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Leadership Perceptions as a Function of Race–Occupation Fit: The Case of Asian Americans

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On the basis of the connectionist model of leadership, we examined perceptions of leadership as a function of the contextual factors of race (Asian American, Caucasian American) and occupation (engineering, sales) in 3 experiments (1 student sample and 2 industry samples). Race and occupation exhibited differential effects for within- and between-race comparisons. With regard to within-race comparisons, leadership perceptions of Asian Americans were higher when race–occupation was a good fit (engineer position) than when race–occupation was a poor fit (sales position) for the two industry samples. With regard to between-race comparisons, leadership perceptions of Asian Americans were low relative to those of Caucasian Americans. Additionally, when race–occupation was a good fit for Asian Americans, such individuals were evaluated higher on perceptions of technical competence than were Caucasian Americans, whereas they were evaluated lower when race–occupation was a poor fit. Furthermore, our results demonstrated that race affects leadership perceptions through the activation of prototypic leadership attributes (i.e., implicit leadership theories). Implications for the findings are discussed in terms of the connectionist model of leadership and leadership opportunities for Asian Americans.

Keywords: implicit leadership theory, perceptions, prototypes, leadership, Asian American

Recent theorizing reflected in the connectionist model of leadership has posited that features of the context, such as culture, work tasks, and characteristics of leaders and followers, may influence individuals’ perceptions of leadership (Foti, Knee, & Backert, 2008; Hogue & Lord, 2007). Indeed, research has established several contextual inputs that influence leadership perceptions, including gender (Eagly & Karau, 2002; Johnson, Murphy, Zeddie, & Reichard, 2008), identity (Hogg, Hains, & Mason, 1998; van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004), and culture (Ayman, 1993; Ensari & Murphy, 2003). Until recently, the potential role of race as a contextual input in leadership perception has been largely ignored (Chung-Herrera & Lankau, 2005; Rosette, Leonardelli, & Phillips, 2008). Furthermore, the role that occupation may play in influencing leadership perceptions of members of minority groups has yet to be examined. Thus, in addition to providing evidence for the direct linkage between race and leadership perceptions, the current study investigates the interactive effects of race and occupation on leadership perceptions. Specifically, we argue that race elicits occupational fit perceptions, which affect leadership perceptions through the activation of different leadership prototypes (i.e., implicit leadership theories).

The current study fills several gaps in the leadership literature. First, we directly tested a key tenet of the connectionist model of leadership to understand how the contextual inputs of race and occupation combine to influence leadership perceptions. Second, we sought to determine whether the perception that Asian Americans are more technically competent than Caucasian Americans that has been shown previously (Leong & Serafica, 1995) provides a basis for distinct leadership prototypes for these two groups. Specifically, we examined how the congruence of race and occupation influences leadership as well as technical competence perceptions of Asian Americans. Finally, this study extends our understanding of diversity by focusing on Asian Americans, a
racial group whose work experience has been largely ignored in the organizational science literature (Cheng & Thatchenkery, 1997; Landau, 1995; Leong & Gupta, 2007). Of particular note is that there are almost no studies of Asian American leadership perceptions (an exception is Chung-Herrera & Lankau, 2005; Ospina & Foldy, 2009).

Connectionist Model of Leadership

On the basis of Rosch’s (1978) theory of cognitive categorization, Lord and colleagues (e.g., Lord, 1977, 1985; Lord & Alliger, 1985; Lord, Foti, & de Vader, 1984) developed leadership categorization theory to describe individuals’ cognitive structures of leadership. Accordingly, individuals engage in a two-stage matching process in which relevant prototypes (i.e., abstract representations of cognitive categories) are activated and a target person is compared with the activated leadership prototype. The target person is then categorized as a leader depending on the degree of fit to the ready-made prototype.

Despite offering significant insight into the cognitive structure of leadership representation, leadership categorization theory has some limitations (for reviews, see Lord, Brown, & Harvey, 2001; Lord, Brown, Harvey, & Hall, 2001). Leadership categorization theory is derived from a symbolic-level view of leadership (Lord, Brown, Harvey, & Hall, 2001) in which individuals’ mental representations of leadership prototypes are stored as discrete, static units in long-term memory, with processing occurring in a serial fashion (Smith, 1998; Smith & DeCoster, 2000). As such, the development of leadership categories in symbolic-level processing is a relatively slow process that requires extensive experience within a particular context (Sherman, 1996; Sherman & Klein, 1994). This notion is inconsistent with recent advances in our understanding of the cognitive structure of leadership representation (e.g., Foti et al., 2008; Hanges, Lord, & Dickson, 2000; Hogue & Lord, 2007; Lord, Brown, Harvey, & Hall, 2001) as a fast, dynamic, and context-sensitive process (often occurring in only a few hundred milliseconds). Furthermore, extensive research has established that leadership prototypes vary considerably between and within perceivers as a function of organizational context (e.g., military), management level, national culture, task type, and gender (Lord, Brown, Harvey, & Hall, 2001). As such, it would require an improbably large number of fixed prototypes to be stored in memory to provide sufficient flexibility in perceiving leadership across contexts.

Given the limitations of leadership categorization theory, Lord and colleagues recently reformulated the theory as the connectionist model of leadership (Lord, Brown, & Harvey, 2001; Lord, Brown, Harvey, & Hall, 2001). Instead of being retrieved from stored memory or composed of symbolic-level constructs, the connectionist model of leadership posits that leadership prototypes are generated “on the fly” at the moment of use. That is, rather than the simple retrieval of prototypes from stored memory, memory involves the dynamic reconstruction of prototypes. In comparison with leadership categorization theory, the reformulation is advantageous in that the connectionist model of leadership explains the flexibility in leadership prototypes used by perceivers as a function of contextual adjustments that guide the reconstruction of the prototypes.

The connectionist model of leadership is conceptualized as a neuronlike network of processing units that continually integrates information from input sources and passes on the information (as a form of activation or inhibition) to connected (output) units (for reviews, see Foti et al., 2008; Hanges et al., 2000; Hogue & Lord, 2007; Lord, Brown, Harvey, & Hall, 2001). Each unit in the network contains information that is processed in the generation of leadership perceptions. The crucial element in the connectionist model of leadership is that the units that store the information form an interconnected communications network. Specifically, the units communicate by activating or inhibiting other units. Activation tends to occur between units that fit well (e.g., a male leader may activate the prototype of dominance), whereas inhibition tends to occur between units that may not fit well (e.g., a male leader may inhibit sensitivity). Note, however, that the degree of fit may be altered by multiple contextual inputs, as we discuss below. Units may also be at rest and remain in a neutral state. The influential strength of one unit on another is determined by the weights (degree of association) between the units, which are developed over time (Hogue & Lord, 2007). Stronger weights between units lead more readily to activation or inhibition. Perceptions of leadership are generated from the overall pattern of activation among units in the network (Lord, Brown, Harvey, & Hall 2001). For example, a pattern of activated communal traits (e.g., sensitivity and flexibility) may be more prototypic of female leaders, and a pattern of activated agentic traits (e.g., dominance and masculinity) may be more prototypic of male leaders (Epitropaki & Martin, 2004; Johnson et al., 2008; Lord, Brown, & Harvey, 2001).

In this research, we focus on the connectionist model of leadership instead of leadership categorization theory as the theoretical foundation for our hypotheses for two reasons. First, the connectionist model of leadership is more consistent with the most current advances in our understanding of social cognition as context-sensitive, dynamic states (Foti et al., 2008; Hogue & Lord, 2007). Second, the connectionist model of leadership is better able to integrate and account for the contextual information of race and occupation that is a central focus of this study. Contextual inputs may exert influence at the prototype-activation stage to fundamentally change the formation of leadership prototypes and the resulting leadership perceptions. In comparison, leadership categorization theory would require an improbably large number of fixed prototypes to be stored in memory to provide sufficient flexibility in perceiving leadership across contexts. For example, on the basis of leadership categorization theory, it would be predicted that once individuals associate race (i.e., Asian) with (non)leader status (e.g., Asians do not match the leadership prototype), this association would be relatively stable across time and context. However, this is inconsistent with research indicating that individuals may hold opposing mental representations in different contexts (Fiske, Cuddy, Glick, & Xu, 2002). For example, an Asian may be considered an appropriate leader in one context (as the President of the People’s Republic of China) but may not be viewed as a good fit for a leader role in a different context (as the President of the United States of America). Thus, the sensitivity to context that is a core theoretical tenet of the connectionist model of leadership, along with the ongoing development of leadership prototypes posed by the theory, provides a stronger basis for understanding leadership perception beyond that of leadership categorization theory, which is static and less contextually sensitive. Specifically,
the connectionist model of leadership explains how contextual inputs, such as race, may influence leadership perceptions. Namely, we propose on the basis of the connectionist model of leadership that race influences leadership perceptions through the activation of different leadership prototypes.

Leadership Perceptions and Race

Understanding the effects of race on leadership perceptions is important, in part, because the U.S. workforce is increasingly racially diverse, and organizations are realizing that the inclusion of racial minorities constitutes a competitive advantage in a global market (Grieco & Cassidy, 2001; Jackson & Joshi, 2002). However, racial minorities are often perceived to be less suitable for management positions in the United States, as evidenced by a persistent glass ceiling for these groups (Federal Glass Ceiling Commission, 1995; Morrison & von Glinow, 1990), lower managerial promotion ratings (Landau, 1995), lower job suitability ratings (Hosoda, Stone, & Stone-Romero, 2003), and individuals’ attributions of success and failure (Ellis, Igen, & Hollenbeck, 2006; Rosette et al., 2008).

The work experience of Asian Americans is almost completely ignored in the literature (Cheng & Thatchenkey, 1997; Landau, 1995; Leong, 1995; Leong & Gupta, 2007) as opposed to a plethora of research that exists on other racial minorities (Cox, 2004; Cox & Nkomo, 1990; Dewberry, 2001; Rosette et al., 2008) and women (Heilman, Wallen, Fuchs, & Tamkins, 2004; Swim, Borgida, Maruyama, & Myers, 1989). Whereas data continue to support the low numbers of Asian Americans in higher status leadership positions (e.g., 0.3% of corporate officers; Kom Ferry International, 2006; less than 1% of corporate board members, Committee of 100, 2004), little research has investigated the causes (Landau, 1995; Yammarino & Jung, 1998).

The limited research on Asian Americans in the U.S. workplace is surprising. First, they are one of the fastest growing groups in the United States, constituting approximately 5% of the population (see Bell, 2007). In addition, they are better educated and earn higher salaries than all other racial groups, including their Caucasian counterparts (U.S. Bureau of Labor Statistics, 2006; U.S. Census Bureau, 2000). Asian Americans also tend to have more work experience compared with others who have similar positions and work titles (Thomas & Gabarro, 1999), suggesting that qualified Asian Americans may be promoted less often than other racial groups. As a group, their achievements have led to the characterization of Asian Americans as the “model minority” (Ho & Jackson, 2001; Hurh & Kim, 1989). Given their background and achievements, one might expect Asian Americans to be overrepresented in leadership positions in reference to proportions that would be expected on the basis of population base rates. However, as noted above, data suggest that advancing to leadership positions may be a significant challenge for Asian Americans. This raises questions as to whether Asian Americans are viewed in a manner that is inconsistent with expectations for those who hold leadership positions.

Only two known studies have examined leadership perceptions of Asian Americans. In one study, Rosette et al. (2008) found that being Caucasian American was considered more prototypic of leaders than was being a member of a racial minority. The results of their study were inconclusive for Asian Americans because they collapsed their “Asian and other” and “Hispanic” categories to form a composite measure of “racial minority.” In another study, Chung-Herrera and Lankau (2005) found that perceptions of Caucasian American and Asian American managers corresponded more closely to the successful manager prototype than did African American or Hispanic American managers. However, they measured leadership perceptions with a revised version of Schein’s (1973) Descriptive Index, which included attributes (e.g., competent, consistent, conscientious, objective, well-informed, rational, self-controlled) that appear to be more consistent with assessments of competence than with broader leadership perceptions (e.g., Landau, 1995; Leong & Gupta, 2007). In light of this research and also evidence that Asian Americans generally are viewed as a good fit for jobs requiring technical competence (Fernandez & Barr, 1993), we opted to systematically examine the association between race and both technical competence and broader prototypes of leadership. Specifically, we examine leadership and technical competence perceptions separately in order to determine whether the competence perceptions of Asian Americans may be inconsistent with the broader range of characteristics deemed necessary for successful leaders in a U.S. context (Bass, 1990; Zane & Song 2007).

Leadership Perceptions as a Function of Race–Occupation Fit

On the basis of the connectionist model of leadership, we posit that race and occupation are contextual inputs that simultaneously constrain the activation of leadership prototypes. For example, Rosette et al. (2008) examined whether Caucasian Americans in the financial services industry were perceived as more prototypic leaders than in other industries and found that occupation had no effect. We propose that there are no strong occupational expectations for Caucasian Americans, as they are in the majority group, whereas there are strong expectations for the types of occupations Asian Americans should occupy (Leong & Hayes, 1990). Whereas its causes may vary (see Leong & Serafica, 1995; Sue & Okazaki, 1990), occupational segregation of Asian Americans is well documented in undergraduate- and graduate-level programs, as well as in private industry. Research suggests that Asian Americans are heavily represented in the engineer and computer science fields; tend to hold positions as mathematicians and scientists; and are less likely to hold positions in sales, production, and labor-related careers (Fernandez & Barr, 1993; Hsia, 1988; Leong, 1995; Leong & Gupta, 2007; Leong & Serafica, 1995; Sue & Kirk, 1972, 1973; Tang, Fouad, & Smith, 1999; Woo, 2000; Wu, 1997).

In the current study, we propose that perceived fit between race and occupational requirements affects leadership perceptions. We operationalize a “good fit” for race–occupation as a condition in which Asian Americans hold an engineer position and a “poor fit” as a condition where Asian Americans hold a sales position. We develop propositions for race–occupation fit under conditions of within-race (e.g., Asian American engineers vs. Asian American salespersons) and between-race (e.g., Asian American engineers vs. Caucasian American engineers) comparisons.

Technical Perceptions

As noted earlier, we examined leadership and technical perceptions separately because they were potential confounds in past
research. In comparisons of technical competence perceptions between Asian Americans and Caucasian Americans, on the basis of the connectionist model of leadership, we expected that Asian Americans would be rated as more technically competent than Caucasian Americans under conditions of a good race–occupation fit (engineer condition) but not under conditions of poor race–occupation fit (salesperson condition). Past research has found that Asian Americans are perceived to possess the necessary attributes for engineer occupations (good race–occupation fit; Fernandez & Barr, 1993; Hsia, 1988; Leong, 1995; Leong & Gupta, 2007; Leong & Serafica, 1995; Sue & Kirk, 1972, 1973; Tang et al., 1999; Woo, 2000; Wu, 1997). Past research has also found that Asian Americans are perceived to lack the necessary attributes for the sales fields (Hsia, 1988; Leong, 1995; Leong & Serafica, 1995; Sue & Kirk, 1972). Traits often associated with Asian Americans, such as social introversion, emotional withdrawal, verbal inhibition, passivity, a quiet demeanor, and a reserved manner (Bourne, 1975; Sue & Kirk, 1972, 1973; Sue & Sue, 1974), are not typically viewed as compatible with sales positions. Consistent with the connectionist model of leadership, we posit that the weights between units are stronger when they exhibit congruence such that units (i.e., Asian Americans and engineer occupation) associated with technical competence are more easily activated and the perception of technical competence is more easily processed and registered. Accordingly, perceptions of technical competence will be (a) more favorable under conditions of good race–occupation fit (Asian Americans in the engineer condition) and (b) less favorable under conditions of poor race–occupation fit (Asian Americans in the salesperson condition). These propositions are consistent with prior research that has found that perceptions are more positive when perceivers’ expectations are confirmed, as in the good-fit condition (Dipboye, 1985; Hains, Hogg, & Duck, 1997; Heilman, 1983, 1995; Hogg et al., 1998, 2006; Platow & van Knippenberg, 2001; Rosette et al., 2008). Thus, we hypothesized the following:

Hypothesis 1a: Technical competence perceptions will be higher for Asian American engineers than for Caucasian American engineers.

Hypothesis 1b: Technical competence perceptions will be lower for Asian American salespersons than for Caucasian American salespersons.

Leadership Perceptions

Between-race comparison. In comparing Caucasian and Asian Americans, we expected that Asian Americans would be rated lower on perceptions of leadership regardless of race–occupation fit, because we expected race to trump occupation. As noted above, the Caucasian race is considered more prototypic of leaders regardless of occupation. Because leadership positions in the United States are most frequently occupied by Caucasian Americans, and individuals have come to associate the Caucasian race as a prototypic attribute of leadership (Rosette et al., 2008), the strength of the weights between the Caucasian race and the other units in the underlying leadership prototype network may more easily activate leadership prototypes that lead to the perception of leadership. Likewise, there are pervasive stereotypes of Asian Americans as dependent, submissive, diffident, obedient to authority, conforming, socially introverted, emotionally withdrawn, socially isolated, and verbally inhibited (Bourne, 1975; Landau, 1995; Sue & Kirk, 1972, 1973; Sue & Sue, 1974; Woo, 2000), traits less likely to activate leadership prototypes (Landau, 1995) that lead to the perception of leadership. Thus, we predicted the following:

Hypothesis 2: Leadership perceptions will be higher for Caucasian Americans than for Asian Americans.

Within-race comparison. With regard to within-race comparisons, the connectionist model of leadership predicts that multiple contextual inputs may constrain the activation of leadership prototypes and thus influence perceptions of leadership. We predicted that leadership perceptions of Asian Americans should be influenced by perceived race–occupation fit. As explained earlier, the crucial element of the connectionist model of leadership is that the units form an interconnected communications network that activate or inhibit other units. The influential strength of one unit on another is determined by the weights (associations) between the units. Stronger weights between units lead to easier activation or inhibition such that some units may be more influential because activation of these units results in a corresponding activation or suppression of other units. We posited that the weights between units would be stronger when they exhibit congruence such that leadership prototypes are more easily activated and the perception of leadership is more easily processed and registered. Accordingly, leadership perceptions were expected to be (a) more favorable under conditions of good fit for race–occupation (Asian American engineer) when leadership prototypes are more easily activated, processed, and registered by perceivers and (b) less favorable under conditions of poor fit (Asian American salesperson). Given that no strong occupational expectations exist for Caucasian Americans (Rosette et al., 2008), we did not expect leadership perceptions to differ on the basis of occupation. Thus, we predicted the following:

Hypothesis 3: Perceptions of leadership as a function of occupation will not differ for Caucasian Americans but will differ for Asian Americans such that leadership perceptions will be higher for Asian American engineers (good-fit condition) than for Asian American salespersons (poor fit condition).

Race and Leadership Perceptions: Mediating Role of Leadership Prototypes

In addition to advancing past research by clarifying the effects of race and occupation on leadership and technical perceptions, we tested another key tenet of the connectionist model of leadership to further explicate the race and leadership perception linkage. On the basis of the connectionist model of leadership, we proposed that race influences leadership perceptions through the activation of differential leadership prototypes. A simplified graphic representation of this proposition (modeled after a figure in Lord, Brown, Harvey, & Hall’s, 2001, article, p. 324), where race influences leadership perceptions through the activation of leadership prototypes and its associated attributes is shown in Figure 3. In the figure, line arrows represent activation, lines ending in dots rep-
resent inhibition, gray circles represent activated units, and white circles represent combined activations that are below threshold levels. The figure illustrates how the same underlying attributes commonly associated with leadership (Dynamism, Tyranny, Intelligence, Dedication, Masculinity, and Sensitivity; Epitropaki & Martin, 2004; Offermann, Kennedy, & Wirtz, 1994) can be differentially activated by race to produce different leader prototype configurations for Caucasian Americans and Asian Americans. These six attributes constitute individuals’ implicit leadership theories and are not necessarily exhaustive but are more representative of the key characteristics that individuals associate with leadership. Perceivers form leadership impressions of others on the basis of these implicit leadership theory attributes (Epitropaki & Martin, 2004; Lord & Maher, 1991), which have been found to be generalizable across time, gender, and a wide variety of individuals and industries (Epitropaki & Martin, 2004; Offermann et al., 1994).

In accordance with the connectionist model of leadership, differential leadership perceptions may be explained at the prototype-activation stage. That is, commonly held perceptions of the characteristics of Asian Americans (i.e., technically competent) may activate in perceivers different leadership prototypes in comparison with Caucasian Americans. Thus, if the targets of leadership perceptions are Asian Americans, then internal units associated with competence-related traits are likely to be activated in perceivers (Chung-Herrera & Lankau, 2005; Eagly & Karau, 1991; Heilman, Block, Martell, & Simon, 1989). As noted, Asian Americans are viewed as technically competent. To the extent that the Asian American race activates competence-related traits, a prototype associating Asian Americans with competence may develop over time, such that it extends to leadership competence (Chung-Herrera & Lankau, 2005). Among the leadership prototypes found in past studies (Epitropaki & Martin, 2004), we argue that internal units associated with competence are most likely activated when targets are Asian Americans. In contrast, if the targets are Caucasian Americans, then internal units associated with agentic traits are likely to be activated (Chung-Herrera & Lankau, 2005; Hogan, Curphy, & Hogan, 1994). Among the implicit leadership theory attributes, Masculinity, Tyranny, and Dynamism most reflect agentic attributes, and Intelligence and Dedication most reflect competence attributes. As such, we hypothesized the following:

**Hypothesis 4a:** The relationship between race and leadership perception will be mediated by leadership prototypes, such that Asian Americans will activate a competent-leader prototype consisting of the attributes of Intelligence and Dedication.

**Hypothesis 4b:** The relationship between race and leadership perception will be mediated by leadership prototypes such that Caucasian Americans will activate an agentic-leader prototype consisting of the attributes of Masculinity, Dynamism, and Tyranny.

To test our hypotheses, we conducted three studies using controlled experiments. In Studies 1 and 2, we examined the influence of race and occupation on technical competence and leadership perceptions (Hypotheses 1a through 3). In Study 3, we directly tested another key tenet of the connectionist model of leadership by examining the proposition that race affects leadership perceptions through the activation of leadership prototypes (Hypotheses 4a and 4b). In all three studies, participants read a vignette and evaluated a target employee (Asian American or Caucasian American) working in either an engineer or a sales position. Vignettes have the advantage of mundane realism that simulates a realistic and naturalistic situation. Similar scenario experiments on leadership have consistently yielded the same results in laboratory and field studies (Geissner & van Knippenberg, 2008).

### Studies 1 and 2

**Method**

**Participants**

**Study 1.** Participants were 131 business undergraduates (50 male, 80 female; one participant did not indicate gender). The mean age of participants was 24.54 years. Over 67% of the participants reported having had work experience (averaging 3 years of full-time work experience). Of the participants, 49 (37%) were Asian American, 34 (26%) were Caucasian American, 34 (26%) were Hispanic American, six (5%) were African American, six (5%) were of “other” ethnicity, and two (1%) did not indicate their race. The participants were recruited from two business courses taught by the same instructor in a large business school on the West Coast of the United States. Students were required to fulfill a research component of the course by volunteering to participate in the current study or writing a short research paper; only one student chose to write the paper.

**Study 2.** As with past research examining perceptions and evaluations in the workplace, we used a methodology of recruiting participants from various businesses in a variety of industries (e.g., Martell & DeSmet, 2001; Schleicher, Watt, & Greguras, 2004). A team of trained research assistants contacted a sample of 501 employees from their existing network in the Los Angeles region of California, of which 362 participated in the study (72% response rate). The sample contained 154 male (43%) and 196 female (54%) participants. Twelve participants did not indicate their sex. One hundred and forty-five (40%) were Caucasian American, 124 (34%) were Asian American, 124 (34%) were Asian American, 57 (16%) were Hispanic American, 7 (2%) were African American, 18 (5%) were of “other” ethnicity, and 11 (3%) did not indicate their race. On average, participants were 31.74 years old and worked 39.45 hr per week. Participants had, on average, 10.81 years of full-time work experience in a variety of industries and had been with their current companies for an average of 6 years.

**Design.** A 2 x 2 independent factorial design was used in which the between-subjects variables were race (Caucasian, Asian) and occupation (engineer, salesperson).

**Procedure.** Participants were informed that the study concerned personnel decision making in work settings and that they would read about and evaluate an employee in a U.S.-based organization. Participants were given information about the employee (e.g., employee’s race, occupation, photograph of the employee) and were asked to evaluate the employee on a brief questionnaire. Prior to the start of the study, participants were randomly assigned to one of four experimental conditions (Asian American engineer, Asian American salesperson, Caucasian American engineer, and Caucasian American salesperson). After
agreeing to participate in the study, participants received an e-mail message with a link to an online survey. Online surveys and paper–pencil formats have been shown to yield similar responses (Booth-Kewley, Edwards, & Rosenfield, 1992). The survey consisted of three web pages. The first web page consisted of the voluntary consent form. The second web page consisted of a vignette describing the target employee. The evaluation items were presented below the vignette. The vignette and evaluation items were included on the same web page so that participants could refer back to the vignette as they evaluated the target employee. The third web page consisted of demographic items. We were concerned that the demographic page may have included items that would activate socially desirable responses (e.g., questions regarding participant’s diversity experiences). Therefore, these items were placed on the last web page so as not to prime socially desirable responses. Participants were unable to move back to the previous pages to change their responses.

Vignette. We developed separate vignettes describing the engineer and salesperson positions. Race was manipulated by varying the name (Tung-Sheng Wong vs. John Davis) and the corresponding race category (Caucasian American vs. Asian American) and by providing a photograph of an Asian or a Caucasian person, thus creating our four experimental conditions of race–occupation. The Asian American engineer condition represented a good race–occupation fit, and the Caucasian American salesperson condition represented a poor race–occupation fit. The Caucasian American engineer and salesperson conditions were used as comparison groups given that Caucasian Americans are the standard against which all other racial groups tend to be compared (Rosette et al., 2008). Each vignette provided limited information about the target person. The design of the vignettes was consistent with past research indicating that leadership perceptions can be elicited with limited information (e.g., Chung-Herrera & Lankau, 2005; Epitropaki & Martin, 2004, 2005). The vignette was stated in general and neutral terms so as not to provide any indication of performance (e.g., high vs. low performer) because leadership perceptions could be inferred from performance information (Lord & Maher, 1991). The vignettes consisted of the following description:

Tung-Sheng Wong (John Davis), a 31-year-old Asian American (Caucasian American) male, graduated in 1994 from University of Arizona as a Marketing (Engineering) major. He has been employed in the same U.S.-based organization for five years as a Sales Manager (Engineer Project Manager). His responsibilities include managing customer complaints, providing consultation regarding the company’s services, and troubleshooting customer problems. While he sometimes has problems with certain co-workers, he is generally good tempered.

Past research indicates that physical attractiveness and gender influence evaluations (Bekehr & Gilmore, 1982; Swim et al., 1989). To control for attractiveness, we selected photographs of an Asian and a Caucasian of equal attractiveness. The photographs were drawn from a larger sample of photographs and were previously judged by an independent sample. An analysis of variance (ANOVA) revealed no significant main effect for the attractiveness of the target employee across study conditions for the student sample, $F(3, 126) = 0.06, p = .96$, or the industry sample, $F(3, 350) = 0.41, p = .74$. We controlled for gender influences on perceptions by limiting the target employee to men. For Studies 1 and 2, there were no differences in leadership or technical perceptions based on participant’s race, age, or gender.

Dependent measures

Technical competence perceptions. On the basis of a recent meta-analysis (Arthur, Day, McNelly, & Edens, 2003), we developed three items to assess technical competence. The first two items were adapted from Arthur et al. (2003) and reflected key technical requirements of a job: (a) organizing and planning and (b) problem solving. The third item assessed overall technical competence. Participants were provided with a definition of each item (e.g., problem solving: developing solutions to problems and technical skills: performs job-related technical skills proficiently) and were asked to rate the target employee on a Likert-type scale ranging from 1 (very poor) to 6 (excellent). Participants’ ratings for the three items were averaged to create an overall technical competence score. Cronbach’s alphas for the three items were .77 and .70 for the student and industry samples, respectively, which were deemed satisfactory.

Leadership perceptions. Like past researchers (Hains et al., 1997; Hogg et al., 1998; Platow & van Knippenberg, 2001), we assessed leadership perceptions using the Global Leadership Impression (GLI) Scale (Cronshaw & Lord, 1987; Lord, 1977). The GLI consists of five items. Sample items included, “How typical of a leader is Tung-Sheng Wong (John Davis)?” and “To what extent does Tung-Sheng Wong (John Davis) demonstrate leadership behaviors?” Participants responded to each item using a six-point Likert-type scale. For example, the two examples given above were anchored at 1 (not at all) and 6 (very much). Cronbach’s alphas (for all five items) of .89 and .82 for the respective student and industry sample were deemed satisfactory. The correlation between technical competence and leadership perception in Studies 1 and 2 were $r = .22, p < .05$, and $r = .25, p < .001$, respectively.

Results and Discussion

Manipulation check. First, we note that our manipulations for race, occupation, and gender were successful, as all participants correctly identified the race, occupation, and gender of the target employee. Second, we examined our manipulation for perceived race–occupation fit. Specifically, participants responded to two questions by indicating how much they agreed or disagreed with each statement: (a) “This job is a good fit for Tung-Sheng Wong (John Davis)” and (b) “Tung-Sheng Wong (John Davis) is a good match for this job.” Participants used a Likert-type scale ranging from 1 (strongly agree) to 7 (strongly disagree) to indicate their response. To reduce social desirability, we embedded the two questions among the other survey questions. Pearson correlations for the two items of $r = .60, p < .001$, and $r = .67, p < .001$, for the respective student and industry samples were deemed satisfactory. As such, a composite score was created by averaging the scores on the two questions. Our manipulation appeared to be successful for both samples. For the student sample, an ANOVA revealed a significant main effect for perceived race–occupation fit for the target employee across study conditions. $F(3, 127) = 11.83, p < .001$. Planned contrasts indicated that the Asian target employee was perceived to be a better fit for the engineer occupation ($M = 3.78, SD = 0.64$) than for the salesperson occupation ($M = 2.84, SD = 0.67$) and did not indicate any difference in
perceived fit between the Caucasian target employee in the engineer ($M = 3.24, SD = 0.72$) and salesperson ($M = 3.29, SD = 0.43$) occupations. Likewise, for the industry sample, an ANOVA revealed a significant main effect for perceived race–occupation fit for the target employee across study conditions, $F(3, 358) = 85.11, p < .001$. Planned contrasts indicated that the Asian target employee was perceived to be a better fit for the engineer occupation ($M = 4.10, SD = 0.58$) than for the salesperson occupation ($M = 2.76, SD = 0.56$) and did not indicate any difference in perceived fit between the Caucasian target employee in the engineer ($M = 3.41, SD = 0.54$) and the salesperson ($M = 3.60, SD = 0.56$) occupations.

**Technical competence perceptions**

**Study 1.** For all analyses, we first conducted hierarchical regression analysis to examine the association of target employees’ race and occupation with technical perceptions. We then conducted ANOVAs and performed inter-cell comparisons to clarify interaction effects and to test our hypotheses directly (Figure 1 displays the results for inter-cell comparisons for Studies 1 and 2). We used Fisher’s least significant difference tests for inter-cell contrasts and set the significance level to .05. In Step 1, we entered participants’ gender ($β = .05, ns$), race ($β = −.05, ns$), and age ($β = −.07, ns$) as control variables ($R^2 = .01$). Step 2 showed that beyond participants’ gender ($β = .12, ns$), race ($β = −.05, ns$), and age ($β = −.07, ns$), the variables of target employee’s occupation (coded as salesperson = 0, engineer = 1) ($β = .31, p < .001$) and race by occupation ($β = .42, p < .001$) explained significant variance in technical competence perception ($ΔR^2 = .26$), whereas target employee’s race (coded as Caucasian Americans = 0, Asian Americans = 1; $β = −.02, ns$) did not. The univariate ANOVA for the interaction term was significant, $F(3, 356) = 13.97, p < .001$, $η^2 = .25$, was significant, and Fisher’s least significant difference (LSD) tests of inter-cell comparisons revealed that perceptions of technical competence (a) were higher for Asian American engineers ($M = 4.72, SD = 0.52$) than for Caucasian American engineers ($M = 3.96, SD = 0.84$) and (b) were lower for Asian American salespersons ($M = 3.45, SD = 0.95$) than for Caucasian American salespersons ($M = 4.18, SD = 0.82$). Thus, Hypotheses 1a and 1b were fully supported.

**Study 2.** To examine the association of target employees’ race and occupation with technical competence perceptions, we entered in Step 1 participants’ gender ($β = −.04, ns$), race ($β = −.03, ns$), and age ($β = .01, ns$) as control variables ($R^2 < .01$). Step 2 showed that beyond participants’ gender ($β = −.00, ns$), race ($β = −.01, ns$), and age ($β = .03, ns$), the variables of target employee’s occupation (coded as salesperson = 0, engineer = 1) ($β = .30, p < .001$) and race by occupation ($β = .28, p < .001$) explained significant variance in technical competence perceptions ($ΔR^2 = .17$), whereas target employee’s race (coded as Caucasian Americans = 0, Asian Americans = 1) ($β = −.04, ns$) did not. The univariate ANOVA for the interaction term was significant, $F(3, 356) = 23.93, p < .001$, $η^2 = .17$, and Fisher’s LSD tests of inter-cell comparisons revealed that perceptions of technical competence (a) were higher for Asian American engineers ($M = 4.45, SD = 0.68$) than for Caucasian American engineers ($M = 3.91, SD = 0.81$) and (b) were lower for Asian American salespersons ($M = 3.48, SD = 0.68$) than for Caucasian American salespersons ($M = 3.87, SD = 0.77$). Thus, Hypotheses 1a and 1b were fully supported.

**Leadership perceptions**

**Study 1.** As with technical perception, we first conducted hierarchical regression analysis to examine the association of target employees’ race and occupation with leadership perceptions, followed by ANOVA and inter-cell comparisons to clarify interaction effects and to test our hypotheses directly (Figure 2 displays the results for inter-cell comparisons for Studies 1 and 2). We used Fisher’s LSD tests, with a significance level of .05 for the inter-cell comparisons. In Step 1, we entered participants’ gender ($β = .12, ns$), race ($β = −.05, ns$), and age ($β = −.07, ns$) as control variables ($R^2 = .42$) explained significant variance in leadership perceptions ($ΔR^2 = .26$, whereas target employee’s race (coded as Caucasian Americans = 0, Asian Americans = 1; $β = −.02, ns$) did not. The univariate ANOVA for the interaction term, $F(3, 127) = 13.97, p < .001$, $η^2 = .25$, was significant, and Fisher’s least significant difference (LSD) tests of inter-cell comparisons revealed that perceptions of leadership (a) were higher for Asian American engineers ($M = 3.96, SD = 0.84$) and (b) were lower for Asian American salespersons ($M = 3.45, SD = 0.95$) than for Caucasian American salespersons ($M = 4.18, SD = 0.82$). Thus, Hypotheses 1a and 1b were fully supported.

**Study 2.** To examine the association of target employees’ race and occupation with leadership perceptions, we entered in Step 1 participants’ gender ($β = −.04, ns$), race ($β = −.03, ns$), and age ($β = .01, ns$) as control variables ($R^2 < .01$). Step 2 showed that beyond participants’ gender ($β = −.00, ns$), race ($β = −.01, ns$), and age ($β = .03, ns$), the variables of target employee’s occupation (coded as salesperson = 0, engineer = 1) ($β = .30, p < .001$) and race by occupation ($β = .28, p < .001$) explained significant variance in leadership perceptions ($ΔR^2 = .17$), whereas target employee’s race (coded as Caucasian Americans = 0, Asian Americans = 1) ($β = −.04, ns$) did not. The univariate ANOVA for the interaction term was significant, $F(3, 356) = 23.93, p < .001$, $η^2 = .17$, and Fisher’s LSD tests of inter-cell comparisons revealed that perceptions of leadership (a) were higher for Asian American engineers ($M = 4.45, SD = 0.68$) than for Caucasian American engineers ($M = 3.91, SD = 0.81$) and (b) were lower for Asian American salespersons ($M = 3.48, SD = 0.68$) than for Caucasian American salespersons ($M = 3.87, SD = 0.77$). Thus, Hypotheses 1a and 1b were fully supported.

![Figure 1](image-url)  
**Figure 1.** Study 1 and 2 means and standard deviations of technical perception. Numbers in parentheses represent standard deviations.
gender ($\beta = .04$, ns), race ($\beta = -.07$, ns), and age ($\beta = .05$, ns), the variable of target employee’s race (coded as Caucasian Americans = 0, Asian Americans = 1) ($\beta = -.32$, $p < .001$), explained significant variance in leadership perception ($\Delta R^2 = .12$), whereas target employee’s occupation (coded as salesperson = 0, engineer = 1) ($\beta = -.12$, ns) and race by occupation ($\beta = -.03$, ns) did not. Thus, there was a main effect for target employee’s race such that leadership perceptions were higher for Caucasian Americans than for Asian Americans. Hypothesis 2 was supported.

Hypothesis 3 predicted that perceptions of leadership as a function of occupation would not differ for Caucasian Americans but would differ for Asian American engineers than for Asian American salespersons. Contrary to expectations, we found no difference in leadership perceptions in the student sample between Asian American engineers ($M = 2.99$, $SD = .72$) and Asian American salespersons ($M = 2.85$, $SD = .71$), $F(3, 127) = 5.90$, $p < .001$, $\eta^2 = .12$. Consistent with our expectations, Caucasian American engineers ($M = 3.56$, $SD = .67$) did not differ from Caucasian American salespersons ($M = 3.30$, $SD = 1.00$). In sum, we found support for Hypothesis 2 but no support for Hypothesis 3.

**Study 2.** In Step 1, we entered participants’ gender ($\beta = -.10$, ns), race ($\beta = .03$, ns), and age ($\beta = -.11$, ns) as control variables ($R^2 = .02$). Step 2 showed that beyond participants’ gender ($\beta = -.06$, ns), race ($\beta = -.01$, ns), and age ($\beta = .01$, ns), the variables of target employee’s race (coded as Caucasian Americans = 0, Asian Americans = 1) ($\beta = -.29$, $p < .001$) and race by occupation ($\beta = .18$, $p < .001$) explained significant variance in leadership perception ($\Delta R^2 = .10$), whereas target employee’s occupation (coded as salesperson = 0, engineer = 1) ($\beta = -.08$, ns) did not. Thus, there was a main effect for target employee’s race such that leadership perceptions were higher for Caucasian Americans than for Asian Americans. Hypothesis 2 was supported. In addition, as detailed in the ANOVA below, there was an interaction effect for race by occupation on leadership perceptions.

The univariate ANOVA for the interaction term was significant, $F(3, 357) = 17.63$, $p < .001$, $\eta^2 = .13$, and Fisher’s LSD tests of inter-cell comparisons supported the predicted pattern in Hypothesis 3 by showing that leadership perceptions of Asian American engineers ($M = 3.19$, $SD = .78$) were significantly higher than those of Asian American salespersons ($M = 2.92$, $SD = .82$). Contrary to expectations, the inter-cell comparisons showed that leadership perceptions of Caucasian American engineers ($M = 3.38$, $SD = .81$) were significantly lower than those of Caucasian American salespersons ($M = 3.77$, $SD = .83$). In sum, we found support for Hypothesis 2 and partial support for Hypothesis 3.

Across Studies 1 and 2, results for technical competence perceptions were consistent and provided full support for Hypotheses 1a and 1b: Technical competence perceptions were higher for Asian American engineers than for Caucasian American engineers, whereas technical competence perceptions were lower for Asian American salespersons than for Caucasian American salespersons. Likewise, between-race leadership perceptions were consistent and provided support for Hypothesis 2: Leadership perceptions were higher for Caucasian Americans than for Asian Americans. However, within-race leadership perceptions were less consistent across Studies 1 and 2. We found partial support in Study 2 (industry sample) but not in Study 1 (student sample) for Hypothesis 3: We predicted that leadership perceptions as a function of occupation would not differ for Caucasian Americans but would differ for Asian Americans such that leadership perceptions would be higher for Asian American engineers than for Asian American salespersons. The inconsistent support for Hypothesis 3 suggests the possibility that participants’ experience and knowledge may account for the differing patterns across samples (Foti et al., 2008; Hogue & Lord, 2007). This inconsistent finding is explored further in the General Discussion.

These results further increase our understanding of leadership perceptions by separately examining technical competence and leadership perceptions, which were potential confounds in past
research. Our results indicate that even when Asian Americans were perceived to be more technically competent (i.e., Asian American engineers vs. Caucasian American engineers), they still were perceived to be less prototypic leaders than were Caucasian Americans. Overall, our results corroborate past research findings (e.g., Chung-Herrera & Lankau, 2005; Rosette et al., 2008) and suggest that Asian Americans are perceived as less prototypic leaders than are Caucasian Americans, regardless of occupation, and perceptions of technical competence. The implications of perceptions of high technical competence among Asian Americans for leadership perceptions are explored in the General Discussion.

**Study 3**

Whereas the results of Studies 1 and 2 indicate that race influences leadership perceptions, the mechanism of influence is less conclusive. On the basis of the connectionist model of leadership, we proposed that race affects leadership perceptions through the activation of prototypic leadership attributes. Accordingly, the primary goal of Study 3 was to test the mediating role of the prototypic leadership attributes on the relationship of race and leadership perceptions. Furthermore, given that different aspects of our hypotheses were supported in Studies 1 and 2 with regard to leadership perceptions, a secondary goal of Study 3 was to cross-validate the results.

**Method**

**Participants and procedures.** A team of trained research assistants recruited a sample of 381 employees from their existing network in the Los Angeles region of California. The sample consisted of 198 women (52%) and 183 men (48%). One hundred and twelve (30%) were Caucasian American, 108 (28%) were Asian American, 95 (25%) were Hispanic, 47 (12%) were African American, and 17 (5%) were of “other” Ethnicity, and two did not indicate their ethnicity. On average, participants were 33.48 years old and worked 40.29 hours per week. Participants had an average of 12.6 years of full-time work experience in a variety of industries and had been with their current companies for an average of 6.8 years. With the exception of excluding the photographs of the target employee, Study 3 followed the same vignette methodology as Studies 1 and 2, whereby participants read about and evaluated an employee in a U.S.-based organization. We used the same 2 (Caucasian, Asian) x 2 (engineer, salesperson) independent factorial design.

**Dependent measures**

**Leadership perceptions.** As in Studies 1 and 2, we used the Global Leadership Impression Scale (Cronshaw & Lord, 1987; Lord, 1977) to measure leadership perceptions. Cronbach’s alpha for all five items of .90 was deemed satisfactory.

**Prototypic leadership attributes.** We used a validated measure of prototypic leader attributes (Implicit Leadership Theories Scale; Epitropaki & Martin, 2004; Offermann et al., 1994). In the vignette, participants were asked to rate how characteristic of the individual each presented trait was, on a 9-point scale ranging from 1 (not at all characteristic) to 9 (extremely characteristic). The six attributes of implicit leadership theory consisted of Intelligence (α = .85: intelligent, knowledgeable, educated, and clever), Dedication (α = .88: dedicated, hardworking, committed, and responsible), Masculinity (α = .94: strong, aggressive, and dominant), Tyranny (α = .86: authoritarian, controlling, and demanding), Sensitivity (α = .89: sensitive, empathetic, and understanding), and Dynamism (α = .86: energetic, dynamic, and proactive).
icitation ($\alpha = .85$: motivated, dedicated, and hardworking), Sensitivity ($\alpha = .82$: understanding, sincere, and helpful), Tyranny ($\alpha = .88$: domineering, pushy, manipulative, loud, conceited, and selfish), Masculinity ($\alpha = .73$: masculine and male), and Dynamism ($\alpha = .85$: energetic, strong, and dynamic). In this study, a maximum-likelihood confirmatory factor analysis provided further support for the established six attributes, $\chi^2(174) = 352.93, p < .001$, $\chi^2/df = 2.03$; comparative fit index (CFI) = .96; Tucker–Lewis index (TLI) = .94; root mean square error of approximation (RMSEA) = .05. For Asian Americans, the respective means and standard deviations for each attribute were as follows: for Intelligence, $M = 7.47, SD = 1.56$; for Dedication, $M = 8.13, SD = 1.33$; for Sensitivity, $M = 6.64, SD = 1.72$; for Tyranny, $M = 4.81, SD = 1.26$; for Masculinity, $M = 7.32, SD = 1.85$; and for Dynamism, $M = 5.40, SD = 1.45$. For Caucasian Americans, the respective means and standard deviations for each attribute were as follows: for Intelligence, $M = 7.09, SD = 1.51$; for Dedication, $M = 7.60, SD = 1.58$; for Sensitivity, $M = 6.56, SD = 1.68$; for Tyranny, $M = 5.14, SD = 1.61$; for Masculinity, $M = 7.75, SD = 1.91$; and for Dynamism, $M = 5.86, SD = 1.21$.

Results and Discussion

Manipulation check. All participants correctly identified the race, occupation, and gender of the target employee. Using the same two-item measure as in Studies 1 and 2 ($r = .85, p < .001$), we created a composite measure to assess perceived race–occupation fit. An ANOVA revealed a significant main effect for perceived race–occupation fit for the target employee across study conditions, $F(3, 371) = 5.81, p < .01$. Planned contrasts indicated that the Asian target employee was perceived to be a better fit for the target employee in the engineer ($M = 4.91, SD = 1.30$) than for the salesperson occupation ($M = 4.30, SD = 1.46$) and did not indicate any difference in perceived fit between the Caucasian target employee in the engineer ($M = 4.51, SD = 1.25$) and salesperson ($M = 4.65, SD = 1.32$) occupations. For Study 3, there were no differences in participant’s race, age, or gender in leadership or technical perceptions.

Mediating effect of leadership attributes and prototypes. We first investigated Hypotheses 4a and 4b by separately testing each leadership attribute as a mediator of the race and leadership perception relationship (simple mediation). We then examined the competent- and agentic-leadership prototypes as mediators (i.e., simultaneously testing multiple leadership attributes as mediators) of the race and leadership perception relationship with multiple-mediation models. Table 1 displays the means, standard deviations, and correlations among the study variables.

**Simple mediations.** We investigated Study 3 hypotheses (see Figure 4) by testing the indirect effect of race on leadership perception through each individual prototypic leadership attribute. Tests of mediation are often guided by the multistep approach suggested by Baron and Kenny (1986). In addition, recent developments recommend that mediation analyses be based on formal significance tests of the indirect effect $ab$, with the Sobel test and bootstrap analysis being most often employed. Bootstrap analysis is preferred over the Sobel test (Sobel, 1982) because it does not assume that the indirect effect is normally distributed and thus avoids problems introduced by asymmetric and non-normal sampling distributions (MacKinnon, Lockwood, & Williams, 2004). This procedure bootstraps the sampling distribution of the indirect effect and empirically derives the CIs for the true population of that effect. We constructed bias-corrected CIs around the product coefficient of the indirect (mediated) effect using the SPSS macro created by Preacher and Hayes (2008). This macro incorporates the procedures proposed by Baron and Kenny and facilitates estimation of the indirect effect $ab$, both with a normal theory approach (i.e., the Sobel test) and with a bootstrap approach to obtain CIs. Product coefficients with 95% CIs that do not include zero indicate that the indirect effect is significant at $\alpha = .05$, showing support for mediation. For the simple mediation analyses, we performed six separate bootstrap analyses (Fritz & MacKinnon, 2007) with each of the six prototypic leadership attributes as mediating variables, race as the independent variable, and leadership perceptions as the dependent variable.

As can be seen in Figure 4, the coefficients for the relationship between (a) the independent variable and the mediator and (b) the mediator and the dependent variable are consistent with our hypotheses that Asian Americans and Caucasian Americans activate different prototypic leadership attributes that, in turn, influence leadership perceptions. Specifically, we expected that leadership perceptions of Asian Americans would be influenced by the acti-
evaluation of a competent-leader prototype consisting of the prototypic leadership attributes of Intelligence and Dedication. Likewise, we expected that leadership perceptions of Caucasian Americans would be influenced by the activation of an agentic-leader prototype consisting of the prototypic leadership attributes of Masculinity, Tyranny, and Dynamism. Table 2 displays the bootstrapped estimates for the specific indirect effects. Masculinity, Intelligence, Tyranny, Dedication, and Dynamism significantly mediated the effect of race on leadership perception, with point estimates of \(0.06, 0.08, 0.04, 0.10, \) and \(-0.09\) and 95% CIs of \(-0.12\) to \(-0.01\), \(0.02\) to \(0.16\), \(-0.09\) to \(-0.01\), \(0.04\) to \(0.18\), and \(-0.19\) to \(-0.03\), respectively. Sensitivity did not mediate the effect of race on leadership perception, point estimate of \(0.01\) and 95% CIs of \(-0.03\) to \(0.06\). The simple mediation results provided support for Hypotheses 4a and 4b.

\section*{Multiple mediation models}
In addition to examining the mediating effect of each leadership attribute on the race and leadership perception relationship, we examined the competent- and agentic-leadership prototypes as mediators of the race and leadership perception relationship with multiple-mediation models. A multiple-mediation model tests “simultaneous mediation by multiple variables” (Preacher & Hayes, 2008, p. 880). Thus, for the competent-leadership prototype, we performed a bootstrap analysis to test the mediation model with (a) race as the independent variable, point estimate of \(0.01\) and 95% CIs of \(-0.03\) to \(0.06\). The simple mediation results provided support for Hypotheses 4a and 4b.

\section*{Multiple mediation models}
In addition to examining the mediating effect of each leadership attribute on the race and leadership perception relationship, we examined the competent- and agentic-leadership prototypes as mediators of the race and leadership perception relationship with multiple-mediation models. A multiple-mediation model tests “simultaneous mediation by multiple variables” (Preacher & Hayes, 2008, p. 880). Thus, for the competent-leadership prototype, we performed a bootstrap analysis to test the mediation model with (a) race as the independent

\begin{table}[h]
\centering
\caption{Study 3 Separate Simple Mediation: Leadership Attributes Mediating the Race and Leadership Perception Relationship}
\small
\begin{tabular}{llllll}
\hline
Variable & Product of coefficients & & & & \\
 & Point estimate & \(SE\) & \(Z\) & \(p\) & \\
\hline
Masculinity & \(-0.06\) & \(0.03\) & \(-2.03\) & \(0.04\) & \\
Intelligence & \(0.08\) & \(0.03\) & \(2.26\) & \(0.02\) & \\
Sensitivity & \(0.01\) & \(0.02\) & \(0.42\) & \(0.68\) & \\
Tyranny & \(-0.04\) & \(0.02\) & \(-1.92\) & \(0.05\) & \\
Dedication & \(-0.10\) & \(0.03\) & \(-3.03\) & \(0.00\) & \\
Dynamism & \(-0.09\) & \(0.03\) & \(-2.88\) & \(0.00\) & \\
\hline
\end{tabular}
\end{table}

\textit{Note.} Bootstrap sample size = 1,000. Coefficients in boldface indicate mediation. CI = confidence interval. Race was coded as \(0 = \) Caucasian, \(1 = \) Asian. Negative and positive point estimates indicate activation by the Caucasian and Asian races, respectively.
variable, (b) Intelligence and Dedication as mediating variables, and (c) leadership perceptions as the dependent variable. Similarly, for the agentic-leader prototype, we performed a bootstrap analysis to test the mediation model with (a) race as the independent variable; (b) Masculinity, Tyranny, and Dynamism as mediating variables; and (c) leadership perceptions as the dependent variable. The mediation results for the competent- and agentic-leadership prototypes are reported in Table 3 and Figure 5 and in Table 4 and Figure 6, respectively. The multiple mediation results are similar to the simple mediation results and provided further support for Hypotheses 4a and 4b.

The results support a key theoretical tenet of the connectionist model of leadership that race affects leadership perceptions through the activation of prototypic leadership attributes. Leadership perceptions of Asian Americans are influenced by the activation of the prototypic leadership attributes of Intelligence and Dedication, whereas leadership perceptions of Caucasian Americans are influenced by the activation of the prototypic leadership attributes of Masculinity, Tyranny, and Dynamism. These results suggest that for Caucasian Americans, leadership perceptions are perhaps more influenced through the activation of an agentic-leader prototype, whereas for Asian Americans, leadership perceptions may be influenced more through the activation of a competent-leader prototype. Indeed, the two leadership prototypes are supported by a maximum-likelihood confirmatory factor analysis specifying a second-order two-factor model, with the attributes of Dynamism, Masculinity, and Tyranny comprising the agentic-leader prototype and Intelligence and Dedication comprising the competent-leader prototype. χ²(129) = 267.06, p < .001, (χ²/df = 2.07, CFI = .96, TLI = .95, RMSEA = .05). The distinction between competent- and agentic-leader prototypes parallels the historical distinction between managers and leaders, whereby managers are characterized as “people who do things right” (i.e., competent in conducting or accomplishing managerial tasks and goals), and leaders are characterized as “people who do the right thing” by influencing and guiding in a direction, course, or action (i.e., agentic in influencing others and outcomes; Bass & Goldsmith, 2003; Zaleznik, 1977).

**Leadership perceptions.** A second goal of Study 3 was to cross-validate the results pertaining to leadership perceptions, given that Hypothesis 3 received inconsistent support in Studies 1 and 2. As in Studies 1 and 2, we first conducted hierarchical regression analysis to examine the association of target employees’ race and occupation with leadership perceptions, followed by ANOVA and inter-cell comparisons to clarify interaction effects and to test our hypotheses directly. In Step 1, we entered participants’ gender (β = .05, ns), race (β = −.05, ns), and age (β = .00, ns) as control variables (R² = .01). Step 2 showed that beyond participants’ gender (β = .07, ns), race (β = −.03, ns), and age (β = −.01, ns), the variables of target employee’s race (coded as Caucasian Americans = 0, Asian Americans = 1) (β = −.30, p < .001) and race by occupation (β = .11, p < .05) explained significant variance in leadership perceptions (ΔR² = .10), whereas target employee’s occupation (coded as salesperson = 0, engineer = 1) (β = .07, ns) did not. Thus, there was a main effect for target employee’s race such that leadership perceptions were higher for Caucasian Americans than for Asian Americans. Hypothesis 2 was supported. In addition, as detailed in the ANOVA below, there was an interaction effect for race by occupation on leadership perceptions.

The univariate ANOVA for the interaction term was significant, F(3, 377) = 14.51, p < .001, ηp² = .10, and Fisher’s LSD tests of inter-cell comparisons supported the predicted pattern in Hypothesis 3, as leadership perceptions of Asian American engineers (M = 3.48, SD = 0.76) were significantly higher than those for Asian American salespersons (M = 3.17, SD = 0.75), and leadership perceptions of Caucasian American engineers (M = 3.81, SD = 0.90) were not different from those of Caucasian American salespersons (M = 3.86, SD = 0.86). In sum, we found support for Hypotheses 4a and 4b in Study 3 as well as cross-validation support for Hypotheses 2 and 3.

**General Discussion**

We applied the connectionist model of leadership in order to better understand the reasons why Asian Americans hold fewer leadership positions than do Caucasian Americans, even though Asian American employees are often viewed positively (Chung-Herrera & Lankau, 2005). Our thinking was that stereotypes of Asian Americans as technically competent and their perceived fit with technical occupations may be one reason for the limited numbers of Asian Americans in business leadership positions (Korn Ferry International, 2006). Consistent with our expectations, across all three studies, our results indicate that when making between-race comparisons, Asian Americans are perceived as less ideal leaders than are Caucasian Americans. This suggests that

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**Table 3**

*Study 3 Multiple-Mediation Model: Competent-Leadership Prototype Mediating the Race and Leadership Perception Relationship*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Point estimate</th>
<th>SE</th>
<th>Z</th>
<th>p</th>
<th>Lower limit</th>
<th>Upper limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>.06</td>
<td>.03</td>
<td>2.09</td>
<td>.04</td>
<td>.02</td>
<td>.12</td>
</tr>
<tr>
<td>Dedication</td>
<td>.06</td>
<td>.03</td>
<td>2.29</td>
<td>.02</td>
<td>.02</td>
<td>.12</td>
</tr>
<tr>
<td>Total indirect effect</td>
<td>.11</td>
<td>.04</td>
<td>2.92</td>
<td>.00</td>
<td>.05</td>
<td>.20</td>
</tr>
</tbody>
</table>

*Note.* Bootstrap sample size = 1,000. Coefficients in boldface indicate mediation. CI = confidence interval. Race was coded as 0 = Caucasian, 1 = Asian. Negative and positive point estimates indicate activation by the Caucasian and Asian races, respectively.
Asian Americans may be disadvantaged relative to Caucasian Americans when organizational leaders make decisions about whom to promote to managerial positions.

Our pattern of results provides some insight into this consistent finding. As expected, Asian Americans received higher technical competence ratings in engineering positions and lower technical competence ratings in sales positions than did Caucasian Americans. This supports our contention that Asian Americans are viewed as less well fitting for leadership roles that require a broad array of knowledge, skills, and abilities. Results from Study 3 also support this argument, as shown by the differential leadership prototypes that predict leadership perceptions for Asian Americans and Caucasian Americans. Specifically, the highly positive technical competence stereotypes may cause Asian Americans to be viewed as less well fitting for leadership roles that require a broad array of knowledge, skills, and abilities. Results from Study 3 also support this argument, as shown by the differential leadership prototypes that predict leadership perceptions for Asian Americans and Caucasian Americans. Whereas the Asian American target activated a competent-leadership prototype, the Caucasian American target activated an agentic-leadership prototype.

Furthermore, the results provide strong evidence that race and occupation may simultaneously influence technical competence perceptions. Consistent with the connectionist model of leadership, when expectations regarding race and occupation were congruent, Asian Americans reaped the benefits. That is, under conditions of good race–occupation fit, Asian American engineers were consistently evaluated more favorably on technical competence than were Caucasian Americans. The positive perceptions of Asian Americans as being diligent, smart, well organized, motivated, and well educated (Bourne, 1975; Landau, 1995; Sue & Sue, 1974) appear to result in high expectations of technical competence for Asian Americans under conditions of good race–occupation fit. Moreover, under conditions of a poor race–occupation fit (Asian American salesperson), Asian Americans were consistently seen as less competent than were Caucasian Americans on the technical aspects of the job, attesting to the importance of occupational fit for technical competence perceptions for Asian Americans.

Our results provided mixed evidence that race and occupation interact to influence leadership perceptions when making within-race comparisons for Asian Americans (Hypothesis 3). Our findings generally corroborate past research that leadership perceptions may be more positive when perceivers’ expectations are

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**Figure 5.** Competent-leader prototype as mediator of the race and leadership perceptions relationship. The numbers represent standardized regression coefficients derived from a bootstrap procedure. Race was coded as 0 = Caucasian, 1 = Asian. Negative and positive estimates indicate activation by the Caucasian and Asian races, respectively. The ‘a’ path represents the relationship between the predictor variable and the mediator variable, the ‘b’ path represents the relationship between the predictor variable and the outcome variable, the ‘c’ path represents the total effect, and the ‘c prime’ path represents the direct effect. *p < .05, **p < .01, ***p < .001.

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**Table 4**

*Study 3 Multiple-Mediation Model: Agentic-Leadership Prototype Mediating the Race and Leadership Perception Relationship*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Product of coefficients</th>
<th>Bootstrapping bias-corrected 95% CI</th>
<th>Lower limit</th>
<th>Upper limit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Point estimate</td>
<td>SE</td>
<td>Z</td>
<td>p</td>
</tr>
<tr>
<td>Masculinity</td>
<td>-.04</td>
<td>.02</td>
<td>-1.97</td>
<td>.04</td>
</tr>
<tr>
<td>Dynamism</td>
<td>-.03</td>
<td>.02</td>
<td>-1.80</td>
<td>.07</td>
</tr>
<tr>
<td>Tyranny</td>
<td>-.07</td>
<td>.03</td>
<td>-2.65</td>
<td>.01</td>
</tr>
<tr>
<td>Total indirect effect</td>
<td>-.15</td>
<td>.04</td>
<td>-3.56</td>
<td>.00</td>
</tr>
</tbody>
</table>

*Note.* Bootstrap sample size = 1,000. Coefficients in boldface indicate mediation. CI = confidence interval. Race was coded as 0 = Caucasian, 1 = Asian. Negative and positive point estimates indicate activation by the Caucasian and Asian races, respectively.
confirmed (Dipboye, 1985; Hains et al., 1997; Heilman, 1983, 1995; Hogg et al., 1998, 2006; Platow & van Knippenberg, 2001; Rosette et al., 2008). Because strong expectations exist for the types of occupations Asian Americans should occupy (Leong & Hayes, 1990), leadership perceptions were more favorable under conditions of good fit for race–occupation (Asian American engineers) and less favorable under conditions of poor fit (Asian American salespersons). By contrast, leadership perceptions do not generally differ when making within-race comparisons for Caucasian Americans. We posit that this is due to the lack of strong expectations for the types of occupations that Caucasian Americans should occupy.

Note, however, that our three samples produced somewhat inconsistent results for Hypothesis 3, so these particular conclusions must be viewed with caution. Specifically, whereas our two industry samples supported Hypothesis 3 that leadership perceptions would be higher for Asian American engineers than for Asian American salespersons on account of occupational fit perceptions, our student sample showed no significant differences. One possible explanation for this pattern of results is that students have fewer occupational stereotypes associated with racial groups. Countering this interpretation is our finding in Hypothesis 1a that the student sample viewed Asian American engineers as more technically competent than Caucasian American engineers. Another possibility is that the student sample had more difficulty associating race–occupation fit with leadership capability. Having few work experiences beyond the entry level, students may have made fewer attributions about the impact of occupational experience in preparing individuals for leadership roles. Consistent with this interpretation, the student sample did not equate any race–occupation groups with more favorable leadership perceptions.

Finally, another unique contribution of this study is that we sought to illustrate how contextual inputs such as race may influence leadership perceptions through the activation of differential leadership prototypes and its associated attributes. More specifically, Asian Americans and Caucasian Americans activate competent- and agentic-leadership prototypes, respectively, which then influence leadership perceptions. Consequently, Asian Americans may be perceived as less suitable leaders in Western business contexts where the agentic-leadership prototype is idealized. Decades of research have demonstrated that the ideal leadership prototype consists of primarily agentic attributes (Eagly & Karau, 2002; Heilman, 2001; Lord & Maher, 1991; Scott & Brown, 2006). Thus, to the extent that agentic views of leadership are widely endorsed in Western contexts, a bias emerges against Asian Americans because they are seen as a poor fit for such positions (Lord & Maher, 1991). These results highlight the key role of cultural context in shaping leadership perceptions (House, Hanges, Javidan, Dorfman, & Gupta, 2004). That is, these results are based on the leadership perceptions of Asians in a Western context where Caucasians are the prototypic norm (Rosette et al., 2008). These results are not likely to hold in cultural contexts where Asians are the prototypic norm. This has clear implications for Asian Americans in terms of career opportunities but also for organizations that may be overlooking a large talent pool of Asian Americans for leadership roles. Clearly, future research is needed that investigates leadership perceptions of Asian Americans in organizational settings to determine whether, in fact, our results for leadership prototypes applies to individuals who are well-known in their organizations.

Another important implication of our research is its potential to help explain the glass ceiling effects experienced by Asian Americans. According to Rosette et al. (2008),

Over time, African Americans have come to occupy a greater percentage of entry-level positions and more middle management roles . . . . Other racial minority groups, such as Asian Americans and Hispanic Americans, have also made noticeable inroads at lower and middle levels in business organizations. Although progress is evident at some positions, racial minorities are still less visible in top leadership positions. (p. 758)

We suspect that the pattern of results for the leader prototypes in Study 3 may provide a basis for understanding why Asian Americans remain in lower level managerial positions. Specifically, the competent-leadership prototype may be viewed as more appropri-
ate for lower and midlevel management positions. In particular, if Asian Americans are assumed to be in technical roles, then they may also be viewed as a good fit for supervisory positions involving technical employees. As such, the competent-leadership prototype may be most relevant for these types of managerial roles, whereas the agentic-leadership prototype may be seen as appropriate for higher level managerial roles that involve a variety of direct and indirect reports (technical employees, support staff, and lower level managers).

It is important to note that our research does not necessarily suggest that Asian Americans are not perceived as leaders; rather our results indicate that Asian Americans are perceived as less ideal leaders in comparison with Caucasian Americans in Western contexts. Ultimately, promotions and leadership advancement of Asian Americans and other minorities occur in a competitive environment where they are compared with others, especially their Caucasian counterparts, who may be viewed as best fitting for a business leader (Rosette et al., 2008). Consequently, the extent to which Asian Americans and other minorities are perceived as less ideal leaders in comparison with others has significant implications for leadership advancement.

Limitations and Future Research

One limitation of this research is that we varied the study methodology by (a) utilizing a student sample in Study 1 and industry samples in Studies 2 and 3 and (b) including a picture of the target individual in Studies 1 and 2 but not in Study 3. These variations may have introduced confounds that influenced our results, namely, the inconsistent results across the three studies pertaining to within-race leadership perceptions (Hypothesis 3). At the same time, the methodological variations across the three studies (i.e., differences in experience with work, employee evaluation, and exposure to various occupations between student and industry samples; amount of information about the leader based on the inclusion vs. exclusion of a photo of the target leader) may provide some potential insight for the mixed results. Researchers have posited that leadership perceptions are influenced by perceivers’ experience and knowledge (Foti et al., 2008; Hogue & Lord, 2007). Consistent with the connectionist model of leadership, the inconsistent support between our industry samples for Hypothesis 3 regarding leadership perceptions as a function of occupation for Caucasian Americans could be explained by differences in knowledge (i.e., information about the target individual). That is, a photograph of the target individual was provided to industry participants in Study 2 but not Study 3. Research shows that individuals are more likely to judge targets in more stereotypical fashion in concert with a decrease in information (Chung-Herrera & Lankau, 2005). To the extent that our hypotheses reflect stereotypical views of Asian Americans, participants in Study 3, who received less information about the target person (no photographs), responded in a more stereotypic fashion (i.e., Hypothesis 3 was supported). In comparison, it is plausible that the photographs included in the vignette represented individuating information for Study 2 participants, who were then more motivated to respond in a less stereotypical fashion (e.g., contrary to our expectation, participants were motivated to make distinctions on leadership perceptions between Caucasian American engineers and Caucasian American salespersons). Thus, whereas the results of Hypothesis 3 appear somewhat inconsistent across the three studies, they may be explained by the connectionist model of leadership, which posits that leadership perceptions are influenced by perceivers’ experience and knowledge. However, our explanation is speculative, as the current investigation is the first empirical study focused on race to test key tenets of the connectionist model of leadership. Future research should examine how attributes of perceivers, in comparison with attributes of the target (as in this study), may influence leadership perceptions. We call for more research on factors that may moderate or mediate the race–leadership perception link, such as work experience, knowledge of occupations, industry-specific effects, and performance-related knowledge about target individuals.

The results across the three studies are more consistent with the connectionist model of leadership than with leadership categorization theory. That is, the results are consistent with the connectionist model of leadership, positing that leadership perceptions are generated at the moment of use and are highly flexible depending on one’s experience, knowledge, motivation, purpose of judgment, and goals (e.g., accuracy goals, social motives, accountability, power hierarchy, etc.) (For a review, see Katz & Hass, 1988; Operario & Fiske, 2004; Thompson, Zanna, & Griffin, 1995). In contrast, leadership categorization theory generates more static predictions such that leadership perceptions would be relatively fixed across time and contexts. Furthermore, leadership categorization theory is less able to account for the influence of contextual factors, such as race, combined with occupation in shaping leadership prototypes (e.g., competent- and agentic-leadership prototypes) that, in turn, influence leadership perceptions. In sum, our results are consistent with recent trends in the leadership literature suggesting that these perceptions may be dynamic and context sensitive (Foti et al., 2008; Hogue & Lord, 2007). At the same time, we have not tested the full connectionist model of leadership, which should be undertaken in future research on race and ethnicity.

An additional limitation of the current research is that the information regarding the target employee’s performance was stated in a “neutral” tone. That is, there was no clear indication that performance was good or poor. Conditions of neutrality or lack of clarity may increase bias (Landau, 1995; Schmitt & Chan, 1998). Future research should examine the effects of race–occupation expectations on evaluations under varying levels of employee performance. Future research should also compare differences in how occupational perceptions influence Asian American men in comparison with Asian American women. Ample research has shown that men and women are evaluated differently (Swim et al., 1989) and that there is clear gender stereotyping of occupations and leadership evaluations (Heilman et al., 2004). Thus, the interaction of race, occupation, and gender stereotyping of minorities would be a valuable avenue to explore.

Practical Implications

Our findings suggest that perceivers’ expectations for race and occupation may influence leadership perceptions of minorities, which, in turn, may subsequently impact their leadership opportunities. This stands in stark contrast to some beliefs that race no longer affects work evaluations because the process is guided by meritocracy (Castilla, 2008; Rosette & Thompson, 2005) and color-blindness (Reitman, 2006; Wildman, 1996). Our results sug-
gest that decision makers should be sensitive to biases stemming from race, occupation, and activated leadership prototypes. The current study helps us better understand why Asian Americans continue to experience barriers to higher status leadership positions despite their positive attributes (i.e., as “model minority”) and qualifications (i.e., having achieved more education, training, and work experience than other groups). Promotion decisions are often based on multiple criteria, of which leadership and technical competence perceptions are arguably two of the most important. Our findings suggest that the glass ceiling effect could be a result of perceptions of Asian Americans as less prototypical leaders. That is, leadership perceptions of Asian Americans (vs. Caucasian Americans) were consistently low despite perceptions that Asian Americans are more technically competent. These discrepant perceptions may explain why so few Asian Americans have attained high-level management positions in U.S. organizations. Furthermore, because Asian Americans tend to believe that technical competence is the primary criterion for promotions (Woo, 2000), they may focus their energy on improving their technical rather than their leadership skills, further perpetuating the cycle of bias.

Our study focused on Asian Americans, a minority group that has been largely ignored in the organizational science literature and most particularly the leadership literature (Ospina & Foldy, 2009). Our results emphasize the validity of the view that research findings for one race–ethnicity group may not generalize to other minority groups (Fernandez, 1999; Rosette et al., 2008; Thomas & Gabarro, 1999) and that the experience of work and workplace issues may be different for Asian Americans than for other minorities. Unfortunately, much of diversity practices today may be largely based on research findings of workplace issues for other minority groups such as African Americans that may not be relevant for Asian Americans (Catalyst, 2003; Leong & Gupta, 2007). Whereas many of these practices have led to improvements in the workplace, they may have ignored the unique needs of Asian Americans. Accordingly, organizations should be more inclusive by incorporating more perspectives in developing their diversity practices (Catalyst, 2003). Researchers also should be more inclusive by expanding their focus to incorporate more diverse race–ethnicity groups (Shore et al., 2009). Diversity research should be more diverse.

In sum, the current research confirms and extends the findings of prior studies examining the linkage between race, occupation, and leadership, all of which are central elements in the workplace. Our findings lend support to the connectionist model of leadership and suggest that contextual inputs may trigger the activation of differential prototypical leadership attributes that impact leadership perceptions. Of particular importance is the finding that for Asian Americans, race and occupation may jointly affect leadership perceptions and the potential implications from our findings that technical competence perceptions may actually limit opportunities for this group. Our study suggests that a subtle and complex stereotyping process may explain why Asian Americans continue to experience barriers to attaining higher status leadership positions despite their positive attributes.

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