Dominant, open nonverbal displays are attractive at zero-acquaintance

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Across two field studies of romantic attraction, we demonstrate that postural expansiveness makes humans more romantically appealing. In a field study (n = 144 speed-dates), we coded nonverbal behaviors associated with liking, love, and dominance. Postural expansiveness—expanding the body in physical space—was most predictive of attraction, with each one-unit increase in coded behavior from the video recordings nearly doubling a person's odds of getting a "yes" response from one's speed-dating partner. In a subsequent field experiment (n = 3,000), we tested the causality of postural expansion (vs. contraction) on attraction using a popular Global Positioning System-based online-dating application. Mate-seekers rapidly flipped through photographs of potential sexual/date partners, selecting those they desired to meet for a date. Mate-seekers were significantly more likely to select partners displaying an expansive (vs. contractive) nonverbal posture. Mediation analyses demonstrate one plausible mechanism through which expansiveness is appealing: Expansiveness makes the dating candidate appear more dominant. In a dating world in which success sometimes is determined by a split-second decision rendered after a brief interaction or exposure to a static photograph, single persons have very little time to make a good impression. Our research suggests that a nonverbal dominance display increases a person's chances of being selected as a potential mate.

attraction | postural expansiveness | mate selection | nonverbal behavior | romantic relationships

Humans seek romantic relationship partners for many reasons. By sharing in a relationship partner's social, psychological, physical, and monetary resources, a person can fulfill a number of goals, including establishing intimate social connections (1), satisfying one's sex drive (2), complying with societal norms of casual dating (3), and reproduction (4). In recent decades, psychologists have made considerable progress in identifying nonverbal behaviors associated with romantic attraction. For example, in human social interactions facial expressions of positivity, such as smiling and laughing, both reflect when a person likes or feels close to another person and cause others to feel close to the person expressing the smiles and laughter (5–7). Similarly, head nods, genuine smiles (i.e., Duchenne smiles), gestures, and leaning forward are associated with more self-reported feelings of love among long-term committed relationship partners (8). However, little empirical research has examined nonverbal displays in initial encounters of romantic attraction, and to our knowledge no experimental research has tested directly which nonverbal behaviors may cause a person to be seen as a more attractive relationship partner.

Nonverbal displays in initial romantic encounters are especially important in the modern dating landscape in which decisions about selecting a partner often are made after brief interactions that sometimes last only a couple minutes (e.g., when speed-dating) or after a few seconds observing photographs online [e.g., on widely used Global Positioning System (GPS)-based dating applications]. The architecture of these modern dating paradigms reduces the human courtship process from weeks or days to minutes or seconds. With less time, people make rapid judgments about a person's worth based on limited information (9, 10). Thus, subtle nonverbal cues may be especially influential. Physical features, such as pupil size, gaze directionality, eye color, facial symmetry, and nonverbal displays, are encoded by human minds in as little as 39 ms (11). Some of these cues (i.e., a direct vs. an averted gaze) influence decisions to pursue or pass over a potential romantic partner when rapidly observing photographs of models in a computer task (12).

In these brief observations of another person, one characteristic that seems to be expressed consistently through a small collection of nonverbal behaviors is hierarchical standing, e.g., one's power, socioeconomic status, or sociometric status. Perhaps because hierarchical standing appears to be expressed nonverbally, evidence suggests it is among the most rapid and automatic trait attributions humans make (13, 14). Specifically, perceivers' impressions of a target's dominance increase significantly as the target assumes a more expanded and open nonverbal posture (15). For humans, expansive, open postures involve widespread limbs, a stretched torso, and/or enlargement of the occupied space. Contractive, closed postures involve limbs held close to the torso and minimization of occupied space by collapsing the body inward (15). These postures likely hold signal value only to perceivers, because research has failed to replicate effects suggesting that expansive postures cause people to feel and behave more powerfully (16). Expansiveness in humans signals perceived and sometimes actual status and access to resources (15, 17, 18). Specifically, different ways of operationalizing expansiveness (e.g., stretched limbs) have been shown to be a nonverbal indicator of actual (17, 19), perceived (17, 20), and believed (15) verticality, a social dimension that organizes

Significance

This set of studies tested whether humans are more attracted to individuals displaying their bodies expansively, a behavior considered to express both dominance and openness. Results from two field studies—a speed-dating event and a controlled experiment using a Global Positioning System-based dating application—suggested that (*i*) expansive (vs. contractive) body posture increases one's romantic desirability; (*ii*) these results are consistent across gender; and (*iii*) perceived dominance and perceived openness are mechanisms through which expansiveness exerts its effect. These findings indicate that in modern-day dating contexts, in which initial attraction often is determined by a rapid decision following a brief interaction or seeing a photograph, displays of expansive posture increase one's chances of initial romantic success.

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people by levels of power, dominance, status, hierarchy, and similar vertical attributes (17, 21, 22).* Given its link to resource acquisition, possession, and allocation control/sharing, the functional preference for dominance in mates may have emerged because it is linked to one's own longer life span as well as to reproductive success and offspring survival. That is, the romantic relationship with the dominant person affords an opportunity to partake in these resources (23). Specifically, expansive, open postures signaling dominance may have served to signal the extent to which an individual can successfully navigate social hierarchies and form alliances (24). A mate possessing these qualities, whether male or female, would be desirable in part because he or she could share the benefits of these adaptive survival-based attributes (e.g., additional resources, respect from the in-group) with mates and offspring.

Of direct relevance to the current research, past ethnographic studies demonstrate that in human romantic courtship, space-maximizing postures and movements in a male precede that male's romantic approach to a female in a casual setting (e.g., in a bar) (25). Moreover, in laboratory experiments research subjects looking at static photographs on a computer screen report more romantic desire toward persons perceived to be dominant (26, 27); a similar effect is found in research examining live interactions between two people (28). Data on nonhuman animals also suggest a consistent link between expansive nonverbal displays and attracting a mate. These expansive, inviting (i.e., open) displays are a well-documented characteristic of many mating displays in which a rump or other genitalia are openly exposed (29–32). Other examples include peacocks, which attract peahens by expansively fanning their tail feathers (33, 34), and male gorillas, which occupy more space to flaunt their physicality by kicking and running in a sideways manner (35). Aside from commanding attention, such expansive displays—similar to those in humans—signal dominance and power within the hierarchically organized animal kingdom (36–40).

These findings across disciplines, when taken together, offer support for a previously untested hypothesis: that, in modern-day dating contexts, an individual's nonverbal expansiveness both predicts that other individuals will experience greater romantic attraction to him or her and causes them to do so. The perception of social dominance associated with expansiveness is one plausible mechanism through which expansiveness may exert its effect.

Materials and Methods

We tested the predictions in two studies of heterosexual human dating interactions. Study 1 was a field study of structured speed-dating interactions (n = 144 speed-dates) in which we examined an individual's naturally occurring postural expansiveness as a predictor of the interaction partner's romantic attraction. We also assessed previously established nonverbal cues of affiliation (e.g., smiles, laughs, head nods) to test alternative hypotheses (details are given in *SI Materials and Methods* and Table S1). Study 2 comprised a pair of studies. Study 2a was a randomized field experiment of real romantic choices conducted on a freely available GPS-based dating application. We tested whether postural expansiveness (vs. contractiveness) caused romantic attraction (details are given in *SI Materials and Methods*). Study 2b provided additional data to test the hypothesis that perceived social dominance (i.e., access to resources) and perhaps openness—a willingness to share resources—are mediating factors in the link between nonverbal expansiveness and romantic attraction. Study 1 was approved by the Northwestern University Institutional Review Board, and study 2 was approved by the University of California, Berkeley, Institutional Review Board. Both studies followed approved procedures for obtaining informed consent from participants.

*For simplicity in the current report, we refer to expansiveness as the nonverbal display of dominance, although expansiveness may signify other types of verticality (e.g., power, status). Aspects of an expansive display also may trigger perceptions of other closely associated traits that reflect subfacets of the dominance construct (e.g., emotional stability, relaxedness).

Table 1. Study 1: Postural expansiveness predicts romantic attraction on a speed-date

	Postural expansiveness		Affiliative display	
Ratings by partner	b	SE	b	SE
Personal qualities				
Attractiveness	0.27†	0.15	0.03	0.21
Earning prospects	0.20†	0.12	0.18	0.16
Vitality	0.39**	0.13	0.64**	0.18
Warmth	0.35**	0.10	0.35*	0.13
Dominance	0.33*	0.14	0.42*	0.18
Intelligence	0.17	0.11	0.18	0.14
Romantic interest				
Chemistry	0.50**	0.14	0.69**	0.19
Romantic attraction	0.52**	0.14	0.22	0.20

Each row is a separate multilevel linear model, with coded postural expansiveness, affiliative display, and gender entered as simultaneous predictors. Displaying more postural expansiveness garners higher ratings of romantic attraction and marginally higher ratings of attractiveness and earning prospects. $^{**}P < 0.01$; $^{*}P < 0.05$; $^{\dagger}P < 0.10$.

Results

Study 1.

Data structure and overview of analyses. Data were collected on 144 speed-dates from dating-age heterosexuals in the Midwest. Female–male pairs were videotaped during a real speed-date which lasted 4 min. After each date, individuals rated their date and indicated whether they would like to see the person again. Data were analyzed at the dyadic date-level, and multilevel modeling was used to account for the repeated assessments of each individual speed-date participant (i.e., within-person variability). For continuous outcome variables, multilevel linear modeling was used. For the binary outcome of receiving a "yes" or "no" response, multilevel logistic modeling was used. Results are presented as odds ratios and probabilities, that is, the odds and likelihood by which one is more likely to receive a "yes" response. No data were excluded.

Expansiveness increases one's chances of getting a "yes" response on a speed-date. We tested the influence of nonverbal affiliation and postural expansiveness on an individual's chances of getting a "yes" response on a speed-date, a critical outcome in speed-dating that measures a person's intention to see a speed-date partner again. Results indicated that an open, expansive nonverbal display expressed during the date—but not nonverbal cues of affiliation—significantly predicted the odds of getting a "yes" response [$t(263) = 6.35$, $P = 0.01$]. Specifically, the odds ratio resulting from the model was 1.76, indicating that for every single SD unit increase in a person's coded postural expansiveness, that person was 76% more likely to get a "yes" response. Postural expansiveness was the only predictor in this model; alternative models that included affiliative displays and gender as covariates showed neither to be independently significant; there were no interactions. Including all variables in the model did not detract from the significant direct effect of expansiveness.

Postural expansiveness predicts more romantic attraction on a speed-date. Table 1 presents the results of eight separate linear models. In each model, a rated characteristic of the individual (e.g., attractiveness, earning prospects, fun) was the predicted outcome, and coded postural expansiveness, affiliative displays, and gender were entered as simultaneous predictors (interaction terms not depicted but tested subsequently). Results demonstrated that people who displayed more postural expansiveness garnered higher ratings on romantic attraction. They also received marginally higher ratings on attractiveness and earning prospects; nonverbal affiliative behaviors did not show the same effects. In

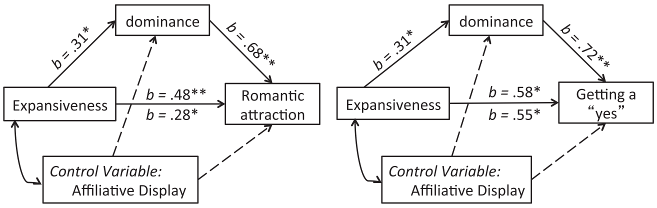

Fig. 1. Mediated models for postural expansiveness, dominance, and romantic attraction (self-reported and receiving a "yes" response from one's interaction partner). Study 1: Statistics for direct effect (unstandardized betas) are shown above the path and for total indirect effect are shown below the path. Results from Monte Carlo method simulations (resample size = 20,000; see online tool in ref. 42) indicate significant mediation of postural expansiveness on romantic attraction and on getting a "yes" response through perceived dominance, controlling for one's affiliative displays. The indirect effect of each model is similarly significant when affiliative displays are not included in the model. The Monte Carlo method accounts for repeated assessments of each individual speed-date participant (i.e., within-person variability). $^{**}P < 0.01$; $^{*}P < 0.05$.

addition, people who displayed either more nonverbal affiliation or more postural expansiveness garnered higher ratings from their interaction partner on the dimensions of vitality, warmth, dominance, and perceived chemistry. There were no significant interactions of affiliation displays with postural expansiveness or with gender and either affiliation displays or postural expansiveness in any of the eight models.

Dominance mediates the link between expansiveness and romantic attraction. Given past research showing a strong association between postural expansiveness and dominance, we tested if speed-daters' self-reports of a given partner's dominance mediated the link between the partner's expansiveness and reporter's level of romantic attraction to that partner. Multilevel mediation models were assessed using the Monte Carlo method, which calculates a confidence interval (CI) for a specified indirect effect based on repeated data simulations and accounts for the repeated assessments of each individual speed-dating participant (41, 42). Results are summarized in Fig. 1. Based on a resampling size of 20,000, results indicated that the total direct effect of postural expansiveness on romantic attraction (b = 0.48, SE = 0.15, $P <$ 0.01) decreased in magnitude when dominance was included as a mediator of the direct effect (b = 0.28, SE = 0.11, $P < 0.05$). Of particular relevance to our hypotheses, the indirect effect was significant, with a 95% CI that did not include zero (0.03, 0.40). This model also controlled for affiliative displays, and the indirect effect remained significant when affiliative displays were not included in the model [95% CI (0.02, 0.38)]. The total direct effect of postural expansiveness on getting a "yes" response (b = 0.58, SE = 0.23, P = 0.01) decreased in magnitude when dominance was included as a mediator (b = 0.55, SE = 0.22, P = 0.01). The 95% CI again did not include zero (0.03, 0.45). The indirect effect remained significant when affiliative cues were not included in the model [95% CI (0.02, 0.44)]. Thus, nonverbal expansiveness was a statistically significant mediator even when controlling for nonverbal affiliation.

These results offer insight into the link between postural expansiveness and judgments of romantic attraction/choice. Statistical evidence was consistent with the conclusion that one way in which postural expansiveness exerts an effect on dating preference is by increasing the actor's perceived dominance. However, the correlational nature of study 1 made it unclear whether the speed-dating participants were engaging in postural expansion because they were liked or if they were liked because of their postural expansion. Although dominance was a significant mediator, the role of openness—also embodied by the expansive posture—was not tested. Testing the causal role of postural expansiveness and the role of both perceived dominance and openness were the goals of the controlled field experiment reported here as study 2.

Study 2a. The data for study 2a were collected using a dating application for mobile devices (details are given in *SI Materials and Methods*). We launched profiles of six different confederates onto the dating application in the Bay Area region of California. Different profiles—an expansive and contractive version—were created for each confederate, resulting in 12 profiles total. Depending on the profile condition, all the photographs were of the confederate in either an expansive/open or contractive/closed posture (Fig. S1). We recorded the number of "yes" responses received for each profile type (i.e., expansive vs. contractive) over a 48-h period. Because of the design of our study (details are given in *SI Materials and Methods*), each of the 12 target profiles had a potential of garnering up to 250 "yes" responses over the days it was featured on the dating application, thus resulting in a total sample size of 3,000 potential "yes" responses across all target profiles. We excluded 17 male responders who indicated suspicion by messaging the confederates [e.g., "Hi! Why do you have the exact same profile pics as another Jessica :)"], resulting in a total sample size of 2,983.

To test our hypothesis that more "yes" responses would be attracted by expansive postures than by contractive postures, we ran a χ^2 test of significance. In all, there were 820 "yes" responses, of which 447 were in response to an expansive profile photograph. Results revealed a significant overall effect, across both genders and all targets, χ^2 (1, N = 2,983) = 8.21, $P < 0.01$, such that profiles featuring pictures in expansive, open postures garnered significantly more "yes" responses than profile pictures featuring contractive, closed postures. The data also revealed an odds ratio of 1.27 [95% CI (1.08, 1.49)], indicating that profiles featuring expansive photographs were 27% more likely to elicit a "yes" response from a given participant.

An exploratory analysis also showed a significant interaction effect of gender and profile type (e.g., expansive vs. contractive): Expansive profile photographs were more effective in garnering a match for men than for women (b = 1.66, SE = 0.55, $P < 0.01$). Overall, male targets did not get many "yes" responses (30 of 1,500 from females users), a result that is consistent with past research showing that women are more selective than men in seeking a romantic partner for reasons of reproductive success (43, 44). However, of those 30 "yes" responses, 26 (87%) were in response to an expansive profile. Indeed, a χ^2 test revealed a significant difference within men for expansive vs. contractive postures, χ^2 (1, N = 1,500) = 16.43, $P < 0.01$. Female targets received many more "yes" responses from male users overall (790 of 1,483), with 421 (53%) of those "yes" responses coming when the woman used an expansive profile photograph. In addition, a χ^2 test revealed a significant difference within women for expansive vs. contractive postures, χ^2 (1, N = 1,483) = 5.25, P = 0.02. Thus, although expansive postures increased "yes" responses for both genders, it appears that males may benefit more than females.

In a follow-up study, we tested again, as we did in study 1, whether perceived dominance was a mechanism by which a target's postural expansiveness increased romantic attraction. We also hypothesized that the expansive, open postures also may signal willingness to share resources and that perceived openness may mediate the link between expansive postures and romantic attraction.

Study 2b.

Expansive (vs. contractive) photographs are rated as more dominant. Participants (n = 853) were recruited for an online study using Amazon Mechanical Turk. Each participant was presented with one of 12 photograph collages. Each photograph collage comprised of the four photographs from each target's profiles used in study 2a. Thus, each target was represented by two photograph collages: one

expansive version and the other contractive. Participants were randomly assigned to view one collage and to rate the amount of trait dominance. Because the expansive (vs. contractive) nonverbal displays are also "open" and "welcoming," we asked other participants to rate the amount of trait openness conveyed in the photograph to test the alternative hypothesis that perceived openness may account for some of the variance in "yes" responses (details are given in *SI Materials and Methods*).

Overall (across photographs of men and women), the expansive photographs were rated as more dominant (mean = 3.78, SD = 0.63) than the contractive photographs (mean = 2.44, SD = 0.88), [$t(424) = 18.02$, $P < 0.0001$, 95% CI (1.19, 1.48)]. In the expanded photographs alone, there was no significant difference between male and female photographs in ratings of dominance [$t(212) = 1.49$, $P = 0.14$, 95% CI (−0.04, 0.30)]. Overall, across photographs of men and women, expanded photographs were rated as more dominant (mean = 3.78, SD = 0.63) than as open (mean = 3.42, SD = 0.65), [$t(428) = 5.73$, $P < 0.0001$, 95% CI (0.23, 0.48)]. Among the expanded photographs alone, there was no significant difference between male and female photographs in ratings of openness, [$t(214) = -1.71$, $P = 0.09$, 95% CI (−0.32, 0.02)]. These descriptive results suggested that in rapid attributions about the expansive (vs. contractive) posed photographs, the perception of dominance varied across the picture profiles but perceptions of openness did not. We next tested if these ratings mediated the causal link established in study 2a between expansiveness and getting a match.

Dominance and openness mediate the link between expansive photographs and the number of online matches. As in study 1, a multilevel mediation model with the Monte Carlo method was used. Profile characteristics (e.g., photograph pose, photograph ratings, online match) were nested within target (e.g., target profile 1, target profile 2, and so forth). All variables examined were at the lower level (i.e., level 1), thereby constituting a "1-1-1 model" (45). The aim was to test the mediating link between expansive photographs and the number of online matches found in study 2a. Ratings of dominance and openness were highly correlated ($r = 0.60$), and mediational models including both variables as mediators were unspecified (i.e., produced impossible values) because of multicollinearity. Thus, mediation models were tested for dominance and openness separately, for each gender. Dominance and openness ratings were centered and entered as a mediator. Photograph pose (coded 0 = contractive; 1 = expansive) was entered as the independent variable. The dependent variable was whether the profile garnered a match on the dating application (coded 0 = no, 1 = yes), thus resulting in a level 1 sample size matched to study 2a, $n = 2{,}983$.

Because dominance ratings and openness ratings were so highly correlated ($r = 0.60$), entering them both simultaneously in a competitive mediation model resulted in unidentified models with impossible standardized beta weights (i.e., over 1.0). Therefore, the contribution of each dominance and openness as a mediator was tested separately. As shown in Fig. 2, the indirect effect model with dominance as a mediator was significant. Based on a resampling size of 20,000, dominance mediated the effect of profile photograph pose on match outcome. The total indirect effect when dominance ratings were included in the model resulted in a 95% CI that did not include zero (2.82, 6.37). The total indirect effect when openness ratings were included in the model was also significant, resulting in a 95% CI that did not include zero (0.40, 0.83). Comparing the magnitude of the two effect sizes computed for each model (based on the product of the partial correlations between photograph pose and the mediator and each mediator and match outcome; refs. 46 and 47) revealed more variance in match outcome explained by dominance ($r^2_{\text{dominance}} = 0.011$) than by openness, ($r^2_{\text{openness}} = 0.004$). These results are consistent with the conclusion that one way in which postural expansiveness exerts its effects on romantic attraction is through perceived dominance, but that dominance appears to be an open, inviting type of dominance.

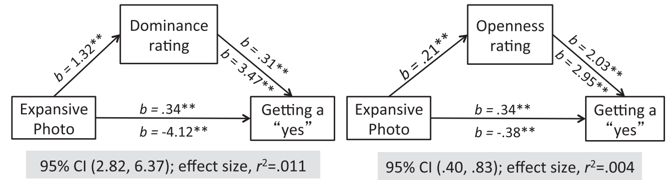

Fig. 2. Dominance is a stronger mediator than openness linking expansive photographs and number of online matches. Study 2b: Statistics for direct effect (unstandardized betas) are shown above the path, and for total indirect effect are shown below the path. Results from Monte Carlo method simulations (resample size = 20,000) indicate a significant indirect effect linking expansive photographs, dominance ratings, and online "yes" responses. A reversed (i.e., negative) c′ path beta coefficient resulted when both the mediator and pose were entered as predictors of getting a "yes" response. An examination of the variance inflation factor revealed high redundancy between the pose in the photograph and the mediator which produces reversed beta coefficients such as this one (63). $^{**}P < 0.01$.

We also tested the 1-1-1 multilevel models reported above split by gender. Based on resulting 95% CIs, both dominance [95% CI (4.10, 8.18), $r^2 = 0.004$] and openness [95% CI (0.74, 1.34), $r^2 = 0.003$] significantly mediate the indirect effect when considering female targets alone, but neither significantly mediates the effect when considering male targets alone [95% $\text{CI}_{\text{dominance}}$ (−4.17, 13.84), $r^2 = 0.01$; 95% $\text{CI}_{\text{openness}}$ (−0.28, 0.31), $r^2 = 0.002$]. The similar patterns of results observed among females only and when considering both genders combined likely reflect female match outcomes comprising the majority of "yes" responses (i.e., the number of matches for men were very small) in study 2a. It is important to note that, given our sample size of target stimuli (i.e., three targets per gender), these data are not suitable for reliably testing gender effects, and therefore inferences are limited (48).[†]

Discussion

Across two field studies—one observational and one experimental, which included a third study that offered additional insight—we arrived at three main conclusions: (*i*) an expansive (vs. contractive) body posture both predicts and causes increased romantic attraction from potential partners in modern-day dating contexts; (*ii*) expansiveness exerts these effects by increasing the observers' perceptions of the actor's dominance and openness; and (*iii*) these results hold true for both males and females, with males enjoying an advantage from expansive posture even more than females. Consistent with past research in sociology and animal research, these findings underscore the importance of both nonverbal expansiveness and dominance in initial romantic attraction. In humans, appearing open is almost as important as dominance. To our knowledge, these findings are the first test linking human nonverbal expansiveness and initial romantic attraction, particularly in modern romantic attraction contexts in which potentially crucial components of the courtship process are increasingly reduced to quick responses at zero acquaintance.

Our current results reveal that people who are seen in expansive, open nonverbal displays enjoy increases in others' romantic attraction toward them. That is, an individual's expansive posture conveying dominance and openness causes the partner to experience greater attraction. These findings are consistent with past nonhuman animal research demonstrating that expansiveness bids

[†]Given the low number of females choosing males, the nested analysis was supplemented with mediation analyses not utilizing the Monte Carlo method. These analyses suggested that dominance was a significant mediator for both females [95% CI (0.31, 1.04)] and males [95% CI (0.004, 0.03)] but that openness was not a significant mediator for either females (−0.08, 0.008) or males (−0.005, 0.005).

for better reproductive outcomes (e.g., in chimpanzees; ref. 49). Moreover, in the context of the very brief romantic interactions in the current studies, the findings suggest that dominance, signaling possible resources, may be a functional preference when making quick inferences about a potential partner (23), and it is hypothesized that openness may be preferred because it signals a willingness to share those resources. We hope our initial test opens the door to the investigation of a suite of other, more important nonverbal, physical, and ornamental variables causally predictive of romantic attraction. Alongside inferences of dominance in a potential partner, past research suggests that people may make inferences about associated traits, such as low neuroticism and general relaxedness (50). However, dominance displays and general relaxedness are nonverbally conveyed in different ways. The nonverbal display of "relaxed" is not characterized by expansiveness. It is conveyed through less gaze at the opposite gender (51) and more vocal warmth (52); the work that best characterizes relaxedness (52) reports that it resembles positive emotion/liking/affiliation (i.e., "immediacy cues"), which we investigated in study 1 and found not be predictive of attraction. Thus, the role of immediacy cues was not tested further in the causal field study that is study 2. However, some of these variables likely need more attention in future studies of attraction. We emphasize that a limitation of the current research—a tradeoff resulting from the use of a study design that establishes high external validity—is that, although internal validity was high and deeply rooted in theory and nonverbal communication research, the photograph manipulation in study 2a does not allow an explicit dissection of dominance and openness from additional and related characteristics in judging a potential partner. That is, any given body posture will necessarily convey a suite of interrelated qualities (rather than a single quality in isolation), which future research may wish to examine in addition to when each cue causes more attraction and for whom.

As with many other past studies of human romantic attraction, our results suggest a more complicated picture when comparing males with females: Specifically, a gender difference in the impact of expansiveness on romantic attraction was nonexistent in study 1 (speed-dating); however, although both genders benefitted from expansiveness in study 2, males benefitted more. There are many empirical cases in which gender differences that emerge in online profile-type study designs do not translate to live interaction designs such as speed-dating (23). In other words, expansiveness may inspire attraction for men and women to the same extent in live contexts, but expansiveness may be a stronger predictor of women's attraction to men than of men's attraction to women in online dating contexts. However, interpretations of gender effects in study 2a must remain tentative, given that target gender is confounded with confederate in this design (48). In other words, the current study design is perfectly sufficient for drawing conclusions about expansiveness (which we manipulated within-confederate), but the strength of the gender difference awaits future research that uses a larger sample size of male and female stimuli (i.e., more than a limited number of targets; refs. 48 and 53). Nevertheless, that women's expansive postures positively predicted men's attraction in both studies challenges the traditional thinking that women should be demure or subordinate to be attractive (54; for a review, see ref. 55). Instead, the current research suggests that both men and women garner more romantic interest by expressing some dominance, and this finding holds timely implications for modern dating in which women play a more active role in recruiting sexual partners (56).

More generally, the current work has practical implications for romantic attraction in nontraditional courtship contexts. Today, in addition to in-person structured speed-dating events, romantic zero-acquaintance interactions occur online. Meeting someone through some form of online dating has become the second most common way of finding a partner, after connecting through friends (57). Nearly 91 million people worldwide use mobile device applications to find love today; ~70% of these users are age 16–34 y (58). On such platforms, where getting a date with another person commonly begins with a photograph or brief interaction, it is advantageous to know how to maximize one's chances within such a minimized time frame. Based on our results garnered from thousands of single persons at an actual speed-dating event and using a dating application, it is evident that postural expansion can dramatically increase a person's chance of making a successful initial romantic connection. Whereas features such as eye color and facial symmetry are not easily modified, one's nonverbal display is controllable (as are ornamental cues such as accessories, clothing, make-up, and hairstyle) and can be managed to optimize one's chances of successfully attracting another person. However, initial attraction is only the first step in a romantic relationship. Examining expansiveness in romantic relationships as they develop over time would be one direction for future research. For example, the longer-term effects of varying degrees of dominance and openness among partners on the quality and longevity of a relationship would be an interesting direction for future research.

What about expansiveness in initial attraction in nonromantic contexts? In general, in their social networks people desire individuals who have access to resources, regardless of context (59). We speculate that the attraction to dominant, resource-rich others is especially strong as the degree of interdependence in the relationship increases. Romantic relationships are highly interdependent (60); thus in romantic contexts, one should be tuned into the type of dominance that signals both access to resources and a willingness to share them. Situational affordance theory (61, 62) suggests that humans evolved to respond in cognition and behavior to certain stimuli and contexts in a manner that optimizes survival and/or utility of that object. We theorize that in the context of a highly interdependent romantic attraction a person considers the resource benefit of selecting a particular partner. We suggest that an open, expansive posture may signal not only dominance but perhaps openness to sharing the resource benefits often accruing to the most dominant members of a society. In other words, we theorize that the "flavor" of dominance that may be most attractive to a potential mate is one which signals both dominance and openness. For a less interdependent interaction, such as hiring a plumber, expansiveness may be less relevant, and hiring a babysitter may fall somewhere in the middle. The exact degree to which expansiveness, and associated inferences regarding dominance and resource-sharing, are unique to romantic contexts, as compared with nonromantic contexts, is an area for future research.

To close, the present dating landscape is one in which mates are selected differently and, in some cases, instantly. To what degree does what we know about historical mate selection and attraction hold true in the modern online landscape? The present studies are among the first tests of which variables—observable in a photograph—may hold currency in increasing one's options in selecting a mate. There are likely many other controllable cues—physical, nonverbal, and ornamental—that people could leverage to present themselves optimally. We hope our results inspire additional investigations of which cues have functional utility, under which conditions, and for whom.

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