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The Presence of Comrades Decreases the Envisioned Physical Formidability of an Opponent

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Abstract

In situations of potential violent conflict, deciding whether to fight, flee, or try to negotiate entails assessing many attributes contributing to the relative formidability of oneself and one's opponent. Summary representations can usefully facilitate such assessments of multiple factors. Because physical size and strength are both phylogenetically ancient and ontogenetically recurrent contributors to the outcome of violent conflicts, these attributes provide plausible conceptual dimensions that may be used by the mind to summarize the relative formidability of opposing parties. Because the presence of allies is a vital factor in determining victory, we hypothesized that men accompanied by male companions would therefore envision a solitary foe as physically smaller and less muscular than men who were alone. We document the predicted effect in two studies, one utilizing naturally occurring variation in the presence of male companions, and one in which we experimentally manipulate the presence of companions.

Sadly, humans are a violent species. While most of us live lives of relative peace, when the possibility of violence rears its head, split-second decision making is called for, as one must decide whether to fight, flee, or try to negotiate. To make this decision effectively, individuals must rapidly assess the likelihood of victory or defeat, and the probable costs entailed therein. This assessment requires keeping track of a large number of relevant variables, including the armaments of the respective parties, their physical size, strength, age, sex, health, and so on. Decision making that involves assessing many parameters can be facilitated through the use of a summary representation. Because physical size and strength are phylogenetically ancient determinants of the outcomes of violent conflicts – a pattern that is repeatedly reinforced during ontogeny – these features constitute readily available dimensions for such a summary representation. Fessler, Holbrook, and Snyder (2012) therefore proposed that, as each of a wide variety of factors relevant to the outcome of a potential conflict is assessed, a representation of the opponent is rendered larger or smaller, and more or less muscular. Note that the issue here is not the accuracy of visual perception – indeed, we can expect natural selection to disfavor diminution of perceptual accuracy in agonistic contexts, as the effectiveness of combat and evasion hinges on precision in this regard. Rather, the claim is that size and strength are the dimensions along which an internal representation of the opponent varies, allowing it to summarize the contributions of diverse factors likely to influence the outcome. Hence, participants' estimations of a potential foe's physical parameters are expected to most clearly reveal the underlying representation when participants do not have access to unambiguous cues of that individual's actual size and strength. Consonant with this thesis, Fessler, Holbrook, and Snyder demonstrated that knowing that a man possesses a gun or a knife led participants to

increase their estimations of his physical size and muscularity; this parallels Duguid and Goncalo's (2012) finding that manipulating participants' perceptions of their power over others leads to both increased estimates of their own height and decreased estimates of another's height.

Coalitional aggression is common both across primate species (Crofoot & Wrangham, 2010) and across human societies, including both the contemporary West and small-scale societies thought to resemble those of ancestral human populations (Kelly, 2000). This pattern is underscored during childhood, as coalitions play a central role in bullying (Salmivalli, Huttunen, & Lagerspetz, 1997). Given the deep phylogeny, cultural ubiquity, and experiential pervasiveness of this factor, we can expect people to intuitively recognize that the presence of allies is a determinant of the outcome of violent conflicts. Accordingly, this should figure prominently in the decision-making process described above. Specifically, being in the presence of allies should lead individuals to increase estimations of their own formidability relative to that of a solitary prospective foe, and these changes should manifest as alterations in the envisioned size and muscularity of the opponent, i.e., being in a group should make a solitary foe seem physically smaller and less muscular. We tested this prediction using two on-the-street studies in Santa Monica, California, one utilizing naturally occurring variation in the presence of companions, the other employing experimental manipulation of this factor.

Our two studies share the same core design. Men are disproportionately responsible for violence the world over (Daly & Wilson, 1988; Mesquida & Wiener, 1996), and both naturalistic and experimental evidence indicates that men are likewise particularly attuned to the possibility of coalitional aggression (for reviews, see Van Vugt, 2009; McDonald, Navarrete, & Van Vugt, 2012; see also Bugental & Beaulieu, 2009; Yuki & Yokota, 2009). Accordingly, while the

predicted effect of the presence of allies on estimations of the physical size and strength of a foe should occur in both sexes, the effect should be more marked in men, hence we limited our investigations to them. Likewise, because we expect the predicted effect to manifest most unambiguously in contexts of potential violence, we selected as a stimulus a photograph of a bearded, turbaned terrorist brandishing a gun in front of Arabic calligraphy (see Figure 1). In light of differing views around the world regarding the United States' "war on terror," we anticipated that Americans would be the most likely to conceptualize the depicted individual as a foe, hence we limited our sample to Americans. To avoid cuing coalitional concepts, participant nationality was collected following participation, and data from non-Americans were discarded prior to analysis. Our first study exploited natural variation in the presence of male companions, individuals who could plausibly constitute potential allies should a violent altercation erupt.

Study 1

Participants

One hundred and seventy-seven adult men were recruited on public streets in exchange for $3 compensation. Twenty-eight participants who did not self-identify as American were dropped, leaving a sample of 149 men (age 18-66, $M = 31.1$, $SD = 11.75$). The ethnicity of the sample was 74.9% White, 7.9% Hispanic/Latin American, 5.7% Asian, 3.8% Black/African American, and 7.7% other or mixed ethnicities. Fifty-six men were recruited while alone, and 93 were recruited while in a group. Group size ranged from 2 to 7 ($M = 3.34$, $SD = 1.17$).

Materials and Procedure

Participants were recruited either while walking alone or as members of predominantly or exclusively male groups of two or more. Participants were informed that the study concerned the

ability to discern various types of information from visual imagery. Participants recruited from groups were escorted 10-15 feet away from their companions to prevent distraction or consultation.

Following several filler measures involving visual judgment, participants were asked to estimate the height (in feet and inches), overall size, and muscularity (using 6-point arrays – see Figure 1) of the target, depicted in a grey-scale image cropped to mask his bodily characteristics (see Figure 1); the caption read, "This man is a convicted terrorist (whose photo was published in newspapers). Can you estimate his physical traits?" Demographic items followed, including self-reported height (to nearest half-inch).

Upon completion, participants were questioned for suspicion about the purpose of the study. Although several speculated that the study might involve terrorist stereotypes, none evinced suspicion that such stereotypes concerned physical attributes or were influenced by the presence of allies.

Results

All analyses reported here are two-tailed, alpha = .05. The prospective adversary's overall physical formidability was composited using standardized values of the estimated height, overall size, and muscularity ($\alpha = .61$).[1] As predicted, a one-way ANOVA revealed that the adversary's mean estimated formidability was significantly greater among lone men ($M = .22$, $SD = 0.86$) than among those in the vicinity of comrades ($M = -.14$, $SD = 0.64$), $F(1, 147) = 8.46$, $p < .01$, $\eta^2 = .06$. A follow-up MANOVA assessing the individual estimations of height, size,

[1] Although a score of at least .7 is generally considered necessary to establish statistical reliability, scores of .6 or higher are acceptable in exploratory studies such as this, particularly if the measure is comprised of few or notably non-redundant items (Nunnally, 1978; Robinson, Wrightsman, & Andrews, 1991).

and muscularity revealed a significant main effect of condition, $F(3, 145) = 3.30$, $p < .03$, $\eta^2 = .06$. The prospective adversary's mean estimated height in inches was significantly greater among lone men ($M = 69.44$, $SD = 3.80$) than among those with comrades ($M = 67.85$, $SD = 3.54$), $p < .02$, $\eta^2 = .04$; estimated size was significantly greater among lone men ($M = 3.98$, $SD = 1.04$) than among those with comrades ($M = 3.62$, $SD = 0.92$), $p < .03$, $\eta^2 = .03$; and estimated muscularity was greater among lone men ($M = 2.16$, $SD = 1.07$) than among those with comrades ($M = 1.83$, $SD = 0.78$), $p = .03$, $\eta^2 = .03$.

Examining potential additional influences on relative formidability, we tested whether differences in the number of comrades present or participant height influenced estimated composited formidability. There was no significant correlation between group size and formidability estimate among those with comrades, $p > .5$, suggesting that the presence of one or more comrades influenced formidability estimates equivalently. As predicted, participant height (which did not differ between conditions, $p > .4$) negatively correlated with estimated formidability, $r(142) = -.28$, $p < .01$. This correlation held for both lone men, $r(53) = -.27$, $p = .05$, and those in the presence of comrades, $r(89) = -.27$, $p < .02$.[2]

Although consonant with our hypothesis that the presence of allies should reduce the envisioned physical formidability of a prospective foe, the results of Study 1 are also consistent with self-selection, as it is possible that men who assess themselves as more formidable (and hence conceptualize a foe as smaller and weaker) are more likely to associate with comrades than are men who assess themselves as less formidable. Arguing against such self-selection, experimental results indicate that self-assessed superiority in a competitive context decreases

[2] Height data were missing for seven participants.

recruitment of allies (Benenson, Markovits, Thompson, & Wrangham, 2009). However, men's endorsement of coercive tactics and their willingness to engage in aggression are both positively correlated with their own muscular strength (reviewed in Sell, Hone, & Pound, 2012; see also Archer & Thanzami, 2009; Price, Dunn, Hopkins, & Kang, 2012). Because allies enhance coercive capabilities, strong men may therefore be more likely to travel with comrades; at the same time, by virtue of their own strength, such men conceptualize a foe as less formidable (Fessler, Holbrook, & Gervais, n.d.). Accordingly, in light of the possibility that the results of Study 1 were due to self-selection, we conducted a second study in which participants were recruited while walking with male companions, then randomly assigned to participate either within visual contact and auditory range of their companions, or physically and visually removed from their companions. In addition, to explore possible contributions of individual differences in self-perceived vulnerability, we added a measure of the fear of crime. This measure indexes perceived risk of victimization, yet minimizes demand characteristics by virtue of having a divergent focus (crime, rather than terrorism) relative to the stimulus. Pilot studies suggested that, in answering, participants likely consult their daily habits, hence the measure probably captures perceived risk of victimization primarily as a trait, rather than a state.

Study 2

Participants

Seventy adult men were recruited while walking with a group on a public oceanfront boardwalk in exchange for $3 compensation. Ten participants who did not self-identify as Americans, one who did not take the study seriously (rating the terrorist as three feet tall), and one who was visibly intoxicated were dropped, leaving a sample of 58 men (age 18-64, M =

25.81, *SD* = 9.11). The ethnicity of the sample was 62.8% White, 15.1% Hispanic/Latin American, 7.5% Asian, 3.8% Black/African American, and 10.8% other or mixed ethnicities. Thirty-seven men completed the survey in the vicinity of their companions, while 21 were isolated from their companions. Group size ranged from 2 to 9 (*M* = 4.59, *SD* = 1.60).

Materials and Procedure

Participants were recruited from predominantly or exclusively male groups of two or more. A coin flip assigned participants to either the "together" condition or the "isolated" condition. As in Study 1, participants in the together condition were led 10-15 feet away from their companions. Participants in the isolated condition were led behind a tent barrier positioned approximately 100 yards away, with the simple explanation that "the study takes place over here." The barrier blocked participants' view of their companions; in addition, participants were positioned facing away from their companions.

Study materials were identical to Study 1, with the addition of a measure of fear of crime. Following Snyder et al. (2011), we employed a modified version of the British Fear of Local Crime Survey (Crime Reduction Centre, 2000), which asks participants to rate their level of concern about six types of victimization on a 7-point Likert scale (1 = *Not worried at all*, 7 = *Very worried*).

Upon completion, participants were questioned for suspicion; as in Study 1, several speculated that the study involved terrorist stereotypes, but none evinced suspicion that such stereotypes related to physical attributes or were influenced by the presence of allies.

Results

The adversary's estimated physical formidability was again composited using standardized values of the estimated height, size, and muscularity ($\alpha = .74$). As predicted, a one-way ANOVA revealed that the adversary's estimated formidability was significantly greater among men who were isolated ($M = .29$, $SD = 0.68$) than among those who participated in the vicinity of comrades ($M = -.19$, $SD = 0.83$), $F(1, 56) = 5.07$, $p < .03$, $\eta^2 = .08$. A follow-up MANOVA assessing the individual estimations of height, size, and muscularity revealed a significant main effect of condition, $F(3, 54) = 2.77$, $p = .05$, $\eta^2 = .13$. The prospective adversary's mean estimated height was greater among isolated men ($M = 69.10$, $SD = 2.64$) than among those near companions ($M = 68.39$, $SD = 2.44$), but this difference was not significant, $p = .25$; estimated size was significantly greater among men who were isolated ($M = 2.57$, $SD = 1.12$) than among those near companions ($M = 2.10$, $SD = 1.15$), $p < .01$, $\eta^2 = .14$; estimated muscularity was also greater among isolated men ($M = 4.19$, $SD = 0.87$) than among those near companions ($M = 3.36$, $SD = 1.10$), but this difference was not significant, $p = .11$.

We tested whether group size or participant height influenced estimated composited formidability. As in Study 1, group size was not significantly correlated with estimated composite formidability in the sample as a whole, $p > .4$, or within each condition, ps $> .3$. In contrast to Study 1, participant height was not significantly correlated with estimated formidability, $r(58) = -.11$, $p > .4$; the correlation was negative in the together condition, $r(37) = -.26$, $p = .13$, but positive in the isolated condition, $r(21) = .18$, $p > .4$.

The six items measuring fear of crime were reliable ($\alpha = .91$). Fear of crime ratings did not significantly differ between conditions, $p > .8$. As predicted, fear of crime positively correlated with estimation of the adversary's formidability, $r(58) = .30$, $p < .03$. This was driven

186 by the participants in the isolated condition, $r(21) = .61$, $p < .01$; the correlation in the together
187 condition was not significant, $p > .2$. However, follow-up analyses revealed that comrade
188 proximity did not significantly moderate the effect of fear of crime on formidability estimation, p
189 $> .1$.

190 Discussion

191 Replicating the pattern of results found in Study 1, in Study 2, men who were within
192 visual and auditory proximity of their male friends estimated a prospective foe to be less
193 physically formidable than did men who were alone. Moreover, because all participants in Study
194 2 were recruited from groups of men walking together, and proximity to companions was then
195 manipulated experimentally, this pattern of results is not explicable in terms of any pre-existing
196 differences between the men in the two conditions. Fear of crime, employed as a proxy measure
197 of trait self-perceived vulnerability, influenced estimations of the foe, but only when men were
198 isolated from their companions. Although analysis revealed the latter effect to not be
199 significantly moderated by condition, this may be due to small sample size, hence future
200 investigations should explore whether the presence of allies is experienced as a sufficiently
201 strong determinant of the outcome of agonistic encounters as to swamp individual differences in
202 dispositional vulnerability.

203 Taken together, these findings indicate that the immediate presence of allies is an
204 important factor in men's estimations of the formidability of potential opponents. Our results
205 bolster the thesis that relative formidability, the product of a diverse assortment of features of
206 self and other, is conceptualized using the simple dimensions of physical size and muscularity,
207 and add to the growing literature exploring coalitional psychology. Our studies are subject to a

number of limitations, each of which suggests directions for future research. First, given that men are more frequently involved in coalitional violence than are women, we expect the presence of allies to affect representations of a prospective foe more strongly in men than in women. However, we recruited only male participants, hence we have yet to test this prediction. Second, we expect the presence of allies to exert this effect most clearly when the target individual is an antagonist – it remains unexplored how allies influence conceptualizations of neutral or friendly parties. Third, we employed participants' estimates of the target's physical parameters as a means of revealing their internal representations of the target. Because we expect visual perceptual accuracy to be unaffected by these representations, in order to prevent accurate perceptions from swamping expressions of internal representations, we employed a stimulus largely devoid of objective cues of size and strength. Future investigations might vary the presence of such cues in order to gauge the relative contributions of perception and representation to stated estimates. Lastly, although we only explored conceptualizations of a prospective foe, and did not measure actual behavior, the thesis that such estimations reflect a summary representation that plays a key role in decision making suggests that, at least for men, the immediate presence of allies may enhance the propensity to aggress. Given the important policy implications of this possibility in realms as diverse as violence prevention, policing, and military science, the relationship between the immediate presence of allies and the decision to engage in confrontation clearly merits further investigation.

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284 Figure caption

285 Figure 1. *Top:* Participants estimated the height, size, and muscularity of this man, described as a
286 "convicted terrorist" (the photo is of Ali Beheshti, convicted of firebombing the home of the
287 publisher of a novel about the Prophet Muhammad [Walker, 2009]).
288 *Center:* Array used by participants to estimate overall size.
289 *Bottom:* Array used by participants to estimate muscularity. Modified with permission from
290 Frederick & Peplau (2007).

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