

Friends Shrink Foes: The Presence of Comrades Decreases the Envisioned Physical Formidability of an Opponent

Psychological Science
24(5) 797–802
© The Author(s) 2013
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/0956797612461508
pss.sagepub.com


Daniel M. T. Fessler and Colin Holbrook

Department of Anthropology and Center for Behavior, Evolution, and Culture,
University of California, Los Angeles

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 would men who were alone. We document the predicted effect in two studies, one using naturally occurring variation in the presence of male companions and one employing experimental manipulation of this factor.

Keywords

violence, social cognition, evolutionary psychology

Received 5/9/12; Accepted 8/26/12

Sadly, humans are a violent species. Although 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, given that 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 that representation to summarize the contributions of diverse factors likely to influence the outcome. Hence, individuals' estimations of a potential foe's physical parameters are expected to most clearly reveal the underlying representation when individuals 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; these

Corresponding Author:

Daniel M. T. Fessler, Department of Anthropology, 341 Haines Hall,
University of California, Los Angeles, CA 90095-1553
E-mail: dfessler@anthro.ucla.edu

results paralleled Duguid and Goncalo's (2012) finding that manipulating participants' perceptions of their power over others both increased participants' estimates of their own height and decreased their estimates of another's height.

Coalitional aggression is common both across primate species (Crofoot & Wrangham, 2010) and across human societies, including both contemporary Western societies 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, cross-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 factor 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 be manifested as alterations in the envisioned size and muscularity of the opponent—that is, 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 and the other employing experimental manipulation of this factor.

Our two studies shared 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 McDonald, Navarrete, & Van Vugt, 2012; Van Vugt, 2009; see also Bugental & Beaulieu, 2009; Yuki & Yokota, 2009). Accordingly, although 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 expected the predicted effect to manifest itself 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 Fig. 1). In light of differing views around the world regarding the U.S. "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

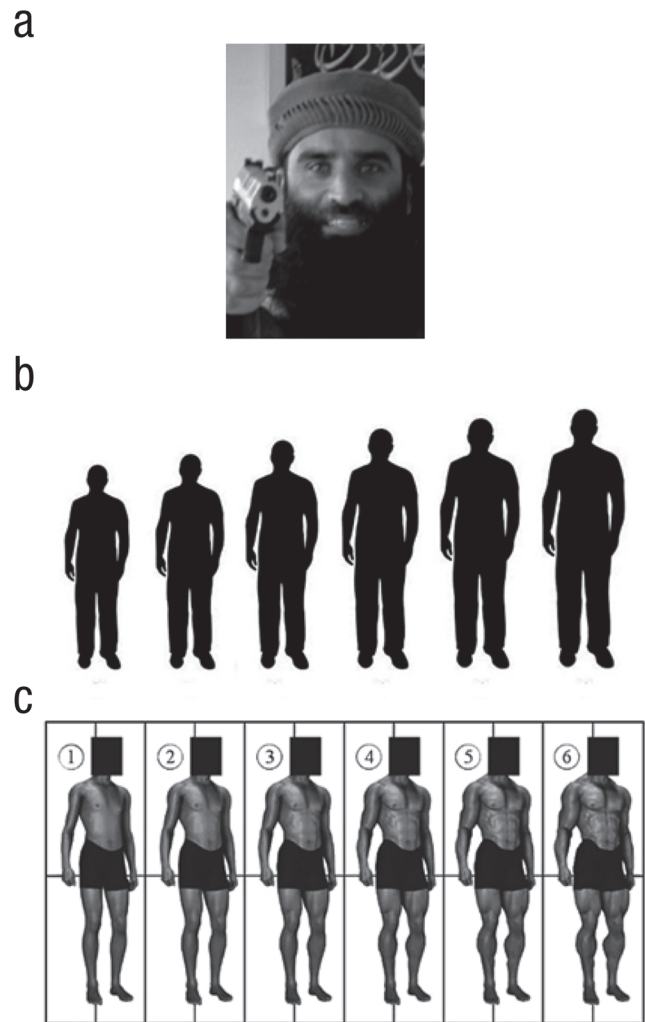


Fig. 1. Participants were shown an image of a man (a) who was described as a "convicted terrorist" and asked to estimate his height, size, and muscularity (the image is a photo of Ali Beheshti, who was convicted of firebombing the home of the publisher of a novel about the Prophet Muhammad; Walker, 2009). Participants used 6-point arrays to estimate the man's overall size (b) and muscularity (c). Adapted from "The UCLA Body Matrices II: Computer-Generated Images of Men and Women Varying in Body Fat and Muscularity/Breast Size to Assess Body Satisfaction and Preferences," by D. A. Frederick and L. A. Peplau (2007). Adapted with permission.

the presence of male companions, individuals who could plausibly constitute potential allies should a violent altercation erupt.

Study 1

Participants

One hundred seventy-seven adult men were recruited on public streets and participated in return for \$3. Twenty-eight participants who did not self-identify as American

were dropped, leaving a sample of 149 men (aged 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, and 7.7% of 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 while walking either 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 to 15 feet away from their companions to prevent distraction or consultation.

After completing several filler measures involving visual judgment, participants were shown the target, who was depicted in a gray-scale image that was cropped to mask his bodily characteristics (see Fig. 1a), and were asked to estimate his height (in feet and inches) and his overall size and muscularity (using 6-point arrays; see Fig. 1); the caption read, "This man is a convicted terrorist (whose photo was published in newspapers). Can you estimate his physical traits?" Finally, participants completed measures of demographic information, including self-reported height (to nearest half inch).

After completing these measures, participants were questioned for suspicion about the purpose of the study. Although several participants speculated that the study might involve terrorist stereotypes, none evinced suspicion that such stereotypes concerned physical attributes or that they may have been influenced by the presence of allies.

Results

All analyses reported here are two-tailed, $\alpha = .05$. We created a composite score for the prospective adversary's overall physical formidability using standardized values of the estimated height, overall size, and muscularity ($\alpha = .61$).¹ As predicted, a one-way analysis of variance (ANOVA) revealed that the adversary's mean estimated formidability was significantly greater among lone men ($M = 0.22$, $SD = 0.86$) than among men in the vicinity of comrades ($M = -0.14$, $SD = 0.64$), $F(1, 147) = 8.46$, $p < .01$, $\eta_p^2 = .06$. A follow-up multivariate ANOVA (MANOVA) assessing the individual estimations of height, size, and muscularity revealed a significant main effect of condition, $F(3, 145) = 3.30$, $p < .03$, $\eta_p^2 = .06$. The estimates of the prospective adversary's height in inches were significantly greater among lone men ($M = 69.44$, $SD = 3.80$) than among men with comrades ($M = 67.85$, $SD = 3.54$),

$p < .02$, $\eta_p^2 = .04$; estimates of the man's size were significantly greater among lone men ($M = 3.98$, $SD = 1.04$) than among men with comrades ($M = 3.62$, $SD = 0.92$), $p < .03$, $\eta_p^2 = .03$; and estimates of the man's muscularity were greater among lone men ($M = 2.16$, $SD = 1.07$) than among men with comrades ($M = 1.83$, $SD = 0.78$), $p = .03$, $\eta_p^2 = .03$.

Examining potential additional influences on relative formidability, we tested whether differences in the number of comrades present or participant height influenced estimated formidability. There was no significant correlation between group size and formidability estimate among men with comrades, $p > .5$, a result suggesting that the presence of one or more comrades influenced formidability estimates equivalently. As predicted, participant height (which did not differ between conditions, $p > .4$) was negatively correlated with estimates of the prospective adversary's formidability, $r(142) = -.28$, $p < .01$. This correlation held for both lone men, $r(53) = -.27$, $p = .05$, and men 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; it is possible that men who consider themselves more formidable (and hence conceptualize a foe as smaller and weaker) are more likely to associate with comrades than are men who consider themselves less formidable. Arguing against such self-selection, prior experimental results have indicated that self-assessed superiority in a competitive context decreases 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 may conceptualize a foe as less formidable (Fessler, Holbrook, & Gervais, 2013).

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 while within visual and auditory range of their companions or while physically removed from, and out of sight of, their companions. In addition, to explore possible contributions of individual differences in self-perceived vulnerability, we added a measure of fear of crime. This measure indexed perceived risk of victimization yet minimized demand characteristics by virtue of having a divergent focus (crime, rather than terrorism) relative to the stimulus. Pilot studies suggested that, in

responding to this measure, participants likely consulted 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 and participated in return for \$3. Ten participants who did not self-identify as Americans, one who did not take the study seriously (estimating the terrorist to be 3 feet tall), and one who was visibly intoxicated were dropped, leaving a sample of 58 men (aged 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, and 10.8% of other or mixed ethnicities. Thirty-seven men completed the survey in the vicinity of their companions, and 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 while they were in predominantly or exclusively male groups of two or more. A coin flip was used to assign participants to either the *together* condition or the *isolated* condition. As in Study 1, participants in the together condition were led 10 to 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, these participants were positioned so that they were facing away from their companions.

Study materials were identical to those used in 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 that asked participants to rate their level of concern about six types of victimization, using 7-point Likert-type scales (from 1, *not worried at all*, to 7, *very worried*).

After completing these measures, participants were questioned for suspicion; as in Study 1, several of the participants speculated that the study involved terrorist stereotypes, but none evinced suspicion that such stereotypes related to physical attributes or that they may have been influenced by the presence of allies.

Results

We created a composite score for the prospective adversary’s overall physical formidability using standardized

values of the estimated height, overall size, and muscularity ($\alpha = .74$). As predicted, a one-way ANOVA revealed that estimates of the adversary’s formidability were significantly greater among men who were isolated ($M = 0.29$, $SD = 0.68$) than among men who participated in the vicinity of comrades ($M = -0.19$, $SD = 0.83$), $F(1, 56) = 5.07$, $p < .03$, $\eta_p^2 = .08$. A follow-up MANOVA assessing the individual estimations of height, size, and muscularity revealed a significant main effect of condition, $F(3, 54) = 2.77$, $p = .05$, $\eta_p^2 = .13$. Estimates of the prospective adversary’s height were greater among isolated men ($M = 69.10$, $SD = 2.64$) than among men who were near companions ($M = 68.39$, $SD = 2.44$), but this difference was not significant, $p = .25$; estimates of the prospective adversary’s size were significantly greater among men who were isolated ($M = 2.57$, $SD = 1.12$) than among men who were near companions ($M = 2.10$, $SD = 1.15$), $p < .01$, $\eta_p^2 = .14$; estimates of his muscularity were greater among isolated men ($M = 4.19$, $SD = 0.87$) than among men who were 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 formidability. As in Study 1, group size was not significantly correlated with estimated formidability in the sample as a whole, $p > .4$, or within either condition, $ps > .3$. Unlike in 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 did not significantly differ between conditions, $p > .8$. As predicted, fear of crime was positively correlated with estimates of the adversary’s formidability, $r(58) = .30$, $p < .03$. This pattern was driven by the participants in the isolated condition, $r(21) = .61$, $p < .01$; the correlation in the together condition was not significant, $p > .2$. However, follow-up analyses revealed that comrade proximity did not significantly moderate the effect of fear of crime on estimations of formidability, $p > .1$.

Discussion

Replicating the pattern of results from Study 1, our findings in Study 2 showed that men who were within visual and auditory proximity of their male friends estimated a prospective foe to be less physically formidable than did men who were alone. Moreover, because all participants in Study 2 were recruited from groups of men walking together and proximity to companions was manipulated experimentally, this pattern of results is not explicable in terms of preexisting differences between the men in the two conditions. Fear of crime, employed as a proxy measure of trait self-perceived vulnerability, influenced

estimations of the foe, but only when men were isolated from their companions. Although analysis revealed the latter effect to not be significantly moderated by condition, this result may have been due to small sample size; hence, future investigations should explore whether the presence of allies is experienced as a sufficiently strong determinant of the outcome of agonistic encounters as to swamp individual differences in dispositional vulnerability.

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

Our studies were 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, 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 to gauge the relative contributions of perception and representation to stated estimates. Last, although we explored only 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.

Acknowledgments

We thank Jeff Snyder and Chris Laidig for logistical assistance, Steven Gangestad and three anonymous reviewers for constructive feedback, and our research assistants for their hard work.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Funding

This material is based on work supported by the U.S. Air Force Office of Scientific Research under Award No. FA9550-10-1-0511.

Notes

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 composed of few or notably nonredundant items (Nunnally, 1978; Robinson, Wrightsman, & Andrews, 1991).
2. Height data were missing for 7 participants.

References

- Archer, J., & Thanzami, V. (2009). The relation between mate value, entitlement, physical aggression, size and strength among a sample of young Indian men. *Evolution & Human Behavior, 30*, 315–321.
- Benenson, J. F., Markovits, H., Thompson, M. E., & Wrangham, R. W. (2009). Strength determines coalitional strategies in humans. *Proceedings of the Royal Society B: Biological Sciences, 276*, 2589–2595.
- Bugental, D. B., & Beaulieu, D. A. (2009). Sex differences in response to coalitional threat. *Evolution & Human Behavior, 30*, 238–243.
- Crofoot, M. C., & Wrangham, R. W. (2010). Intergroup aggression in primates and humans: The case for a unified theory. In P. M. Kappeler & J. B. Silk (Eds.), *Mind the gap: Tracing the origins of human universals* (pp. 171–195). New York, NY: Springer Verlag.
- Daly, M., & Wilson, M. (1988). *Homicide*. New York, NY: Aldine de Gruyter.
- Duguid, M. M., & Goncalo, J. A. (2012). Living large: The powerful overestimate their own height. *Psychological Science, 23*, 36–40.
- Fessler, D. M. T., Holbrook, C., & Gervais, M. (2013). *Physical strength moderates conceptualizations of prospective foes in two disparate human societies*. Manuscript submitted for publication.
- Fessler, D. M. T., Holbrook, C., & Snyder, J. K. (2012). Weapons make the man (larger): Formidability is represented as size and strength in humans. *PLoS ONE, 7*(4), e32751. Retrieved from <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0032751>
- Frederick, D. A., & Peplau, L. A. (2007, January). *The UCLA Body Matrices II: Computer-generated images of men and women varying in body fat and muscularity/breast size to assess body satisfaction and preferences*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, Memphis, TN.
- Kelly, R. C. (2000). *Warless societies and the origin of war*. Ann Arbor: University of Michigan Press.

- McDonald, M. M., Navarrete, C. D., & Van Vugt, M. (2012). Evolution and the psychology of intergroup conflict: The male warrior hypothesis. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *367*, 670–679.
- Mesquida, C. G., & Wiener, N. I. (1996). Human collective aggression: A behavioral ecology perspective. *Ethology and Sociobiology*, *17*, 247–262.
- Nunnally, J. (1978). *Psychometric theory* (2nd ed.). New York, NY: McGraw-Hill.
- Price, M. E., Dunn, J., Hopkins, S., & Kang, J. (2012). Anthropometric correlates of human anger. *Evolution & Human Behavior*, *33*, 174–181.
- Robinson, J. P., Wrightsman, L. S., & Andrews, F. M. (Eds.). (1991). *Measures of personality and social psychological attitudes*. San Diego, CA: Academic Press.
- Salmivalli, C., Huttunen, A., & Lagerspetz, K. M. J. (1997). Peer networks and bullying in schools. *Scandinavian Journal of Psychology*, *38*, 305–312.
- Sell, A., Hone, L. S. E., & Pound, N. (2012). The importance of physical strength to human males. *Human Nature*, *23*, 30–44.
- Snyder, J. K., Fessler, D. M. T., Tiokhin, L., Frederick, D. A., Lee, S. W., & Navarrete, C. D. (2011). Trade-offs in a dangerous world: Women's fear of crime predicts preferences for aggressive and formidable mates. *Evolution & Human Behavior*, *32*, 127–137.
- Van Vugt, M. (2009). Sex differences in intergroup competition, aggression, and warfare. *Annals of the New York Academy of Sciences*, *1167*, 124–134.
- Walker, P. (2009, July 7). Three jailed for arson attack over Muhammad bride novel. *The Guardian News*. Retrieved August 3, 2011, from <http://www.guardian.co.uk/uk/2009/jul/07/muslims-jailed-arson-book-protest>
- Yuki, M., & Yokota, K. (2009). The primal warrior: Outgroup threat priming enhances intergroup discrimination in men but not women. *Journal of Experimental Social Psychology*, *45*, 271–274.