Self-Esteem as an Adaptive Sociometer of Mating Success:

Evaluating Evidence of Sex-Specific Psychological Design across 10 World Regions

Abstract

According to an evolutionary-adaptive version of sociometer theory, because men, more than women, have faced the adaptive problem of obtaining large numbers of willing short-term mating partners, positive associations between self-esteem and number of past sexual partners should be stronger among men than women. We correlated self-esteem with number of past sexual partners in a sample of more than 16,000 people across 10 major regions of the world. Results largely supported our prediction. This amply powered research investigation provided a limited, but revealing, test of an evolutionary-adaptive sociometer theory of self-esteem. For men, successfully accessing more sexual partners, regardless of personal desire or the mores of wider culture, was generally associated with higher self-esteem. For women, the links between numbers of sexual partners and self-esteem were much more dependent on culture.

Keywords: self-esteem; number of sexual partners; sociometer; sex differences; evolutionary psychology

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Global self-esteem refers to one's overall sense of worthiness as a person (Baumeister, 1993; Rosenberg, 1979). Individual differences in global self-esteem appear to play an important role in how well we do in life (McGee & Williams, 2000). Those with high levels of self-esteem tend to have better outcomes in school performance, job performance, interpersonal relations, and leadership (for a general review, see Baumeister, Campbell, Krueger, & Vohs, 2003). Possessing low levels of self-esteem, in contrast, appears linked to a variety of negative life outcomes, including psychological maladjustment, anti-sociality, and engaging in unhealthy behaviours (Donnellan et al., 2005; Trzesniewski et al., 2006). Unresolved, however, is the degree to which the close empirical links between self-esteem and important life outcomes represent true causal associations, and if so, exactly in which direction the causal path flows (Boden, Fergusson, & Horwood, 2008; Donnellan, Trzesniewski, & Robins, 2011).

Self-Esteem as a Cause of Life Outcomes

If self-esteem does play a pivotal, causal role in generating its links with important life outcomes, people who experience increases in their self-esteem, in theory, should subsequently behave in more prosocial, interpersonally effective, and mentally healthy ways (Baumeister et al., 2003; Derrick et al., 2008). Such a view has led some to argue for treating increased self-esteem as a goal unto itself. For instance, researchers have proposed nurturing self-esteem should facilitate future goal attainment (Bednar, Wells, & Peterson, 1989) and can serve as a precursor for psychological buffering against existential threats (Solomon, Greenburg, & Pysczynski, 1991). In such cases, researchers assume individuals seek to maintain high self-esteem because

feeling good about oneself is crucial for achieving success in future endeavours (Branden, 1994). Self-esteem comes first, in this perspective, positive outcomes come second.

This self-esteem-comes-first perspective has led to considerable efforts at developing training programs for increasing self-esteem and to research attempts that experimentally manipulate self-esteem and its facets to improve future life outcomes (see Baumeister et al., 2003; Lammers et al., 2013). Undoubtedly, this view has some merit. However, researchers may be misguided in assuming the causal connection of self-esteem and important life outcomes flows primarily in one direction. In some cases, researchers and policy-makers could have the order backwards; self-esteem might be a dynamic consequence, not a cause, of certain social behaviors and attitudes (Baumeister et al., 2003).

Self-Esteem as a Consequence of Life Outcomes

According to the sociometer theory of self-esteem (Baumeister & Leary, 1995; Leary, 1999; Leary & Downs, 1995), instead of self-esteem causing the aforementioned positive future life outcomes, it may be positive success in different domains of life subsequently leads to higher self-esteem (Baumeister & Leary, 1995; Leary, 1999). In this view, there may be little gained by artificially raising self-esteem because it is not a potent causal generator of positive life outcomes. Self-esteem may very well be a response to or consequence of adventitious life events, rather than a precursor of positive life outcomes (Denissen, Penke, Schmitt, & Van Aken, 2008).

Importantly, self-esteem may not flow from just *any* positive life event. Self-esteem may be particular, even depending on whether one is a man or a woman (Josephs, Markus, & Tafarodi, 1992; Kavanagh, Robins, & Ellis, 2010; Kirkpatrick & Ellis, 2001). According to sociometer theory, self-esteem is designed to function as a psychological gauge that monitors the success that individuals have experienced in fulfilling *adaptive life tasks*, such as obtaining social

inclusion and interpersonal acceptance (Leary, Tambor, Terdal, & Downs, 1995). Monitoring social inclusion and interpersonal acceptance may have had important adaptive outcomes in as much as humans are a highly social primate (Herrmann et al., 2007), and survival and reproduction among our foraging ancestors was highly contingent on careful monitoring of social inclusion and interpersonal acceptance (Baumeister & Leary, 1995; Byrne & Whiten, 1988). Such a model runs directly counter to humanistic models of self-esteem which assume that seeking external approval of the self and worrying about what others think of us is generally unhealthy (Fenigstein, 1987; Rogers, 1965). Instead, an evolutionary perspective suggests seeking the approval of others is fundamentally important to human survival and reproduction, and self-esteem may be an evolved mechanism specially-designed to provide individuals with adaptively-relevant feedback about one's place in the social world (Barkow, 1980; Kenrick et al., 2010; Leary, 1999).

Self-Esteem as a Consequence of Sexual Outcomes

An important social domain that has received relatively limited attention in reference to the sociometer model is the sociosexual domain (Simpson & Gangestad, 1991), particularly how biological sex may interact with sociosexual acceptance as a mating partner in ways that impact self-esteem (Bale & Archer, 2013; Brase & Guy, 2004; Kavanagh et al., 2010; Pass, Lindenberg, & Park, 2010). In the context of short-term mating, one reason for the link between acceptance and self-esteem might be the widely-held assumption that having sex with many partners is psychologically pathological, particularly for women (see Gallup, O'Brien, White, & Wilson, 2009; Mikach & Bailey, 1999; Schmitt, 2005a). For instance, in a review of self-esteem research (Baumeister et al., 2003), findings on sexual behaviour were included in the section with smoking, drugs, and eating behaviour instead of the sections on romantic or interpersonal

relationships. Others have treated sociosexual permissiveness as a "deviant" and "risky" behaviour (Hoyle et al., 2000; Perlman, 1974; Stratton & Spitzer, 1967), and research on the sexual double standard suggests negative views of permissive short-term sexuality are much more potent when considering women's sexual behaviour (Jonason & Marks, 2009). According to attachment theory, short-term mating is often viewed as merely the dysfunctional failure of men and women to pursue the more adaptive pathway of long-term mating (Miller & Fishkin, 1997; cf. Schmitt, 2005a).

Evolutionary perspectives on human mating, however, generally view short-term mating as an adaptive option among a menu of reproductive strategies, one that is particularly suited for certain types of men (e.g., high mate value men; Lukaszewski, Larson, Gildersleeve, Roney, & Haselton, 2014) and particularly viable when pursued within specific socioecological contexts (e.g., ecologies associated with fast life history strategies; Jonason, Li, Webster, & Schmitt, 2009). From an evolutionary-adaptive sociometer perspective, therefore, it could be argued that number of past sexual partners is, to some degree and in the proper cultural context, an indication of the degree to which members of one's social group have sociosexually accepted them (Jonason, 2007; Kavanagh et al., 2010). That is, non-coercive sex is an act denoting social approval and, thus, sex with more partners can be a direct, quantifiable indicator of one's degree of sociosexual acceptance within the context of short-term mating. Specifically, if someone has had sex with 50 people, this suggests 50 people have offered tangible social approval in the form of agreeing to have sex with that person. If this sociometer perspective on sociosexuality is correct, success in the context of short-term mating may be a potent cause, more than a consequence, of increased self-esteem.

Unfortunately, research inquiries into the relationship between self-esteem and number of past sexual partners (as a measure of mating success; Jonason, Li, Webster, & Schmitt, 2009) have yielded unclear and conflicting answers. Some research has documented a positive association between self-esteem and short-term mating attitudes and behaviours (Herold & Goodwin, 1979; Rosenthal, Moore, & Flynn, 1991; Stimson & Dougherty, 1980; Walsh, 1991), especially among those who actively desire short-term mating (Vrangalova & Ong, 2014). Other researchers have reported a positive correlation between self-esteem and indicators of short-term mating, but the effects were largely localized to men and not women (Jessor & Jessor, 1975; Stratton & Spitzer, 1967). Importantly, many researchers have found no relationship at all between self-esteem and short-term mating (Cvetkovich & Grote, 1980; MacCorquoldale & DeLamater, 1979; McGee & Williams, 2000; Paul, Fitzjohn, Herbison, & Dickson, 2000; Visser et al., 2010; Walsh & Balazs, 1990). And in some studies, short-term mating attitudes and behaviours have been negatively linked to self-esteem (Boden & Horwood, 2006; Hornick, 1978).

What might account for these seemingly equivocal results? It is possible that the relationship between these two variables is generally positive but is relatively weak and, therefore, past studies may have suffered from limited power in trying to detect it (Spellman, 2015). Alternatively, it could be a function of the tendency in past research to focus on sexual *attitudes* over *behaviours*; the two being correlated but not identical (see Schmitt, 2005a). In the case of the sociometer view of sociosexuality, it is the past behavioural acts of others accepting one as a short-term mating partner (rather than one's own attitudes toward short-term mating) that should give rise to increased feelings of self-esteem. In contrast, those with highly unrestricted sociosexual attitudes who are unable to effectively pursue short-term mating may

experience recurring feelings of romantic rejection and strategic failure, resulting in lower self-esteem. Among repeatedly thwarted short-term maters, higher sociosexuality might negatively correlate with self-esteem. Among those successful at achieving their objective of numerous sexual encounters, higher sociosexuality might positively correlate with self-esteem.

In order to better understand the link between self-esteem and short-term mating, we correlated self-reported self-esteem with number of past sexual partners in a sample of greater than 16,000 people from 10 major regions of the world—North America, South America, Western Europe, Eastern Europe, Southern Europe, Middle East, Africa, Oceania, South/Southeast Asia, and East Asia. We also examined these links specifically among men and women who are actively seeking short-term mates. Our relatively large samples sizes and diverse cultural contexts provided a unique window into revealing the underlying links between self-esteem and success in short-term mating behaviour.

Self-Esteem as a Consequence of Evolutionary-Relevant Sexual Outcomes

If we adopt an evolutionary-adaptive approach to sociometer theory (Hill & Buss, 2006; Kirkpatrick & Elis, 2001; Kirkpatrick, Waugh, Valencia, & Webster, 2002), not only do we expect a positive correlation between self-reported self-esteem and number of past sexual partners, we further expect this correlation to be stronger in men than in women (Landolt, Lalumiere, & Quisey, 1995; Penke & Denissen, 2008; Penke, Todd, Lenton, Fasolo, 2008; Walsh & Balazs, 1990). Men's reproductive fitness is more strongly tied to access to high *quantities* of short-term mating partners than women's is (Betzig, 2012; Buss & Schmitt, 1993). Women's reproductive fitness, in general, is more strongly tied to obtaining high *quality* partners who are able and willing to invest in women and their offspring in long-term mating (Schmitt, 2014; Trivers, 1972), and high genetic quality—not mere quantity—when short-term mating

(Gildersleeve, Haselton, & Fales, 2014; Thornhill & Gangestad, 2008). This critical theoretical distinction within the context of short-term mating leads to drastically different expectations about the relationship between self-esteem and short-term mating success for men and women.

For men, self-esteem may be heightened, in part, as an adaptive feedback mechanism that is sensitive to (1) the degree of sociosexual acceptance and approval from numerous women in the context of short-term mating, and (2) feelings of satisfaction over accomplishing the adaptive challenges that men have asymmetrically faced relative to women in the context of short-term mating (Anthony, Holmes, & Wood, 2007; Gentile et al., 2009; Goodwin et al., 2012; Wade, 2000). Indeed, it appears that men (but not women) report sexual success in the context of short-term mating makes them feel a sense of accomplishment or conquest (Jonason, 2007; Jonason & Fisher, 2009). Male pornographic film stars—men with high rates of sexual success in short-term mating—also report high rates of self-esteem (Griffith, Hayworth, Adams, Mitchell, & Hart, 2013). Moreover, several studies have found men's self-esteem and self-perceived mate value, but not women's, tend to be positively associated with desiring and obtaining large numbers of sex partners (Gomula, Nowak-Szczepanska, & Danel, 2014; Zeigler-Hill, Campe, & Myers, 2009). For instance, Zeigler-Hill and his colleagues (2009) found high self-esteem men exhibited lower minimum standards for potential short-term mates (making the pursuit of a short-term mating easier), whereas women with high self-esteem insisted on higher minimum standards when they considered short-term mates. Finally, research in which men's feelings of self-worth and overall mate value are experimentally increased tend to lead men to increase their desires for short-term mating (Surbey & Brice, 2007). This evolutionary-adaptive pattern of sociosexual linkages to self-esteem leads us to generate *Prediction 1:* Men who have larger numbers of past

sexual partners will tend to have higher self-esteem than men who have had fewer numbers of past sexual partners.

In contrast to the evolutionary-adaptive logic and pattern of evidence among men, there is no convincing theoretical rationale or set of empirical findings that lead us to expect women to base their self-esteem on obtaining *quantitatively* large numbers of sexual partners in the context of short-term mating. Indeed, evidence suggests doing so in women is more often associated with sexual regret (Galperin et al., 2014; Paul & Hayes, 2002). Women tend not to suffer from a shortage of short-term mating opportunities as men do (on average; see Baumeister & Vohs, 2004; Clark & Hatfield, 1989) and this sex differentiated pattern has likely persisted across ancestral foraging environments (Schmitt, 2014). If self-esteem is an adaptive mechanism to give individuals information related to the successful accomplishment of adaptive tasks and women do not face the challenge of obtaining high quantities of sexual partners in the context of short-term mating like men do, there seems little reason to expect self-esteem will be as tightly correlated with numbers of past sexual partners in women to the degree it is in men. As a result, our *Prediction 2* is that we expect in cultures where self-esteem is positively associated with numbers of past sexual partners, this association will be stronger in men than women.

It is not the case that evolutionary psychologists never expect women to pursue short-term mates. More than 20 years of empirical evidence has been accumulated by evolutionary psychologists confirming women are “specially-designed” for short-term mating (Buss & Schmitt, 2011). Men may desire short-term mating more than women, on average (Schmitt et al., 2003), but when women do pursue short-term mating their desires appear specially-designed to solve a suite of adaptive problems, such as obtaining men of high genetic quality (Gildersleeve et al., 2014; Schmitt, 2014). Indeed, previous studies have found that those men and women who

are especially desiring of casual sex experiences tend to react more positively after having engaged in short-term mating (Vrangalova & Ong, 2014). As a result, our *Prediction 3* is that self-esteem will be more positively associated with number of past sexual partners for men and women who are more *actively seeking* short-term mates.

Finally, previous research has found the prevalence of short-term mating attitudes and behaviours varies widely across cultures (Schmitt, 2015b; Schmitt et al., 2003). Some research suggests the relationship between short-term mating and self-esteem may fluctuate with local socioecological factors (Baumeister & Mendoza, 2011; Gangestad & Simpson, 2000) and social climate (Perlman, 1974; Stratton & Spitzer, 1967; Walsh, 1991). For instance, in more traditional world regions (e.g., Middle East) there are relatively strict rules regarding sexual behaviour and, therefore, men and women may be relatively constrained in their ability to have many short-term mating partners. In addition, cultural constraints on sexuality tend to be more restrictive for women than for men across most (if not all) cultures (see Schmitt & Fuller, 2015; Verne, 1995). *Prediction 4a* is that self-esteem will be more positively associated with numbers of past sexual partners for men and women who reside in world regions where permissive short-term mating sexuality is more common. *Prediction 4b* is that sex differences in the degree to which self-esteem and numbers of past sexual partners are linked will be most apparent in more sexually constrained cultures (where women's short-term mating behaviours are especially constrained, limiting the observable links between self-esteem and number of past sexual partners among women).

Method

Samples

The research reported in this paper is a result of the International Sexuality Description Project (ISDP), a collaborative effort of over 100 social, behavioural, and biological scientists from 56 nations (Schmitt, 2005b; Schmitt et al., 2003). To address issues of statistical power, the 56 nations were collapsed into 10 basic world regions for the purposes of this paper. The 10 world regions included North America (*n* = 1,463 men, 2,558 women), South America (*n* = 349 men, 419 women), Western Europe (*n* = 1,034 men, 1,790 women), Eastern Europe (*n* = 1,139 men, 1,431 women), Southern Europe (*n* = 476 men, 805 women), the Middle East (*n* = 488 men, 531 women), Africa (*n* = 576 men, 469 women), Oceania (*n* = 382 men, 499 women), South/Southeast Asia (*n* = 228 men, 239 women), and East Asia (*n* = 551 men, 575 women). For each world region, at least 200 participants (100 men and 100 women) were included, providing the necessary statistical power (when setting beta = .90, alpha = .05, and when looking for effects moderate in size; Cohen, 1988) for evaluating regional variation in sex differences. In addition, these 10 world regions have proven useful in previous studies of romantic attachment, sexual desire, and human mating strategies (Schmitt, 2005b; Schmitt et al., 2003, 2004).

Participants in most samples were recruited as volunteers, some received course credit for participation, and others received a small monetary reward for participation. All samples were administered an anonymous self-report survey, most surveys were returned via sealed envelope or the usage of a drop-box. Return rates for college student samples were relatively high (≈ 95%); although this number was lower in some cultures. Return rates for community samples were around 50%. Further details on the sampling and assessment procedures within each of the world regions and national samples are provided elsewhere (Schmitt et al., 2003, 2004).

Procedure

All participants were provided with a brief description of the study, including the following written instructions: “This questionnaire is entirely voluntary. All your responses will be kept confidential and your personal identity will remain anonymous. No identifying information is requested on this survey, nor will any such information be added later to this survey. If any of the questions make you uncomfortable, feel free not to answer them. You are free to withdraw from this study at any time for any reason. This series of questionnaires should take about 20 minutes to complete. Thank you for your participation.” The full instructional set provided by each collaborator varied, however, and was adapted to fit the specific culture and type of sample. Details on incentives and cover stories used across samples are available from the first author.

Measures

Researchers from nations where English was not the primary language used a translation/back-translation procedure and administered the ISDP survey in their native language. This procedure typically involved the primary collaborator translating the measures into the native language of the participants, and then having a second bilingual person back-translate the measures into English. Differences between the original English and the back-translation were discussed, and mutual agreements were made as to the most appropriate translation (Brislin, 1970; Harkness, Van de Vijver, & Mohler, 2003).

Each sample was first presented with a demographic measure entitled “Confidential Personal Information.” This measure included questions about sex (male, female), age, sexual orientation (heterosexual, homosexual, bisexual), current relationship status (married, cohabiting, dating one person exclusively, not currently involved with anyone), and current socioeconomic status (upper, upper-middle, middle, lower-middle, lower).

Self-Esteem. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) was translated into 28 different languages (see Schmitt & Allik, 2005). The 10 items of the RSES assess a person's overall evaluation of his or her worthiness as a human being (Rosenberg, 1979). Responses were coded on a 4-point scale (1 = *strongly disagree*; 4 = *strongly agree*). The RSES contains an equal number of positively (e.g., "On the whole, I am satisfied with my life") and negatively (e.g., "All in all, I am inclined to feel that I am a failure") worded items. However, Alessandri, Cenciotti, Łaguna, Różycka-Tran, & Vecchione (2017) found using multilevel confirmatory factor analysis across 37 nations that the RSES mostly contains a general self-esteem factor. It is most appropriate, therefore, for all items to be summed to create an index of global, trait self-esteem. In the full sample, this overall RSES scale had good internal consistency (Cronbach's $\alpha = 85$, $M = 30.44$, $SD = 1.53$).

Number of Past Sex Partners. The number of sex partners in the past year was taken from the Sociosexual Orientation Inventory (SOI). The SOI is a 7-item self-report survey designed to measure restricted versus unrestricted sociosexuality (e.g., Simpson & Gangestad, 1991). The first item of the SOI is intended to capture overt behavioral expression of sociosexual variation (see Schmitt, 2005b), reading "With how many different partners have you had sex (sexual intercourse) within the past year?" This first item of the SOI was the focus of the current study.

Short-Term Mate Seeking. The short-term mate seeking scale was a single item that asked on a 7-point scale (1 = *not at all*; 4 = *moderately seeking*; 7 = *actively*) the degree which the participant is currently seeking short-term mating partners (see Schmitt et al., 2003). Participants were defined as "actively seeking" short-term mates if they scored at or above the midpoint (4 = *moderately seeking*) of the short-term mate seeking scale.

Results

We begin by reporting observed sex differences across key variables within each of the 10 world regions of the ISDP. As seen in Table 1, we found men reported more past sexual partners (in the last year) than women do across all regions of the world. The strength of this sex difference was weakest in Western Europe (d = 0.20)[1] and strongest in South America (d = 0.67). These findings were consistent with previous research (Wiederman, 1997), as men tend to use different methods for estimating past sexual partners than women do (i.e., women tend to count each person with high fidelity, men tend to estimate using ballpark figures; see Brown & Sinclair, 1999). Men also may be motivated to report higher numbers of past sexual partners because of concerns about the prestige afforded to them if they claim to have many sex partners (Jonason & Fisher, 2009), a finding not inconsistent with an evolutionary-adaptive view of self-esteem in men.

As displayed in Table 2, on average men reported higher levels of self-esteem than women across most regions of the world. This sex difference also was consistent with previous research (Bleindorn et al., 2015: Kling et al., 1999; Zuckerman, Li, & Hall, 2016). In two cases (i.e., Africa and East Asia) women had slightly, albeit statistically not significantly, higher self-esteem than men. The greatest sex difference was found in the Middle East (d = +0.34), with men having small to moderately higher levels of self-esteem than women. Overall, that our findings of sex differences in numbers of past sexual partners and self-esteem mirrored previous meta-analytic work led us to be more confident in proceeding to test our predictions concerning the links between self-esteem and number of past sexual partners.

We examined the associations between self-reported self-esteem and number of past sex partners (in the past year) for men and women separately. In partial support of Prediction 1, the

[1] According to Cohen (1988), the d statistic may be considered a small difference at ±0.20, moderate differences are ±0.50, and large differences are ±0.80 and above.

correlations between numbers of past sex partners and self-esteem were in the positive direction for men across all regions of the world. However, most of these correlations were rather small and correlations observed in South America, Southern Europe, Africa, and Oceania fell short of statistical significance. Overall, Prediction 1 received only partial support.

To test Prediction 2, we examined the moderating role of sex by using Fisher's *r* to *z'* transformations (Fisher, 1938). From an evolutionary-adaptive perspective on sociometer theory, we expected in cultures where self-esteem was positively associated with numbers of past sexual partners, this association would be stronger in men than women. Worldwide, the correlation between number of sex partners in the last year was stronger in men ($r(6711) = .08$, $p < .001$), than in women ($r(9321) = .03$, $p < .01$; $z = 3.13$, $p < .001$). This finding supports Prediction 2. Within each of our 10 world regions (see Table 3), this same significant sex difference in self-esteem's association with number of past sex partners was evident in North America ($z = 2.75$, $p < .01$), Africa ($z = 2.74$, $p < .01$), South/Southeast Asia ($z = 2.59$, $p < .01$), and East Asia ($z = 2.86$, $p < .01$). Sex differences displayed the predicted pattern, but did not reach statistical significance, in South America ($z = 1.51$) and Oceania ($z = 1.47$). Sex differences in self-esteem's links to past numbers of sexual partners were not evident in Western Europe ($z = 0.00$), Eastern Europe ($z = 0.00$), and the Middle East ($z = 0.00$). Sex differences were in the opposite of the predicted direction, but not statistically significant, in Southern Europe ($z = -1.05$). Overall, these findings provide only partial support for Prediction 2.

Next, we examined Prediction 3, the expectation that self-esteem would be more positively associated with number of past sexual partners for men and women who report actively seeking short-term mates (see Table 4). Participants were defined as "actively seeking" short-term mates if they scored at or above the midpoint (4 = *moderately seeking*) of the short-

term mate seeking scale (Schmitt, 2005a; Schmitt et al., 2003). Around 40% of men and 22% of women in the ISDP were classified as actively seeking short-term mates. Sex differences in the degree of actively seeking short-term mates were significant in all regions of the world, consistent with Sexual Strategies Theory (Buss & Schmitt, 1993; Schmitt et al., 2003). Active short-term mate seeking was relatively high for men in Southern Europe (47%), South/Southeast Asia (47%), Middle East (46%), South America (45%), and East Asia (42%), and was especially low in Western Europe (30%). This suggests that short-term mating, for men, may be more active in nations with more traditional sex roles (i.e., South/Southeast Asia, Middle East, South America, and East Asia; see Schmitt, 2005b). Active short-term mate seeking was less variable across world regions for women, though it was relatively high for women in Oceania (29%) and East Asia (29%).

As seen in Table 5, the positive correlations between self-esteem and numbers of past sexual partners among men who were actively seeking short-term mates were significant across most regions of the world. However, in no world region were these associations significantly stronger than among men in general (for those associations, see Table 3). Among women who were actively seeking short-term mates, the correlations between self-esteem and numbers of past sexual partners in most world regions were not stronger or more positive than among women in general (for those associations, see Table 3). Indeed, in most cases among women actively seeking short-term mates, the associations were even more *negative*, such as in South America ($r(62) = -0.16$), Africa ($r(64) = -0.23$, $p < .05$), South/Southeast Asia ($r(33) = -0.18$), and East Asia ($r(161) = -0.14$, $p < .05$). Though again, these correlations were not significantly different compared to women in general. Overall, we found little to no support for Prediction 3.

Prediction 4a expected the links between past numbers of sexual partners and self-esteem would be higher for people who are "actively seeking" short-term mates, and this should be especially evident within nations with higher levels of active short-term mate seeking (i.e., for men, in Southern Europe, South/Southeast Asia, Middle East, South America, and East Asia; for women in Oceania and East Asia). We found some support for this prediction, in that the correlations for men were especially strong in South/Southeast Asia ($r(70) = +0.25$, $p < .01$), Middle East ($r(207) = +0.15$, $p < .01$), and East Asia ($r(222) = +0.18$, $p < .01$), but these correlations were not significantly different from men in general. In addition, we did not find correlations for women were especially strong in Oceania ($r(139) = +0.13$) or East Asia ($r(161) = -0.14$, $p < .05$). Indeed, the findings from East Asia suggest women who desire short-term mates, and have lots of partners within regions where a lot of short-term mating is desired, possess lower self-esteem. Predictions 4a and 4b received little to no support across the regions of the ISDP.

Discussion

Past attempts to specify the relationship between self-esteem and number of past sexual partners have yielded conflicting and sometimes contradictory results. Some researchers have documented positive associations between self-esteem and short-term mating attitudes and behaviours (Herold & Goodwin, 1979; Rosenthal et al., 1991; Stimson & Dougherty, 1980; Walsh, 1991), but many have found no associations (McGee & Williams, 2000; Paul et al., 2000). According to an evolutionary-adaptive sociometer theory, because men, more than women, have faced the adaptive problem of obtaining numerous willing short-term mating partners, we predicted more intense positive associations among men than women between self-esteem and numbers of past sexual partners.

In order to test this prediction, we correlated self-esteem with numbers of past sexual partners in a sample of more than 16,000 people from 10 major regions of the world—North America, South America, Western Europe, Eastern Europe, Southern Europe, Middle East, Africa, Oceania, South/Southeast Asia, and East Asia. We also predicted the positive links between self-esteem and numbers of past sexual partners would be more intense for men and women who report actively seeking short-term mates and for people who live in regions of the world in which short-term mating is more common. Results largely supported our prediction of more intense positive associations among men than women between self-esteem and numbers of past sexual partners, but our other predictions received little to no support.

Our study has some obvious advantages over prior work on both sociometer theory and studies on the relationship between sexual behaviours and self-esteem in terms of sample size, the application of cross-cultural methods, and clear theory-informed predictions. Nevertheless, there are several important limitations. We used a global, domain-general measure of self-esteem, the RSES. While the RSES is a well-validated measure of self-esteem (Schmitt & Allik, 2005) it may be relatively insensitive to sociometer predictions rooted in evolutionary theory (Kirkpatrick & Ellis, 2001). Indeed, it is possible that the small correlations we reported are a function of the generality of the measure we used. Alternatively, the small correlations we observed could be the result of a skewed distribution in number of sex partners. Count data are often skewed. However, results analysed using transformed data yielded similar conclusions regarding our predictions.

Last, number of past sexual partners is only one way to derive a sense of self-worth and social inclusion. Success in numerous domains of life likely inform one’s general self-esteem (Baumeister et al., 2003; Becker et al., 2014; Bolognini et al, 1996); as such, we have only

carved out an examination of only a small portion of self-esteem variance. To get a more complete understanding of self-esteem and a better test of evolutionary-adaptive sociometer theory, a multifactorial study of self-esteem (Quatman & Watson, 2001) and that simultaneously includes other domains of life related to survival and reproduction should be pursued (see Brown et al., 2015).

It is also important to consider apparently contradictory experimental evidence that self-esteem can impact mating psychology. For instance, experimental manipulations of self-esteem and self-perceived mate value appear to influence men's and women's sexual desires and cognitions in sex-specific ways (Bailey, Durante, & Geary, 2011; Pass et al. 2009; Surbey, & Brice, 2007). This is consistent with an evolutionary view of self-esteem as a key component of men's adaptive pursuit of short-term mating (Jonason et al., 2009), but these experimental results suggest self-esteem may be both a cause *and* a consequence of short-term mating success in men. We believe such findings do not directly contradict our results, but rather add to our findings. Future work should seek to disentangle the many functions of self-esteem within men's short-term mating psychology, including work to identify how self-esteem may serve specially-designed functions as both a consequence, and a cause, of short-term mating success.

To many, self-esteem is fundamentally important for human growth and happiness. Humanistic, sociocultural, and terror management researchers envision self-esteem as a key predictor of success in relationships, work, and more (see Baumeister et al., 2003). However, there are compelling reasons to view self-esteem also as a consequence, not just a cause, of feedback from the world (Leary, 1999). Evolutionary-adaptive sociometer theory provides a unique and compelling way of understanding the functions of self-esteem. In this study, we provided a cross-cultural test of an understudied way that individuals, men in particular, may

derive self-esteem. More sociosexual success may indicate more social acceptance for men because their reproductive success is more tightly tied than women's is to access to numerous willing short-term mates (Anthony, Holmes, & Wood, 2007; Gangestad & Simpson, 2000; Penke & Denissen, 2008; Schmitt, 2005a). Importantly, though, the strength of this association appears not to depend on whether men particularly want short-term mates, nor whether they reside in a culture in which people are more likely to express desires for short-term mates. Although the associations are limited, for men, at least, it appears having had more sexual partners is linked with higher self-esteem.

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Tables

Table 1. Sex differences in number of sex partners in the past year across 10 world regions.

	M (*SD*)		*t*	*d*
	Men	Women		
North America (*n* = 4,021)	1.80 (3.43)	1.25 (1.52)	7.01***	0.21
South America (*n* = 768)	2.46 (2.74)	1.04 (1.24)	9.60***	0.67
Western Europe (*n* = 2,824)	1.74 (2.36)	1.34 (1.48)	5.54***	0.20
Eastern Europe (*n* = 2,570)	1.94 (2.49)	1.16 (1.22)	10.44***	0.40
Southern Europe (*n* = 1,281)	2.11 (5.32)	0.89 (0.94)	6.39***	0.32
Middle East (*n* = 1,019)	2.17 (3.22)	1.00 (1.41)	7.65***	0.47
Africa (*n* = 1,045)	3.28 (7.05)	0.97 (1.69)	7.10***	0.45
Oceania (*n* = 881)	2.20 (3.11)	1.38 (2.14)	4.67***	0.31
South/Southeast Asia (*n* = 467)	1.41 (2.64)	0.37 (0.74)	5.91***	0.54
East Asia (*n* = 1,126)	0.74 (1.46)	0.44 (1.11)	3.95***	0.23
Worldwide (*N* = 16,036)	1.95 (3.64)	1.12 (1.45)	20.10***	0.30

Note: *d* is Cohen's *d*
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2. Sex differences in self-esteem across 10 world regions.

	M (*SD*)		*t*	*d*
	Men	Women		
North America (*n* = 4,021)	32.10 (4.97)	31.35 (5.01)	4.55***	0.15
South America (*n* = 768)	32.37 (4.23)	31.77 (4.56)	2.17*	0.14
Western Europe (*n* = 2,824)	31.39 (5.00)	30.43 (4.92)	5.11***	0.19
Eastern Europe (*n* = 2,570)	30.57 (4.57)	30.25 (4.61)	1.79	0.07
Southern Europe (*n* = 1,281)	31.44 (4.66)	30.31 (4.86)	4.19***	0.24
Middle East (*n* = 1,019)	30.22 (8.15)	27.32 (8.78)	6.18***	0.34
Africa (*n* = 1,045)	30.05 (3.95)	30.18 (4.20)	-0.51	-0.03
Oceania (*n* = 881)	30.79 (5.03)	30.01 (5.12)	2.30*	0.15
South/Southeast Asia (*n* = 467)	29.86 (4.28)	29.45 (4.48)	1.36	0.09
East Asia (*n* = 1,126)	28.01 (4.52)	28.07 (4.22)	-0.26	-0.01
Worldwide (*N* = 16,036)	30.87 (5.16)	30.26 (5.31)	7.60***	0.12

Note: *d* is Cohen's *d*
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. Correlations between self-esteem and number of sex partners in past year: Evidence for moderation by sex of the participant across 10 world regions.

	r (*n*)		
	Men	Women	*z*
North America (*n* = 4,021)	.08** (1,463)	-.01 (2,558)	2.75**
South America (*n* = 768)	.04 (349)	-.07 (419)	1.51
Western Europe (*n* = 2,824)	.06* (1,034)	.06** (1,790)	0.00
Eastern Europe (*n* = 2,570)	.11*** (1,139)	.11*** (1,431)	0.00
Southern Europe (*n* = 1,281)	.07 (476)	.13*** (805)	-1.05
Middle East (*n* = 1,019)	.08* (488)	.08* (531)	0.00
Africa (*n* = 1,045)	.02 (576)	-.15*** (469)	2.74**
Oceania (*n* = 881)	.07 (382)	-.03 (499)	1.47
South/Southeast Asia (*n* = 467)	.16** (228)	-.08 (239)	2.59**
East Asia (*n* = 1,126)	.14*** (551)	-.03 (575)	2.86**
Worldwide (*N* = 16,036)	.08*** (6,713)	.03** (9,323)	3.13***

Note: Correlations control for national difference within regions; *r* is Pearson's *r; z* was derived from a Fisher's *r* to *z* transformation.
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4. Sex differences in the percentage of individuals who are "actively" short-term mate seeking across 10 world regions.

	% Short-Term Mating		χ^2
	Men	Women	
North America (*n* = 3,633)	42%	25%	119.01***
South America (*n* = 757)	45%	18%	62.90***
Western Europe (*n* = 2,865)	30%	18%	56.14***
Eastern Europe (*n* = 2,696)	37%	19%	110.36***
Southern Europe (*n* = 1,287)	47%	22%	86.53***
Middle East (*n* = 999)	46%	19%	84.52***
Africa (*n* = 947)	38%	19%	42.44***
Oceania (*n* = 891)	41%	29%	13.02***
South/Southeast Asia (*n* = 466)	47%	23%	29.50***
East Asia (*n* = 1,137)	42%	29%	19.88***
Worldwide (*N* = 15,678)	40%	22%	594.66***

*** $p < .001$

Table 5. Correlations between self-esteem and number of sex partners in past year among those "actively seeking" short-term mates

	r (*n*)		
	Men	Women	*z*
North America (*n* = 1,120)	.12** (556)	-.02 (564)	2.35**
South America (*n* = 209)	.03 (145)	-.16 (64)	1.25
Western Europe (*n* = 594)	.04 (297)	.11* (297)	-0.85
Eastern Europe (*n* = 665)	.12** (409)	.19*** (256)	-0.90
Southern Europe (*n* = 381)	.09 (214)	.12 (167)	-0.29
Middle East (*n* = 299)	.15** (209)	.15 (90)	0.00
Africa (*n* = 245)	.00 (179)	-.23* (66)	1.60*
Oceania (*n* = 286)	.14* (145)	.13 (141)	0.09
South/Southeast Asia (*n* = 105)	.25** (72)	-.18 (35)	2.05*
East Asia (*n* = 387)	.18** (224)	-.14* (163)	3.11***
Worldwide (*N* = 4,347)	.10*** (2,477)	.05** (1,870)	1.65*

Note: Correlations control for national difference within regions; *r* is Pearson's *r*; *z* was derived from a Fisher's *r* to *z* transformation.
* $p < .05$, ** $p < .01$, *** $p < .001$;