedures and stimulus selection

A set of stimuli were created in WebMorph (DeBruine, 2018) using images drawn from the Face-Place Face Database. All images were head-on photographs of young adult males, and were identified in the database as White, Black, or Asian. First, an average Asian and average Black face were created by combining 10 parent images from each racial category. These average faces were each combined with a series of monoracial White faces to create multiracial morphs. Twenty-one morphs were created along a spectrum of parent face content, from 0% White/100% non-White to 100% White/0% non-White. Only 50% White/50% non-White faces were included in the pilot-testing procedures for this research, in order to examine the studied effects in the perception of maximally ambiguous faces.

Following the morphing procedures, all stimuli were trimmed to remove hair, ears, clothing, and the background of the images. All of the stimuli were masked into ellipses that were approximately equal in size, to ensure that they appeared consistent to participants and only differed in facial features and skin tone. Example stimuli are presented in Figure 2. Stimuli with hair occluding the face, or for which the morphing process made the face appear blurred or grainy were also excluded. The final set of 98 stimuli for pilot testing included 26 Asian-White morphs, 27 Black-White morphs, 9 monoracial Asian, 9 monoracial Black, and 27 monoracial White faces.

Participants for the pilot test were recruited from an introductory psychology class at a mid-sized American university, and received partial course

credit for their participation. A total of 60 participants, 15 male (25%) and 45 female (75%), ranging in age from 18 to 24 years (*M* = 19.03, *SD* = 1.10), were included in the sample. The sample was composed of 45 students who identified as White/Caucasian, 11 who identified as Black/African-American, 9 who identified as Hispanic or Latino, 3 who identified as Asian/Asian-American, 3 who identified as American Indian or Alaska Native, 1 who identified as Native Hawaiian or Pacific Islander, and 1 who identified as Other. Participants were allowed to choose as many responses as were appropriate for this item.

Each participant viewed and rated approximately half of the 98 face stimuli and provided responses to a series of questions pertaining to the target faces in an online survey form; each target was thus rated by approximately 30 participants. First, respondents were asked to identify the most appropriate racial category for each target in a free response. Then, respondents rated targets' attractiveness and familiarity on 5-point scales (*1=much less than average* to *5=much more than average*). Next, respondents rated their perception of targets' appearance on two scales - 100% White to 100% Black and 100% White to 100% Asian, to gauge each target's relative racial stereotypicality.

Participants' free responses to the categorization item were coded by their content. Responses indicating a target was "White," "Caucasian-American," or "Caucasian" were coded as monoracial White, those indicating a target was "Black," "African-American," or "African" were coded as monoracial Black, and those indicating a target was "Asian" or "Asian-American" were coded as monoracial Asian. Variations on these terms were interpreted on a case-by-case

basis, but any response that made reference to a country or nation (e.g. Japanese, British) were not coded as monoracial categorizations. For each stimulus, the number of monoracial White categorizations, as well as the number of Black or Asian categorizations where appropriate, was divided by the total number of responses to calculate an index of ambiguity, where more ambiguous faces have lower proportions of monoracial categorizations.

A subset of stimuli were selected from the pilot-tested faces for use in the dual categorization tasks, on the basis of their stereotypicality ratings. The ten Asian-White morphs and ten Black-White morphs with scores closest to the midpoint (50% White/50% non-White) of their respective stereotypicality scales were chosen for use in Study 2. Choosing faces that were rated at the middle of the stereotypicality scale ensured that the experimental stimuli were maximally ambiguous with regard to race. These experimental stimuli were neutral with regard to familiarity (M = 2.62, SD = 0.16) and attractiveness (M = 2.62, SD = 0.24). Additionally, ten White faces, five Asian faces, and five Black faces - those most commonly described in the free naming item as monoracial (all proportions > 0.75, M = 0.94, SD = 0.07) by participants - were selected for use as a control in the dual categorization task. These faces were also neutral with regard to familiarity (M = 2.61, SD = 0.26) and attractiveness (M = 2.39, SD = 0.33). The monoracial and morphed faces do not significantly differ in familiarity, t = 0.151, p = 0.880, but the morphed faces are rated as more attractive on average than the monoracial faces, $t(41)$ = 2.60, p = 0.013. While the groups differ in attractiveness, the mean attractiveness rating for each group is close to the

midpoint of the scale, indicating that all of the faces are neutral with regard to attractiveness.