

1 Running Head: DOMINANCE, PRESTIGE, SOCIAL STATUS

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Two Ways to the Top:

15 **Evidence that Dominance and Prestige are Distinct yet Viable Avenues to Social Status**

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28 Word Count: 13,104

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Abstract

The pursuit of social status is a recurrent and pervasive challenge faced by people in all human societies. Yet, the precise means through which individuals compete for status remains unclear. In two studies, we investigated the impact of two fundamental strategies—*Dominance* (the use of force and intimidation to induce fear) and *Prestige* (the sharing of expertise or know-how to gain respect)—on the attainment of social status, which we conceptualized as the acquisition of (a) perceived status (Study 1), (b) influence over others (Study 1), and (c) others' visual attention (Study 2). Study 1 examined the process of hierarchy formation among a group of previously unacquainted individuals, who provided round-robin judgments of each other after completing a group task. Results indicated that the adoption of either a Dominance or Prestige strategy promoted judgments of high-status by group members and outside observers, and higher levels of social influence, based on a behavioral measure. In Study 2, a new sample of participants viewed brief video clips of Study 1's group interactions while their gaze was monitored with an eye-tracker device; these participants' subsequent status judgments coincided with those of participants from Study 1, and both Dominant and Prestigious targets received greater visual attention than low-status targets. Together, these findings demonstrate that Dominance and Prestige are distinct yet both viable status-obtaining strategies, consistent with evolutionary theory.

Keywords: dominance, prestige, social status, social influence, social hierarchy

75 Berger, Rosenholtz, & Zelditch, 1980; Ellis, 1995; Fried, 1967). Even the most egalitarian of
76 foragers reveal such status differences, despite the frequent presence of social norms that
77 partially suppress them (Boehm, 1993; Lee, 1979; Lewis, 1974; see Henrich & Gil-White 2001).
78 High-status individuals tend to have disproportionate influence, such that social status can be
79 defined as the degree of influence one possesses over resource allocation, conflicts, and group
80 decisions (Berger et al., 1980). In contrast, low-status individuals must give up these benefits,
81 deferring to higher status group members. As a result, higher status tends to promote greater
82 fitness than low-status, and a large body of evidence attests to a strong relation between social
83 rank and fitness or well-being, across species (e.g., Barkow, 1975; Betzig, 1986; Cowlshaw &
84 Dunbar, 1991; Hill, 1984; Hill & Hurtado, 1989; von Rueden, Gurven, & Kaplan, in press).

85 Despite its ubiquity, the process of status differentiation in humans is not well understood.
86 In the face of a growing body of research, it remains unclear precisely how individuals attain
87 status and successfully compete for social standing. At least two major accounts of status
88 attainment currently prevail in the literature, but they are directly at odds with each other,
89 resulting in an ongoing debate within the field (Anderson, Srivastava, Beer, & Spataro, 2006).
90 On one hand, a number of theorists have argued that status acquisition relies on the attainment
91 and demonstration of superior skills and abilities, as well as altruistic tendencies, arguing that
92 “individuals do not attain status by bullying and intimidating... but by behaving in ways that
93 suggest high levels of competence, generosity, and commitment” (Anderson & Kilduff, 2009a, p.
94 295; also see Berger, Cohen, & Zelditch, 1972; Hollander & Julian, 1969). In contrast, others
95 argue that individuals can effectively ascend a group’s status hierarchy by using manipulative
96 and coercive tactics such as intimidation and “aggression... [which] function to increase one’s
97 status or power” (Buss & Duntley, 2006; p. 267), and that the human status system is at least

98 partially “based... on overt threats and physical attack” (Mazur, 1973, p. 526; also see Chagnon,
99 1983; Griskevicius, Tybur, Gangestad, Perea, Shapiro, & Kenrick, 2009; Hill & Hurtado, 1996).
100 These incompatible perspectives beg some resolution. Here, we argue that in contrast to both of
101 these opposing perspectives, neither intimidation nor competence is the exclusive means of
102 status acquisition in humans. Instead, both of these two distinct processes may operate
103 concurrently within social groups, such that individuals can pursue either path to successfully
104 climb the hierarchy (Cheng, Tracy, & Henrich, 2010; Henrich & Gil-White, 2001). We tested
105 this novel account of status attainment by examining whether individuals who adopt these
106 distinct behavioral pathways emerge as high status members of their social group, regardless of
107 which path they choose.

108 **Perspectives on Status Attainment**

109 **The Social-Functionalist Account**

110 Most accounts of social hierarchies take a social-functionalist perspective (e.g., Berger
111 et al., 1972; Blau, 1964; Hollander & Julian, 1969; Thibaut & Kelley, 1959), in which an
112 individual’s status is considered to be a function of the group’s collective consensus on where
113 the individual ranks in the hierarchy based on social worth. In other words, status is conferred,
114 by the group, upon individuals perceived to possess superior expertise and competence in valued
115 domains (Berger et al., 1972). This system of expertise-based status allocation is thought to serve
116 a number of social functions, such as increasing perceptions that the hierarchy is legitimate and
117 fair, which minimizes conflict, and allowing the group to maximize contributions from its most
118 competent members and best achieve shared goals.

119 The social-functionalist perspective on status attainment has garnered considerable
120 empirical support. For example, numerous studies have demonstrated that the characteristics

121 valued and prioritized in leaders—intelligence, competence, group commitment, and
122 prosociality—consistently predict high status, defined in terms of perceived influence and
123 leadership, as well as more objective influence over group decisions (Báles, Strodbeck, Mills, &
124 Roseborough, 1951; Coie, Dodge, & Coppotelli, 1982; Driskell, Olmstead, & Salas, 1993; Lord,
125 De Vader, & Alliger, 1986; Strodbeck, 1951; Willer, 2009; for a review, see Anderson &
126 Kilduff, 2009a). More specifically, studies have found that status is granted to individuals who
127 make high-quality comments (Gintner & Lindsfold, 1975; Sorrentino & Boutillier, 1975), are
128 perceived as experts (Bottger, 1984; Littlepage, Schmidt, Whisler, & Frost, 1995; Ridgeway,
129 1987), and make large contributions to a public fund (Willer, 2009). In fact, Anderson and
130 Kilduff (2009b) found that in task-focused groups, perceptions of competence were the most
131 important factor contributing to social influence.

132 **The Social-Dominance Account**

133 Central to the social-functionalist account is the notion that status cannot be attained
134 through coercive tactics such as bullying or intimidation, but instead derives only from one's
135 apparent value to the group (Anderson & Kilduff, 2009a; Ridgeway, 1987; Ridgeway &
136 Diekema, 1989). One of the strongest proponents of this account is Barkow (1975), who argues
137 that status relationships based purely on threat of force are untenable in human societies.
138 However, the other major extant account of status attainment in the social science literature, the
139 social-dominance account, opposes this view. According to the social-dominance account,
140 dominance contests (i.e., ritualized agonistic challenges, threats, or attacks resulting in the
141 submission of one party to another) and coercion function as fundamental systems of status
142 allocation in human societies (Buss & Duntley, 2006; Chagnon, 1983; Griskevicius et al., 2009;
143 Hill & Hurtado, 1996; Kyl-Heku & Buss, 1996; Lee & Ofshe, 1981; Mazur, 1973). In this view,

144 status (i.e., social influence) is allocated to individuals who show a dominant, authoritative
145 demeanor, and not, as the social-functionalist perspective suggests, on the basis of rational
146 calculation about others' abilities or expertise.

147 Consistent with this account, a number of studies indicate that status may be associated
148 with intimidation and threat; high-status (i.e., perceived influence and leadership, and actual
149 resource control) has been found to positively correlate with coercive behavior, toughness, and
150 various forms of aggression (Cashdan, 1998; Hawley, 2002). Results of a meta-analysis found
151 that the personality trait of dominance—defined as a propensity towards forceful, assertive, and
152 aggressive behaviors—explains a substantial proportion of variance in perceptions of leadership,
153 even more so than intelligence (Lord et al., 1986). Furthermore, when asked to nominate
154 strategies typically used for negotiating status hierarchies, individuals report aggression, coercion,
155 derogation, social exclusion, and manipulation as frequently used tactics, along with tactics
156 consistent with the social-functionalist perspective, such as displaying knowledge, working hard,
157 and helping others (Buss, Gomes, Higgins, & Lauterbach, 1987; Kyl-Heku & Buss, 1996),
158 suggesting that lay-people conceptually associate both sets of strategies with status acquisition.
159 More broadly, there is evidence that the motivation to seek status promotes aggressive behaviors
160 (though this research did not examine the effectiveness of these behaviors). Approximately 48%
161 of men and 45% of women identify status concerns as the primary reason for their last act of
162 aggression, and the experimental induction of status motives increases aggressive tendencies in
163 both men and women (Griskevicius et al., 2009). While it remains unclear whether social-
164 dominance is an effective route to status attainment, these findings are suggestive, and cannot be
165 reconciled with the social-functionalist account.

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167 **The Dominance-Prestige Account**

168 More recently, Henrich and Gil-White (2001) developed an alternative evolutionary
169 model that takes into account both our species' heritage as primates who tend to use coercive
170 dominance, and as cultural beings who rely immensely on cultural learning. By considering the
171 selection pressures that likely favored the emergence of status inequalities, Henrich and Gil-
172 White (2001) proposed that there are two distinct paths to status attainment in human societies:
173 *Dominance* and *Prestige*. In this view, *Dominance* refers to the use of intimidation and coercion
174 to attain a social status that is premised on the induction of fear, similar to the means of status
175 attainment suggested by the social-dominance account. *Prestige*, in contrast, refers to status that
176 is granted to individuals who are recognized and respected for their skills, success, or knowledge
177 (which can be acquired via cultural learning), similar to the social-functionalist account. The
178 major difference between the Dominance-Prestige account and these prior accounts is that it
179 explicitly argues, on the basis of evolutionary logic, that *both* strategies persist in modern
180 humans, both lead to patterns of behavior and tactics that are effective routes to social influence,
181 and both can be effective even within the same social groups.

182 Dominance is exemplified by contemporary institutional relationships based on coercion,
183 such as that between a boss and employee, or bully and victim. Dominant individuals create fear
184 in subordinates by unpredictably and erratically taking or threatening (implicitly or explicitly) to
185 withhold resources; in turn, subordinates submit by complying with Dominants' demands, in
186 order to safeguard other more valuable resources (e.g., their physical welfare, children, or
187 livelihoods). As a result, Dominants can attain a great deal of social status. *Prestige*, in contrast,
188 is granted to individuals who are considered worthy of emulation, usually for their skill or
189 success. As a result, the opinions, wishes, and decisions of Prestigious individuals are heeded,

190 thus conferring them with social influence. The social influence of Prestigious individuals is
191 unique in that subordinates both shift their views and opinions closer to that of the Prestigious
192 (an example of imitation) and heed their wishes out of deference even when they do not agree
193 with them (an example of seeking favor, in order to be granted greater access to these leaders to
194 facilitate copying/learning).

195 According to the model, Dominance initially arose in evolutionary history as a result of
196 agonistic contests for material resources and mates which were common among non-human
197 species, but continues to exist in contemporary human societies, largely in the form of
198 psychological intimidation, coercion, and wielded control over costs and benefits (e.g., access to
199 resources, mates, and well-being). In both humans and nonhumans, Dominance hierarchies are
200 thought to emerge to help maintain patterns of submission directed from subordinates to
201 Dominants, thereby minimizing agonistic battles and incurred costs. In contrast, Prestige is likely
202 unique to humans, because it is thought to have emerged from selection pressures to
203 preferentially attend to and acquire cultural knowledge from highly skilled or successful
204 individuals, a capacity considered to be less developed in other animals (Boyd & Richerson,
205 1985; Laland & Bennett, 2009).¹ In this view, social learning (i.e., copying others) evolved in
206 humans as a low-cost, fitness-maximizing information-gathering mechanism (Boyd & Richerson,
207 1985). Once it became adaptive to copy skilled others, a preference for social models with better-
208 than-average information would have emerged. This would promote competition for access to
209 the highest quality models, and deference toward these models in exchange for copying/learning
210 opportunities. Consequently, selection likely favored Prestige differentiation, with individuals
211 possessing high-quality information or skills elevated to the top of the hierarchy. Meanwhile,
212 other individuals may reach the highest ranks of their group's hierarchy by wielding threat of

213 force, regardless of the quality of their information or skills. Thus, Dominance and Prestige are
214 thought to be coexisting avenues to social status within the same social groups, despite being
215 underpinned by distinct motivations and behavioral patterns, and resulting in distinct patterns of
216 imitation and deference from subordinates.

217 Importantly, both Dominance and Prestige are best conceptualized as behavioral
218 strategies deployed in certain situations, which influence relationships, and can be used (with
219 more or less success) by any individual within a group.² They are not types of *individuals*, or
220 even, necessarily, traits within individuals. Instead, we assume that all situated dyadic
221 relationships contain differential degrees of both Dominance and Prestige, such that each person
222 is Dominant and Prestigious to some extent, to some other individual. Thus, high levels of
223 Dominance *and* Prestige may be found within the same individual, and may depend on who is
224 doing the judging. For example, by controlling students' access to rewards and punishments,
225 school teachers may exert Dominance in their relationships with some students, but
226 simultaneously enjoy Prestige with others, if they are respected and deferred to for their
227 competence and wisdom. Indeed, previous studies have shown that, based on both self- and peer-
228 ratings, Dominance and Prestige are largely independent (mean $r = -.03$; Cheng et al., 2010).

229 Nonetheless, though this account holds that Dominance and Prestige can be effective
230 status-attaining strategies for all individuals in the appropriate contexts, it is also assumed that
231 individuals vary in their preferred strategy. As a result of certain genes and/or adaptive
232 calibrations over the course of ontogeny (i.e., acquired habits), individuals may develop
233 predominantly Prestige- or Dominance-based relationships with many others, resulting in a trait-
234 like use of each strategy, and measurable individual differences in the tendency to perceive
235 oneself, and be perceived by others, as Dominant and/or Prestigious (Cheng et al., 2010). For

236 example, certain physical or personality characteristics likely provide individuals with greater
237 ease and success at inducing fear or admiration (e.g., physical size, narcissism, aggressiveness,
238 intelligence), and thereby allow certain individuals to derive maximal payoff from the pursuit of
239 Dominance or Prestige, thus leading to relatively stable individual differences in the propensity
240 to use each strategy (see Cheng et al., 2010). Past experiences in wielding coercion versus
241 displaying skills may also play a role in determining whether individuals engage in Dominance
242 rather than Prestige, or vice-versa, or both (Cheng, et al., 2010; Tracy, Shariff, & Cheng, 2010).

243 Indeed, several recent studies have drawn on the Dominance-Prestige account to measure
244 these two strategies as trait-like dispositions that vary between individuals, and several findings
245 supportive of the Dominance-Prestige account have emerged. First, individuals who tend to use a
246 Dominant strategy across numerous relationships (from here on referred to as individuals high in
247 Dominance, or Dominant individuals) tend to be aggressive, narcissistic, and Machiavellian,
248 whereas those who tend to use a Prestige strategy across relationships (from here on referred to
249 as individuals high in Prestige, or Prestigious individuals) tend to be socially accepted, agreeable,
250 conscientious, and have high self-esteem (Buttermore, 2006; Cheng et al., 2010; Johnson, Burk,
251 & Kirkpatrick, 2007). These findings are based on assessments of Dominance and Prestige using
252 both self- and peer-ratings. Second, Prestigious individuals tend to demonstrate locally valued
253 competencies and skills, such as academic achievement, altruistic behaviors, and athletic, social,
254 intellectual, and advice-giving abilities (in the context of collegiate varsity teams; Cheng et al.,
255 2010); and hunting ability, skill in food production, generosity, number of allies, and nutritional
256 status (in the context of a small-scale Amazonian society; Reyes-Garcia et al., 2008; 2009; von
257 Rueden, Gurven, & Kaplan, 2008). Third, there is evidence for distinct neuroendocrine profiles;

258 individuals high in Prestige tend to have lower basal Testosterone levels, a hormone linked to
259 aggressive behavior, relative to individuals low in Prestige (Johnson et al., 2007).

260 In sum, the Dominance-Prestige account provides a way of reconciling the two currently
261 reigning, and opposing, approaches to understanding human status attainment. As a result, this
262 model has several advantages over these prior perspectives. First, although prior models that
263 emphasize the narrow traits and attributes (e.g., aggressiveness, intelligence) predictive of status
264 serve a descriptive function (i.e., providing information about the kinds of individuals who tend
265 to attain status, on average, across many contexts), they do not provide a causal or explanatory
266 account. That is, such models do not address questions of *why* these behaviors effectively
267 promote status. The Dominance-Prestige account, in contrast, uses evolutionary logic to generate
268 *a priori* hypotheses about the processes underlying the attainment of status in humans, such that,
269 when these hypotheses are supported, findings explain (rather than simply describe) why a vast
270 number of narrower attributes and characteristics give rise to status.

271 Second, the Dominance-Prestige approach emphasizes broad social processes, involving
272 *fear* and *respect*, rather than the narrower stable attributes and traits thought to underlie status in
273 other accounts. Although these narrower characteristics may elicit feelings of fear or respect in
274 others (and by implication, be part of the broader Dominance or Prestige constructs), these links
275 are highly context-specific. For example, an intelligent college professor probably holds little
276 status on a recreational soccer team, where the team's star soccer player exerts greater influence.
277 Intellectual abilities can enhance status in one context, but may be ineffectual in others. Stable
278 traits and characteristics produce admiration and fear in some contexts but not others, so have
279 limited utility in explaining cross-situational patterns of status allocation. Thus, in the present
280 research, we assessed individuals' relationships with group members broadly, using items such

304 looks or glances from their peers (Abramovitch, 1976; Hold, 1976; La Freniere & Charlesworth,
305 1983; Vaughn & Waters, 1981). Similarly, studies have found that teacher-rated aggressiveness,
306 observed dominant acts, peer liking, and the degree to which a child is imitated are all predictors
307 of the number of glances received from other children (Abramovitch & Grusec, 1978; La
308 Freniere & Charlesworth 1983; but see Vaughn & Waters, 1981). In this literature, others'
309 glances or visual attention is typically operationalized as an indicator of social status.

310 Though none of these studies assessed Dominance or Prestige as the broad constructs that
311 they are—constituted of a range of distinct behaviors and tendencies—these findings do provide
312 preliminary support for the suggestion that both strategies may effectively garner status within
313 the same social groups. However, several researchers have argued that status dynamics work
314 differently in children's social groups, in that children tolerate the use of force and coercion to
315 obtain social rank but adults do not (Barkow, 1975; Savin-Williams, 1980; but see Strayer &
316 Trudel, 1984). Consistent with this view, Savin-Williams (1979) found that among children and
317 early adolescents (age 9-13), narrow characteristics and behaviors theoretically associated with
318 Dominance (e.g., pubertal maturation, physical fitness, physical and verbal threats, taking or
319 removing objects) were the strongest predictors of status, but among middle to late adolescents
320 (age 14-17), these same variables were unrelated to status (Savin-Williams, 1980). Further
321 supporting the developmental account, Hawley (2002) found that coercive 3-6 year-old children
322 were rated as more likeable by their peers, an effect directly opposed to findings in adults, who
323 typically dislike and reject coercive, arrogant, and aggressive individuals (Cheng et al., 2010).
324 Thus, findings on the early development of status hierarchies suggest that the effectiveness of
325 Dominance-related behaviors and tactics may shift over the lifespan, such that Dominance is
326 effective uniquely in early childhood, but perhaps not in adulthood. It thus remains to be seen

327 whether Dominance and Prestige are viable status-attainment strategies in adult social groups.
328 According to the Dominance-Prestige account, Dominance hierarchies may emerge in childhood
329 social groups prior to Prestige hierarchies, but this does not mean that one later comes to replace
330 the other.

331 **Testing the Viability of Dominance and Prestige**

332 To sufficiently test the Dominance-Prestige account, several conditions must be met.
333 First, we must measure the distribution of actual influence, as well as group members'
334 perceptions of influence (Buss et al., 1987). Explicit beliefs about which tactics promote
335 influence do not necessarily reflect the actual processes through which influence is obtained. For
336 example, married couples rate an accommodative communication style as a useful tactic to
337 achieve influence, but this style is, in fact, predictive of *less* decision-making power (Kipnis,
338 Castell, Gergen, & Mauch, 1976). Second, we must assess status as it is perceived by uninvolved
339 outside observers, in addition to other group-members. Group members may be motivated to
340 exaggerate (or even construct) *post-hoc* perceptions of leaders' status to rationalize the hierarchy
341 that emerged (Anderson & Kilduff, 2009b; see Jost & Banaji, 1994). To address these issues, we
342 assessed influence in the present research using a behavioral task, and obtained both group-
343 members' ratings of each individual's status and ratings made by outside observers.

344 Third, we must ensure that Dominance is assessed in terms of actual Dominance—based
345 on group members' reports of fear of a target individual—and not in terms of *attempted*
346 Dominance. In prior work, narrow behaviors associated with Dominance (e.g., dismissive,
347 intrusive, or contemptuous speech, nonverbal behaviors thought to convey Dominance) were
348 found to be ineffective for status attainment when a confederate's dominant behavior was
349 resisted by observers (Ridgeway, 1987; Ridgeway & Diekema, 1989). These studies have been

350 interpreted to suggest that coercion does not promote status. However, these studies do not
351 provide an adequate test of this question because they involved *failed* attempts at inducing
352 coercion; dominant confederates did not pose any real threat to participants (either because
353 participants resisted them or because the confederate was present only via video-recording). To
354 address this issue, we assessed both Dominance and Prestige on the basis of peer ratings, using
355 previously validated scales which capture the extent to which group members experience fear
356 and admiration toward each target (Cheng et al., 2010).

357 Fourth, we must examine the concurrent effectiveness of Dominance and Prestige within
358 the same social groups. A number of researchers have argued that the reason some studies found
359 status-attainment effects from coercive behaviors, whereas others found such effects from
360 competence is that the different groups examined hold different values about legitimate bases of
361 status. Thus, it is critical to directly test whether the two strategies are both effective within the
362 same social groups, to examine whether: (a) Dominance is effective in groups other than those
363 that are simply uncooperative and value aggression over competence; (b) Dominance and
364 Prestige are inherently incompatible or antagonistic; and (c) Dominant and Prestigious
365 individuals can both attain high status even when they directly compete against each other. We
366 are aware of no prior studies that meet all of these criteria.

367 **Measurement of Social Status in the Present Research**

368 While definitions of social status vary, two prominent features of status that have been
369 reliably assessed in a range of human societies are social influence (Báles et al., 1951; Berger et
370 al., 1972; French & Raven, 1959; Mazur, 1973; Moore, 1968) and attention paid by other group
371 members (Anderson & Shirako, 2008; Chance, 1967; Fiske, 1993; Hold, 1976; see Anderson,
372 John, Keltner, & Kring, 2001). In the current research, we operationalized status in three ways.

373 First, we examined each individual's level of social influence, where influence is defined as the
374 ability to modify others' behaviors, thoughts, and feelings (Berger et al., 1980; Cartwright, 1959;
375 Lewin, 1951). Second, we examined the amount of visual attention each individual received
376 from others, under the assumption that high-status individuals receive disproportionately more
377 social attention than low-status individuals (Chance, 1967; Fiske, 1993). Third, we computed a
378 measure of overall perceived status from peers' judgments of the degree to which each individual
379 possesses high status and influence, garners attention, and demonstrates leadership ability. By
380 conceptualizing status as behavioral influence, social attention, and overall perceived status, we
381 can ensure to capture variance in a range of within-group asymmetries that have been identified
382 (e.g., status, power, dominance, prestige, popularity, leadership hierarchies). In addition, this
383 multi-method approach allows us to differentiate the consequences of high-status (i.e., influence
384 over others, heightened attention, perceived status) from the means of its attainment (i.e., use of a
385 Dominance or Prestige strategy), permitting us to test the viability of these potential status-
386 attaining strategies. Other definitions conflate this important distinction; for example, "power"
387 and "intimidation" can each be viewed as both the means and the ends to status attainment,
388 making it difficult to separate cause and effect.

389 Specifically, in Study 1, we examined whether Dominance and Prestige spontaneously
390 emerge and coexist as viable status-attainment strategies within the same social groups, by
391 asking previously unacquainted individuals to complete a collaborative task and allowing status
392 hierarchies to naturally emerge. Dominance, Prestige, and perceived status were assessed using
393 both within-group peer-ratings and outside observers' ratings, and behavioral influence was
394 assessed by measuring the degree to which each person shaped the group's decision-making.
395 Study 2 examined whether Dominance and Prestige both promote high status within the same

396 groups using visual attention as the barometer of status. Observer who were unacquainted with
397 participants from Study 1 wore an eye-tracking device while viewing video clips of the Study 1
398 group interactions, and we assessed the extent to which their gaze tracked targets' Dominance
399 and Prestige, and cohered with their explicit ratings of targets' Dominance and Prestige.

400 Study 1

401 Method

402 **Participants and procedure.** 191 students at the University of British Columbia (53%
403 male) were randomly assigned to 1 of 36 same-sex groups (50% male), each consisting of 4 to 6
404 unacquainted individuals ($M = 5.31$ participants per group). Participants were contacted prior to
405 the study to ensure that all group members were not previously acquainted. They were paid for
406 their participation, with the chance to earn an additional monetary bonus during the study.

407 Upon arrival, participants were randomly assigned seats at a rectangular table, with a
408 name tag in front of each participant identifying him/her to other group members. Participants
409 were first asked to privately complete the "Lost on the Moon" exercise (Bottger, 1984), which
410 involves rank-ordering 15 items (e.g., oxygen tanks, heating unit, signal flares) in order of their
411 utility for surviving a crash landing on the moon. Next, participants worked collectively as a
412 group for 20 minutes on the same task. They were instructed to use their previously completed
413 private responses to guide the group discussion. To incentivize group involvement, participants
414 were told that the group's final decision would be scored against an answer key, and high scores
415 would earn each group member a \$5 bonus. The 20-minute group interaction was video-recorded
416 using two digital video cameras mounted on tripods on either side of the table (each camera
417 captured all participants on one side of the table and no participants on the other side; either 2 or
418 3 participants sat on each side; see Figure 1). Observation of the video-recorded interactions

419 revealed that the task was engaging and evoked considerable discussion and disagreement among
420 members.

421 After completing the group task, participants privately completed a post-task
422 questionnaire in which they provided peer ratings of all group members (see below for measures),
423 in a round-robin design. Finally, the experimenter excused herself to purportedly score the
424 group's submitted response on the group task.

425 **Measures.**

426 *Post-task round-robin peer-ratings.* Upon completing the group task, group members
427 rated each other on a number of dimensions (listed below), on a scale ranging from 1 (“Not at
428 all”) to 7 (“Very much”). We analyzed these ratings using the software program SOREMO
429 (Kenny, 1998), to implement the Social Relations Model (SRM; Kenny & La Voie, 1984). SRM
430 partitions peer-rating scores into perceiver, target, and relationship effects. Here, we were
431 particularly interested in *target effects*, which are, essentially, the average of all group members’
432 ratings of a given target on a given dimension, after removing idiosyncratic perceiver and
433 relationship biases/effects.³ Also of interest is *target variance*, which captures the amount of
434 variation in peer-ratings due to the target, and was used as an index of extent of consensus
435 among perceivers in their ratings of each target (i.e., a measure of inter-rater reliability). A larger
436 relative target variance (i.e., target variance divided by total variance) indicates that a given
437 target elicited a high level of consensus among group members.

438 (a) *Perceived social status and agency.* Participants indicated the extent to which each
439 group member demonstrated high social status during the task by rating each member on three
440 items—“was paid attention”, “had high status”, and “led the task”. All three items showed
441 statistically significant amounts of target variance (relative target variances were 29%, 33%, and

442 64%,⁴ respectively, $ps < .05$),⁵ indicating that group members agreed on each other's relative
443 perceived social status at better than chance levels. To further partition relationship variance
444 from error variance, these three status items were subsequently entered as multiple indicators of
445 a latent *perceived social status* construct (inter-item $\alpha = .89$, relative target variance = 38%).

446 As an additional index of perceived status, we also assessed perceived agency—a concept
447 involving control, power, and status (Bakan, 1966)—which is expected to show positive
448 associations with the two strategies. Agency was assessed using three peer-rated items:
449 “assertive”, “self-confident”, and “timid” (reverse-scored; Wiggins, 1979). Statistically
450 significant amounts of target variance were found across these 3 items (relative target variances
451 were 38%, 41%, and 40%, respectively, $ps < .05$), so we aggregated across their target scores to
452 form an overall score for agency (inter-item $\alpha = .92$, relative target variance = 38%).

453 (b) *Dominance and Prestige*. To capture the extent to which each participant adopted a
454 Dominance and Prestige strategy, peers rated the perceived Dominance and Prestige of each
455 group member using the Dominance and Prestige Peer-Rating Scales (Cheng et al., 2010). These
456 previously validated scales include 8 items assessing Dominance (e.g., “desires to control others”) and
457 8 items assessing Prestige (e.g., “is respected and admired by others”; see [http://ubc-](http://ubc-emotionlab.ca/research/#dompres)
458 [emotionlab.ca/research/#dompres](http://ubc-emotionlab.ca/research/#dompres) for full scales; we omitted one item—“Members of your group
459 do not want to be like him/her”—due to its unsuitability for briefly acquainted group members).
460 The amount of target variance in ratings across the 8 Dominance items (ranging from 10% to
461 36%) and across the 8 Prestige items (ranging from 10% to 35%) were statistically significant,
462 all $ps < .05$, suggesting that group members could reliably report individual differences on both
463 scales. Target scores for the 8 Dominance items, and the 8 Prestige items were combined,

464 respectively, to form overall Dominance (inter-item $\alpha = .93$, relative target variance = 22%) and
465 Prestige (inter-item $\alpha = .89$, relative target variance = 15%) scores for each individual.

466 (c) *Liking*. In addition to examining the effects of Dominance and Prestige on status,
467 Study 1 sought to probe the kinds of relationships that Dominant and Prestigious individuals
468 have with followers, by examining whether the two strategies are differentially associated with
469 peer liking. Our evolutionary analysis suggests that Dominance is a form of imposed status
470 predicated on inducing fear through coercive and intimidating behaviors, whereas Prestigious
471 individuals have no authority or power to enforce decisions, but instead signal their kindness,
472 warmth, and social attractiveness to maintain respect and their conferred status. We therefore
473 expect Dominance to be negatively, and Prestige positively, associated with perceived likeability.
474 Importantly, however, we do not expect liking alone to promote status among individuals high in
475 either strategy, given that for the Prestigious power derives from demonstrated skills and
476 expertise, not by gaining others' liking, and for the Dominant power derives from their ability to
477 control access to valuable resources, not from the fact that others dislike them. Specifically,
478 likeability was assessed with two items: "I like this person", and "I like working with this
479 person". Statistically significant amounts of target variance were found across these items
480 (relative target variances were 15% and 22%, respectively, $ps < .05$). Consequently, their target
481 scores were combined to form an overall score for likeability (inter-item $\alpha = .89$, relative target
482 variance = 17%).

483 ***Behavioral measure of social influence.*** We quantified behavioral influence by
484 assessing the degree to which individuals brought the collective group decision on the Lost on
485 the Moon Task closer to their own thoughts and opinions (Cartwright, 1959; Lewin, 1951).
486 Specifically, following Bottger's (1984) approach, we measured the degree of similarity between

487 each participant's *private* response, completed prior to the group interaction, and the *group's*
 488 final public, collective response. For each participant, a behavioral influence score was computed
 489 by calculating the absolute difference between his/her private ranking of each Lost on the Moon
 490 item and the group's final ranking of that item, then summing across all 15 items and multiplying
 491 by -1 (for directionality scaling). This scoring procedure can be represented as:

$$492 \quad y_{ij} = -1(\sum_{k=1}^{15} |x_{ijk} - x_{jk}|)$$

493 where y_{ij} is the influence score of subject i from group j . x_{ijk} is subject i 's rating on item k . x_{jk} is
 494 group j 's rating on item k . The expression in brackets, which captures the level of discrepancy
 495 between individual and group responses, was multiplied by -1 so that higher scores (i.e., negative
 496 values closer to 0) would reflect greater social influence (i.e., greater similarity between
 497 individual and group responses). The use of this behavioral measure, coupled with peers' ratings
 498 of perceived social status, allowed us to circumvent limitations associated with sole reliance on
 499 peer-reports of social influence (i.e., findings indicate that such perceptions may be only weakly
 500 correlated with actual task influence; Bottger, 1984; March, 1956).

501 ***Outside observer global judgments.*** Two research assistants, blind to the hypotheses and
 502 unacquainted with participants, independently watched all video-recorded group interactions.
 503 After viewing each session, they judged each participant on the following dimensions:

504 (a) *Perceived social status, Dominance, and Prestige.* Judges rated the extent to which
 505 each group member was "influential" (inter-rater $\alpha = .87$), "bossy" (which we used as a measure
 506 of Dominance; inter-rater $\alpha = .83$), and "respected" (which we used as a measure of Prestige;
 507 inter-rater $\alpha = .70$). Ratings were completed on a scale ranging from 1 (*Not at all*) to 5
 508 (*Extremely*).

532 results was largely replicated when we used outside observers' perceptions of participants'
533 Dominance and Prestige instead of in-lab peers'. The only exception was that, with outside-
534 observer judgments, the positive correlation between Dominance and the behavioral measure of
535 influence did not reach conventional levels of significance, $p = .14$.

536 **Are There Group Differences in the Extent to Which Dominance and Prestige Promote**
537 **Status?**

538 The correlational analyses reported above cannot account for the possible dependencies
539 that may arise from groups (i.e., individuals were nested within groups). As a result, the status-
540 promoting effects of Dominance and Prestige we found may be limited to selected groups, and
541 not uniformly characteristic of all groups sampled. This is unlikely given that groups were
542 formed via random assignment, so group differences can be expected to be minimal; indeed,
543 most research using a small-groups zero-acquaintance paradigm assumes, and has verified, an
544 absence of substantive group differences (e.g., Albright, Kenny, & Malloy, 1988; DePaulo,
545 Kenny, Hoover, Webb, & Oliver, 1987; Kenny & Albright, 1987; Kenny, Horner, Kashy, & Chu,
546 1992; Malloy & Albright, 1990). Nonetheless, we examined the possibility of between-group
547 differences by modeling for potential group differences using hierarchical linear modeling (HLM;
548 Bryk & Raudenbush, 1992). Individual participants were modeled at Level 1 and groups were
549 modeled at Level 2. The coefficients for Level 1 predictor terms Dominance and Prestige were
550 modeled as random effects, to allow the effects of Dominance and Prestige on status to vary
551 across groups. Three separate models were estimated for our three measures of status: peer-
552 perceived status, peer-perceived agency, and behavioral influence. All variables were
553 standardized. We specified the following model to estimate the concurrent effects of Dominance
554 and Prestige on each measure of status:

555 Level 1: $\text{Status}_{ij} = \beta_{0j} + \beta_{1j}(\text{Dominance})_{ij} + \beta_{2j}(\text{Prestige})_{ij} + r_{ij}$

556 Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

557 $\beta_{1j} = \gamma_{10} + \mu_{1j}$

558 $\beta_{2j} = \gamma_{20} + \mu_{2j}$

559 Mixed Model: $\text{Status}_{ij} = \gamma_{00} + (\gamma_{10} + \mu_{1j})\text{Dominance}_{ij} + (\gamma_{20} + \mu_{2j})\text{Prestige}_{ij} + \mu_{0j} + r_{ij}$

560 The results of all three models revealed, first, that Dominance and Prestige each predicted
 561 greater peer-perceived status ($\gamma_{10} = .70$, $\gamma_{20} = .57$; $z_s = 17.19$ & 14.11 ; both $ps < .001$), peer-
 562 perceived agency ($\gamma_{10} = .77$, $\gamma_{20} = .47$; $z_s = 13.23$ & 8.31 ; both $ps < .001$), and behavioral
 563 influence ($\gamma_{10} = .15$, $\gamma_{20} = .14$; $z_s = 1.76$ & 1.76 ; both $ps = .09$) within-group. Second, these
 564 models revealed that Dominance and Prestige together explained the majority of variance in
 565 perceived status, $R^2 = .77$, 95%CI [.72, .81], agency, $R^2 = .67$, 95%CI [.60, .72], and a
 566 substantially smaller but still significant portion of variance in the behavioral measure of
 567 influence, $R^2 = .04$, 95%CI [.001, .10].⁶ This is consistent with the Dominance-Prestige account,
 568 which predicts that Dominance and Prestige represent the primary pathways to social status, and
 569 thus together they should explain the majority of the variation in status differences among
 570 individuals. Third, these models demonstrated that all random variance components representing
 571 the degree of variation across groups, in the respective effects of Dominance and Prestige on
 572 status, were non-significant (peer-perceived status, $\hat{\tau}_{11} = .01$ & $\hat{\tau}_{22} = .01$; peer-perceived agency,
 573 $\hat{\tau}_{11} = .02$ & $\hat{\tau}_{22} = .03$; behavioral influence, $\hat{\tau}_{11} = .00$ & $\hat{\tau}_{22} = .06$; all variance components = *ns*).
 574 Thus, the groups did not differ in the extent to which Dominance and Prestige predicted status;
 575 individuals with greater Dominance and those with greater Prestige tended to uniformly acquire
 576 higher status to a similar degree, regardless of the group to which they belonged.

577 **Are Dominance and Prestige Distinct Routes to Status?**

578 Given that both Dominance and Prestige were positive predictors of all of our measures
579 of social status, it was important to verify that they do, in fact, represent different ways of
580 attaining status. Thus, we next examined whether individuals high in Dominance and Prestige
581 differed on interpersonal likeability, a key dimension of social evaluation. Consistent with
582 theoretical expectations, Prestigious individuals were viewed as highly likeable by both in-lab
583 peers and outside observers, whereas Dominant individuals were viewed as dislikeable by
584 outside observers and neither particularly likeable nor dislikeable by peers. A comparison of
585 these correlations (i.e., likeability with Dominance versus Prestige) revealed that in all cases
586 likeability's association with Dominance differed significantly from that of Prestige ($Z_s = -9.11$,
587 -5.05 , -6.02 , and -4.62 , respectively, all $p_s < .001$; see Table 2). Thus, Dominance and Prestige
588 appear to be divergent interpersonal strategies to attaining social status.⁷

589 **Does Liking Promote Status?**

590 A key question that arises from these findings is whether interpersonal liking, in the
591 absence of agency, is sufficient for acquiring social status. This question is particularly important
592 within the context of our broader question concerning the viability of various status-attainment
593 strategies; the Dominance-Prestige account holds that although liking is important for Prestige
594 attainment and Dominant individuals tend to be disliked, liking alone is not sufficient for the
595 attainment of either form of status. To address this question, we correlated measures of liking
596 with measures of social status. In-lab peers' perceptions of participants' likeability were
597 positively correlated with their perceptions of participants' social status ($r = .45$) and agency (r
598 $= .32$), and with outside observers' perceptions of status ($r = .29$) and agency ($r = .25$; all p_s
599 $< .01$). However, likeability was unrelated to behavioral influence ($r = .02$, ns). In contrast,
600 outside observers' ratings of participants' likeability were not significantly related to outside

624 Dominance and Prestige in obtaining social status cannot be attributed to any effects of these
625 strategies on targets' likeability; and, in fact, Dominance and Prestige seemed to have completely
626 opposite effects on likeability.

627 **Study 2**

628 In Study 2, we tested whether the allocation of visual attention—a social outcome
629 described as “the best framework for analyzing social rank as it takes into account all leadership
630 styles” (Hold, 1976, p. 179; also see Chance, 1967)—is associated with both Dominance and
631 Prestige. Despite this theoretical emphasis on visual attention as an indicator of status, we are
632 aware of only two prior studies that examined whether status is associated with receiving greater
633 visual attention in adults. In one of these, observers wearing an eye-tracking device were found
634 to selectively attend to photos of individuals displaying cues of Prestige (i.e., males in
635 professional attire); Dominance was not examined (Maner, DeWall, & Gailliot, 2008). In the
636 other study, individuals engaging in a group task who were rated by other group members as
637 “leading the task” were found to receive the most visual attention from unacquainted observers
638 who wore an eye-tracking device while viewing video-recordings of the group interactions
639 (Foulsham, Cheng, Tracy, Henrich, & Kingstone, 2010). Neither of these studies separately
640 examined Dominance and Prestige, so it remains unclear whether both strategies result in greater
641 visual attention. Theoretically, Dominants may be visually tracked out of fear of unexpected
642 attacks (though direct eye contact may be avoided in cases where Dominants can notice others'
643 stares, which could signal a challenge; Exline, Ellyson, and Long, 1975; Mazur & Booth, 1998),
644 and Prestigious individuals may be carefully monitored to facilitate learning and copying.

645 The goal of Study 2 was to determine whether gaze allocation patterns corresponded to
646 perceived Dominance and Prestige. By using the video-recorded interactions from Study 1 as

647 stimuli in Study 2, we were able to measure visual attention received by individuals in a group
648 with demonstrated Dominance and Prestige hierarchies, and test how eye-tracked participants'
649 attention varies as a function of targets' Dominance and Prestige. A final novel feature of Study
650 2 is that, because we assessed perceived Dominance and Prestige by obtaining ratings from eye-
651 tracked participants who had only very limited exposure to targets (see Method, below), we were
652 able to examine whether these judgments can be made accurately with only minimal information.

653 **Method**

654 **Participants and procedure.** Fifty-nine undergraduates at the University of British
655 Columbia (61% female) participated in exchange for course credit. All participants were
656 unfamiliar with the target individuals in the video stimuli.⁸

657 Participants were instructed to watch a series of six 20-second video clips portraying
658 three people working together on the group task described in Study 1 (see Figure 1 for a
659 schematic). Participants were told to "Imagine that you're in the room with these people,
660 working on the task. Please think about which of the people in the group you would want to
661 work with in a subsequent task". These instructions were given to prompt participants to view
662 the video clips in a similar frame of mind as the individuals featured in the clips. While wearing
663 an eye-tracker, participants then viewed the six clips (of the same group of 3 targets) in a
664 randomly determined order (i.e., *not* chronological), to prevent them from discerning Dominance
665 and Prestige on the basis of the sequential content of the interactions, and instead encourage
666 them to focus them on targets' verbal and nonverbal behaviors within each clip. The video clips
667 were shown on a 19-inch computer monitor with a refresh rate of 60 Hz. Participants used a
668 headrest, which minimized head movements and ensured a constant viewing distance of 60 cm,
669 which resulted in a screen size of 40° by 31° of visual angle. Sound was played through a pair of

670 speakers positioned on either side of the monitor. The Eyelink II system was used to record
671 participants' eye movements with a head-mounted camera. Pupil position was recorded
672 monocularly from the video image of the right eye at 500 Hz.

673 At the beginning of each of the six clips, a drift-correct marker was presented in the
674 center of the screen, and participants were required to look at the dot and press a key on the
675 keyboard when central fixation was attained. The clip then appeared, and video and audio were
676 played at normal speed for the 20-sec duration. Eye movements were recorded during this time,
677 along with a record of timestamps indicating the onset time of each frame of the video.
678 After viewing all 6 clips, participants rated the perceived Dominance, Prestige, perceived social
679 status, and likeability of each of the targets in the clips using the same scales as were completed
680 by in-lab peers in Study 1.

681 Upon completion of all data collection, a research assistant viewed all 24 clips at reduced
682 speed and logged the beginning and end of each utterance or verbalization made by each target.
683 This was repeated three times per clip (once for each target), to accurately assess the total
684 number of seconds each target spoke. Speaking duration times were subsequently divided by the
685 length of each associated clip (i.e., 20-sec), to determine the proportion of time within each clip
686 each target was speaking, then aggregated across the 6 clips to determine each target's overall
687 mean proportion of speaking time. Speaking time was subsequently entered into analyses as a
688 covariate, given our expectation that it would significantly affect Dominance, Prestige, and
689 visual attention.

690 **Stimuli.** Four sets of video clips portraying a trio of Study 1 participants completing the
691 group decision-making task were selected from all available clips on the basis of the relative
692 Dominance and Prestige ratings (made by in-lab peers in Study 1) of the targets. Given our goal

693 of testing whether both highly Dominant and highly Prestigious individuals are likely to receive
694 greater visual attention from onlookers compared to individuals who score low on either
695 dimension, we wanted to ensure that each video clip featured individuals who differed
696 substantially from each other in perceived Dominance and Prestige. Indeed, across the four sets
697 of videos, there was a significant difference in in-lab peer perceived Dominance (based on Study
698 1) between targets with the highest score ($M = 4.77$) and those with the lowest score [$M = 2.04$; d
699 $= 4.59$, $t(6) = 6.49$, $p < .01$]; and a significant difference in in-lab peer-perceived Prestige
700 between targets with the highest score ($M = 5.76$) and those with the lowest score [$M = 4.45$; $d =$
701 2.40 , $t(6) = 3.40$, $p < .05$].

702 Participants viewed 6 clips, each 20-sec in length, from each of the 4 video sets. These
703 were selected by a research assistant blind to research hypotheses who was instructed to select
704 segments during which a key decision was made by the group. Each participant viewed clips of
705 only one set of targets (i.e., 6 clips from the same interaction).

706 **Results and Discussion**

707 **Data analytic approach.** To determine the amount of visual attention participants paid to
708 each target, a region of interest (ROI) was defined around each target, at a consistent size of
709 10.9° by 14.1° (see Figure 1). Fixations landing within a target's prescribed ROI were classified
710 as attention allocated to that target. Two indices of attention—mean proportion of fixations out
711 of the total number of fixations made, and total fixation duration—were computed for each
712 participant. Mean proportion of fixations was computed by dividing, for each participant, the
713 total number of fixations that fell within a given target's ROI by the total number of fixations
714 that occurred during the 20-sec clip, averaged across all 6 clips. Total fixation duration was
715 computed by taking, for each participant, the sum duration of all the fixations (in sec) on a given

716 target's ROI, across all 6 clips. This index reflects differences in the total length of time
717 participants gazed at each target, over and above the number of fixations, and is thus
718 qualitatively distinct from the proportion of fixations.

719 For each index of attention, our study design yielded three observations for each
720 participant—one for each of the three targets in each clip. These three attention scores were
721 grouped and nested within each participant, potentially leading to a lack of independence for
722 individual observations within subjects, and thus violating assumptions of independence and
723 homoscedasticity in ordinary least squares-based approaches (Bliese & Hanges, 2004; Kenny &
724 Judd, 1986). Indeed, intra-class correlations indicate a high degree of covariation among
725 observations within each participant cluster for the mean proportion of fixations index ($ICC = -$
726 $.32$) and the total fixation duration index ($ICC = -.30$).⁹ Thus, to account for the non-
727 independence between observations produced by such nesting, clustered robust standard errors
728 were used to derive accurate estimates of standard errors (Wooldridge, 2003).¹⁰

729 **Do Dominant and Prestigious individuals receive greater visual attention?** We
730 conducted two multiple regression analyses predicting each index of attention (proportion of
731 fixations and total fixation duration) on eye-tracked participants' ratings of each target's
732 perceived Dominance and Prestige and two control variables: target speaking time and seating
733 position (i.e., whether the target was assigned to sit in the left, right, or center position at the
734 table). To facilitate interpretation, all predictors were grand mean centered, with the exception of
735 seating position, which was dummy coded (as 0 for side, or 1 for center; our assumption was that
736 the center-seated target might receive greater attention than the other two due to his/her
737 position).¹¹ In all models, we used clustered robust standard errors, clustering on participants

738 because the analyses compiled repeated observations from the same eye-tracked participants,
739 who each provided multiple observations.

740 Table 3 presents the two regression models. Controlling for eye-tracked participants'
741 judgments of target's Prestige, speaking time¹², and seating position, the regression coefficients
742 for Dominance were statistically significant and positive in both models, indicating that a 1-point
743 increase in perceived Dominance was associated with a 2% increase in proportion of fixations
744 and 2.11 additional seconds of total fixation duration. Similarly, controlling for targets'
745 perceived Dominance, speaking time, and seating position, the regression coefficients for
746 Prestige were significant and positive in both models, indicating that a 1-point increase in
747 perceived Prestige was associated with a 2% increase in proportion of fixations and an additional
748 1.94 seconds of total fixation duration.

749 In both models, speaking time and seating position also emerged as significant predictors,
750 suggesting that these factors also influenced attention, as expected based on previous research
751 (Aries, Gold, & Weigel, 1983; Cashdan, 1998; Cohen, 1994; Mast, 2002; Mullen, Salas, &
752 Driskell, 1989). Speaking time was also positively associated with eye-tracked judges'
753 perceptions of Dominance ($r = .68$) and Prestige ($r = .35$). There were no perceiver gender or
754 target gender main or interactive effects.

755 If Dominance and Prestige represent the primary pathways to social status, the two
756 strategies together should explain substantial portions of variance in attention. To test this
757 prediction, we next ran separate regression models with proportion of fixations and total fixation
758 duration as outcomes, and eye-tracked judges' ratings of Dominance and Prestige as predictor
759 variables [here, the two predictor variables showed a small positive association (using clustered
760 robust standard errors), $\beta = .20$, $t(58) = 2.86$, $p < .01$], after standardizing all variables. Again,

761 clustered robust standard errors were used. As expected, Dominance and Prestige were each
762 significantly associated with both measures of attention—proportion of fixations, $\beta_s = .56$
763 and $.24$, $t(58)s = 7.79$ and 3.72 , $ps < .001$, and total fixation duration, $\beta_s = .55$ and $.23$, $t(58)s =$
764 7.03 and 3.36 , $ps < .01$. Furthermore, perceived Dominance and Prestige explained considerable
765 amounts of variance in proportion of fixations, $R^2 = .48$, 95%CI [.31, .65] and total fixation
766 duration, $R^2 = .46$, 95%CI [.28, .64]. Together, these results suggest that both Dominance and
767 Prestige were strongly associated with receiving heightened visual attention, and these effects
768 were independent of how much targets spoke and where they sat.

769 To ensure that eye-tracked judges' perceptions of targets' dominance and prestige was
770 accurate, we next examined correlations between these judges' ratings of targets and those made
771 by Study 1 in-lab peers, on these dimensions. Results indicated that the two sets of viewers
772 showed substantial agreement in their ratings of targets' Dominance and Prestige ($r_s = .79$ for
773 Dominance and $.66$ for Prestige, $ps < .05$; note that these correlations were conducted across the
774 12 targets, not across participants). These correlations are particularly noteworthy given that the
775 two sets of participants had access to substantially different amounts of information and made
776 their ratings after engaging in very different tasks (i.e., viewing and interacting with targets face-
777 to-face for 20-minutes with the goal of completing a collaborative task, versus viewing targets on
778 video for a total of 120-sec truncated into fragmented and randomized 20-sec segments, with the
779 goal of "imagining" that they were interacting with them). This high level of convergence
780 suggests that both sets of perceptions were valid measures of targets' use of Dominance and
781 Prestige strategies. Furthermore, these correlations also suggest that even under conditions of
782 very limited exposure, observers can make highly accurate judgments of Dominance and
783 Prestige.¹³

807 replicated this finding with status operationalized as social attention; both high-Dominance and
808 high-Prestige group members tend to receive greater visual attention from outside observers than
809 low-status group members. This result was replicated across two measures of visual attention and
810 two sources of Dominance and Prestige perceptions, and held controlling for speaking time and
811 seating position. Together, these two studies provide evidence for the central claim of the
812 Dominance-Prestige account: that both Dominance and Prestige are effective strategies for
813 attaining social status in contemporary human groups, even within the same social group.

814 Although previous studies have identified distinct micro-level personality traits and
815 attributes that are associated with Dominance or Prestige (Buttermore, 2006; Cheng et al., 2010;
816 Johnson et al., 2007; Reyes-Garcia et al., 2008), this is the first research to examine the
817 concurrent efficacy of the two strategies for attaining status and influence. In addition, while
818 previous work examined long-term Dominance and Prestige hierarchies in pre-existing social
819 groups, the present research demonstrates that both hierarchies emerge rapidly among members
820 of short-term, newly acquainted groups who interact for only 20-minutes. The finding that
821 differences along both dimensions emerged spontaneously and reliably in brief social encounters,
822 and that individuals' ranks on each dimension were readily apparent to peers within the group,
823 outside observers, and eye-tracked observers who viewed each interaction for only 120-sec of
824 fragmented moments, suggests that individual differences in the use of these strategies are
825 fundamental to the formation of interpersonal relationships, and that individuals are highly
826 attuned to accurately perceiving these differences.

827 These findings are also consistent with a large body of research demonstrating high levels
828 of consensus and accuracy in person judgments from only brief observations of "thin sliced"
829 behavior (e.g., Ambady & Rosenthal, 1992; Funder & Colvin, 1988). The present research adds

830 to this literature by demonstrating that Dominance and Prestige, too, can be very quickly and
831 accurately judged. This ability may be shaped by selection pressures on subordinates to monitor
832 and pre-empt attacks from Dominants and maximize opportunities to acquire fitness-enhancing
833 cultural information from Prestigious individuals. Study 2 suggests that, in both cases, these
834 quick perceptual abilities may be facilitated by automatic visual attention patterns.

835 **Implications for the Evolutionary Foundations of Human Social Status**

836 The finding that Dominance and Prestige can coexist within the same social groups as
837 viable status strategies suggests that human status hierarchies are multidimensional. This finding
838 stands in contrast to the social-functional perspective, which maintains that intimidation and
839 aggression are ineffectual for status attainment, and that the only viable route to influence is via
840 competence and generosity (e.g., Anderson & Kilduff, 2009a; 2009b; Barkow, 1975; Ridgeway
841 & Diekema, 1989). Our findings also challenge the social-dominance view, which holds that
842 individuals acquire status by displaying dominance and threat but *not* by signaling their abilities
843 and competence. By supporting the Dominance-Prestige account, the present findings integrate
844 the two narrower accounts, and thus reconcile a longstanding division in the literature on social
845 status. When considered jointly, Dominance and Prestige explain a substantial portion of
846 variation between individuals in social status, consistent with the theoretical notion that the two
847 status strategies form the core foundations of human social status.

848 They also suggest that many of the fairly wide range of narrow attributes and behaviors
849 previously found to be associated with status likely demonstrated those relations because they
850 are part of one of the two fundamental strategies. Specifically, prior evidence for an association
851 between high status and physical strength (Schjelderup-Ebbe, 1935), aggression (Griskevicius et
852 al., 2009), toughness (Cashdan, 1998), threatening and coercive behavior (Kyl-Heku & Buss,

1996), assertiveness (Gibb, 1968; Lord et al., 1986; Stogdill, 1948), need for power (Flynn, Reagans, Amanatullah, & Ames, 2006; Winter, 1988), anger (Tiedens, 2001; Van Kleef, Homan, Beersma, & van Knippenberg, 2010), narcissism (Brunell et al., 2008), over-confidence (Anderson & Brion, 2011), and prioritizing self- over group-interest (Maner & Mead, 2010), may be more parsimoniously viewed as reflecting Dominance-based processes. Likewise, evidence for an association between status and the possession of valuable skills (Berger et al., 1972; Ellis, 1994; Lord et al., 1986), task ability (Driskell et al., 1993), intelligence (Lord et al., 1986; Stogdill, 1948), perceived competence (Anderson & Kilduff, 2009b), specialized knowledge (Mesoudi, 2008; Van Vugt, 2006), altruism (Hardy & Van Vugt, 2006; Willer, 2009), helpfulness (Flynn et al., 2006), generosity, honesty, responsibility, fairness (Lord & Maher, 1991), and charisma (Awamleh & Gardner, 1999) may in fact reflect Prestige processes. The present research is the first to bring together all of these seemingly disparate sets of findings in one coherent model, and to provide an empirically supported account that suggests that the social-functionalist and social-dominance perspectives are not in fact incongruous, but rather that human social status is dual faceted.

Distinctions similar to Dominance and Prestige have been made in anthropology (e.g., Krackle, 1978; Barkow, 1975; Chance & Jolly, 1970), psychology (e.g., Gilbert, Price, & Allan, 1995; Magee & Galinsky, 2008), and sociology (e.g., Kemper, 1990), based on inductive inferences; however, the framework adopted here has several advantages over these earlier models. First, it explains why subordinates in human social groups seem to demonstrate two notably distinct ethological and psychological patterns directed at different high-status individuals—copying and deferring to some leaders while avoiding and fearing others, as well as differential patterns of imitation, memory, attention, and persuasion in the presence of these

876 different leaders (for a review, see Henrich & Gil-White, 2001). Second, it explains *why* certain
877 socially attractive qualities (e.g., expertise and success) promote high status. Third, it can
878 account for group and cultural differences in the traits and abilities that lead to high status; for
879 example, why athletic ability is valued among adolescent boys but not academic scholars. In sum,
880 by positing a cultural learning process to account for Prestige hierarchies and employing
881 evolutionary logic, the Dominance-Prestige account provides a basis for understanding the distal
882 forces that shape preferences for social models and processes of social influence.

883 More broadly, our findings lend support to the theoretical account of Prestige as having
884 arisen in response to the evolution, in humans, of cultural learning capacities. With the
885 emergence of capabilities for acquiring cultural information, it likely became adaptive for
886 individuals to acquire such knowledge from skilled social models, resulting in a human
887 psychology in which individuals ingratiate themselves to skilled others by displaying deference.
888 This in turn permits subordinate learners access to Prestigious models, who allow copying and
889 thus exert further influence over learners. Consistent with this account, our results indicate that
890 individuals pay greater attention to Prestigious others than non-Prestigious, and defer to their
891 opinions (as evidenced by the finding that Prestigious individuals scored higher on the
892 behavioral measure of influence in Study 1), despite our finding that these individuals, in
893 contrast to Dominants, are not viewed as threatening and are well liked. The present findings are
894 thus compatible with the theory of Prestige as resulting from the evolution of cultural
895 transmission (see Henrich & Gil-White, 2001; Boyd & Richerson, 1985); in our view, this
896 account provides the most parsimonious and empirically supported framework for the extant data.

897 The present findings also raise questions for accounts of human social status as being
898 exclusively Prestige-based, having evolved (or “exapted”) from earlier Dominance hierarchies

899 seen in other animals (Barkow, 1975). Given the evidence that emerged here for the prevalence
900 and viability of Dominance, it seems reasonable to conclude that human social status is
901 characterized by the co-occurrence of both strategies, even among groups of university students
902 who are presumably more oriented than average toward the attainment of cultural knowledge,
903 and not particularly fearful of threat of force in a laboratory-based situation. Given the
904 importance of agonistic contests in virtually all nonhuman animal social hierarchies (Mazur,
905 1973), Dominance in humans likely represents an evolutionarily ancient system which, despite
906 the rise of Prestige, remains operative. Human Dominance is not, however, limited to physical
907 conflict; in most contemporary societies it is likely more frequently wielded by controlling costs
908 and benefits in non-agonistic domains.

909 One potentially unique feature of human hierarchies is that merit-based institutional
910 positions, which are attained via the demonstration of skill and ability, are typically endowed
911 with the control of costs and benefits, and thus can evoke Dominance-oriented behaviors,
912 resulting in the simultaneous use of both strategies (also see Magee & Galinsky, 2008). Indeed,
913 in the present as well as previous research (Cheng et al., 2010), Dominance and Prestige were
914 statistically independent, suggesting that individuals could concurrently adopt both strategies,
915 consistent with developmental studies showing that some children simultaneously demonstrate
916 both pro-social and coercive relational styles (Hawley, Little, & Pasupathi, 2002).

917 Finally, the present research also has implications for research on the evolutionary origins
918 of leadership (e.g., Van Vugt, 2006; Gillet, Cartwright, & Van Vugt, 2011). Although we
919 focused more on status and influence than leadership, effective leadership depends on inducing
920 social influence (Bass, 1990; Hollander, 1985; Hollander & Julian, 1969), suggesting that
921 Dominance and Prestige may also underpin two alternative styles of leadership. Consistent with

922 this notion, researchers have delineated two contrasting leadership personalities, termed ‘selfish’
923 and ‘servant’ (Gillet et al., 2011; Greenleaf, 2002; Wilson, Van Vugt, & O’Gorman, 2008).
924 Selfish leaders have been found to exploit their positions of power and take more than followers
925 from a common resource, out of feelings of entitlement. Their behaviors contrast sharply with
926 those of “servant” leaders, who engage in self-sacrificial, altruistic behaviors to promote group
927 cooperation at a cost to themselves (De Cremer & Van Dijk, 2005; Gillet et al., 2011; O’Gorman,
928 Henrich, & Van Vugt, 2009). A similar distinction can be found in studies comparing “autocratic”
929 and “democratic” approaches to leadership (Lewin, Lippit, & White, 1939).

930 Our findings also shed light on the prevalence of narcissistic, aggressive, and
931 manipulative egotists in leadership roles, such as company presidents and chief executive
932 officers (Brunell et al., 2008; Deluga, 1997; Fast & Chen, 2009; Rosenthal & Pattinsky, 2006;
933 Van Vugt, 2006; Wasylyshyn, 2005; Workplace Bullying Institute & Zogby International, 2010),
934 and the multitude of kings, emperors, tyrants, and dictators who have throughout history
935 exploited their leadership positions for self-benefit at the cost of the group (Betzig, 1993). The
936 high status of these despots may be explained by their effectiveness in deploying a Dominance
937 strategy. These individuals may rely on Dominance-oriented behaviors as a result of insecurities
938 about their ability to attain broadly recognized Prestige; indeed, recent findings suggest that
939 powerful individuals become aggressive when they perceive themselves as incompetent (Fast &
940 Chen, 2009).

941 **Limitations and Future Directions**

942 One limitation of the present research is our reliance on a correlational approach, which
943 prevents us from directly addressing questions of causality—whether Dominance or Prestige are
944 causal antecedents to status. However, given that Dominance and Prestige are latent perceptions

945 constituted from the sum of numerous more specific social attributes, behaviors, and
946 interpersonal traits, manipulating any single attribute would likely be ineffective to promote a
947 genuine, believable Dominant or Prestigious reputation. Nevertheless, one important future
948 direction is to directly test the causal model indicated by our theoretical account.

949 Another important direction is to examine whether the present findings generalize to
950 stable long-term groups. Previous research suggests that both dimensions exist and can be
951 reliably assessed within such groups (Cheng et al., 2010; Reyes-Garcia et al. 2008; 2009), and
952 that in at least one long-term group (university athletic teams), both Dominant and Prestigious
953 individuals are perceived as leaders by other group members (Cheng et al., 2010). Thus, it seems
954 likely that the present results represent Dominance and Prestige dynamics as they occur in real-
955 world, long-term social hierarchies, but this should be tested in future research.

956 Given the evolutionary framework of the present research, another limitation is our
957 inclusion of only North American undergraduates, who are often not representative of most of
958 the world's populations (Henrich, Heine, & Norenzayan, 2010). Future studies are needed to
959 replicate these findings in diverse populations, to test whether the status-promoting effects of
960 Dominance and Prestige generalize across human societies. Previous research is consistent with
961 this expectation; Dominance and Prestige hierarchies have been documented in culturally and
962 geographically diverse populations, including the Tsimane'—a highly egalitarian population of
963 forager-horticulturalists in the Bolivian Amazon (Reyes-Garcia et al., 2008; 2009; also see von
964 Rueden et al., 2008)—as well as industrialized populations from the United States and Canada
965 (Buttermore, 2006; Cheng et al., 2010; Johnson et al., 2007)—but these studies have not tested
966 whether both strategies, defined in terms of higher order, widely-encompassing reputations—are
967 associated with social status in these diverse groups.

968 In conclusion, although the pursuit of social status is a recurrent, pervasive, and universal
969 feature of human societies, only recently has a parsimonious evolutionary account emerged that
970 can unify the diverse and seemingly contradictory empirical findings regarding status attainment.
971 The present research provides support for the Dominance-Prestige account, and demonstrates
972 that while both are effective status strategies, they are underpinned by divergent interpersonal
973 behaviors and perceptions.

Acknowledgments

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976 We would like to thank Social Sciences Research Council of Canada (File #s 767-2009-2108 and
977 410-2009-2458), the Michael Smith Foundation for Health Research [File # CI-SCH-01862(07-
978 1)], and the Canadian Institute for Advanced Research (CIFAR) for supporting this research. We
979 also thank Marc Fournier, Alec Beall, Jason Martens, and Jack Eurich for their helpful feedback
980 on a previous draft of this manuscript.

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References

- 982
983 Abramovitch, R. (1976). The relation of attention and proximity to rank in preschool children. In:
984 M. R. A. Larsen, & R. R. Larsen (Eds.), *The social structure of attention* (pp. 153-176).
985 London: Wiley.
- 986 Abramovitch, R., & Grusec, J. E. (1978). Peer imitation in a natural setting. *Child Development*,
987 *49*, 60-65.
- 988 Albright, L., Kenny, D. A., & Malloy, T. E. (1988). Consensus in personality judgments at zero
989 acquaintance. *Journal of Personality and Social Psychology*, *55*, 387.
- 990 Ambady, N., & Rosenthal, R. (1992). Thin slices of expressive behavior as predictors of
991 interpersonal consequences: A meta-analysis. *Psychological Bulletin*, *111*, 256-274.
- 992 Anderson, C., & Brion, S. (2011). Why do “big wigs” have big egos? Self-perceptions of
993 competence and the attainment of status. *Under review*.
- 994 Anderson, C., & Kilduff, G. J. (2009a). The pursuit of status in social groups. *Current Directions*
995 *in Psychological Science*, *18*, 295-298.
- 996 Anderson, C., & Kilduff, G. J. (2009b). Why do dominant personalities attain influence in face-
997 to-face groups? The competence-signaling effects of trait dominance. *Journal of*
998 *Personality and Social Psychology*, *96*, 491-503.
- 999 Anderson, C., John, O. P., Keltner, D., & Kring, A. M. (2001). Who attains social status? Effects
1000 of personality and physical attractiveness in social groups. *Journal of Personality and*
1001 *Social Psychology*, *81*, 116-132.
- 1002 Anderson, C., & Shirako, A. (2008). Are individuals' reputations related to their history of
1003 behavior? *Journal of Personality and Social Psychology*, *94*, 320-333.

- 1004 Anderson, C., Srivastava, S., Beer, J. S., Spataro, S. E., & Chatman, J. A. (2006). Knowing your
1005 place: Self-perceptions of status in face-to-face groups. *Journal of personality and social*
1006 *psychology, 91*, 1094.
- 1007 Aries, E. J., Gold, C., & Weigel, R. (1983). Dispositional and situational influences on
1008 dominance behavior in small groups. *Journal of Personality and Social Psychology, 44*,
1009 779-786.
- 1010 Awamleh, R., & Gardner, W. L. (1999). Perceptions of leader charisma and effectiveness: The
1011 effects of vision content, delivery, and organizational performance. *The Leadership*
1012 *Quarterly, 10*, 345-373.
- 1013 Bakan, D. (1966). *The duality of human existence*. Skokie, IL: Rand McNally.
- 1014 Báles, R. F. (1950). *Interaction process analysis: A method for the study of small groups*.
1015 Reading, MA: Addison-Wesley.
- 1016 Báles, R. F., Strodtbeck, F. L., Mills, T. M., & Roseborough, M. E. (1951). Channels of
1017 communication in small groups. *American Sociological Review, 16*, 461-468.
- 1018 Barkow, J. H. (1975). Prestige and culture: A biosocial interpretation. *Current Anthropology, 16*,
1019 553-572.
- 1020 Bass, B. M. (1990). *Bass and Stogdill's handbook of leadership: Theory, research, and*
1021 *managerial applications* (3rd ed.). New York: Free Press.
- 1022 Berger, J., Cohen, B. P., & Zelditch, M. (1972). Status characteristics and social interaction.
1023 *American Sociological Review, 37*, 241-255.
- 1024 Berger, J., Rosenholtz, S. J., & Zelditch, M. (1980). Status organizing processes. *Annual Review*
1025 *of Sociology, 6*, 479-508.

- 1026 Betzig, L. L. (1986). *Despotism and differential reproduction: A Darwinian view of history*.
1027 Hawthorne, NY: Aldine.
- 1028 Betzig, L. L. (1993). Sex, succession, and stratification in the first six civilizations: How
1029 powerful men reproduced, passed power on to their sons, and used power to defend their
1030 wealth, women, and children. In L. Ellis (Ed.), *Social stratification and socioeconomic*
1031 *inequality* (Vol. 1, pp. 37–74). Westport, CT: Praeger.
- 1032 Blau, P. M. (1964). *Exchange and power in social life*. New York: Wiley.
- 1033 Bliese, P. D., & Hanges, P. J. (2004). Being both too liberal and too conservative: The perils of
1034 treating grouped data as though they were independent. *Organizational Research*
1035 *Methods*, 7, 400-417.
- 1036 Boehm, C. (1993). Egalitarian society and reverse dominance hierarchy. *Current Anthropology*,
1037 34, 227-254.
- 1038 Bottger, P. C. (1984). Expertise and air time as basis of actual and perceived influence in
1039 problem solving groups. *Journal of Applied Psychology*, 69, 214-221.
- 1040 Boyd, R., & Richerson, P. J. (1985). *Culture and the evolutionary process*. Chicago: The
1041 University of Chicago Press.
- 1042 Brown, D. (1991). *Human universals*. Philadelphia: Temple University Press.
- 1043 Brunell, A. B., Gentry, W. A., Campbell, W. K., Hoffman, B. J., Kuhnert, K. W., & DeMarree,
1044 K. G. (2008). Leader emergence: The case of the narcissistic leader. *Personality and*
1045 *Social Psychology Bulletin*, 34, 1663 -1676.
- 1046 Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data*
1047 *analysis methods*. Thousand Oaks, CA: Sage Publications Inc.

- 1048 Buttermore, N. (2006). *Distinguishing Dominance and Prestige: Validation of a self-report scale*.
1049 Poster presented at the Human Behavior and Evolution Society's 18th Annual Meeting.
1050 Philadelphia, Pennsylvania.
- 1051 Buss, D. M., & Duntley, J. D. (2006). The evolution of aggression. In M. Schaller, J. A. Simpson,
1052 & D. T. Kenrick (Eds.), *Evolution and social psychology* (pp. 263–286). New York:
1053 Psychology Press.
- 1054 Buss, D. M., Gomes, M., Higgins, D. S., & Lauterbach, K. (1987). Tactics of manipulation.
1055 *Journal of Personality and Social Psychology*, 52, 1219.
- 1056 Cartwright, D. (1959). A field theoretical conception of power. In D. Cartwright (Ed.), *Studies in*
1057 *social power* (pp. 183–220). Ann Arbor, MI: Institute for Social Research.
- 1058 Cashdan, E. (1998). Smiles, speech, and body posture: How women and men display sociometric
1059 status and power. *Journal of Nonverbal Behavior*, 22, 209-228.
- 1060 Chagnon, N. (1983). *Yanomamo* (3rd ed.). New York: Holt, Rinehart, & Winston.
- 1061 Chance, M. R. A. (1967). Attention structure as the basis of primate rank orders. *Man*, 2, 503-
1062 518.
- 1063 Chance, M. R. A., & Jolly, C. J. (1970). *Social groups of monkeys, apes and man*. London:
1064 Jonathan Cape.
- 1065 Cheng, J. T., Tracy, J. L., & Henrich, J. (2010). Pride, personality, and the evolutionary
1066 foundations of human social status. *Evolution and Human Behavior*, 31, 334-347.
- 1067 Cohen, E. (1994). *Designing groupwork: Strategies for the heterogeneous classroom*. New York:
1068 Teachers College Press.
- 1069 Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A
1070 cross-age perspective. *Developmental Psychology*, 18, 557-570.

- 1071 Cowlshaw, G., & Dunbar, R. I. (1991). Dominance rank and mating success in male primates.
1072 *Animal Behaviour*, 41, 1045-1056.
- 1073 De Cremer, D., & Van Dijk, E. (2005). When and why leaders put themselves first: Leader
1074 behaviour in resource allocations as a function of feeling entitled. *European Journal of*
1075 *Social Psychology*, 35, 553–563.
- 1076 Deluga, R. J. (1997). Relationship among American presidential charismatic leadership,
1077 narcissism, and rated performance. *Leadership Quarterly*, 8, 49-65.
- 1078 DePaulo, B. M., Kenny, D. A., Hoover, C. W., Webb, W., & Oliver, P. V. (1987). Accuracy of
1079 person perception: Do people know what kinds of impressions they convey? *Journal of*
1080 *Personality and Social Psychology*, 52, 303-315.
- 1081 Driskell, J. E., Olmstead, B., & Salas, E. (1993). Task cues, dominance cues, and influence in
1082 task groups. *Journal of Applied Psychology*, 78, 51-60.
- 1083 Ellis, L. (1994). *Social stratification and socioeconomic inequality, Vol. 2: Reproductive and*
1084 *interpersonal aspects of dominance and status*. Westport, CT: Praeger.
- 1085 Ellis, L. (1995). Dominance and reproductive success among nonhuman animals: A cross-
1086 species comparison. *Ethology and Sociobiology*, 16, 257-333.
- 1087 Exline, R. V., Ellyson, S. L., & Long, B. (1975). Visual behavior as an aspect of power role
1088 relationships. In P. Pliner, L. Krames, & T. Alloway (Eds.), *Nonverbal communication of*
1089 *aggression* (pp. 21–52). New York: Plenum Press.
- 1090 Fast, N. J., & Chen, S. (2009). When the boss feels inadequate: Power, incompetence, and
1091 aggression. *Psychological Science*, 20, 1406-1413.
- 1092 Fiske, S. T. (1993). Controlling other people: The impact of power on stereotyping. *American*
1093 *Psychologist*, 48, 621–628.

- 1094 Flynn, F. J., Reagans, R. E., Amanatullah, E. T., & Ames, D. R. (2006). Helping one's way to the
1095 top: Self-monitors achieve status by helping others and knowing who helps whom.
1096 *Journal of Personality and Social Psychology, 91*, 1123-1137.
- 1097 Foa, U. G., & Foa, E. B. (1974). *Societal structures of the mind*. Springfield, IL: Thomas.
- 1098 Foulsham, T., Cheng, J. T., Tracy, J. L., Henrich, J., Kingstone, A. (2010). Gaze allocation in a
1099 dynamic situation: Effects of social status and speaking. *Cognition, 117*, 319-331.
- 1100 French, J., & Raven, B. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in*
1101 *social power* (pp. 150–165). Ann Arbor, MI: Institute for Social Research.
- 1102 Fried, M. H. (1967). *The evolution of political society: An essay in political anthropology*. New
1103 York: Random House.
- 1104 Funder, D. C., & Colvin, C. R. (1988). Friends and strangers: Acquaintanceship, agreement, and
1105 the accuracy of personality judgment. *Journal of Personality and Social Psychology, 55*,
1106 149–158.
- 1107 Gibb, C. (1968). Leadership. In G. Lindzey & E. Aronson (Eds.), *The handbook of social*
1108 *psychology* (2nd ed., pp. 205-283). Reading, MA: Addison-Wesley.
- 1109 Gilbert, P., Price, J., & Allan, S. (1995). Social comparison, social attractiveness and evolution:
1110 How might they be related? *New Ideas in Psychology, 13*, 149-165.
- 1111 Gillet, J., Cartwright, E., & Vugt, M. (2011). Selfish or servant leadership? Evolutionary
1112 predictions on leadership personalities in coordination games. *Personality and Individual*
1113 *Differences, 51*, 231-236.
- 1114 Gintner, G., & Lindskold, S. (1975). Rate of participation and expertise as factors influencing
1115 leader choice. *Journal of Personality and Social Psychology, 32*, 1085-1089.

- 1116 Greenleaf, R. K. (2002) *Servant leadership: A journey into the nature of legitimate power and*
1117 *greatness* (25th anniversary ed.). Mahwah, NJ: Paulist Press.
- 1118 Griskevicius, V., Tybur, J. M., Gangestad, S. W., Perea, E. F., Shapiro, J. R., & Kenrick, D. T.
1119 (2009). Aggress to impress: Hostility as an evolved context-dependent strategy. *Journal*
1120 *of Personality and Social Psychology*, 96, 980-994.
- 1121 Hardy, C. L., & Van Vugt, M. (2006). Nice guys finish first: The competitive altruism
1122 hypothesis. *Personality and Social Psychology Bulletin*, 32, 1402 -1413.
- 1123 Hawley, P. H. (2002). Social dominance and prosocial and coercive strategies of resource control
1124 in preschoolers. *International Journal of Behavioral Development*, 26, 167 -176.
- 1125 Hawley, P. H. (2003). Strategies of control, aggression, and morality in preschoolers: An
1126 evolutionary perspective. *Journal of Experimental Child Psychology*, 85, 213-235.
- 1127 Hawley, P. H., Little, T. D., & Pasupathi, M. (2002). Winning friends and influencing peers:
1128 Strategies of peer influence in late childhood. *International Journal of Behavioral*
1129 *Development*, 26, 466-474.
- 1130 Henrich, J., & Gil-White, F. J. (2001). The evolution of prestige: Freely conferred deference as a
1131 mechanism for enhancing the benefits of cultural transmission. *Evolution and Human*
1132 *Behavior*, 22, 165-196.
- 1133 Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world?
1134 *Behavioral and Brain Sciences*, 33, 61-83.
- 1135 Hill, J. (1984). Prestige and reproductive success in man. *Ethology and Sociobiology*, 5, 77-95.
- 1136 Hill, K., & Hurtado, A. M. (1989). Hunter-gatherers of the New World. *American Scientist*, 77,
1137 436-443.

- 1138 Hold, B. C. L. (1976). Attention structure and rank specific behavior in preschool children. In: M.
1139 R. A. Chance, & R. R. Larsen (Eds.), *The social structure of attention* (pp. 177-202).
1140 London: Wiley.
- 1141 Hollander, E. P. (1985). Leadership and power. In G. Lindzey & E. Aronson (Eds.), *The*
1142 *handbook of social psychology* (pp. 485-537). New York: Random House.
- 1143 Hollander, E. P., & Julian, J. W. (1969). Contemporary trends in the analysis of leadership
1144 processes. *Psychological Bulletin*, *71*, 387.
- 1145 Horner, V., Proctor, D., Bonnie, K. E., Whiten, A., & de Waal, F. B. M. (2010). Prestige affects
1146 cultural learning in chimpanzees. *PLoS ONE*, *5*, e10625.
- 1147 Iacocca, L. (1984). *Iacocca: An autobiography*. New York: Bantam Books.
- 1148 Johnson, R. T., Burk, J. A., & Kirkpatrick, L. A. (2007). Dominance and prestige as differential
1149 predictors of aggression and testosterone levels in men. *Evolution and Human Behavior*,
1150 *28*, 345-351.
- 1151 Jost, J. T., & Banaji, M. R. (1994). The role of stereotyping in system-justification and the
1152 production of false consciousness. *British Journal of Social Psychology*, *33*, 1-27.
- 1153 Kemper, T. D. (1990). *Social structure and testosterone: Explorations of the socio-bio-social*
1154 *chain*. New Brunswick, NJ: Rutgers University Press.
- 1155 Kenny, D. A. (1998). *SOREMO* [Computer software]. University of Connecticut.
- 1156 Kenny, D. A., & Albright, L. (1987). Accuracy in interpersonal perception: A social relations
1157 analysis. *Psychological Bulletin*, *102*, 390-402.
- 1158 Kenny, D. A., Albright, L., Malloy, T. E., & Kashy, D. A. (1994). Consensus in interpersonal
1159 perception: Acquaintance and the big five. *Psychological Bulletin*, *116*, 245-258.

- 1160 Kenny, D. A., Horner, C., Kashy, D. A., & Chu, L. (1992). Consensus at zero acquaintance:
1161 Replication, behavioral cues, and stability. *Journal of Personality and Social Psychology*,
1162 62, 88-97.
- 1163 Kenny, D. A., & Judd, C. M. (1986). Consequences of violating the independence assumption in
1164 analysis of variance. *Psychological Bulletin*, 99, 422-431.
- 1165 Kenny, D. A., & La Voie, L. (1984). The social relations model. In L. Berkowitz (Ed.), *Advances*
1166 *in experimental social psychology* (Vol. 18, pp. 142–182). Orlando, FL: Academic Press.
- 1167 Kenny, D. A., Kashy, D. A., & Cook, W. (2006). *Dyadic data analysis*. New York: Guilford
1168 Press.
- 1169 Kipnis, D., Castell, J., Gergen, M., & Mauch, D. (1976). Metamorphic effects of power. *Journal*
1170 *of Applied Psychology*, 61, 127-135.
- 1171 Krackle, W. H. (1978). *Force and persuasion: Leadership in an Amazonian society*. Chicago:
1172 The University of Chicago Press.
- 1173 Kyl-Heku, L. M., & Buss, D. M. (1996). Tactics as units of analysis in personality psychology:
1174 An illustration using tactics of hierarchy negotiation. *Personality and Individual*
1175 *Differences*, 21, 497-517.
- 1176 La Freniere, P., & Charlesworth, W. R. (1983). Dominance, attention, and affiliation in a
1177 preschool group: A nine-month longitudinal study. *Ethology and Sociobiology*, 4, 55-67.
- 1178 Laland, K. N., & Galef, B. G. (2009). *The question of animal culture*. Cambridge, MA: Harvard
1179 University Press.
- 1180 Lee, M. T., & Ofshe, R. (1981). The impact of behavioral style and status characteristics on
1181 social influence: A test of two competing theories. *Social Psychology Quarterly*, 44, 73-
1182 82.

- 1183 Lee, R. B. (1979). *The !Kung San: Men, women and work in a foraging society*. Cambridge,
1184 New York: Cambridge University Press.
- 1185 Lewin, K. (1951). *Field theory in social science: Selected theoretical papers*. New York:
1186 Harpers.
- 1187 Lewin, K., Lippit, R., & White, R. K. (1939). Patterns of aggressive behavior in experimentally
1188 created “social climates.” *Journal of Social Psychology, 10*, 271-279.
- 1189 Lewis, H. (1974). *Leaders and followers: Some anthropological perspectives*. Reading, MA:
1190 Addison-Wesley.
- 1191 Littlepage, G. E., Schmidt, G. W., Whisler, E. W., & Frost, A. G. (1995). An input-process-
1192 output analysis of influence and performance in problem-solving groups. *Journal of*
1193 *Personality and Social Psychology, 69*, 877-889.
- 1194 Lord, R. G., & Maher, K. J. (1991). *Leadership and information processing: Linking perception*
1195 *and performance*. Boston: Unwin Hyman.
- 1196 Lord, R. G., De Vader, C. L., & Alliger, G. M. (1986). A meta-analysis of the relation between
1197 personality traits and leadership perceptions: An application of validity generalization
1198 procedures. *Journal of Applied Psychology, 71*, 402-410.
- 1199 Magee, J. C., & Galinsky, A. D. (2008). Social hierarchy: The self-reinforcing nature of power
1200 and status. *Academy of Management Annals, 2*, 351-398.
- 1201 Malloy, T. E., & Albright, L. (1990). Interpersonal perception in a social context. *Journal of*
1202 *Personality and Social Psychology, 58*, 419-428.
- 1203 Maner, J. K., DeWall, C. N., & Gailliot, M. T. (2008). Selective attention to signs of success:
1204 Social dominance and early stage interpersonal perception. *Personality and Social*
1205 *Psychology Bulletin, 34*, 488-501.

- 1206 Maner, J. K., & Mead, N. (2010). The essential tension between leadership and power: When
1207 leaders sacrifice group goals for the sake of self-interest. *Journal of Personality and*
1208 *Social Psychology, 99*, 482-497.
- 1209 March, J. G. (1956). Influence measurement in experimental and semiexperimental groups.
1210 *Sociometry, 19*, 260-271.
- 1211 Mast, M. S. (2002). Dominance as expressed and inferred through speaking time: A meta-
1212 analysis. *Human Communication Research, 28*, 420-450.
- 1213 Mather, M., Shafir, E., & Johnson, M. K. (2000). Misremembrance of options past: Source
1214 monitoring and choice. *Psychological Science, 11*, 132-138.
- 1215 Mazur, A. (1973). A cross-species comparison of status in small established groups. *American*
1216 *Sociological Review, 38*, 513-530.
- 1217 Mazur, A. (1985). A biosocial model of status in face-to-face primate groups. *Social Forces, 64*,
1218 377-402.
- 1219 Mazur, A., & Booth, A. (1998). Testosterone and dominance in men. *Behavioral and Brain*
1220 *Sciences, 21*, 353-363.
- 1221 Mesoudi, A. (2008). An experimental simulation of the "copy-successful-individuals" cultural
1222 learning strategy: Adaptive landscapes, producer-scrounger dynamics, and informational
1223 access costs. *Evolution and Human Behavior, 29*, 350-363.
- 1224 Moore, J. C. (1968). Status and influence in small group interactions. *Sociometry, 31*, 47-63.
- 1225 Moskowitz, D., & Zuroff, D. C. (2005). Assessing interpersonal perceptions using the
1226 interpersonal grid. *Psychological Assessment, 17*, 218-230.

- 1227 Mullen, B., Salas, E., & Driskell, J. E. (1989). Salience, motivation, and artifact as contributions
1228 to the relation between participation rate and leadership. *Journal of Experimental Social*
1229 *Psychology, 25*, 545-559.
- 1230 Murdock, G. P. (1949). *Social structure*. New York: Free Press.
- 1231 O’Gorman, R., Henrich, J., & Van Vugt, M. (2009). Constraining free-riding in public goods
1232 games: Designated solitary punishers can sustain human cooperation. *Proceedings of the*
1233 *Royal Society B, 276*, 323–329.
- 1234 Rendell, L., Fogarty, L., Hoppitt, W. J. E., Morgan, T. J. H., Webster, M. M., & Laland, K. N.
1235 (2011). Cognitive culture: theoretical and empirical insights into social learning strategies.
1236 *Trends in Cognitive Sciences, 15*, 68-76.
- 1237 Reyes-Garcia, V., Molina, J. L., Broesch, J., Calvet, L., Huanca, T., Saus, J., Tanner, S., et al.
1238 (2008). Do the aged and knowledgeable men enjoy more prestige? A test of predictions
1239 from the prestige-bias model of cultural transmission. *Evolution and Human Behavior, 29*,
1240 275-281.
- 1241 Reyes-Garcia, V., Molina, J. L., McDade, T. W., Tanner, S. N., Huanca, T., & Leonard, W. R.
1242 (2009). Inequality in social rank and adult nutritional status: Evidence from a small-scale
1243 society in the Bolivian Amazon. *Social Science & Medicine, 69*, 571-578.
- 1244 Ridgeway, C. L. (1987). Nonverbal behavior, dominance, and the basis of status in task groups.
1245 *American Sociological Review, 52*, 683-694.
- 1246 Ridgeway, C., & Diekema, D. (1989). Dominance and collective hierarchy formation in male
1247 and female task groups. *American Sociological Review, 54*, 79-93.
- 1248 Rosenthal, S. A., & Pittinsky, T. L. (2006). Narcissistic leadership. *Leadership Quarterly, 17*,
1249 617-633.

- 1250 von Rueden, C., Gurven, M., & Kaplan, H. (2008). The multiple dimensions of male social status
1251 in an Amazonian society. *Evolution and Human Behavior*, 29, 402-415.
- 1252 von Rueden, C. Gurven, M., & Kaplan, H. (in press). Why do men seek status? Fitness payoffs
1253 to dominance and prestige. *Proceedings of The Royal Society B*.
- 1254 Savin-Williams, R. C. (1979). Dominance hierarchies in groups of early adolescents. *Child*
1255 *development*, 923-935.
- 1256 Savin-Williams, R. C. (1980). Dominance hierarchies in groups of middle to late adolescent
1257 males. *Journal of Youth and Adolescence*, 9, 75-85.
- 1258 Schjelderup-Ebbe, T. (1935). Social behavior of birds. In C. Murchison (Ed.), *A handbook of*
1259 *social psychology, volume 2* (pp. 947–972). New York: Russell and Russell.
- 1260 Sherman, S. J. (1983). Expectation-based and automatic behavior: A comment on Lee and Ofshe,
1261 and Berger and Zelditch. *Social Psychology Quarterly*, 46, 66-70.
- 1262 Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability.
1263 *Psychological Bulletin*, 86, 420-428.
- 1264 Sorrentino, R. M., & Boutillier, R. G. (1975). The effect of quantity and quality of verbal
1265 interaction on ratings of leadership ability. *Journal of Experimental Social Psychology*,
1266 11, 403-411.
- 1267 Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature.
1268 *Journal of Psychology*, 25, 35-71.
- 1269 Strayer, F., & Trudel, M. (1984). Developmental changes in the nature and function of social
1270 dominance among young children. *Ethology and Sociobiology*, 5, 279-295.
- 1271 Strodtbeck, F. L. (1951). Husband-wife interaction over revealed differences. *American*
1272 *Sociological Review*, 16, 468-473.

- 1273 Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. New York: Wiley.
- 1274 Tiedens, L. Z. (2001). Anger and advancement versus sadness and subjugation: The effect of
1275 negative emotion expressions on social status conferral. *Journal of Personality and*
1276 *Social Psychology, 80*, 86-94.
- 1277 Tracy, J. L., Shariff, A. F., & Cheng, J. T. (2010). A naturalist's view of pride. *Emotion Review,*
1278 *2*, 163 -177.
- 1279 Van Kleef, G. A., Homan, A. C., Beersma, B., & van Knippenberg, D. (2010). On angry leaders
1280 and agreeable followers: How leaders' emotions and followers' personalities shape
1281 motivation and team performance. *Psychological Science, 21*, 1827-1834.
- 1282 Van Vugt, M. (2006). Evolutionary origins of leadership and followership. *Personality and*
1283 *Social Psychology Review, 10*, 354 -371.
- 1284 Vaughn, B. E., & Waters, E. (1981). Attention structure, sociometric status, and dominance:
1285 Interrelations, behavioral correlates, and relationships to social competence.
1286 *Developmental Psychology, 17*, 275-288.
- 1287 Wasylyshyn, K. M. (2005). The reluctant president. *Consulting Psychology Journal: Practice*
1288 *and Research, 57*, 57-70.
- 1289 Wiggins, J. S. (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal
1290 domain. *Journal of Personality and Social Psychology, 37*, 395-412.
- 1291 Wiggins, J. S., & Trapnell, P. D. (1996). A dyadic-interactional perspective on the Five Factor
1292 Model. In J. S. Wiggins (Ed.), *The Five Factor Model of personality: Theoretical*
1293 *perspectives* (pp. 88-162). New York: Guilford Press.
- 1294 Willer, R. (2009). Groups reward individual sacrifice: The status solution to the collective action
1295 problem. *American Sociological Review, 74*, 23-43.

- 1296 Wilson, D. S., Van Vugt, M., & O’Gorman, R. (2008). Multilevel selection theory and major
1297 evolutionary transitions: Implications for psychological science. *Current Directions in*
1298 *Psychological Science*, *17*, 6–9.
- 1299 Winter, D. G. (1988). The power motive in women—and men. *Journal of Personality and Social*
1300 *Psychology*, *54*, 510–519.
- 1301 Wooldridge, J. M. (2003). Cluster-sample methods in applied econometrics. *The American*
1302 *Economic Review*, *93*, 133-138.
- 1303 Workplace Bullying Institute & Zogby International. (2010). *U.S. workplace bullying survey*.
1304 Retrieved February 11, 2011, from
1305 http://workplacebullying.org/docs/WBI_2010_Natl_Survey.pdf

1306 *Table 1. Correlations among peer-rated indices of status, Study 1.*

	Dominance	Prestige	Perceived Social Status	Agency	Behavioral Measure of Influence
Dominance	1	-	-	-	-
Prestige	.01	1	-	-	-
Perceived Social Status	.68**	.57**	1	-	-
Agency	.69**	.45**	.88**	1	-
Behavioral Measure of Influence	.17*	.17*	.22**	.30**	1

1307

1308 *Note. N = 177.*1309 * $p < .05$. ** $p < .01$.

1310

1311 *Table 2. Correlations of Dominance and Prestige (as Rated by In-Lab Peers and Outside*
 1312 *Observers) with Measures of Social Status and Liking, Study 1*

1313

Measures	In-Lab Peer-Rated		Outside Observer-Rated	
	Dominance	Prestige	Dominance	Prestige
In-Lab Peers' Ratings				
Status	.68** (.79**)	.57** (.40**)	.59** (.62**)	.63** (.55**)
Agency	.69** (.75**)	.45** (.33**)	.59** (.59**)	.60** (.54**)
Likeability	-.06	.73**	.13†	.49**
Outside Observers' Ratings				
Status	.57** (.54**)	.38** (.44**)	.70** (.71**)	.73** (.70**)
Agency	.56** (.52**)	.35** (.41**)	.69** (.69**)	.64** (.61**)
Likeability	-.18**	.38**	.09	.43**
Behavioral measure of influence	.17* (.17*)	.17* (.22**)	.11 (.11)	.13† (.14†)

1314
 1315 *Note. N = 191. Partial correlations controlling for likeability are presented in parentheses.*

1316
 1317 † $p < .10$ * $p < .05$ ** $p < .01$.

Table 3. Linear Regressions Predicting Visual Attention from Eye-Tracked Participant-Rated Dominance and Prestige, Controlling for Speaking Time and Seating Position, Study 2.

Predictor Variable	Measure of Attention					
	Proportion of Fixations			Total Fixation Duration (s)		
	<i>b</i> (SE)	β	<i>t</i>	<i>b</i> (SE)	β	<i>t</i>
Dominance	.02 (.01)	.18	2.47*	1.60 (.76)	.17	2.11*
Prestige	.02 (.01)	.16	3.09**	1.94 (.73)	.15	2.65*
Speaking Time	.43 (.05)	.48	8.97**	53.69 (6.63)	.49	8.09**
Position†	.06 (.02)	.47	3.60*	6.11 (1.84)	.44	3.32**
R^2		.66			.64	

Note. $N = 177$. Clustered robust standard errors were used to adjust for non-independence of observations resulting from repeated observations from the same participants, 59 individuals (clusters).

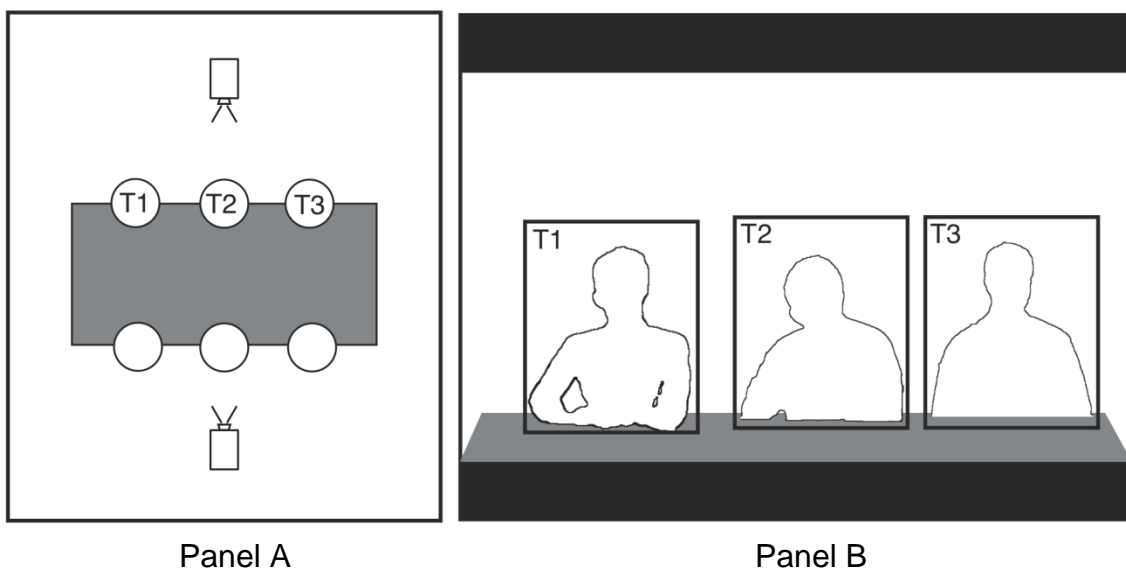
* $p < .05$. ** $p < .01$. †Position is an individual-level dummy variable with “0” representing seating on the left or right side, and “1” representing center position.

Figure Captions

Figure 1. Set up of Study 1 group interaction, Panel A, and example of video clip stimuli that Study 2 participants and Study 1 outside observers viewed, Panel B. Cameras were positioned at either side of the table during the group interaction, and videos portrayed three participants (i.e., targets T1, T2, and T3) in each group. The boxes around each target in Panel B represent regions of interest (ROIs), which were demarked to allow for the tallying of the total amount of visual attention paid to each target in Study 2.

Figure 2. Visual attention, operationalized as proportion of fixations, Panel A, and total fixation duration, Panel B, received by targets as a function of their Dominance and Prestige ranks, controlling for speaking time and position, Study 2. Error bars represent standard error of the mean.

Figure 1.



¹ The Dominance-Prestige account predicts that the evolution of Prestige depends on two factors: the emergence of high-fidelity cultural learning and group living. It is possible that other social species may eventually be found to satisfy these conditions (e.g., whales and dolphins), as we learn more about culture in non-human animals. At this point, however, no other species seems to have sufficiently high fidelity cultural learning for Prestige hierarchies to become a likely outcome, though some have made arguments for chimpanzees (Horner, Proctor, Bonnie, Whiten, & de Waal, 2010). More limited forms of social learning that target particular behavioral domains (e.g., mate choice, foraging patch selection), have been found in species ranging from fish to chimpanzees, but in these cases domain-specific expertise does not translate to cross-domain social influence, as is the case for Prestige (Rendell et al., 2011).

² We use the term “behavioral strategy” to suggest a suite of subjective feelings, cognitions, motivations, and behavioral patterns that together lead to certain outcomes.

³ In the present context, perceiver effect quantifies the degree to which a perceiver/rater tends to perceive a consistent level of social status across all group members. Some perceivers tend to rate all others high in status, while others generally see others as low in status. Relationship effect indexes the unique relationship between two persons by measuring the degree to which a perceiver rates a given target as particularly high in status, over and above the perceiver’s general tendency to see others as influential (i.e., perceiver effect), as well as the target’s tendency to be seen by all other group members as influential (i.e., target effect; Kenny, Kashy, & Cook, 2006).

⁴ For comparison, round-robin studies of Extraversion, a highly visible trait which tends to elicit substantial observer agreement, typically show relative target variance levels of approximately 30% (Kenny, Albright, Malloy, & Kashy, 1994).

⁵ Significance tests of variance components are conducted with one-tailed tests, as variances in principle cannot be negative.

⁶ The relatively smaller magnitude of this coefficient of determination may have resulted from the fact that in order to be influenced, participants would need to not only agree with some other, but also overturn their own previous private decision, which individuals tend to resist (Mather, Shafir, & Johnson, 2000).

⁷ To examine whether Dominance and Prestige interact to predict status (i.e., is the highest level of status found among individuals who adopt both strategies simultaneously?), we conducted a number of regression analyses separately predicting perceived social status, agency, and the behavioral measure of influence from Dominance, Prestige, and the Dominance \times Prestige interaction. The interaction term across all three models were not statistically significant [perceived social status: $\beta = .03$, $t(187) = .98$, *ns*; agency: $\beta = -.07$, $t(187) = -1.68$, *ns*; behavioral influence: $\beta = -.09$, $t(187) = -1.39$, *ns*], suggesting no interactive effects over and above the significant main effects of Dominance and Prestige.

⁸ These data were drawn from a larger study examining visual attention and social status perceptions (see Foulsham et al., 2010).

⁹ Negative empirical estimates (and population values) of the intra-class correlation can arise when the average covariance among the items is negative (Shrout & Fleiss, 1979), reflecting the bounded nature of the data here; that is, greater visual attention to one target would necessarily lead to less attention to other targets (see Kenny et al., 2006, p. 33 for another example).

¹⁰ Multi-level models—in which participants' ratings of each target's perceived Dominance and Prestige and speaking time constituted Level-1 variables and participants constituted a Level-2 variable—could not be fit to these data because of redundancy in the observations of the dependent variables (i.e., amount of attention paid to Target 1 necessarily decreased the amount of attention paid to Targets 2 and 3, and attention paid to Target 3 could be almost perfectly predicted from the amount of attention paid to Targets 1 and 2). Thus, we used robust standard errors, an econometric technique commonly used to handle clustered data, instead of multi-level modeling. In addition, all results reported below hold when 3 dummy variables were entered as covariates in the models to account for any potential differences due to the 4 different clip sets used.

¹¹ We also ran analyses with two dummy codes representing the three seating positions (left, center, or right). In all models, there was no significant effect of left vs. right seating position.

¹² It is noteworthy that controlling for speaking time is a conservative approach to testing the effects of Dominance and Prestige on attention. Theoretically, Prestigious individuals should be deferred to and invited to speak (by subordinates who wish to acquire their skills and knowledge), whereas Dominant individuals should forcefully occupy discussions. Thus, increased speaking time is a theoretically predicted effect endogenous to Dominance and Prestige processes, and not necessarily a confound. Nonetheless, by controlling for speaking time we were able to ensure that differences found were not entirely attributable to how much each target spoke.

¹³ Of note, we could not directly test whether eye-tracked participants' attention covaried with targets' Dominance and Prestige as judged by in-lab peers from Study 1 because there were too few observations on the dependent variable; only 12 Dominance or Prestige in-lab peer-rated scores were available. Though we considered converting the Study 1 continuous peer-ratings into relative Dominance and Prestige categorical ranks and using ANCOVA to address this issue, we realized this was not possible because of the naturalistic design of the study. Targets were not seated according to their Dominance or Prestige ranks (since these emerged only afterward), so the three factors of Dominance, Prestige, and seating position (the last of which must be included as a covariate, given the natural tendency for center-seated targets to receive the greatest visual attention) were not fully crossed at each level. In fact, no targets (and thus observations) were available in the following cross-tabulated cells: low-Dominance, center-seating position; and medium-Prestige, center-seating position.