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Brief Report

Sex differences and lifestyle-dependent shifts in the attunement of self-esteem to self-perceived mate value: Hints to an adaptive mechanism?

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Abstract

It has been suggested that self-esteem is reactive to signs of social rejection, and that this "sociometer" mechanism becomes attuned to those personal attributes that affect social acceptance by significant others. Based on evolutionary models of human mating, we predicted that self-esteem should be more attuned to self-perceived mate value in men (when compared to women) who pursue short-term mating tactics, especially if they are unsuccessful therein. In a web-based study ($N = 2670$), we found that mate value self-perceptions had a stronger effect on self-esteem on those who had less short-term mating success in the past. However, being in a committed relationship or parenthood reduced the impact of mate value self-perceptions. As expected, these effects were specific to men. These results are suggestive of a psychological mechanism based on adaptive sociometer attunements that could help men to choose their optimal mating tactic and might thus partly explain intrasexual differences in sociosexuality.

Keywords: Self-esteem; Sex differences; Mate value; Sociometer theory; Sociosexuality; Evolutionary psychology; Conditional mating tactics; Self-regulation; Adaptive sociometer attunements; Life transitions

1. Introduction

Sociometer theory (Leary & Baumeister, 2000) interprets general self-esteem as a monitor of an individual's overall risk of social exclusion. It states that people react with decreased self-esteem when they perceive cues of social rejection by significant others. These cues may differ according to the kinds of social roles in which the corresponding relationships are embedded. For example, being accepted as a friend may require communal attributes, whereas being accepted as a co-worker may require agentic attributes. Anthony, Holmes, and Wood (2007) argued that, as a consequence, self-esteem will be most dependent on those attributes that are characteristic for people's predominant social roles. They call this the *attunement* of the sociometer to certain personal attributes.

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Of course, people's predominant social roles change with changing personal situations, goals, and lifestyles. For example, gender roles gain in importance during puberty, with the advent of interest in romantic and sexual relationships. It is also the stage when acceptance by members of the opposite sex becomes increasingly important, as adolescents are confronted with being a *potential mate* for the first time. This likely attunes the sociometer to one's overall attractiveness as a potential mate, or *mate value*. Later, after making the transition to a committed relationship or parenthood, the attunement of the sociometer to mate value might fade again, whereas the social roles of being a romantic partner or father become more important.

From an evolutionary perspective, the domain of romantic and sexual relationships is of central importance, since it is intimately intertwined with reproductive success. Indeed, various authors proposed that humans should have evolved a psychological mechanism to track their mate value, in order to allow them to adjust their mating-related decisions accordingly (e.g., Buss & Schmitt, 1993; Penke, Todd, Lenton, & Fasolo, 2007; Trivers, 1972). Kirkpatrick and Ellis (2001) called this mechanism a mate value sociometer. It is possible that developmental changes in the attunements of the general sociometer (i.e., general self-esteem) to this specific mate value sociometer serve an adaptive purpose. If this is the case, evolutionary models of human mating should predict when adaptive changes in these attunements occur.

In the absence of true genetic monogamy (i.e., when some degree of promiscuity exists), reproductive success is generally more variable and more contingent to mate value for men than for women (Gangestad & Simpson, 2000). At the same time, men are much more interested than women in attracting short-term mates (Schmitt et al., 2003), ultimately explicable by the fact that men, but not women, can directly benefit in terms of reproductive success from an increasing number of mating partners (Trivers, 1972).

As a result of female choosiness and intra-sexual competition, seeking short-term mates is an especially risky social endeavor for men, with both high potential fitness benefits and costs, depending on their mate value. Therefore, the mate value sociometer should be especially helpful for male, but not female, decisions to pursue *short-term mating tactics* (i.e., finding, choosing, and courting new potential mates) versus *long-term mating tactics* (i.e., investing in an exclusive relationship and potential offspring) (Penke et al., 2007; Trivers, 1972). Indeed, Landolt, Lalumiere, and Quinsey (1995) showed that male, but not female, preferences and self-reported behavioral intentions for short-term mating tactics were dependent on self-perceived mate value in a sample of college students. Accordingly, our first hypothesis is that male's self-esteem is more dependent on their self-perceived mate value than women's.

In the current study, however, we argue that this increased sensitivity is not universal for all men all the time. With the onset of their desire for sexual variety in puberty, pursuing short-term mating tactics becomes a highly valued goal for men, so successes and failures in this domain become associated with strong fluctuations in self-esteem. This should constitute no problem as long as they are successful with it, but it will have the side-effect that failures in this domain become highly self-relevant—general self-esteem will become even more attuned to self-perceived mate value (i.e., the mate value sociometer). Therefore, our second hypothesis is that the self-esteem of men who are less successful in attracting short-term mates is more dependent on perceptions of mate-value than the self-esteem of women in this situation.

If men experience increasingly painful rejections by women, self-protective motives (Baumeister, 1997) can override the primary goal of pursuing short-term tactics. Crocker, Brook, Niiya, and Villacorta (2006) argued that people will seek out more achievable low-risk alternatives under such conditions. In the mating domain, the most obvious alternative for less successful men is to change their lifestyle to pursuing long-term mating tactics. Since this means that these men limit the scope of their mating opportunities and simultaneously make a concession to the optimal female mating tactic (Trivers, 1972), successful pairing should thus be facilitated even in the absence of exceptionally high mate value. As a consequence, our third hypothesis is that the self-esteem of men who leave the competitive environment of the mating market and concentrate on long-term tactics such as committing to an exclusive relationship and investing in children should become less attuned to the mate value sociometer (Kirkpatrick & Ellis, 2001). Since there is no convincing theoretical rationale why women should base their mating tactic decisions on their self-perceived mate value (but more on environmental factors instead, see Gangestad & Simpson, 2000, pp. 583–585), we expect none of these effects for women.

The current study makes an initial attempt to tests these predictions.

2. Methods

2.1. Sample

The analyses in the present study are based on a sample of 2670 German-speaking internet users (969 men, 1701 women, age $M = 23.5$, $SD = 6.9$) who participated in an online survey and reported a heterosexual orientation and serious responding to the questionnaires. A total of 1316 participants (49.3%) had left school with less than thirteen years of formal education; 1477 participants (55.3%) were currently in a committed romantic relationship, 217 of whom (8.1%) were married. Two hundred and two participants (10.9%) had their own children. As an incentive, participants received an automatically generated personality profile after completing the study.

2.2. Measures

After a list of demographic questions, including items regarding marital status and number of children, the participants completed the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965, revised German adaptation by von Collani & Herzberg, 2003; men: $M = 2.01$, $SD = .66$, $\alpha = .88$, women: $M = 2.05$, $SD = .64$, $\alpha = .90$, range 0–3) and four items with open response format about their sociosexual history (i.e., their past short-term mating success), asking for the overall number of lifetime sexual partners, the number of sexual partners in the last 12 months, the number of sexual partners with whom they had intercourse only once, and the number of extra-pair sexual partners.

Finally, self-perceived mate value was assessed in two different ways. First, participants responded to the 8-item self-perceived Mate Value Scale (MVS, Landolt et al., 1995; men: $M = 4.06$, $SD = 1.23$, $\alpha = .90$, women: $M = 4.91$, $SD = 1.17$, $\alpha = .90$, range 1–7). This scale asks how one perceives the reactions one gets from potential mates. An exemplary item is "Members of the opposite sex are attracted to me." This scale may be understood as a straightforward measure of the mate value sociometer status, even though it requires an explicit reflection on one's standing with the opposite sex.

Our second operationalization of the mate value sociometer was more indirect: Participants rated themselves in comparison to their same-sex peers on the Self-Attributes Questionnaire (SAQ, Pelham & Swann, 1989; men: $M = 6.45$, $SD = 1.18$, $\alpha = .77$, women: $M = 6.37$, $SD = 1.08$, $\alpha = .75$, range 1–10). The items of the SAQ reflect a diverse set of attributes that people care about in social comparison processes (e.g., physical attractiveness, intellectual/academic ability). ("Luck" was excluded from the original item list because it does not reflect a stable trait. However, results remain virtually unchanged when it was included.) While these attributes surely affect various life domains, recent mate choice theories argue that they may also function as reliable indicators of mate qualities such as good genes, health, fertility, or social status, and are thus also preferred when selecting a mate (for reviews, see Miller, 2000, 2007; Penke et al., 2007). Taken together, we assume that they reflect the overall self-perception of one's capability to compete with others in domains that potential mates care about, even though the link with the mating domain does not have to be represented explicitly (this interpretation of the SAQ goes back to Kirkpatrick, Waugh, Valencia, & Webster, 2002). Since evolved psychological mechanisms do not require conscious insight into the psychological processes that ultimately lead to adaptive behavior (see Penke et al., 2007), this indirect measure of the mate value sociometer should work as well as the more direct MVS.

Measures were presented in this order, but were interspersed by other instruments irrelevant for the present study.

2.3. Treatment of the sociosexual behavior items

To correct for heavy skew in the sociosexual behavior items (which is a usual finding, see Wiederman, 1997), responses on the four open-response items were recoded into a 5-point scaling format: (i) no partners, (ii) one partner, (iii) two to three partners, (iv) four to seven partners, and (v) eight or more partners. When all four recoded items were, separately for each sex, subjected to principle axis factor analyses, a clear one-factor solution emerged in both cases (explaining 58.8% of the variance in men and 53.0% in women). For all anal-

yses, sex-specific factor scores from these analyses were used, with high values indicating unrestrictive past sociosexual behavior and low values indicating a more restrictive past. Factor-analyzing both sexes together did not affect the results.

3. Results

3.1. Intercorrelations

The MVS and the SAQ showed high positive correlations in both men ($r = .50$, $p < .001$) and women ($r = .45$, $p < .001$). Since both scales are intended to measure the mate value sociometer, we aggregated both scale values to an index of overall mate value self-perception (OMV-SP) and report results for this composite. However, when we reran all analysis with the two individual measures, the pattern of results was highly similar.

Age was weakly correlated with some of the variables in this study. While the following results are uncorrected for age, we reran all analyses with age as a covariate. None of the results turned out to be dependent on age.

General self-esteem was positively related to the overall mate value self-perception in both sexes. This can be interpreted as a general attunement of people's sociometer to mate value. However, the correlation was higher for men ($r = .61$, $p < .001$) than for women ($r = .53$, $p < .001$). This difference was significant ($Z = 2.94$, $p < .01$), supporting our hypothesis that male self-esteem should be generally more attuned to self-perceived mate value than female self-esteem.

3.2. Conditionality of self-esteem attunements

Lifestyle-dependent shifts in the attunements of self-esteem were tested with a series of hierarchical regressions, with global self-esteem as the dependent variable and with the overall mate value self-perception, sex, and one of the three lifestyle indicators (sociosexual behavior factor, relationship status, or parental status) as predictors in Step 1, and their 2- and 3-way interactions of interest added as additional predictors in Step 2.

3.3. Main effects

As Table 1 shows, the overall mate value self-perception had a strong influence on general self-esteem in all analyses, while sex had not. The effect of past sociosexual behaviors was also close to zero and not significant. Romantic relationships and parenthood, in turn, had weak positive main effects on general self-esteem.

Table 1
Beta weights and determination coefficients from hierarchical regression analyses of effects of lifestyle indicators, mate value self-perception, sex, and their interactions on general self-esteem

	Lifestyle indicators		
	Sociosexual behavior	Relationship status	Parental status
Lifestyle indicator	.02	.05**	.09***
Overall mate value self-perception	.54***	.52***	.50***
Sex	−.02	−.02	.00
Lifestyle X OMV-SP	**−.07*** **	**−.04***	**−.08****
Lifestyle X OMV-SP X sex	**.04***	**.03***	**.04***
ΔR^2	.005***	.002*	.003**
Multiple R^2 (full model)	.32	.29	.57
F (full model)	243.59***	196.17***	250.86***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. OMV-SP: overall mate value self-perception. Relationship status, parenthood, and sex were all contrast-coded, with positive values for individuals in committed relationships, parents, and women. ΔR^2s are for the change between regression step 1 (only main effects) and step 2 (main effects plus interactions). Beta weights, multiple R^2s, and Fs are for the full model. The critical interactions (indicating lifestyle-dependent self-esteem attunements and sex differences therein) were printed in bold.

The critical results, however, are that the interactions between mate value self-perceptions and the lifestyle variables as well as their 3-way interactions with sex.

3.4. Interactions with past sociosexual behaviors

The interaction between the overall mate value self-perception and the sociosexual behavior factor was significant, with the direction of the effect indicating that general self-esteem was more attuned to mate value self-perceptions in individuals with a history of few sexual partners than in individuals with a promiscuous history of changing sexual partners. The significant 3-way interaction indicates that this effect is stronger for men than for women (Table 1). Panels A and B in Fig. 1 graph this result with extreme groups ($\pm 1SD$) for the overall

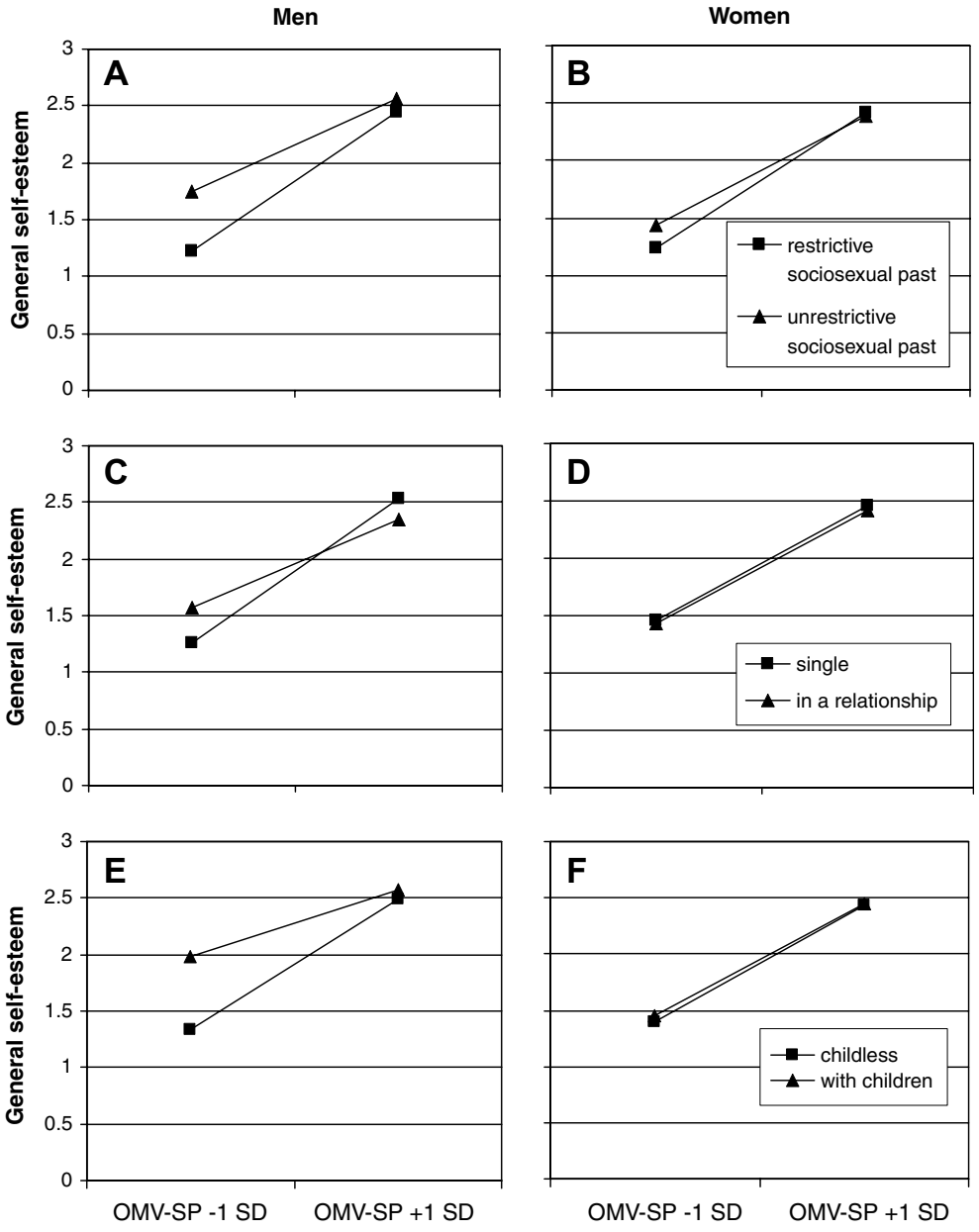

Fig. 1. Graphical illustration of the interaction effect between lifestyle variables and the self-perception of overall mate value (OMV-SP) on general self-esteem. (A and B) Show the interactions with the sociosexual behavior factor (restrictive = low past mating success, unrestrictive = high past mating success), (C and D) show the interactions with relationship status, and (E and F(show the interactions with parenthood. Results for men are depicted in (A, C, and E), those for women are depicted in (B, D, and F).

mate value self-perception. They clearly show that the interaction effect is exclusive to men. This pattern provides support for our hypothesis that mate value becomes more self-relevant for men (but not women) who experienced failures when trying to attract short-term mates in the past.

3.5. Interactions with current romantic relationship status and parenthood

The interactions between mate value self-perceptions and the current romantic relationship and parental status can be found in the right half of Table 1. Similar to the interactions with sociosexual behavior, the attunement of general self-esteem to self-perceived mate value was dependent on both kinds of lifestyle indicators. The 3-way interactions showed that these effects were more pronounced in men. As before, the interactions between the overall mate value self-perception and both relationship and parental status on general self-esteem were plotted in panels C to F of Fig. 1. As these figures show, the self-esteems of men with long-term partners or children were less dependent on mate value self-perceptions than those of singles or childless men. Female self-esteem, in contrast, was attuned to mate value self-perceptions to the same degree all the time, independent of their lifestyles.

4. Discussion

We used cross-sectional survey data from a large, heterogeneous online sample to test the hypotheses that (1) the general self-esteem of men, due to their greater desire for sexual variety and greater dependence of short-term mating success on mate value, is more attuned to self-perceptions of mate value than women's, (2) self-perceptions of mate value are more self-relevant for men (compared to women) without a history of short-term mating successes, and (3) both romantically involved men and fathers (but not paired women or mothers), for whom it is possible to adaptively shift efforts from their preferred mating tactics of competing in finding and courting new mates to mate retention and parental investment, react less strongly to negative self-perceptions in the mating domain than their peers who lack this alternative because they are single or childless. All three predictions received support.

Against this background, we would like to propose the following psychological mechanism as a plausible candidate for a mechanism that partly explains male intrasexual differences in mating tactic decisions and sociosexuality (for other influencing factors, see Simpson, Wilson, & Winterheld, 2004): while most men tend to start their reproductive life with a high desire for sexual variety (Buss & Schmitt, 1993; Schmitt et al., 2003), subsequent encounters with choosy women might lead to experiences of social rejection as a mate for some men. Since our data suggests that the general sociometer mechanism (Leary & Baumeister, 2000) is especially sensitive to cues of social exclusion in this domain in men with a history unsuccessful short-term mating, they are especially likely to react to female rejection with low self-esteem. To satisfy general self-protective motives (Baumeister, 1997), these men should refrain from competing for short-term mates and prefer to concentrate on the more reachable goal of investing in an exclusive romantic partnership and offspring instead.

In addition, men who refrain from short-term tactics are more appealing for women, who tend to prefer long-term mating (Miller, 2007). Thus, commitment to a relationship might compensate for deficits in other aspects of men's mate value and help them to be more successful with long-term than with short-term mating tactics. Those men who do not experience rejections by potential mates on a regular basis, on the other hand, experience no need to suppress their desire for sexual variety and the accompanied motivation to pursue short-term mating tactics.

Note that there is no equivalent adaptive rationale for women: they tend to prefer long-term relationships initially (Schmitt et al., 2003) and the adaptive value of female short-term tactics tends to depend much more on environmental factors than on mate value (Gangestad & Simpson, 2000). Thus, sociometer attunements to self-perceived mate value could not provide a plausible adaptive mechanism for women, which is consistent with the results of our study.

However, this interpretation must be regarded as preliminary, since the cross-sectional nature of the current study prohibits causal inferences. For example, it could well be that men who have both a low self-perceived mate value *and* a low general self-esteem are a priori more likely to have a restrictive sociosexual past, to be

single, or to be childless. Future studies should attempt to corroborate the existence of the proposed mechanism by testing it more directly in longitudinal designs.

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