PERCEPTION OF SEXUAL INTEREST

Examining the roles of situations, dispositions, and culture

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Acknowledgements

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Abstract

This thesis incorporates a set of empirical studies addressing different perceiver-based predictors of sexual interest perception. We first tackled the question: what is the psychological function of perceiving sexual interest? Daily diary data ($N = 84$) from the first study in Chapter 3 revealed that perceiving sexual interest was associated with increases in momentary self-esteem. However, this depended on the relationship status of the perceiver and the person from whom they perceived sexual interest. Perceiving sexual interest from any other person boosted the state self-esteem of perceivers who were single but not for those who were in a relationship. People in a relationship only reported self-esteem boosts after perceiving sexual interest from their current relationship partner. We suggested that, in line with the sociometer theory (Leary, Tambor, Terdal, & Downs, 1995), self-esteem may also function as a gauge of how well one's reproductive needs are being met, with sexual perceptions as input. On the basis of these findings, it was posited that perception of sexual interest may represent one important, albeit tenuous, resource that contributes to the development of good mate value.

The following investigations were, thus, grounded on the proposition that situations and dispositions that afforded reward pursuit (rather than threat aversion) would increase individuals' perception of sexual interest, presumably as a means to satisfy reproductive goals or mating needs via the accumulation of mate value. The second aim in the studies presented in Chapter 3 was to examine how self-esteem, as a trait, would shape sexual perceptions. According to the risk regulation model (Murray, Holmes, & Collins, 2006), trait self-esteem guides people's sensitivity to social risks and rewards; in that people with high self-esteem are more motivated to pursue rewards (e.g., to connect with others, to recharge or build up mate value) because they possess a psychological resource that acts as a protective shield against social risk. Those with low self-esteem, however, lack such resources and therefore prioritize the avoidance of the consequences associated with social risks. As predicted, we found that people's general level of self-esteem predicted increased sexual perceptions.

As a follow-up to the findings in Chapter 3, the studies presented in Chapter 4 examined whether holding power – a situation that promotes reward pursuit – would also heighten sexual perception. Results from 3 experiments ($N_s = 529$) with Swiss military samples revealed that male military members reported higher estimations of sexual interest from a female military member when they held a higher military rank relative to the female

target, compared to those holding either an equal rank or a relatively lower rank. Additionally, the power effect was not present among individuals who were hypersensitive to rewards by disposition, as they already perceived high sexual interest in general. Power only increase sexual perceptions for those who were low-to-moderately sensitive to rewards.

Results from the studies in Chapters 3 and 4 support our proposition that sexual interest perception would increase in situations and dispositions that afford goal pursuit and decrease in those that trigger threat aversion. What about situations that do not provide the perceiver a so-called psychological insurance against risks (which power and high self-esteem offer), but instead just seems to be perceived as safe, rather than dangerous? For instance, one's mood has been proposed in prior research to function as a signal of the conditions of his or her current environment. A positive mood indicates safety while a negative mood indicates a presence of threat. Given this, the final study (Chapter 5) examined if people perceive more sexual interest when they are in a good mood and less when they are in a negative mood. Experiments involving mood induction procedures were conducted on university students in Switzerland and Malaysia (Ns = 234). The results of this experiment revealed that negative mood significantly reduced men and women's estimations of sexual interest, but not for Malaysian participants. Further analyses showed that the difference in mood effects in perception between the two samples could be explained by differential endorsement in sociocentric values; people who highly valued social harmony and stability (such as the Malaysian sample) were not significantly affected by their mood when making sexual judgments. Taken together, the results from the current work imply that sexual perception may be better understood as a situation-varying, individual-varying, and culture-varying phenomenon rather than simply being examined as a gendered one.

1

Introduction

"He loves me… He loves me not…"

Just as a little girl would slowly pick, one by one, the petals off a daisy to decide whether or not her crush returns her feelings, adults generally undergo a similar deliberative process when deciding whether or not someone is interested in them in a sexual manner. This is likely because signals or cues utilized to convey sexual interest are usually difficult to interpret due to their ambiguous, non-explicit nature. More often than not, such signals involve non-verbal cues, rather than direct verbal proclamations (Abbey, 1982; Fichten, Tagalakis, Judd, Wright, & Amsel, 1992) and this subtlety probably contributes to heightened susceptibility to misunderstandings, which has been shown to be of frequent occurrence in daily life. For instance, between 70% (Haselton, 2003) and 78% (Reiber, & Garcia, 2010) of participants in previous studies have reported personal experiences involving misperception of sexual interest cues.

Wrongly estimating the sexual interest conveyed by an interaction partner can be problematic because people tend to behave in ways that reflect their sexual perceptions (Kunstman & Maner, 2011). The consequences of such perceptual errors have varying severity: On a lighter note, personal relationships may turn sour due to the discomfort and embarrassment from such situations (Abbey, 1987), but on a heavier one, sexual harassment and violence may occur (Abbey, McAuslan & Ross, 1998; Abbey, Zawacki, & McAuslan,

2000; Farris, Treat, Viken, & McFall, 2008b; Johnson, Stockdale & Saal, 1991). Studying perception of sexual interest is, thus, of importance given the omnipresent occurrence of sexual harassment and misunderstandings, be it in professional (Krings, Schär Moser, & Mouton, 2013) or casual settings (Abbey, 1987; Haselton, 2003; Reiber & Garcia, 2010).

Past research on the perception of sexual interest have given the spotlight to the differences in the way heterosexual men and women perceive sexual interest from potential mates (e.g., Abbey, 1982; Haselton, 2003) and more specifically men's tendency to *overperceive* sexual interest. However, more recent findings showed that the male overperception effect disappeared when women provided sexual interest ratings from the perspective of another woman rather than of their own (Perilloux & Kurzban, 2015). This effect was also absent in ratings of certain dating behaviors, and in ratings of participants from certain countries (Perilloux, Muñoz-Reyes, Turiegano, Kurzban, & Pita, 2015). Such findings challenge the robustness of the gender bias in perception, and further highlight the importance of examining and identifying more reliable predictors of sexual misperception. The objective of the current work was to examine how perception of sexual interest can vary within an individual, between individuals of different traits and cultures, and more importantly, their interplay(s).

The thesis is presented in the following order: The second chapter provides a review of the current literature on the perception of sexual interest followed by a brief overview outlining the methodological approach and key results of the studies included in this thesis. These studies are presented in Chapters 3 to 5. Chapter 3 describes two studies (i.e., a daily-diary study and a vignette-based experiment), which investigated the relationship between perception of sexual interest and self-esteem. Chapter 4 reports three vignette-based experiments, which examined the role of power in men's sexual perception within a military context. The investigation of the roles of mood states and culture on sexual interest perception was presented in Chapter 5. The final chapter provides a general discussion of the findings, along with their theoretical and practical contributions, limitations, and some recommendations for future research.

2

Literature review and overview of included studies

Almost every interaction we engage in entails a degree of uncertainty. It is virtually impossible to know the exact thoughts, motives and desires of the person with whom we are interacting, because people may either deliberately conceal their true intentions, or even unknowingly miscommunicate their wishes due to a lack of communication efficacy. Besides that, we, as perceivers, also bring our own set of currently activated goals (McCulloch, Ferguson, Kawada, & Bargh, 2008), currently activated cognitive concepts (Srull & Wyer, 1979), preexisting beliefs (Uleman, Newman, & Moskowitz, 1996) and expectancies (Anderson, Krull, & Weiner, 1996; Olson, Roese, & Zanna, 1996) to the interaction, which could filter out or distort the message from the person with whom we are communicating – thus further hampering the possibility for error-free communication.

Accurate communication becomes even more difficult when it comes to the communication of sexual interest. People tend to rely more on non-verbal rather than verbal cues to convey and infer sexual interest (Muehlenhard, Koralewski, Andrews, & Burdick, 1986; Sawyer, Desmond, & Lucke, 1993). For instance, people rely on the amount of smiling as a diagnostic indicator: a modest amount indicates friendliness, medium to large implies flirtation, and finally constant smiling reflects seductiveness (Andersen, 1985; Coker & Burgoon, 1987; Muehlenhard et al., 1986; Sigal, Gibbs, Adams, & Derfler, 1988). Other indicators include physical touch, interpersonal proximity, and eye contact (Abbey & Melby,

1986; Andersen; Burgoon, Buller & Woodall, 1989; Muehlenhard et al.,1986; Sigal et al., 1988), or the use of childlike expressions such as pouting and head-tilting (Burgoon et al., 1989). However, these behavioral indicators are not reliable across different individuals since the definition and distinction between the categories of small, medium, and large amounts are difficult to be quantified and likely differ across perceivers and those engaging in such behaviors. This heightens the opportunity for a mismatch between the perceiver's interpretation of the target's behavior and the target's intentions, also known as the *misperception* of sexual interest.

While misunderstandings or communication errors are common in most aspects of human communication (DiDonato, Ulrich, & Krueger, 2011), the consequences are more profound when it comes to misunderstandings in sexual interest communication as they could range from some embarrassment (Abbey, 1987) or experiencing painful rejection thus hurting their self-esteem or mate value (Symons, 2005), to sexual coercion and violence (Abbey, Jacques- Tiura, & LeBreton, 2011). Research in this area has thus concentrated on identifying and understanding the antecedents of sexual misperception. Following this section is a review of the literature, which includes empirical findings and theoretical propositions, on the most widely studied factor in this area of research – the gender of the perceiver. The following section identifies and reviews the target-based and perceiver-based variables that have been shown to predict people's perception of sexual interest in various studies. This chapter then closes with an argument for the current work, coupled with an overview of the studies included in this thesis.

(Mis)perception of sexual interest and the gender effect

Three decades of research on sexual misperception have revolved around men's misperception of women's sexual interest. In a landmark study, Abbey (1982) conducted face-to-face interactions with 36 opposite-sex dyads (interactors) in which they were to converse for 5 minutes. Each of these interactions were observed in real-time through a one-way mirror by another opposite-sex dyad (observers), with a different pair of observers assigned to each of the 36 interactions. Both the dyads that interacted and observed then rated the degree to which the behavior of the conversing dyad was *flirtatious, seductive*, and *promiscuous*. Results revealed that a significant gender difference was present in the evaluation of the interaction. Compared to female participants, male participants (i.e., both

interactors and observers) perceived the women who participated in the conversation as showing more sexual interest in their interaction partner and rated them as being more seductive and promiscuous. Furthermore, male participants also perceived the men who participated in the conversation as being more promiscuous than female participants rated them. Based on her results, Abbey concluded that men's tendency to mistake women's friendly behavior as sexual interest may be due to their global inclination to perceive their environment through a more sexualized lens.

This male sexual overperception bias has been consistently replicated in subsequent studies utilizing similar (Abbey et al., 2000; Harnish, Abbey, & DeBono, 1990; Levesque, Nave, & Lowe, 2006; Saal, Johnson, & Weber, 1989) as well as different methodologies; the latter includes the rating of photographs (Abbey & Melby, 1986; Abbey, Cozzarelli, McLaughlin, & Harnish, 1987), videos (Saal et al., 1989; Shotland & Craig, 1988), hypothetical scenarios (Abbey & Harnish, 1995; Fisher & Walters, 2003), and participants' recall of actual events (Abbey, 1987; Haselton, 2003). The same pattern has also been found in studies that involved actual face-to-face interactions between male and female heterosexual participants, such as "speed-dating" designs, which require participants to engage in multiple brief interactions, each with different interaction partners (e.g., Back, Penke, Schmukle, & Asendorpf, 2011; Perilloux, Easton, & Buss, 2012). For instance, Perilloux and colleagues (2012) showed that males perceived higher sexual interest from females than females self-report intending to convey (i.e., *overperception*), while females perceived lower sexual interest from males than males self-report (i.e., *underperception*).

Numerous theoretical frameworks have been proposed in attempts to explain these empirical findings of the gender difference in sexual perception. Early hypotheses were based on principles of socialization (Abbey, 1982; Shotland & Craig, 1988). Abbey hypothesized that because men have been socialized to prioritize sex more than women, they possess a heightened sensitivity to sexual stimuli, which makes them unable to differentiate between cues of sexual and platonic interest. Building on this proposition, Shotland and Craig added that the driver behind men's *oversexualization* bias may be the projection of their own sexual intentions onto the behavior of others. Based on their projection hypothesis, men are able to differentiate sexual interest from platonic interest, despite consistently rating behaviors in general as being higher in sexual interest than do women (e.g., Koukounas & Letch, 2001; Kowalski, 1993). Men simply have lower or more lenient decisional thresholds than women in terms of what is considered sexually interested behavior, presumably because men project

their own heightened sexual intentions onto the target. This is in line with the principles of social projection, where people assume that others are similar to themselves and thus rely on their own preferences and dispositions as information when making judgments about the intentions of others (Krueger, 1998, 2000). More recent findings (Koenig, Kirkpatrick, & Ketellar, 2007), however, showed that this hypothesis was only applicable when the target is perceived as a valuable mate, that is, if the perceiver is sexually attracted to the target. This finding appears to parallel a variation of the projection hypothesis – *functional projection* – which posits that selective perception occurs because people's cognitive resources become attuned to information that would allow the potential achievement of their currently active goal (Maner et al., 2005). Rather than expecting others to reciprocate the perceiver's own intentions, the perceiver projects only specific feelings or thoughts that are *functionally* important to his or her active goal(s). The functional projection hypothesis may serve as a more appropriate explanation for Koenig et al.'s findings, since perceiving high sexual interest is only functional when the target is a potential mate.

A theory that moves away from the focus of male *overperception*, proposes that men, compared to women, are less sensitive to differences in the subtle non-verbal sexual cues conveyed by the opposite sex and therefore less accurate in their estimations of sexual interest (Farris, Treat, Viken, & McFall, 2008a). Men made more mistakes than women when asked to evaluate whether a female target was friendly or sexually interested (Farris et al., 2008a; Farris, Viken, & Treat, 2010). Rather than consistently seeing platonic interest as sexual interest, men were found to be just as likely to mistake sexual interest for platonic interest, and platonic interest for sexual interest (Farris et al., 2008a). However, it is important to note that little evidence exists for this proposition apart from the work of these authors.

Apart from the abovementioned models, researchers have also attempted to explain the gender effect in sexual misperception from an evolutionary perspective. Haselton and Buss (2000) proposed the error-management theory (EMT), which is based on signal detection logic (Green & Swets, 1966). This theory is grounded on the basic assumption that evolution shapes human decisions to be biased toward selecting the least costly error. In the context of sexual communication, two possible errors are present: The first is a miss, or failing to detect sexual interest that is present, whereas the second is a false alarm, or perceiving sexual interest when none is present. Both errors are accompanied by their own combination of potential costs and benefits, and the weighing of these costs and benefits is shaped by

evolutionary forces, best elucidated using the parental investment theory (Trivers, 1972). According to the parental investment theory, women have a significantly longer minimum obligatory parental investment period (i.e., at least 9 months of pregnancy and more years for lactation after the birth of the offspring) than men (i.e., the time for copulation). Human males therefore possess a faster potential reproductive rate than females and this gender imbalance then translates into gender differences in mating strategies. Because men's reproductive success increases with every additional chance to mate and spread their genes, men would have to compete with other males for access to females. On the other hand, women's reproductive success tends to depend more on obtaining the best possible mate with good genetic material along with a willingness and capability to invest in the offspring. Because women invest more than men for each offspring, they have more at stake if they take a poor reproductive decision. For this reason, women have to be highly selective when deciding for a mate. Supporting this theory are empirical findings that show, for instance, that men are more likely than women to accept casual sex offers (Clark & Hatfield, 1989), desire many sexual partners in their lifetime (Buss & Schmitt, 1993), engage in short-term mating, and have permissive attitudes toward casual sex (Petersen & Hyde, 2010; Schmitt, 2005).

In the case of gender differences in sexual perception, men's tendency to overperceive sexual interest would thus be a manifestation of a selected adaptation to minimize the reproductive costs of a missed mating opportunity. Women's tendency to underperceive sexual interest, on the other hand, is thought to be an adaptation to minimize the reproductive costs of mating with a "bad quality" mate (i.e., one with bad genes, and insufficient resources or willingness to protect and invest in the offspring). In essence, the EMT is comparable to Shotland and Craig's (1988) projection hypothesis as both attribute gender differences in sexual perception to gender differences in biases in the interpretation of behavior rather than the overall sensitivity to subtle behavioral cues. Whereas the projection hypothesis asserts that men's reduced threshold for detecting sexual interest is a product of socialization processes, the EMT suggests that this is a result of evolutionary adaption processes. Among the reviewed hypotheses, the EMT appears to hold the most advantage in explaining the gender effect as it is parsimonious and yet able to account for target-specific and perceiver-specific effects (for discussion, see Perilloux, 2014).

Despite the large amount of evidence from research in this area advocating the gender difference in perception of sexual interest, some studies have shown no differences in men and women's sexual perceptions (Quackenbush, 1987; Sigal et al., 1988, Study 1) while

others show that the gender difference is only present in certain conditions. For instance, Kowalski (1993) found that the gender difference only appeared when people were asked to estimate sexual interest from target behaviors that were more ambiguous (e.g., having dinner, maintaining eye contact, smiling, holding hands), and not when behaviors were overtly sexual in nature (e.g., touching of genitals, undressing). Along the same vein, Koukounas and Letch (2001) found that gender differences were not significant in interactions with low levels of nonverbal cues conveying interest (e.g., no eye contact, no touching), but only in interactions with high levels of nonverbal cues of interest (e.g., continuous eye contact, holding hands). Overall, results from both studies are in line with the proposition that biases in sexual perception are only activated when interactions are ambiguous, and not when the behaviors of the target reflect either clear disinterest or clear sexual interest (see also Fisher & Walters, 2003). In sum, such findings highlight the significance of identifying and better understanding the role of situational factors, which may qualify the emergence of biases in perception.

Besides that, some findings raise concerns regarding the operationalization of misperception as either a difference between the perceiver's estimation and target's self-report, or the difference between two observers' (usually a man vs. woman) estimations of whether a target is sexually interested in another target. For example, even though past studies involving evaluations of a third-party heterosexual interaction usually demonstrated that male observers infer higher sexual interest from the female target than female observers, these studies also showed that there is some consensus in the sexual estimations of male and female observers; all observers consistently rate the female target as showing more sexual interest than the male target (e.g., Abbey, 1982; Abbey & Melby, 1986). Observer ratings as such suggest the possibility that men's sexual overperception and women's underperception (at least those measured as a difference between sexual interest perceived and actual report of sexual interest) may not be misperceptions at all. Instead, it can be argued that misperception may simply reflect inconsistencies in target's reporting of own sexual interest, or a mismatch between target's intention and actual behavior. This brings up several questions: Do men unknowingly behave in ways that do not accurately reflect their actual (high) sexual interest during heterosexual interactions? Do women behave in ways that make them seem more sexually interested than they actually are? Do men overstate their own sexual interest in women or their estimation of women's interest in them, perhaps in effort to appear more

confident or masculine? Do women underreport their own interest in men or their estimation of men's interest in them, in order to appear less promiscuous?

Indeed, there is evidence that women, at times, express resistance even when sexually interested as a reputation-management strategy (Muehlenhard, 1988; Muehlenhard & Hollabaugh, 1988). Perilloux & Kurzban (2015) has recently attempted to examine whether men's overperception of women's sexual interest can be explained by women's tendency to understate their sexual intentions. Participants were presented a list of 15 dating-related behaviors (e.g., held hands, complimented, touched thigh, kissed). In their second study, male participants rated the sexual interest of women who engaged in those behaviors while female participants rated the sexual interest that they themselves intend to convey, and also what they thought other women would intend to convey with those behaviors. Male participants generally perceived higher sexual interest from those behaviors than female participants report to convey. Female participants rated the behaviors as lower in sexual interest when framed as their own behaviors than as other women's behaviors. These findings reveal that women show a tendency to understate their *own* sexual intentions or perhaps a tendency to overstate *other women's* sexual intentions. Then, in the third study, the authors asked participants to estimate what they think other women actually convey (*true* interest) and what they think other women would report intending to convey (*reported* interest) with those 15 behaviors. Interestingly, the estimations of male and female participants no longer differed when asked to estimate the other women's *true* sexual interest. Both men and women seem to believe that women underreport their sexual interest in general. The authors therefore concluded that the male sexual overperception bias may merely represent a female underreporting bias, and that men are in fact rather accurate in their estimations of women's sexual interest from their behaviors. This further underlines the importance of identifying more reliable factors that affect people's perception of sexual interest.

The role of target-based factors

As mentioned earlier in this review, people tend to depend on nonverbal cues more frequently than verbal cues when estimating the sexual interest of others (Muehlenhard et al., 1986; Sawyer et al., 1993). The degree of nonverbal indicators enacted by an interaction partner should therefore also predict the perceiver's estimations of his or her sexual interest. For instance, contact initiation is one nonverbal cue of sexual interest. Interestingly, people tend

to view a female who initiated an interaction, regardless of the content or nature of the interaction, as being more seductive (Koeppel, Montagne-Miller, O'Hair, & Cody, 1993) and willing to engage in sexual activities (Muehlenhard, 1988) in comparison to when the interaction was initiated by a male actor. Moreover, female-initiated touch also tends to be perceived as a stronger indicator of sexual attraction than male-initiated touch (Abbey & Melby, 1986). Koukounas and Letch (2001) examined how the systematic increment of the degree of such non-verbal cues affected people's estimation of women's sexual interest. In their study, 183 men and 186 women were randomly allocated into three groups and presented one out of three film segments depicting an interaction between a man and a woman, which varied in the degree of non-verbal cues of interest present (e.g., eye contact, touch, proximity, clothing style). Participants then provided their perceptions on the female actor in the video. While male participants generally provided higher estimations of the female actor's sexual interest than female participants, the estimations of the female actor's sexual interest also increased as the engagement in eye contact with, degree of touching, and proximity to the male actor increased. While these findings confirm Abbey's (1982) original findings of a gender difference in sexual perception, they also show that men *are* sensitive to variability in non-verbal cues (e.g., Koeppel et al.; Muehlenhard; Sigal et al., 1988) – therefore refuting Abbey's oversexualization hypothesis.

Another target-based factor that has been shown to be linked to men's perception of sexual interest is physical attractiveness (Perilloux et al., 2012; Treat, Viken, Farris, & Smith, 2016; Treat, Viken, Kruschke, & McFall, 2011). Female physical attractiveness serves as a cue of fertility and youth (Symons, 1979). As these fitness cues are directly related to a woman's reproductive value (Buss, 1989), men may have evolved to rely on these indicators during mate selection (Buss & Schmitt, 1993). Indeed, men show a preference for attractive women when selecting partners for long- and short-term relationships (Li, Bailey, Kenrick, & Linsenmeier, 2002), and also tend to pay more attention to attractive women (Maner et al., 2003). Men who were primed with a mate search goal perceived higher sexual arousal in photographs of women with a neutral facial expression, but only if they were attractive (Maner et al., 2005). However, past research suggests that not all men rely on physical attractiveness to infer sexual interest. Some men, particularly those with high propensity for sexual aggression, tend to do so more than others (Treat, McFall, Viken, & Kruschke, 2001; Treat et al., 2016). Target attractiveness may be thus an important factor to consider when examining how people perceive sexual interest (e.g., Koenig et al., 2007).

Men may also infer the degree of sexual interest from female targets by relying on information conveyed through clothing. Women who dress in more suggestive outfits, such as those that reveal their skin (e.g., showing cleavage, shoulders, or legs) or accentuate their form (e.g., tight-fitting), in comparison to those who dress more conservatively (e.g., covering cleavage, shoulders, or legs, and loose-fitting), were more likely to be perceived as sexually interested by *both* men and women (Abbey, 1987; Abbey et al., 1987; Koukounas & Letch, 2001). Guéguen (2011) examined this clothing effect on sexual perception using a field study, which observed the behavior of 108 Caucasian men aged 21 years on average in two bars at a resort town in France. Men were quicker in approaching the female confederate who was dressed in a short skirt and a tight-fitting top with a plunging neckline, and also rated her as showing high sexual interest than the female confederate who was dressed in a long skirt and a blouse. Like physical attractiveness, clothing style is a non-affective cue that remains constant throughout the interaction and is highly salient. Affective cues, on the other hand, are specific and dynamic behavioral responses, which may be expressed verbally and nonverbally (Farris et al., 2008b). Even though affective cues should act as the most valid indicators of one's momentary level of sexual interest, men show a tendency to rely on the more salient cues of physical attractiveness and clothing style (Treat et al., 2016). Farris, Viken, Treat, and McFall (2006) showed that men became less sensitive to women's affective cues when women were dressed more provocatively, particularly among those who endorsed more rape-supportive attitudes. In addition, the color of women's clothing has also been found to affect men's judgment of women's sexual attractiveness and sexual interest (Guéguen, 2012; Pazda, Elliot, & Greitemeyer, 2012). These studies by Guéguen as well as Pazda and colleagues showed that women dressed in red, in comparison to women dressed in green, white, or blue, tend to be perceived as more sexually receptive and attractive. Overall, it appears that misjudgments in the sexual interest of others may be, in part, due to the reliance on target-based cues that are highly salient but lack information about one's actual, momentary level of sexual interest.

The role of perceiver-based factors

Apart from variables that may vary across targets, various perceiver-based factors have also been demonstrated to affect people's estimations of sexual interest. A contextual factor that has been consistently found to be involved in sexual assault cases is alcohol consumption (Abbey, Zawacki, Buck, Clinton, & McAuslan, 2004). Consumption of alcohol has been

associated with heightened estimations of women's sexual interest among male college students (Abbey, Ross, McDuffie, & McAuslan, 1996). Abbey and her colleagues (2000) tested this experimentally by having previously unacquainted opposite-sex dyads interact for 15 minutes, half of which consumed alcohol while the other half did not. Both male and female participants were perceived as more sexually interested by participants who consumed alcohol than sober participants. Unlike participants who consumed alcohol, those who were sober were more likely to assess that partners who were inattentive were less sexually interested than attentive ones. In other words, non-alcohol drinkers were more cautious and attended to avoidance cues such as inattentiveness, which could imply disinterest, in comparison to alcohol drinkers who attended more to approach cues (e.g., mere mention of being single suggests sexual availability) when making sexual interest judgments (Abbey, Zawacki, & Buck, 2005). This is in line with the alcohol myopia model (Steele & Josephs, 1990), which posits that alcohol induces an acute "nearsightedness" or myopia that causes the drinker to attend and respond more to salient, immediate environmental cues rather than more complex peripheral cues that would usually inhibit behavior. Nevertheless, the relationship between alcohol consumption and sexual perception is not that straightforward. For instance, according to expectancy models, the way people behave after drinking relies heavily on their preexisting beliefs about the behavioral effects of alcohol, therefore suggesting the moderating role of such beliefs (Lang, 1985). There is some support for this theory; George, Stoner, Norris, Lopez, and Lehman (2000) showed that people who were led to believe that they drank alcohol perceived more sexual receptivity in their interaction partners, but only if they held strong pre-existing beliefs about alcohol's capacity to enhance sexual experiences. Despite mixed conclusions about the theoretical underpinnings, empirical findings consistently show an association between alcohol consumption and heightened sexual perception.

Besides alcohol consumption, perception of sexual interest has also been shown to vary with another situational variable that has been proposed to increase people's tendency to express themselves in ways that are consistent with their beliefs and preexisting dispositions (Kraus, Chen, & Keltner, 2011) and tendency to be more approach-oriented (Galinsky, Gruenfeld, & Magee, 2003; Smith & Bargh, 2008) – power. While the concept of power has long since been associated with sex and human mating (Bargh, Raymond, Pryor, & Strack, 1995; Buss, 1989; Gonzaga, Keltner, & Ward, 2008; Symons, 1979), Kunstman and Maner (2011) were the first to test the effect of power on people's estimations of sexual interest. In a

series of experiments, Kunstman and Maner showed that having power activated a mating motive (Bargh et al., 1995), that people in power were more likely to perceive higher sexual interest from opposite-sex targets than those without power, and that heightened sexual perceptions induced by power led people to exhibit more sexualized behavior when interacting with an opposite-sex participant. They also showed that the relationship between power and sexual perception was conditional on the sexual availability of the target and the sociosexual tendencies of the perceiver; power only increased sexual perception when the target was sexually available, and among perceivers with chronically high sexual motivation. The current work (Chapter 4) includes a series of experimental studies replicating and extending their work within a military context.

On a related note, people with chronically high sexual motivation should also show a tendency to infer higher sexual interest from others according to the oversexualisation (Abbey, 1982) and projection hypotheses (Shotland & Craig, 1988; Maner et al., 2005). Because motivation shapes perception (Balcetis & Dunning, 2006), perception of sexual interest should be heavily dependent on the sexual motivation of the perceiver. Indeed, Howell, Etchells, and Penton-Voak (2012) demonstrated that gender differences in perception of sexual interest can be explained by individual differences in sociosexuality, which is one indicator of individual differences in sexual goals. Sociosexuality can be defined as an individual's willingness and desire to engage in casual, short-term sexual relationships without emotional commitment (Simpson & Gangestad, 1991). People with unrestricted sociosexual orientation tend to have positive attitudes toward, and engage in short-term mating strategies. Those with more restricted sociosexual orientation tend to favor relationship commitment, and value fostering emotional intimacy prior to beginning a sexual relationship. People who pursue an unrestricted, short-term mating strategy are more likely to perceive higher sexual interest from someone of the opposite sex than those who pursue a restricted, long-term mating strategy (e.g., Howell et al., 2012; Jacques-Tiura, Abbey, Parkhill, & Zawacki, 2007; Kohl & Robertson, 2014; Lenton, Bryan, Hastie, & Fischer, 2007; Perilloux et al., 2012; Perilloux, Cloud, & Buss, 2013).

Other studies concerning individual differences in sexual perception have examined individual tendencies in the endorsement of negative attitudes towards women (e.g., "women should worry less about their rights and more about becoming good wives and mothers"; Spence, Helmreich, & Stapp, 1973) and heterosexual relationships (e.g., "men and women are generally out to use each other"; Lonsway & Fitzgerald, 1995), and the endorsement of

rape-supportive beliefs (e.g., "any healthy woman can successfully resist a rapist if she really wants to"; Burt, 1980) – all of which are interrelated concepts (Burt, 1980; Fischer, 1986; Muehlenhard, 1988; Muehlenhard, Friedman, & Thomas, 1985). For instance, men who strongly endorse traditional attitudes towards women (Kowalski, 1993; McKenzie-Mohr & Zanna, 1990; Muehlenhard, 1988), report exaggerated male stereotypical attitudes (Fisher & Walters, 2003; Jacques-Tiura et al., 2007), or hold adversarial and cynical beliefs about heterosexual relationships (Kowalski, 1993; Lindgren, Shoda, & George, 2007) are more likely to oversexualize an initial interaction. A similar pattern has been shown with people who endorse rape-supportive beliefs (Abbey & Harnish, 1995; Bondurant & Donat, 1999; Kowalski, 1993; Vrij & Kirby, 2002). In a vignette-based study, Abbey and Harnish found that male participants who endorse rape-supportive attitudes (i.e., beliefs that justify male sexual aggression and lay blame on female victims) perceived the female target as having higher sexual intentions, in comparison to female participants and male participants who rejected rape-supportive attitudes. As previously mentioned, men at high risk of sexual aggression showed less sensitivity to emotional cues expressed by women, and paid more attention to indirect physical cues such as dressing style and physical attractiveness, which may be more salient but in fact convey little information about how sexually interested the woman is in the perceiver (Farris et al., 2006), during heterosexual interactions.

More recent work on individual differences in sexual perception has ventured into the examination of personality traits as predictors. Hart and Howard (2016) had heterosexual men from the U.S. complete an online study. Using a vignette adapted from Kohl and Robertson (2014), participants were asked to imagine a nightclub scenario where they catch the attention of a woman, and then rate (1) how much interest they felt the female target was showing, (2) the degree to which they felt the female target was acting flirtatiously or seductively, (3) how interested they thought the target was in having sexual intercourse with them, and (4) how sexually attracted they thought the target was toward them. Participants also competed measures of attachment style and desire for intimacy. Across two studies, the authors found that men who were more anxiously attached perceived higher sexual interest due to their higher desire for intimacy. Furthermore, men who were more avoidantly attached perceived lower sexual interest due to their lower desires for intimacy, compared to less avoidantly attached men. The authors concluded that men's romantic attachment style shapes their need for intimacy, which in turn biases their judgments of a potential mate's sexual

interest – thus supporting the motivated or functional projection account of sexual perception (Maner et al., 2005).

In sum, the work that has been done on sexual perception research hitherto demonstrate that sexual perception can vary not only across genders, but also across different situations and individuals. However, despite significant implications in individual and societal well-being, sexual misperception remains surprisingly understudied, with existing literature largely concentrated on male *overperception* of females' sexual interest. Moreover, most of the individual difference variables that have been investigated are rather specific to beliefs about gender (e.g., attitudes towards women, sex roles), sex (e.g., sociosexual orientation, sexual experience) or sexual assault (e.g., rape myths), which is understandable given that most of the studies reviewed stem from sexual assault literature. Despite the valuable theoretical and practical implications of these findings, there is still a gap in the literature when it comes to understanding how sexual interest perceptions may vary. What about other variables that are not directly associated with sex or gender beliefs (e.g., personality factors, self-esteem, affective states)? Can such variables also effectively predict perception of sexual interest? Indeed, researchers (Fisher & Walters, 2003; Perilloux, 2014) have consistently expressed the need for further examination and documentation of other situational or dispositional predictors of sexual interest perception, in addition to gender itself.

Aims of the thesis and overview of chapters

This literature review has, first and foremost, outlined how research in sexual interest perception has shifted from the examination of gender differences to the consideration of other target-based and perceiver-based factors, which could be situational or dispositional in nature. The overarching aim of the current thesis was, thus, to advance the examination on how sexual interest perception varies within- and between-individuals. Our work did not revolve around the misperception of sexual interest, which focuses on the errors and accuracy in estimations (e.g., whether one can distinguish sexual interest from platonic interest or whether one's estimation matches what the target reports). Rather, we examined the perception of sexual interest as a form of interpersonal perception, which can be biased upward or downward in response to certain situations or dispositions. Our current examinations were focused on perceiver-varying factors, that is, how people's estimation of a

(potential) mate's sexual interest could differ depending on *their own* momentary state, or stable traits.

We follow the assumption that humans, especially those currently of reproductive age (as young adults are), have a general need to reproduce and therefore a desire to be a valuable mate. At the same time, humans also have a need to protect themselves from harm. Thus, when it comes to meeting a potential sexual partner for the first time, two conflicting goals arise: a goal to obtain a sexual partner (satisfaction of mating or reproductive goal) and a goal to protect the self from harm. If one's motivation to obtain a sexual partner is prioritized over self-protection, the likelihood of perceiving high sexual interest from a potential mate will be higher. If one's self-protection motivation trumps the motivation to obtain a sexual partner, this person would more likely perceive low sexual interest as a strategy to "get their hopes down". The prioritization of these reward vs. risk motives depend on situational demands or individual tendencies (Elliot, 2008). The variables examined in the current work were therefore selected on the basis of their theorized mechanisms of inducing or prioritizing approach vs. avoidance tendencies, as well as their association with other forms of social perception, sexual attitudes, and sexual motivation. Our general hypothesis is that factors – be they state- or trait-based – that foster the pursuit of goals and rewards rather than self-protection would increase perception of sexual interest on the basis of functional projection (Maner et al., 2005).

Secondly, this literature review also raised the importance of utilizing appropriate methodological procedures and measures to avoid any potential confounds, which could potentially undermine the reliability or validity of our findings. As we focused on perception of sexual interest in a relationship initiation context, all studies reported in this thesis featured samples of young adults since young adulthood is the developmental stage where people are ready for intimacy (Erikson, 1968) and to enter romantic relationships or explore their sexuality (Stinson, 2010). Care was taken when designing study materials to ensure that all studies consistently measured people's estimation of how much sexual interest they think the target is conveying toward them, and not another person (as done in some previous studies where participants rated interactions between a male actor and a female actor such as Abbey, 1982; Koukounas & Letch, 2001). In other words, perceptions in the current work were captured from a first-person perspective, rather than a third-person perspective. This was important in order to reduce the likelihood of confounded results because people's interpersonal perceptions tend to differ when imagining an interaction that is directed toward

themselves versus toward others. For instance, Cameron, Stinson, Gaetz, and Balchen (2010) showed that biases in perception of acceptance were only present when participants rated an interaction as directed to them but not when they took on the role as observers. This is likely because participants who rated as observers did not perceive a possible risk of rejection, which therefore did not trigger their self-protection motives. This self vs. other bias was also discussed earlier in this literature review; women's sexual interest reports were significantly lower when the behaviors were framed as their own behaviors as opposed to behaviors of other women (Perilloux & Kurzban, 2015). Lastly, in our materials, the targets were always either described as attractive and similar in age or rated as average and above in physical attractiveness in pilot studies. This was done in order to account for the target specific-nature of functional projection (Maner et al., 2005); in their study for instance, they found that men only projected their sexual arousal onto attractive female targets.

A third sub goal in the current work was to extend the investigation of sexual interest perception into other populations. Most of the studies that examined biases in sexual interest perception were conducted on Western university student samples. In fact, a large majority of the findings reviewed have been derived from North American samples. Thus far, only a few studies have been conducted in other countries. For example, DeSouza, Pierce, Zanelli, and Hutz's (1992) comparison of samples from Brazil and the USA revealed that Brazilians generally attributed higher sexual interest in the behaviors of others than Americans. Bendixen (2014) replicated the male overperception effect on a Norwegian sample while Perilloux and colleagues' (2015) examination of this effect on Spanish, Chilean, and French samples resulted in mixed findings. The current investigations thus involved data collection in the Swiss Military, and also at a university in Malaysia.

The present thesis is comprised of a total of six studies grouped into three chapters, which were conducted at the University of Fribourg (Switzerland), University of Monash (Malaysia), and the Military Academy at ETH Zurich (Switzerland). Data for studies in Chapter 3 and one half of the study in Chapter 5 were collected at the University of Fribourg under the direction of Prof. Dominik Schöbi. Data for the other half of the study in Chapter 5 were collected at Monash University Malaysia with the support of Dr. Jasmine Loo while data for the studies in Chapter 4 were collected at the casern of Bern ("Mannschaftskaserne der Berner Truppen") by Dr. Peter Stöckli under the direction of Dr. Hubert Annen.

The first goal of our research was to examine the function of perceiving sexual interest. Establishing the function of sexual perception was important as it sets a foundation for this

thesis. While there is a wealth of empirical findings and theoretical propositions on why males and females differ in their sexual interest perception, and also regarding the accuracy of perception, not much is known about the psychological function of sexual interest perception. Choi and Hur (2013) showed that men who perceived sexual interest from a potential mate reported a higher likelihood to engage in behaviors to flirt with the potential mate, and were also more likely to select courtship strategies that were preferred by targets who were sexually interested. While this informs us that sexual perception appears to guide men toward the achievement of reproductive success, the underlying mechanisms remain unclear. This thus formed the first goal of Chapter 3.

Following the assumption that people's feelings of self-worth during early adulthood are likely to be attuned to their value as a potential mate (Kirkpatrick & Ellis, 2001), we examined if sexual interest functions as a resource for mate value, comparable to how social acceptance functions as a resource for social value (Leary & Baumeister, 2000; Leary et al., 1995). Since people tend to experience increases in self-esteem when they feel accepted by a potential romantic partner (Kavanagh, Fletcher, & Ellis, 2014; Kavanagh, Robins, & Ellis, 2010), we expected people to also experience increases in self-esteem when they think that a potential mate is expressing sexual interest. If perceiving sexual interest contributes to one's feelings of self-worth as a mate (as we proposed), and self-perceived mate value predicts perception of sexual interest (Kohl & Robertson, 2014), we should expect perception of sexual interest to increase self-esteem.

To test this, a daily diary or ecological momentary assessment study was conducted. Participants, who were 84 undergraduate psychology students, were provided palm hand-held computers, which prompted them to provide momentary reports on self-esteem and interpersonal perceptions from interactions with others in general or their partner four times a day, over the course of four weeks. Multilevel analyses revealed that perceiving sexual interest predicted an increase in one's self-esteem state. In contrast, perceiving rejection from an interaction partner predicted a decrease in self-esteem. Unlike the consistently-found negative association between general rejection and self-esteem, however, the positive association between perceiving sexual interest and self-esteem depended on the perceiver's availability as a mate, and whether or not the target was an actual or potential mate. That is, while perceiving sexual interest from other people boosted the self-esteem of participants who were single, participants who were in a relationship only experienced this boost in self-esteem after perceiving sexual interest from their relationship partner. Overall, these results

suggest that perceiving sexual interest from a potential or actual mate is rewarding to one's feelings of self-worth.

On the grounds of the sociometer and risk regulation (Murray, Derrick, Leder, & Holmes, 2008; Murray et al., 2006) models, we also expected one's trait self-esteem to shape the way people perceive sexual interest in upcoming interactions. We hypothesized that people with high self-esteem would perceive higher sexual interest than those with low self-esteem. Upon completion of the daily diary study, 79 of the 84 participants agreed to participate in the second study, where they completed a vignette-based experiment at a laboratory on university grounds. In the experiment, participants were presented three hypothetical scenarios depicting interactions with an attractive opposite-sex target with varying levels of interest and interpersonal risk.

In sum, results from both the daily diary study and the repeated-measures experiment showed that self-esteem traits predicted perception of sexual interest, but only when the target is a potential or actual mate. Our results lend support to the proposition that self-esteem guides sensitivity to risk and rewards, and that having high, rather than low, self-esteem allows people to approach rewards such as a potential sexual encounter having their self-protection motivation attenuated (Murray et al., 2006, 2008). These studies are, to the best of our knowledge, the first to examine the relationship between self-esteem and the perception of sexual interest.

In Chapter 4, we tested the effect of power on sexual perception using samples consisting of male military personnel. Similar to self-esteem, power can be viewed as a psychological insurance, which affords the pursuit of rewards by shielding one's vulnerability to interpersonal punishments (Keltner, Gruenfeld, & Anderson, 2003). As mentioned earlier in this review, Kunstman and Maner (2011) has shown that having power led to higher sexual motivation and more sexualized perceptions.

As one of the ancillary goals of the current work was to extend sexual perception research onto non-university student samples, we sought to replicate and extend Kunstman and Maner's findings using military samples. It was ideal to examine sexual perception in the military because of the frequency of sexual harassment cases within the military and its associated costs (Moral et al., 2015). Moreover, the military context is one that is distinct from university contexts; in that it endorses stereotypically male sex roles and places high

value on power and hierarchy (Zaleski, 2015; Zubringgen, 2010) and these are traits that have been consistently linked to sexual misperception and coercion (Fischer & Walters, 2003).

In three experiments adopting between-group designs, we manipulated power by varying the military rank of the perceiver, or the target. Across three vignette-based experiments with a total of 529 participants, men consistently reported heightened sexual perceptions when they held a rank higher than the female interaction partner in comparison to when they were the subordinate or of equal rank. The third experiment in this chapter showed that power only increased sexual estimations among men who had low subclinical psychopathy scores, a trait that reflects hypersensitivity to rewards. Men with high psychopathy scores reported sexualized perceptions, regardless of power. In other words, our set of findings demonstrated that men in power perceive sexual interest similarly to those who tend to be impulsively approach-oriented and reward-driven by disposition. This ties in, theoretically, with findings from Chapter 3 and our general hypothesis; dispositions or situations that afford pursuit of rewards, as opposed to those that emphasizes self-protection or avoidance of punishments, generally beget or are associated with higher perception of sexual interest.

With this in mind, our final study (in Chapter 5) examined how mood would impact sexual perceptions. Mood has been theorized to function as a signal that informs a person whether his or her environment is relatively safe or dangerous (Clore, Schwarz, & Conway, 1994; Schwarz & Clore, 1983). A positive mood signals a safe environment, which allows people to more readily approach social rewards, such as developing or increasing mate value. A negative mood, on the other hand, signals a threat in the environment, which activates a motivation to avoid potential negative outcomes such as a harsh rejection from a potential mate that would hurt one's mate value (Symons, 2005). Hence, the question arises as to whether or not the pattern of sexual perception in response to the signal of a safe environment could parallel the response pattern of people who possess or are given the psychological resources to buffer interpersonal risks, and vice versa.

We tested if people would infer more sexual interest when they are in a positive mood, and infer less sexual interest when they are in a negative mood. Participants attended three experimental sessions, once every two weeks. In each session, they underwent a mood induction procedure, after which they engaged in video-guided imagined interactions with both male and female targets, and provided ratings on interpersonal perceptions. Participants

were instructed to take on the perspective of an opposite-sex peer when imagining the interactions with a same-sex target.

This study was conducted on two culturally distinct samples of university students from Switzerland ($N = 117$) and Malaysia ($N = 117$) for the following reasons: First, as mentioned earlier, the majority of findings in sexual perception research has been derived from North American samples with none from Asian samples. Second, most findings concerning mood effects on social perception have also been derived from Western samples. Finally, extant evidence on cultural differences in sexuality (e.g., Ahrold & Meston, 2010; Hatfield & Rapson, 2005; Higgins & Sun, 2007), interpersonal perception (Wu & Keysar, 2007), and adoption of approach vs. avoidance orientation (Elliot, Chirkov, Kim, & Sheldon, 2001; Lee, Aaker, & Garder, 2000) suggest that culture may play an important role in sexual perception. We thus expected culture to moderate the effects of mood on sexual perception. Our results showed that sexual interest estimations were generally lower in the Malaysian than the Swiss sample. Additionally, negative mood appeared to only reduce the sexual interest estimations of participants from the Swiss sample and not those from the Malaysian sample.

Self-Esteem

Feel Sexy, Feel Good:

Self-esteem in the Perception of Sexual Interest

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Abstract Just as people have an inherent need to belong, which drives them to pursue social connections with others, people have a basic need to reproduce, which drives them to seek sexual connections with potential mates. Based on the sociometer theory (Leary & Baumeister, 2000; Kirkpatrick & Ellis, 2001), two studies (Ns = 84 and 79) examined the associations between self-esteem and the perceptions of sexual interest and social acceptance-rejection. Three forms of self-esteem were considered: self-esteem state, overall level and instability. In Study 1, perceptions of sexual interest and social rejection in general were associated with fluctuations in self-esteem state. Both studies 1 and 2 showed that higher self-esteem level and lower self-esteem instability were generally linked to higher estimations of sexual interest and social acceptance (and lower rejection), and in certain instances, interactions between self-esteem level and instability were present. Relationship status differences were found in self-esteem effects of sexual perceptions but not perceptions of general acceptance or rejection. We discuss these findings in relation to the functions of self-

esteem as monitors of one's success in satisfying belongingness and reproductive needs, and as an interpersonal guidance system.

During interactions with a potential mate, sexual interest is usually not communicated explicitly, but through subtle cues (Abbey, 1982; Fichten et al., 1992). Ambiguity in these cues of sexual interest makes their interpretation susceptible to biases, which could stem from contextual influences as well as perceiver-based influences such as one's social motivations. Self-esteem is one particularly powerful factor that can guide social motivations (Cameron et al., 2010) and shape the interpretation of social information (Leary & Baumeister, 2000). According to Leary and Baumeister (2000), self-esteem (SE) operates as an internal gauge – a *sociometer* – of one's perceived previous, present, and future successes in satisfying one's belongingness needs. As such, state self-esteem increases following social acceptance, and decreases in response to rejection. Over time, these fluctuations accumulate to a trait level of self-esteem, which consequently shapes one's perceptions or expectations of acceptance in upcoming interpersonal interactions (Leary et al., 1995). More recently, however, some researchers have shown that self-esteem can be attuned to one's self-perceived mate value (Kirkpatrick & Ellis, 2001, 2006; Penke & Denissen, 2008). We thus propose that perceiving sexual interest would contribute to mate value in a similar way that perceiving acceptance does to social value. By this reasoning, perceiving sexual interest should increase state self-esteem, and trait self-esteem should, in turn, shape upcoming sexual perceptions.

Although there is substantial literature on the role of SE and perceptions of acceptance (e.g. Cameron et al., 2010; Leary & Baumeister, 2000), SE has not received much attention as a factor relevant to the perception of sexual interest. The goal of the current research was to examine the link between self-esteem and perceptions of sexual interest. To this end, we used both data collected in daily life and data from an experimental setting, and tested how within-individual fluctuations and between-individuals differences in self-esteem relate to perceptions of sexual interest. The current research also tested two possible moderators of the associations between interpersonal perceptions and SE: First, SE instability, or the extent to which SE fluctuates over time (Kernis, 1993), which has been shown to moderate SE level

effects (Zeigler-Hill, Clark, & Beckman, 2011), and at times even demonstrate predictive ability superior to SE level (Franck & de Raedt, 2007). Second, we considered the role of one's relationship status since theoretical and empirical work suggests that relationship status is a relevant factor in interpersonal attraction (e.g., Cole, Trope, & Balcetis, 2016; Maner, Gailliot, & Miller, 2009). To better understand whether the link between self-esteem and sexual perception show some specificity to mate value or more generally contributes to social value, we paralleled these analyses with analyses of perceptions of social acceptance or rejection.

In the remainder of the introduction, we will provide a review on the associations between interpersonal perceptions and SE state, SE level differences in the perception of acceptance and how this could translate into sexual perceptions, and finally we argue how SE instability could contribute to SE level effects in interpersonal perceptions.

Perception of sexual interest and state self-esteem

The perception that others show sexual interest in oneself should be relevant to SE, as it implies how desirable one is as a sexual partner (Kenrick, Grothe, Trost, & Sadalla, 1993). Recent experimental studies that tested the sociometer role of self-esteem in romantic relationships found that individuals who perceived acceptance from potential romantic partners showed increases in state SE, while those who experienced rejections showed substantial drops (Kavanagh et al., 2014; Kavanagh et al., 2010). The negative effects of experienced rejection on SE are stronger when rejection involves potential romantic partners, than when it involves friends (Pass, Lindenberg, & Park, 2010).

Although it is generally assumed that an adapted mechanism that monitors mate value exists (e.g. Buss & Schmitt, 1993; Kirkpatrick & Ellis, 2001, 2006; Trivers, 1972), no study, to our knowledge, has examined the link between perception of sexual interest and SE. Hence, the first aim of the present research is to establish if SE state fluctuates in response to perception of sexual interest from potential or actual partners, as it does in response to perception of acceptance. While similar, perceptions of acceptance and sexual interest differ in the needs and goals they serve. From an evolutionary perspective, perceptions of sexual interest are more likely to facilitate mating or reproductive needs whereas perceptions of acceptance serve belongingness needs. Thus, the association between self-esteem and perceptions of sexual interest should also be largely dependent on the sexual access between the interaction target and perceiver. Mating goals that arise for individuals in a committed

relationship would be more likely directed toward relationship partners than toward non-partners since this would be the less costly option. For those in a relationship, perceiving sexual interest from just anyone may not be as rewarding to self-esteem state as it is for singles. We propose that perceiving sexual interest from others is related to increases in immediate feelings of SE for singles while increases in state SE of those in a relationship only follows perception of sexual interest from relationship partners. In contrast, the association between perceptions of (general) rejection or acceptance and state SE should not differ significantly by relationship status since belongingness needs are not dependent on the sexual availability of the perceiver.

Self-esteem level and the regulation of interpersonal risk

Over time, one's state SE in response to interpersonal experiences average to a baseline, trait level of self-esteem or SE level, which in turn, influences future interpersonal experiences (Leary et al., 1995). When individuals engage in social interactions, the interaction partner's goals and concerns are often inferred from subtle cues, which leave ample room for uncertainty (Weary & Edwards, 1996). While social interactions offer opportunities to forge new, rewarding interpersonal connections, they also bear a risk of rejection. Our SE level, that is, whether we have generally high or low SE, guides our sensitivity to risk or rewards, and motivates corresponding perceptions and behaviors (e.g. Anthony, Wood, & Holmes, 2007; Cameron et al., 2010; Cameron, Stinson, & Wood, 2013; Cavallo, Fitzsimons, & Holmes, 2009; Heimpel, Elliot, & Wood, 2006; Murray et al., 2008). Supporting this proposition is the finding of self-esteem differences in the adoption of cognitive strategies during information processing. Specifically, low self-esteem (LSE) individuals are more likely to display an attentional bias toward rejection cues than high self-esteem (HSE) individuals. This has been demonstrated by longer response times when completing the Emotional Stroop task with rejecting rather than accepting words (Dandeneau & Baldwin, 2004), and greater event-related brain potentials in response to cues of interpersonal rejection (Li, Zeigler-Hill, Luo, Yang, & Zhang, 2012).

According to the risk regulation model (Murray et al., 2006, 2008), the risk of rejection during an interpersonal encounter triggers two opposing social goals: the goal to satisfy belongingness needs, and the goal to protect the self. People with HSE prioritize the rewarding prospects of an interaction over its potential costs. This permits the attenuation or overriding of their motivation to protect themselves. On the other hand, LSEs, keen to protect their low self-worth from further decline, value self-protection goals rather than

belongingness goals. Studies by Cameron et al. (2010) provided evidence supporting this view. Individuals with high rather than low SE consistently showed approach-motivated cognitive processing during novel social interactions, and perceived more acceptance from others. Moreover, they found that in the absence of the risk of interpersonal rejection, LSEs were just as likely to detect acceptance from interaction partners as HSEs (Cameron et al., 2010; Studies 2 & 3). This research suggests that in novel social interactions with risk of rejection, individuals with LSE would infer lower acceptance or higher rejection, presumably due to self-protective and avoidance-motivated cognitive processes.

Self-esteem level and the perception of sexual interest

Self-esteem may also bias individuals' appraisals of interactions that potentially convey sexual interest following the risk regulation perspective (Murray et al., 2006, 2008). Accordingly, HSEs who prioritize the rewards from achieving mating goals over the costs of rejection, would readily approach potential mates and thus be more likely to perceive sexual interest during interactions with potential or actual relationship partners. LSEs on the other hand, may not view the risk of rejection as worth the potential for mating success and therefore show a lower tendency of interpreting target behavior as sexual interest. A similar reasoning has been used to justify males' tendencies to overperceive and females' tendencies to underperceive sexual interest (Error Management Theory; see Haselton & Buss, 2000)

Self-esteem may also shape sexual perceptions by means of motivated projections (Lenton et al., 2007; Maner et al., 2005). An example of this mechanism was recently illustrated in Hart and Howard's (2016) study, which found that anxiously attached men were more likely to perceive sexual interest from potential mates due to self-serving perceptual biases stemming from their strong desire for intimacy. If we follow the motivated projection reasoning, LSEs should less likely perceive sexual interest from others relative to their HSE counterparts since they perceive themselves as less valuable relational partners or have a strong desire in avoiding interpersonal rejection.

Other than that, men who rate themselves higher in attractiveness have been found to perceive more sexual interest from female interaction partners (Perilloux et al., 2012). Because feelings about one's body (Franzoi & Herzog, 1986; Henriques & Calhoun, 1999; Leary & Baumeister, 2000; McCaulay, Mintz, & Glenn, 1988), self-rated attractiveness (Feingold, 1992; Wiederman & Hurst, 1998) and perceptions of mate value (Brase & Guy, 2004; Penke & Dennisen, 2008), contribute in important ways to global self-esteem, it is

reasonable to expect SE level to influence the perception of sexual interest during interpersonal interactions.

Self-esteem instability and an impoverished sense of self

Self-esteem is not only limited to the overall level of a person's self-esteem and momentary states of self-esteem but also the extent to which a person's self-esteem is subject to change – all of which could have important implications for interpersonal cognitions and behaviors (Kernis, 2003). Kernis (1993) defined self-esteem instability as the magnitude of short-term fluctuations across repeated of momentary and context-based self-esteem measurements. Individuals with unstable self-esteem exhibit substantial fluctuations in their self-esteem levels from day to day, or even within a day itself (Kernis, 2005).

Unstable SE has been linked to diminished confidence and clarity in self-knowledge, a greater likelihood of regulating self-worth on the basis of external factors, and a lower likelihood of engaging in intrinsically-motivated behaviors (Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000). Due to their high ego-involvement, those with unstable SE are highly sensitive to social events, with a strong tendency to interpret events as relevant to their self-worth even when they are not (Greenier, Kernis, McNamara, Waschull, Berry, & Herlocker, 1999; Kernis, Cornell, Sun, Berry, & Harlow, 1993; Kernis & Waschull, 1995). They show an attentional bias towards aspects of interpersonal experiences that threaten their SE (Waschull & Kernis, 1996). It would therefore be reasonable to expect people with unstable SE to experience larger fluctuations in momentary self-esteem following interactions where social rejection or acceptance, and sexual interest is perceived.

Recent findings suggest that self-esteem instability fosters self-protective goals beyond SE levels (Zeigler-Hill & Wallace, 2012). However, individuals with unstable HSE and unstable LSE are likely to differ in how they deal with these conflicting goals. Specifically, individuals with fragile but relatively high SE believe they possess positive competencies and qualities (Blaine & Crocker, 1993), whereas those with fragile but low SE tend to be more uncertain about their qualities and abilities (Crocker, Luhtanen, Cooper, & Bouvrette, 2003). SE instability specifically predicts how LSEs cope with self-esteem threat. Unstable LSEs are oriented toward avoiding actual and potential threats while stable LSEs invest less in avoidant strategies (Kernis, 1993). This appears to take its toll on unstable LSEs: Relative to others, unstable LSEs tend to be the most sensitive to rejection, feel most hopeless and report elevated depressive symptoms (Zeigler-Hill & Wallace, 2012).

In contrast, high levels of SE appear to attenuate the effects of unstable SE. Individuals with unstable but high SE not only report low depressive symptoms and low sensitivity to rejection (both males and females; Zeigler-Hill & Wallace, 2012), but also report being more satisfied with and committed to their intimate relationships than those with other forms of SE (only for males; Zeigler-Hill et al., 2011). This suggests that in HSEs, SE instability is not detrimental, but possibly, even beneficial to interpersonal adjustment. Therefore, we would not expect differences between unstable and stable HSEs with respect to interpersonal perceptions, while we expect that unstable LSEs will report lower perceptions of acceptance and/or sexual interest than stable LSEs.

The present investigation

The general aim of the current research was to refine the mate value sociometer (Kirkpatrick & Ellis, 2001) by examining the relationship between SE and perception of sexual interest. The reviewed research points to three aspects of SE that are relevant to social motivation and behavior, which are the momentary states, overall, typical levels, and degree of instability. Most studies on interpersonal relationships, romance and mating have focused on the effects of self-esteem levels rather than instability. We thus assessed, in the current research, all three aspects of SE and tested whether these SE features relate not only to social rejection and acceptance, as shown in prior research, but also extend to the perception of sexual interest.

Study 1 utilized an experience sampling approach to examine the association between interpersonal perceptions and SE. Over the course of four weeks, participants provided reports on their momentary SE and on their perceptions of rejection and sexual interest from social interactions four times per day. Complementing this naturalistic approach with an experimental design, Study 2 examined whether trait SE predicted perceptions of acceptance and sexual interest during hypothetical interpersonal interactions using text-based vignettes. In both studies, we tested whether one's relationship status moderates the associations between SE and interpersonal perceptions. Given prior research suggesting gender effects in sexual perception (Lindgren, Parkhill, George, & Hendershot, 2008), we also included gender as a control variable.

Study 1

Self-esteem and interpersonal perceptions in daily life

The aim of Study 1 was to examine the associations between SE and interpersonal perceptions. We first tested how perceptions of sexual interest and general social rejection predict SE (Study 1a), and then assessed how SE in turn, predicts these perceptions (Study 1b).

Method

Participants. Participants were 85 (13 male, 72 female) undergraduate psychology students with a mean age of 22.39 ($SD = 1.66$). Forty-four participants reported being in a romantic relationship. Participation was rewarded with course credit. Data from a female participant was excluded because it was an extreme outlier (very high SE instability score). Analyses were thus conducted based on diary data from 84 participants.

Measures and procedure. This study was part of a larger project on daily personal and interpersonal functioning, and emotional dynamics where participants completed a 4-week diary study. They were provided palm hand-held computer devices, which prompted them to provide ratings on their current state 4 times a day – upon awaking, between 12-1 pm, between 6-7 pm, and before bedtime.

As part of the diary study, we assessed participants' state SE, level of perceived rejection, and perception of sexual interest. The whole sample provided a total of 9177 observations, with an average of 109.25 observations per participant ($SD = 22.65$; ranging from 52 to 234). While single participants contributed 4318 observations, those in a relationship contributed 4859. Of this amount, 3105 involved interactions with their relationship partner. The average contact one has with their relationship partner is 0.64 ($SD = 0.21$; ranging from 0.18 – 0.96).

Self-esteem state. SE state was measured by averaging 4 items, "I have everything under control, "I am satisfied with my abilities and skills", "Others respect and like me", and "I have many good qualities", rated on scales ranging from 1 (not at all) to 5 (absolutely). The descriptives for the measures in Study 1 are summarized in Table 1.

Table 1

Descriptives of Self-Esteem Variables and Interpersonal Perceptions from Interactions with Others and Relationship Partner

Variable		Overall sample M (SD)	Overall sample Range	Singles only M (SD)	Singles only Range	Partnered only M (SD)	Partnered only Range
Level 1							
SE state	others	3.76 (0.67)	1.00 - 5.00	3.67 (0.62)	1.00 - 5.00	3.84 (0.70)	1.50 - 5.00
	partner					3.88 (0.70)	1.50 - 5.00
PSI	others	0.03 (0.16)	0 - 1	0.05 (0.21)	0 - 1	0.01 (0.10)	0 - 1
	partner					0.32 (0.47)	0 - 1
PR	others	1.07 (0.34)	1.00 - 5.50	1.10 (0.39)	1.00 - 5.00	1.05 (0.30)	1.00 - 5.50
	partner					1.11 (0.46)	1.00 - 6.00
Level 2							
SE level		3.77 (0.59)	2.33 - 5.00	3.66 (0.50)	2.77 - 4.55	3.87 (0.66)	2.33 - 5.00
SE instability		0.14 (0.11)	0.00 - 0.42	0.16 (0.12)	0.01 - 0.42	0.13 (0.10)	0.00 - 0.34

Note. SE = Self-esteem; PSI = Perception of sexual interest; PR = Perception of rejection

Self-esteem level. Each participant's SE state scores were averaged to form an SE level score. Higher scores indicate higher typical levels of SE.

Self-esteem instability. Past studies on self-esteem instability have adapted Kernis' (2005) procedure to capture self-esteem instability (e.g., Kernis, Lakey, & Heppner, 2008; Zeigler-Hill, Clark, & Beckman, 2011; Zeigler-Hill, Enjaian, Holden, & Southard, 2014; Zeigler-Hill & Wallace, 2012). Participants complete a modified version of the Rosenberg

Self-esteem Scale once at the end of the day for 7 consecutive days. The within-person standard deviation is then computed as the SE instability index, with higher standard deviations indicating higher instability. Other than that, Zeigler-Hill et al. (2014) used the corrected standard deviation suggested by Baird, Le, and Lucas (2006). Because the standard deviation reflects the variability of the scores within person, that is, the dispersion of scores from the mean, it does not take into account the chronological order of the scores. As SE instability is defined as the degree of momentary fluctuations of one's state SE (Kernis, 2005), the temporal dependency represents the central component that defines instability (Ebner-Priemer et al., 2007; Ebner-Priemer, Eid, Kleindienst, Stabenow, & Trull, 2009). We therefore used an index of instability that emphasizes moment-to-moment fluctuations in SE: the mean squared successive difference (MSSD; von Neumann, Kent, Bellinson, & Hart, 1941) as suggested by Ebner-Priemer et al. (2009). The MSSD is computed as shown in Equation 1:

$$MSSD\ (SE) = \frac{\Sigma_{i=2}^{n}(SE_i - SE_{i-1})^2}{n - 1}$$

(1)

SE_i refers to one's current state self-esteem and SE_{i-1} refers to lag of state self-esteem or the state self-esteem at the previous time point. As the MSSD is computed from differences between consecutive observations, it incorporates temporal dependency - the change in SE from one time point to the next – thus preventing the issue of variability overestimation and enhancing sensitivity to momentary changes, as compared to the standard deviation.

The MSSD across repeated SE assessments was computed as a SE instability index, with higher MSSD scores indicating SE instability, and lower MSSD scores reflecting more stable SE[1].

Perception of social rejection. Two items (i.e., "I felt badly treated", "I felt rejected") rated on a six-point Likert scale with anchors "not at all" and "very", measured degree of perceived rejection, or PR, during an interaction within the last hour. Participants who were in a relationship completed two versions of these, one regarding an interaction with their relationship partner and another with someone else.

Perception of sexual interest. To capture perceptions of sexual interest (PSI), participants were asked to indicate whether or not they had perceived sexual interest (a)

"from another person", or (b) "none", and those who reported being in a committed relationship had an additional option of (c) "from my partner". PSI was dummy scored (occurrence = 1, non-occurrence = 0).

After completing the diary study, participants completed an online questionnaire, which measured their demographics along with other questionnaires unrelated to the current study.

Study 1a

Does perceiving sexual interest predict self-esteem?

In Study 1a, our goal was to determine whether perceiving sexual interest would predict an increase in state SE. If SE also functions as a mating-specific sociometer (Kavanagh et al., 2010; 2014; Kirkpatrick & Ellis, 2001; Pass et al., 2010) through perceptions of sexual interest, on top of perceptions of acceptance from potential mates, perception of sexual interest should be associated with momentary increases in SE. As SE instability has been found to reflect increased reactivity to interpersonal events (Greenier et al., 1999), we hypothesized that effect of perceptions of sexual interest on SE should be more pronounced for individuals with higher SE instability. Moreover, perceiving sexual interest from others may not be as rewarding to those involved in a romantic relationship than singles. We thus also expected relationship status to moderate the association between perception of sexual interest and state SE. In contrast, the association between perception of general interpersonal rejection should not differ by relationship status.

Data Analysis

The current data featured a multilevel structure, with repeated measurements nested within individuals. We therefore adopted a multilevel modeling approach, modeling reports on SE state and interpersonal perceptions at the within-person level (Level 1), and SE level and instability, along with gender and relationship status, at the between-person level (Level 2).

Continuous predictor variables at Level 1 such as degree of rejection perceived and previous state SE were centered at each person's mean to ensure that they featured within-person fluctuations instead of between-person differences. As perception of sexual interest was measured as an event, the mean proportion of perception of sexual interest for each participant was computed and entered as a covariate at Level 2 for models that included PSI as a predictor. For the intercept and all Level-1 predictor variables, gender was included as a

covariate (dummy coded as 0 = female, 1 = male), while relationship status was included as a predictor (dummy coded as 0 = single, 1 = partnered). As interactions with partners were also considered for participants who reported being in a relationship, we additionally applied the models to the data of participants with a romantic partner ($N = 44$), considering only the data points where partner interaction was reported.

Multilevel analyses were run with HLM 7 (Raudenbush, Bryk, & Congdon, 2010). We first examined whether perceiving sexual interest during a previous interaction predicted current increases, and if previous rejection predicted current decreases in state SE. To this end, we included the prior state SE as a predictor in the model, so that the residual in the dependent variable reflected change. The Level 1 equation for this model is noted as follows (Equation 2):

$$\text{SE state}_{ij} = \beta_{0j} + \beta_{1j}(\text{Perception}) + \beta_{2j}(\text{Previous SE state}) + \delta_{ij}$$

(2)

where:

SE state$_{ij}$ represents the state self-esteem reported by person j, at time i,

β_{0j} represents the average state self-esteem score of person j,

β_{1j} captures the association of perceiving perception of sexual interest (PSI) or rejection (PR) reported by person j at time i

β_{2j} captures the association of state self-esteem score of person j at the previous time point, and

δ_{ij} reflects person j's residual at time i.

To test whether relationship status, SE level, and SE instability moderated the relationship between interpersonal perceptions and state self-esteem, the Level 2 predictors were entered into the model. The Level 2 equations are as follows (Equations 3a-c):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(SE\ level) + \gamma_{02}(SE\ instability) + \gamma_{03}(Rel) + \gamma_{04}(Gender)$$
$$+ \gamma_{05}(mPSI) + v_{0j}$$

(3a)

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(SE\ level) + \gamma_{12}\ (SE\ instability) + \gamma_{13}(Rel) + \gamma_{14}(Gender)$$
$$+ \gamma_{15}(mPSI) + \nu_{1j}$$

(3b)

$$\beta_{2j} = \gamma_{20} + \nu_{2j}$$

(3c)

Where β_{1j}, the PSI (or PR) coefficient is a function of γ_{10}, which represents the sample average sexual (or rejection) perception coefficient, γ_{11} (along with $\gamma_{12\text{-}15}$), which captures the extent to which the SE level (or SE instability, relationship status, gender, or mean probability of sexual perception per person, mPSI) of person j modulated his or her interpersonal perception effects. mPSI variable was only included in the models that test PSI as a predictor. The results (coefficients) from our analyses are reported in Table 2.

Results

Preliminary analyses. No significant correlations emerged between SE level and SE instability (overall sample, $r = -0.20$, $p = .06$; for singles, $r = -0.12$, $p = .47$; and for partnered participants, $r = -.24$, $p = .11$). Independent samples t-tests comparing relationship status suggested no significant differences in SE level, $t(82) = -1.70$, $p = .09$, and SE instability, $t(82) = 1.14$, $p = .26$.

Interpersonal perception as a predictor of consequent state self-esteem. At Level 1, our results showed a significant autocorrelation of state SE from the previous time point to the current time point ($\beta = 0.35$, $t = 14.96$, $p < .001$). Supporting the proposition that perceiving rejection is punitive while sexual interest is rewarding to one's feeling of self-worth, we found that perceiving sexual interest ($t = 3.57$, $p < .001$) increased while perceiving rejection from others ($t = -6.53$, $p < .001$) decreased consequent state SE in general.

Table 2

Multilevel Modeling Coefficients Indicating the Moderating Effects of Self-Esteem Level, Self-Esteem Instability, and Relationship Status on Within-Person Associations between Interpersonal Perceptions and State Self-Esteem (Study 1a)

	Interaction with others		Interaction with partner
	Simple model	Interaction model	Simple model
Associations between state self-esteem and perception of sexual interest, self-esteem traits, gender, and relationship status			
Within-person main effects			
Perception of sexual interest	0.16***	0.16***	0.07***
Between-persons level moderators of within-persons slope			
SE level	0.04	0.03	0.00
SE instability	0.32***	0.42***	0.43**
Gender	-0.05	-0.04	0.03
Relationship status	-0.12*	-0.11*	
Relationship status X SE level		0.05	
Relationship status X SE instability		-0.76*	
Associations between state self-esteem and perception of rejection, self-esteem traits, gender, and relationship status			
Within-person main effects			
Perception of rejection	-0.11***	-0.09***	-0.13***
Between-persons level moderators of within-persons slope			
SE level	-0.00	0.04	-0.09
SE instability	-0.52***	-0.63***	0.53
Gender	-0.03	-0.03	-0.07
Relationship status	0.03	0.01	
Relationship status X SE level		-0.07	
Relationship status X SE instability		0.25	

Note. * $p < .05$.   ** $p < .01$.   *** $p < .001$. Coefficients representing between-persons main effects were not reported as they were not relevant to our present hypotheses.

The association between PSI and state SE was moderated by SE instability ($t = 3.71$, $p < .001$) and relationship status ($t = -2.25$, $p = .027$). As we expected this association to differ by relationship status, we ran the model again with two additional interaction terms in level 2: the interaction between relationship status and SE level, and the interaction between relationship status and SE instability. A three-way interaction between relationship status, instability of SE, and perception of sexual interest was significant ($t = -2.31$, $p = .024$). Determining simple slopes using the computational tool for three-way interactions in hierarchical linear models proposed by Preacher, Curran, and Bauer (2006) showed that for singles, perception of sexual interest from others predicted increased state SE, to a larger degree for those at one standard deviation in SE instability above the mean (unstable SE) with a coefficient of 0.21 ($z = 4.63$, $p < .001$), than those at one standard deviation in SE instability below the mean (stable SE) with a coefficient of 0.11 ($z = 2.41$, $p = .016$). Perceiving sexual interest from others did not increase state SE for those who reported being in a relationship, $ps > 0.05$.

Nevertheless, perceiving sexual interest from relationship partners increased state SE of those in a romantic relationship ($t = 4.88$, $p < .001$) with a moderation of SE instability ($t = 2.73$, $p = .009$). Consistent with singles' perception of sexual interest from prospective partners, perceiving sexual interest from relationship partners increased state SE more for those with unstable SE with a coefficient of 0.12 ($z = 4.19$, $p < .001$) than those with stable SE with a coefficient of 0.03 ($z = 2.21$, $p = .027$).

As for perception of rejection, the negative association between PR from others and SE state was moderated by the instability of SE ($t = -3.70$, $p < .001$) but not relationship status, $p > .05$. Simple slopes show that this relationship is more pronounced in those with high SE instability with a coefficient of -0.16 ($z = -6.97$, $p < .001$) compared to those with lower instability with a coefficient of -0.05 ($z = -2.02$, $p = .043$). For those in a relationship, however, perceiving rejection from their partner decreased state SE unconditionally ($t = -3.45$, $p = .001$).

Discussion

In support of our hypothesis and past research (e.g., Leary & Baumeister, 2000), perceiving rejection is generally punitive to one's self-worth. As for sexual interest perception, increases in immediate feelings of self-worth followed after singles perceived sexual interest from

others and also after individuals in a relationship perceived sexual interest from their partner. Congruent with past findings (Kavanagh et al., 2010; 2014; Pass et al., 2010), feeling sexually desired makes people feel better about themselves. However, perceiving sexual interest from others did not affect the SE of those in a relationship. It appears that their feelings of self-worth are anchored predominantly in how their existing relationship partners, rather than others, value them as a sexual partner. Last but not least, the associations between interpersonal perceptions and state SE were more pronounced for those with high instability in SE, suggesting the heightened reactivity of individuals with unstable SE to interpersonal events (Greenier et al., 1999; Kernis et al., 1993). An exception resulted for the perception of relationship partner's rejection, which was associated with an unconditional decrease in consequent state SE. Overall, our findings extend and clarifies the application of a domain-specific mating sociometer (Kirkpatrick & Ellis, 2001) from perceptions of romantic acceptance to perceptions of sexual interest.

Study 1b

Self-esteem biases in interpersonal perceptions

The aim of Study 1b was to test how and which aspects of SE shape biases in perceptions of sexual interest and general interpersonal rejection. Three forms of SE were considered, SE level, SE instability, and state SE.

In theory, SE functions also a gauge of future successes in interpersonal connection (Leary et al., 1995; Leary & Baumeister, 2000). While there is substantial evidence for the influence of *trait* SE on interpersonal processes (Cameron et al., 2010), prior research favors a one-way relationship between *immediate* feelings of SE and interpersonal processes. Being liked by others predicted an increase in SE but not vice versa (Srivastava & Beer, 2005), and the quality of a social interaction positively predicted one's SE the day after but no significant inverse relationship was found (Denissen, Penke, Schmitt, & van Aken, 2008). In other words, state SE does not appear to predict interpersonal perceptions momentarily.

On the basis of these findings, we hypothesized that SE traits (i.e., SE level and instability) but not state SE would predict interpersonal perceptions. Specifically, people with higher levels of SE or lower SE instability would perceive higher overall sexual interest and lower rejection during interactions than those with LSE or unstable SE. We also hypothesized

that the relationship between these SE traits and interpersonal perceptions would vary by relationship status.

Data Analysis

Analyses were conducted in two steps. In the first step, we examined how SE state (Level 1), along with Level-2 variables of SE level, SE instability, and gender predicted interpersonal perceptions from others for the entire sample and from partners for those in a relationship (all following Equations 4a-b). Since findings from Study 1a suggest relationship status differences in the associations between self-esteem and perceptions of sexual interest, but not between SE and perceptions of rejection, the analyses involving PSI from others were repeated for single and partnered participants as separate samples. With PSI measured as an event, analyses for binary outcomes (Bernoulli model) with adaptive Gaussian quadrature estimation were utilized when predicting PSI. Relationship status was included as a control variable in our analyses on the data from the overall sample. This was followed by a test of an interaction model where we examine if there is an interplay between SE level and SE instability as predictors (equation 4c). While findings about perception of rejection are based on the entire sample, findings about perception of sexual interest are reported separately for singles and those in a relationship (key findings from PSI analyses involving the entire sample are presented as preliminary findings). All coefficients from these analyses are provided in Table 3.

Level 1:

$$\ln\left(\frac{PSI_{ij}}{1-PSI_{ij}}\right) or\ PR_{ij} = \ \beta_{0j} + \beta_{1j}(Previous\ SE\ state) + \delta_{ij}$$

(4a)

Level 2 (Simple model):

$$\beta_{0j} = \ \gamma_{00} + \gamma_{01}(SE\ level) + \gamma_{02}\ (SE\ instability) + \gamma_{03}(Gender) + \nu_{0j}$$

$$\beta_{1j} = \ \gamma_{10} + \gamma_{11}(SE\ level) + \gamma_{12}\ (SE\ instability) + \gamma_{13}(Gender) + \nu_{1j}$$

(4b)

Level 2 (Interaction model):

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(SE\ level) + \gamma_{02}\ (SE\ instability) + \gamma_{03}(Gender)$$
$$+ \gamma_{04}(SE\ level\ X\ SE\ instability) + v_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(SE\ level) + \gamma_{12}\ (SE\ instability) + \gamma_{13}(Gender)$$
$$+ \gamma_{14}(SE\ level\ X\ SE\ instability) + v_{1j}$$

(4c)

Results

Preliminary analyses. PSI analyses with the entire sample revealed that participants in a relationship were generally less likely to perceive sexual interest from others than those who are single with a coefficient of -1.69 ($t = $ -4.30, $p < $ .001). We also tested whether participants in a relationship show differences in their interpersonal perceptions in interactions with others vs. their partner on average. HLM analyses of interaction target (0 = other, 1 = partner) predicting overall PSI (binomial model used since overall PSI featured proportion scores per participant) and overall PR (continuous score) at level 1 were run. In general, partnered participants perceived significantly more sexual interest from their partner than others ($t = $ 18.88, $p < $ .001), but also more rejection from their partner than others ($t = $ 2.17, $p = $ .035) with coefficients of 3.06 and 0.02 respectively.

Did SE predict perception of sexual interest in daily life? Our results show a significant main effect of SE level on singles' likelihood of perceiving sexual interest from others ($t = $ 2.17, $p = $ .036). Among singles, HSEs were more likely to perceive sexual interest than LSEs. No significant main effects of SE instability, gender, and state SE were found, $ps > $ .10. There was a significant cross-level interaction between state SE and SE instability ($t = $ -2.23, $p = $ .032). SE level and gender did not moderate the relationship between state SE and PSI from *others*, $ps > $ .10. Nevertheless, the interaction model revealed a three-way interaction between SE level, instability and state ($t = $ -2.04, $p = $ .049). Simple slopes revealed that state SE negatively predicted, with an unstandardized estimate of -0.78 ($z = $ -1.98, $p = $ .047), PSI from *others* only for singles who have a combination of high SE level (1 standard deviation above mean) and high SE instability (1.5 standard deviation above mean). There was no association

between state SE and PSI *others* for single participants with stable HSE ($z = 1.35$, $p = .178$), stable LSE ($z = -0.72$, $p = .474$) and unstable LSE ($z = -0.18$, $p = .861$).

SE level was also the only significant predictor of sexual perception for those in a relationship, albeit in an opposite direction ($t = -2.19$, $p = .035$). Partnered participants with LSE were more likely to perceive sexual interest from *others* than those with HSE. There were no significant main effects of state SE and SE instability ($ps > .10$), gender ($p = .067$), or significant interactions between the predictors ($ps > .10$)[2].

When it comes to perception of partner's sexual interest, only state SE emerged as a significant predictor ($t = 2.29$, $p = .027$). People were more likely to perceive sexual interest from their partner when they felt relatively better about themselves. No significant main effects of SE level, SE instability, gender or significant interactions between predictors were found ($ps > .10$).

Did SE predict perception of rejection in daily life? As for perceptions of rejection from *others*, significant main effects of SE level ($t = -2.56$, $p = .012$), SE instability ($t = 2.06$, $p = .043$) and relationship status ($t = -2.72$, $p = .008$) were found. One with HSE, stable SE, or who is in a relationship, perceived less rejection from others in day-to day interactions than one with LSE, unstable SE, or who is single. There were no main effects of state SE or interactions between the SE variables, $ps > .10$.

Among participants in a committed relationship, only SE instability significantly predicted perception of *partner* rejection ($t = 2.51$, $p = .016$). However, the interaction model revealed that this relationship was conditional on SE level ($t = -1.97$, $p = .056$). A simple slopes test (see Figure 1) revealed that the relationship between SE instability and perception of *partner* rejection was significant at one standard deviation SE level below the mean with a positive slope of 0.91($z = 2.32$, $p = .020$) and at mean SE level with a slope of 0.43 ($z = 2.51$, $p = .012$) but not at one standard deviation SE level above the mean ($p = .725$). No other main effects or interaction between predictors were found, $ps > .10$.

Table 3

Multilevel Modeling Coefficients Indicating the Relationship between Self-Esteem Level, Self-Esteem Instability, and Self-Esteem State on Interpersonal Perceptions Controlling for Gender and Relationship Status (Study 1b)

	From others						From partner	
	Overall		Singles only		Partnered only			
	Simple model	Interaction model	Simple model	Interaction model	Simple model	Interaction model	Simple model	Interaction model
Associations between perception of sexual interest and self-esteem								
Within-person main effects								
Previous state self-esteem			0.03	-0.15	-0.15	0.02	0.49*	0.44*
Between-persons main effects								
SE level			1.11*	1.15*	-1.15*	-1.20*	0.49	0.46
SE instability			1.73	1.9	0.42	0.55	-0.66	-0.79
SE level X SE instability				-2.50		2.70		1.20
Between-persons level moderators of within-persons slope								
SE state X SE level			-0.19	0.38	-0.39	0.19	-0.14	0.34
SE state X SE instability			-3.26*	-1.52	3.73	2.01	0.37	0.50
SE state X SE level X SE instability				-6.11*		-7.77		-6.33
Associations between perception of rejection and self-esteem								
Within-person main effects								
Previous state self-esteem	-0.06	-0.05					-0.03	-0.03
Between-persons main effects								
SE level	-0.03*	-0.03*					-0.05	-0.04
SE instability	0.14*	0.14*					0.36*	0.43*
SE level X SE instability		-0.1						-0.73†
Between-persons level moderators of within-persons slope								
SE state X SE level	-0.03	-0.04					-0.01	-0.01
SE state X SE instability	-0.15	-0.15					-0.45	-0.46
SE state X SE level X SE instability		0.20						0.20

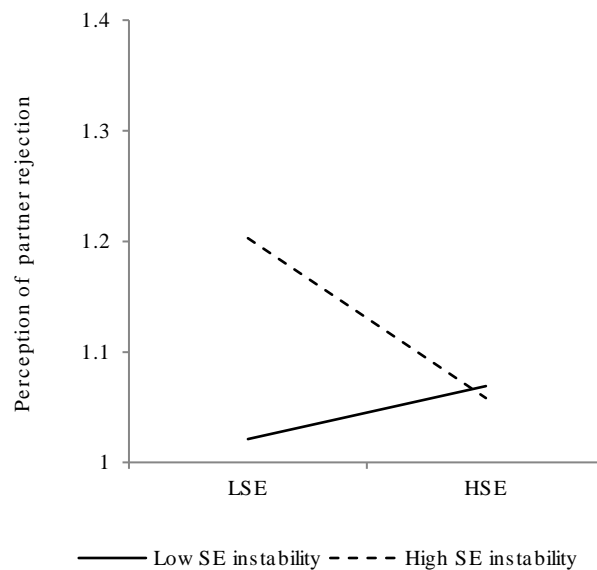*Note.* † $p < .06$.   * $p < .05$.   ** $p < .01$.   *** $p < .001$.

Figure 1. Degree of partner rejection perceived as a function of self-esteem level and instability (Study 1b). LSE and low SE instability represent individuals at one standard deviation below the mean SE level and SE instability respectively while HSE and high SE instability represent individuals at one standard deviation above the means. People with a combination of LSE and high SE instability (unstable LSE) perceive significantly more partner rejection compared to the rest. No significant differences in perception were found among HSE individuals with high and low SE instability, and LSE individuals with low SE instability.

Discussion

Compared to singles, participants in a relationship perceived significantly less sexual interest from others, and these perceptions were more likely to be made by those with LSE than HSE. Not surprisingly, those in a relationship predominantly perceived sexual interest from their relationship partner. On the other hand, singles with HSE perceived more sexual interest in their daily life than singles with LSE.

The contrasting directions of the association between SE level and perception of sexual interest depending on relationship status are in congruence with the risk regulation perspective (Cameron et al., 2010; Murray et al., 2006): Because singles with HSE are motivated to connect with others or consider themselves as attractive potential partners compared to LSE singles, they either are more attuned to sexual interest cues or more readily translate ambiguous behaviors as cues of sexual interest, with a reduced need to protect

themselves from rejection from others. HSEs in a relationship on the other hand, are motivated to promote their romantic relationship and connect to their partners, with a reduced need to protect themselves from partner rejection while LSEs in a relationship are driven to protect themselves with a lower commitment or dependence on their relationship partner (Murray, Rose, Bellavia, Holmes, & Kusche, 2002). Being more committed to their relationship partner and feeling that their relationship satisfies their sexual needs may curb the motivation for partnered HSEs to seek out alternative relationship partners (Le & Agnew, 2003; Rusbult, 1989; Rusbult, Drigotas, & Verette, 1994). This may decrease their attention to behavioral cues of sexual interest, or downplay the attractiveness or potential interest of others (Johnson & Rusbult, 1989), thus reducing their reports of perceiving sexual interest from others. Besides that, partnered HSEs may less likely find themselves in situations that offer perception of sexual interest from others. Partnered LSEs may, on the other hand, be relatively more motivated than partnered HSEs to perceive sexual interest from others as a strategy to reduce dependence on their relationship partner.

Interestingly, those in a relationship perceived lower rejection from others compared to singles. They also inferred less rejection from others than from their own relationship partners. This could be due to the partner's higher willingness to express negative emotions to the participant compared to non-partners, as this willingness can be perceived as an indicator of one's trust in another (Graham, Huang, Clark, & Helgeson, 2008). For instance, Richardson and Green (2006) found that people report directly hurting their romantic partners more frequently in comparison to their friends, or family members. Apart from the willingness of a partner in expressing negative emotions, people also tend to be more accurate in decoding the behavior of a relationship partner compared to others (Sabatelli, Buck, & Dreyer, 1982). Indeed, accuracy in the recognition of subdued negative emotions in particular, has been shown to increase with relationship intimacy (Zhang & Parmley, 2011), which may also explain why people are more likely to perceive higher levels of rejection from their partner than others in overall.

People with LSE and unstable SE tend to be more sensitive to rejection (Nezlek, Kowalski, Leary, Blevins & Holgate, 1997). Such predispositions lower the threshold for perceiving social acceptance. As expected, our results showed that individuals with HSE and stable SE generally perceive lower rejection from others during day-to-day interactions compared to their counterparts. Moreover, unstable LSE individuals in a relationship perceived significantly higher rejection from their partner than those with HSE and stable

LSE, who did not differ in their perceptions of partner rejection. This suggests that the finding that people who feel less valued by their partner (Murray, Griffin, Rose, & Bellavia, 2003), and have higher rejection sensitivity (Downey & Feldman, 1996) are more likely to interpret ambiguous partner behavior as rejecting, and report relationship decline over time (Murray, Bellavia, Rose, & Griffin, 2003), may be specific to LSE individuals who are also uncertain of their self-worth.

Consistent with past findings (Denissen et al., 2008; Srivastava & Beer, 2005), momentary feelings of SE did not predict consequent interpersonal perceptions in general. A couple of exceptions were present: First, the perception of sexual interest for singles with unstable HSE. While singles with HSE were more likely to perceive sexual interest than singles with LSE, only singles with unstable HSE showed a tendency to perceive sexual interest at times when they felt relatively worse about themselves. While speculative, these findings may hint at the possibility that perception of sexual interest may be utilized by people with unstable HSE as an instrument to regulate their volatile feelings of SE. That is, for unstable HSE individuals, SE may not simply be a *sociometer,* which monitors success in interpersonal relationships, but may instead be a goal state that they are motivated to enhance and protect (Crocker & Park, 2004).

Second, only one's momentary SE positively predicted the likelihood of perceiving sexual interest from their relationship partners. We propose two possible explanations for this finding, which appears to be limited to relationship partners in our study. One possibility could be the different benchmarks in place when estimating sexual interest from a relationship partner and a non-partner. While relationship partners are generally expected to show sexual interest, this is not the case for strangers, friends or acquaintances. Sexual interest is also likely conveyed in a less ambiguous manner in an established romantic relationship, compared to novel interactions or newly developing relationship. This expectation benchmark and reduced ambiguity could explain why partnered individuals are not influenced by their SE traits but are instead situationally-driven in their perceptions of partner interest. An alternative explanation would be that perception of sexual interest from others was simply not reported with a frequency sufficient for a moment-to-moment relationship to be substantial.

While the strength of Study 1 lies within its use of a naturalistic repeated-measures design, it is limited by the lack of details in information regarding day-to-day interactions, such as information about the specific setting of the interactions, or the characteristics of

interaction partners. In addition, we measured only the event of perceiving sexual interest, rather than the degree of sexual interest perceived (continuous score) which could better inform our results.

<div align="center">

Study 2

</div>

Self-esteem level, self-esteem instability, and interpersonal perceptions in the laboratory

Our goal for Study 2 was to extend Study 1 to the context of novel interactions during relationship initiation using a scenario-based paradigm. This paradigm offers stronger control because the target behavior and context of the interaction is set and kept constant across all participants, which reduces potential target- and context- based effects present in designs utilizing actual interactions. In addition, this allowed us to examine the role of other key variables on which SE effects could be conditional. SE, as a trait, is proposed to guide perceptions and behavior during novel social interactions in which a risk of rejection is present (Cameron et al., 2010, 2013). Although our findings in Study 1 lent support to SE level and instability as predictors of sexual interest (given relationship status differences) and general interpersonal rejection, its design did not permit us to test the situational limits of these effects. Study 2 thus explored two potential variables that may qualify the role of SE level and instability in perceptions of sexual interest and acceptance: (1) whether the situation entailed a risk of future rejection, or (2) whether the target was showing interest or rejection. To promote ease of comparability to sexual interest perceptions (as both sexual interest and acceptance are positively related to self-esteem) as well as comparability with previous findings on self-esteem effects on perceived acceptance (e.g., Cameron et al.), perception of interpersonal acceptance, rather than rejection, was measured in Study 2.

We hypothesized that SE level and/or instability would predict perceptions, especially of acceptance, only in interactions where a risk of future rejection is possible. On the grounds of our findings from Study 1 and past research (Greenier, Kernis, & Waschull, 1995; Zeigler-Hill et al., 2011), we expected unstable HSE individuals to perceive similarly high or higher acceptance and sexual interest from these targets, than stable HSEs. On the other hand, unstable LSEs, who are most sensitive to rejection (Zeigler-Hill & Wallace, 2012), were expected to perceive lower acceptance and sexual interest in comparison to others. We further predicted that SE would only predict perception of sexual interest for singles and not

those in a relationship, whereas SE effects on perception of acceptance were not expected to differ across relationship status.

Method

Participants. Participants from Study 1 were re-invited to participate in the current study. Of the 84 participants from Study 1, 79 (67 females, 12 males) agreed to complete Study 2 by attending a laboratory session where they were presented vignettes depicting interactions, and provided ratings. About half of the sample for this study ($N = 40$) reported being in a relationship.

Table 4

Behavioral Cues Communicating Boredom, Interest in Daily Conversation and Interest in Dating Situations

Type	Boredom	Interest in daily conversation	Interest in dating situations
Verbal	Give short, close-ended responses	Speak with warmth and politeness	Flirt verbally – make suggestive statement
	End conversation	Tell a joke	Tell a joke
Nonverbal	Attend to something or someone else	Initiate contact, show genuine interest in conversation	Initiate contact, show genuine interest in conversation
	Avoid eye contact	Give full attention	Give full attention

Procedure & measures. During the laboratory sessions, participants completed the study individually. They were presented with 3 passages of hypothetical scenarios depicting casual interactions with strangers, which varied in cues of interest and social risk, and 2 'distractor' vignettes, which depict interactions with strangers expressing randomized behavioral cues. After each scenario, participants completed a short questionnaire, which included measures for manipulation checks, perception of sexual interest, and perception of acceptance. These items were rated on a 7-point Likert scale from 1 (not at all) to 7 (very much).

Manipulation of cues of interest and social risk. To manipulate the degree of interest expressed by the target, we identified a selection of popular behavioral cues used to signal interest in a dating context, interest in daily conversation, and boredom from Fichten et al. (1992, pp. 760-761), which matched a set of cues that were most cited in our pilot study ($N = 50$, $M_{age} = 24.50$, $Range_{age} = 21 - 39$ years). As summarized in Table 4, the cues of interest in a dating context and daily conversation are identical with the exception of "verbal flirtation". Three hypothetical scenarios − interest, rejection, and interest without risk − were designed. In the interest condition, the cues of interest including verbal flirtation were expressed and in the rejecting condition, the cues of rejection were presented. Both conditions featured someone the participant is likely to meet again (risk of future rejection is higher). To remove social risk, we excluded the verbal flirting behavior and made the target someone the participant is less likely to meet again (a stranger at a post office). For example, the vignette for the interest condition presented to female participants is as follows (All three vignettes are provided in the Appendix):

> *It is the first day of university and there is a new male student in one of your classes. He sits next to you and starts a conversation with you* [Contact initiation]. *After the class, he asks you the location of the cafeteria and since you were planning to eat there anyway, you tell him that he can join you for lunch and he agreed. While having lunch, you ask him about his courses and a little bit about himself to be polite. He teases you for asking him such questions and playfully says, "Oh, so this is a date huh?"* [Verbal flirtation and joke]

Manipulation check. To check for the success of our manipulation, we assessed (1) perceiver's interpersonal interest in the target, and (2) feelings of uncertainty. Participants should be equally interested in connecting with the targets showing interest, with or without social risk, but more interested in these targets than a rejecting one. It was especially important to ensure that participants would not be more interested to connect with the target who flirted verbally (*interest* condition) than the target who was interested without the verbal flirtation (*interest without risk* condition). At the same time, participants should report higher feelings of uncertainty in the *interest* and *rejection* conditions than the *interest without risk* condition. The interpersonal interest in the target was assessed using three items (i.e., "I would try to continue the conversation", "I would ask for the target's phone number given the

opportunity", and "I would like to get to know the target better given the opportunity"), average α = .68. Three items were completed and averaged to measure the degree of uncertainty participants felt about the hypothetical person (i.e., "I felt uncertain", "I felt unsure of the person's intentions", "I was uncertain about my ability to read the person's mind"), average α = .75.

Perception of sexual interest. Three items (i.e. the target… "…was flirting with me", "…probably had sexual feelings for me", "… would probably be interested in a sexual encounter with me") captured the degree of sexual interest perceived from the target. The average of these items formed the PSI score, average α = .85. The means of the PSI score for the interest, interest without risk, and rejecting conditions are 3.95 (SD = 1.45, range = 1.00 − 7.00), 3.46 (SD = 1.19, range = 1.00 − 6.33), and 1.36 (SD = 0.60, range = 1.00 − 3.33) respectively.

Perception of acceptance. We measured the degree of acceptance perceived from the target with four items: the target… (1) "…probably liked me", (2) "…probably enjoyed the conversation with me", (3) "…showed signs of rejection" (reverse-scored), and (4) "…did not seem interested in the conversation" (reverse-scored), some of which were adapted from Cameron et al. (2010). These four items were averaged to form the PA score, average α = 0.66. The means of the PA score for the interest, interest without risk and rejecting conditions are 5.22 (SD = 1.11, range = 2.25 − 7.00), 5.75 (SD = 0.69, range = 4.00 − 6.75), and 2.26 (SD = 0.85, range = 1.00 − 4.25) respectively.

Self-esteem. The SE level and SE instability scores were obtained from Study 1. In overall (N = 79), the mean for SE level was 3.74 (SD = 0.58, range = 2.33 − 5.00) while SE instability ranged from 0.00 to 0.42 (M = 0.15, SD = 0.11). For singles (N = 39), the SE level ranged from 2.77 to 4.55 (M = 3.65, SD = 0.50) while SE instability ranged from 0.01 to 0.42 (M = 0.16, SD = 0.12).

Data analysis

As the data from Study 2 also featured a multilevel structure, consisting of repeated measurements that are nested in individuals, HLM 7 was again used to analyze the data. We first examined associations between trait features of SE and interpersonal perceptions. As in Study 1b (following Equations 4b-c), we entered SE level, SE instability, relationship status, and gender as predictors at Level 2, and perceptions of acceptance and sexual interest as

outcomes. Relationship status (0 = single, 1 = partnered) and gender (0 = female, 1 = male) were dummy coded while SE level and SE instability were entered grand-mean centred.

We then tested how the experimental conditions with an opposite-sex target either showing interest (*interest* condition), interest without risk (*interest w/o risk* condition), and rejection (*rejecting* condition), predicted interpersonal perceptions. Indicators for each condition at the level of repeated measurements were created. These predictor variables were dummy coded (1 = presence of condition, 0 = absence of condition). To test our predictions that SE specifically shapes perception in situations of interest with risk of rejection, we conducted first a planned contrast with *interest without risk* and *rejecting* conditions against the *interest* condition (5a). We then conducted another planned contrast with *rejecting* and *interest* conditions against the *interest without risk* condition (5b) to examine the difference in perceptions between the rejecting and interest without risk conditions. The Level-1 models are as follows:

$$PA_{ij} \text{ or } PSI_{ij} = \beta_{0j} + \beta_{1j}(Interest\ w/o\ risk) + \beta_{2j}(Rejecting) + \delta_{ij}$$

(5a)

$$PA_{ij} \text{ or } PSI_{ij} = \beta_{0j} + \beta_{1j}(Interest) + \beta_{2j}(Rejecting) + \delta_{ij}$$

(5b)

The coefficient for the Level-1 intercept, β_{0j}, represent the sample mean of PSI and PA in the *interest* condition in Equation 5a, and the *interest w/o risk* condition in Equation 5b. The coefficients for variables, β_{1j} and β_{2j} respectively, capture the extent to which PSI and PA in the *interest w/o risk* and *rejecting* conditions differ from the PSI and PA in the contrast or baseline condition, *interest*, in Equation 5a. In Equation 5b, β_{1j} represents the difference in perceptions in the *interest* while and β_{2j} represents the difference in perception in the *rejecting* condition, as compared to the *interest without risk* condition. To test whether SE level or instability moderated the associations between the conditions and perceptions, we entered SE instability, SE level (*simple model*) and their interaction term (*interaction model*) as Level-2 predictors. We also included gender and relationship status as controls at this level. As the condition-specific associations between the Level-2 predictors and interpersonal perceptions for both *interest* conditions can be derived from the intercepts of Equation 5a and 5b, we additionally computed the coefficients representing these associations in the *rejecting* condition (reported in text). The key coefficients from all models are presented in Table 5.

Table 5

Multilevel Modelling Coefficients Indicating the Effects of SE Variables, Relationship Status and Sex on Interpersonal Perceptions from Models Contrasting Conditions against Interest (Model 1) and against Interest without Risk Conditions (Model 2).

	Perception of sexual interest				Perception of acceptance			
	Model 1		Model 2		Model 1		Model 2	
	Simple model	Interaction model	Simple model	Interaction model	Simple model	Interaction model	Simple model	Interaction model
Associations between perceptions and self-esteem across target conditions								
SE level	-0.12				0.26*			
SE instability	-1.92*				-1.06			
Relationship status	-0.34†				-0.18			
Gender	0.19				0.16			
Relationship between conditions and perceptions taking into account self-esteem								
Within-person main effects								
Interest w/o risk against Interest	-0.56*	-0.59*			0.30	0.29		
Rejection against Interest	-2.92***	-2.98***			-3.15***	-4.16***		
Rejection against Interest w/o risk			-2.36***	-2.39***			-3.45***	-3.45***
Between-persons level moderators of within-persons slope								
Interest w/o risk against Interest X SE level	-0.66	-0.62			-0.58*	-0.56*		
Rejection against Interest X SE level	-0.65*	-0.58*			-0.20	-0.18		
Rejection against Interest w/o risk X SE level			0.01	0.05			0.38	0.38
Interest w/o risk against Interest X SE instability	2.32	2.31			0.96	1.03		
Rejection against Interest X SE instability	4.70***	4.67**			-0.41	-0.34		
Rejection against Interest w/o risk X SE instability			2.38	2.36			-1.37	-1.37
Interest w/o risk against Interest X SE level X SE instability		-2.88				-1.53		
Rejection against Interest X SE level X SE instability		-5.88***				-1.56		
Rejection against Interest w/o risk X SE level X SE instability				-3.00				-0.02

Note. † $p < .06$.   * $p < .05$.   ** $p < .01$.   *** $p < .001$.

Results

Manipulation check. A repeated measures ANOVA confirmed that participants were more interested in connecting with the targets from both *interest* conditions than the *rejecting* condition ($M = 1.83$, $SD = 0.74$), with no significant differences ($p = .897$) between the *interest* ($M = 3.81$, $SD = 1.66$) and *interest without risk* conditions ($M = 3.79$, $SD = 1.39$), $F(2, 156) = 88.43$, $p < .001$, $\eta^2_p = .53$. Differences in perceived uncertainty between the conditions were also confirmed, $F(2, 156) = 18.93$, $p < .001$, $\eta^2_p = .20$. Pairwise comparisons show that the *interest* condition ($M = 3.91$, $SD = 1.33$) and *rejecting* conditions ($M = 3.87$, $SD = 1.37$) elicited significantly greater feelings of uncertainty than the *interest w/o risk* ($M = 3.03$, $SD = 1.09$), $ps < .001$. No significant differences were found between the former two conditions ($p = .843$). Despite feeling more uncertain in the *interest* (and *rejecting*) condition than the *interest without risk* condition, participants were equally interested in the targets showing interest with and without social risk.

How did self-esteem predict overall interpersonal perceptions? As shown in Table 5, only SE level predicted PA ($t = 2.35$, $p = .020$), with no significant main effects of SE instability ($p = .061$), gender ($p = .512$), and relationship status ($p = .162$). As for PSI, main effects of SE instability ($t = -2.56$, $p = .011$), and relationship status ($t = -1.97$, $p = .052$) were found. No significant main effects were found for gender ($p = .578$) and SE level ($p = .392$). Since we expected relationship status to moderate the way SE predicts PSI but not PA, we re-ran the model including the interaction terms: SE level X Relationship status, and SE instability X Relationship status. As expected, there was a significant interaction between SE instability and relationship status for PSI with a coefficient of 3.04 ($t = 2.05$, $p = .044$). Examining simple slopes indicated that SE instability only negatively (-3.27) predicted perception of sexual interest for singles ($z = -4.21$, $p < .001$) and not for those in a relationship ($z = -0.19$, $p = .85$). Overall, the PSI of all partnered participants did not differ significantly from singles with unstable SE in our sample, and they reported the lowest PSI scores. Relationship status did not moderate the relationship between SE level and PSI, or the relationships between both SE traits and PA, $ps > .10$.

In line with our findings from Study 1, this offers further support on the existence of discrepancies in the way SE predicts perception of sexual interest from others amongst singles and those in a relationship. Therefore, we restricted the following analyses on perception of sexual interest to singles ($N = 39$) while the analyses on perception of

acceptance were run using the whole sample ($N = 79$). All coefficients are summarized in the second panel of Table 5.
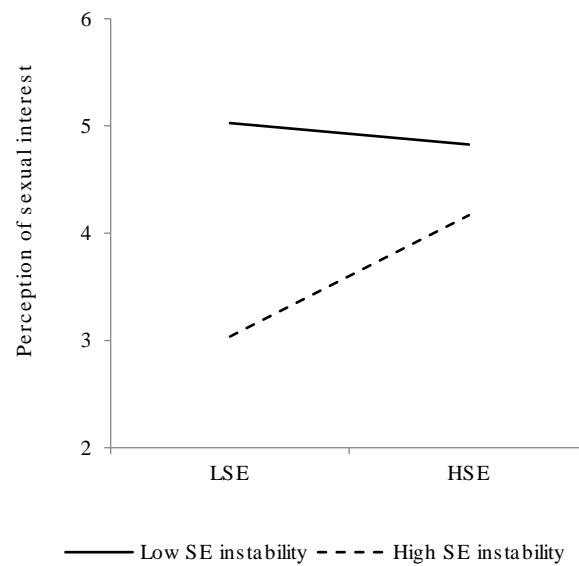

Figure 2. Perception of sexual interest from a target showing interest as a function of self-esteem level and instability graphed for individuals at one standard deviation above (HSE and high instability) and below (LSE and low instability) the mean (Study 2). Individuals with a combination of LSE and high SE instability perceived significantly lower sexual interest, in comparison to HSE individuals regardless of SE instability, and LSE individuals with low SE instability who did not differ significantly in their sexual perceptions.

How did self-esteem predict perception of sexual interest in different contexts? Results from the simple model showed that singles perceived significantly more sexual interest in from the *interest* than *interest without risk* ($t = $ -2.52, $p = $ .014) and *rejecting* conditions ($t = $ -21.98, $p < $ .001). Compared to *interest without risk,* PSI scores were significantly lower in the *rejecting* condition ($t = $ -13.99, $p < $ .001).

Only SE instability emerged as a significant predictor of PSI in both the *interest* condition with a coefficient of -5.61($t = $ -4.58, $p < $ .001) and *interest without risk* condition with a coefficient of -3.29 ($t = $ -2.38, $p = $ .023). However, the interaction model revealed a significant interaction between SE level and instability on PSI in the *interest* condition with a coefficient of 5.48 ($t = $ 2.64, $p = $ .016). As illustrated in Figure 2, the simple slope was significant ($z = $ 3.06, $p = $ .002) with an unstandardized estimate of 1.10 at one standard deviation SE instability above the mean. The simple slope was not significant at the mean

level of SE instability (z = 1.58, p = .11) and at one standard deviation below the mean (z = -0.24, p = .81).

Moreover, there was a significant SE level X SE instability moderation of the slope predicting PSI differences between the *interested* and *rejecting* targets (t = -3.84, p < .001). While significant, the simple slope was less steep, with an estimate of -1.78 (z = -10.69, p < .001) at one standard deviation SE level below the mean and one standard deviation SE instability above the mean, compared to the other simple slopes with estimates ranging from -3.60 to -3.06 (ps < .001). Compared to others, singles with unstable LSE were less divergent in their perceptions of sexual interest conveyed by an interested as opposed to rejecting target. Neither SE level nor SE instability predicted PSI in the *rejecting* condition (ps > .10).

How does self-esteem predict perception of acceptance in different contexts? The PA in both *interest* (t = -15.33, p < .001) and *interest without risk* (t = -20.00, p < .001) conditions were higher than in the *rejecting* condition but not significantly different from each other (t = 1.76, p = .080). SE level significantly predicted the degree of acceptance perceived in the *interest* condition with a coefficient of 0.52 (t = 2.40, p = .019) while SE instability emerged as a significant predictor of PA in the *rejecting* condition with a coefficient of -1.65, t = -2.23, p = .029.

Neither SE level or instability predicted PA in the *interest without risk* condition, ps > .10. In support, SE level predicted the difference in PA between the two interest conditions (t = -2.49, p = .014). A simple slopes analysis (illustrated in Figure 3) revealed that people with mean levels of SE (z = 1.76, p = .078) and one standard deviation above the mean (z = -0.04, p = .97) did not perceive acceptance from the target in the two interest conditions differently. Only those with one standard deviation SE level below mean perceive significantly more acceptance from the target in the interest without risk condition than the interest condition with a slope estimate of 0.59 (z = 3.06, p = .002). PA from an interested target did not vary as a function of one's SE level in the absence of interpersonal risk (t = -0.43, p = .668). No main or moderating effects of SE instability, gender and relationship status were found, and the interaction models revealed no significant SE level and SE instability interactions, ps > .10.
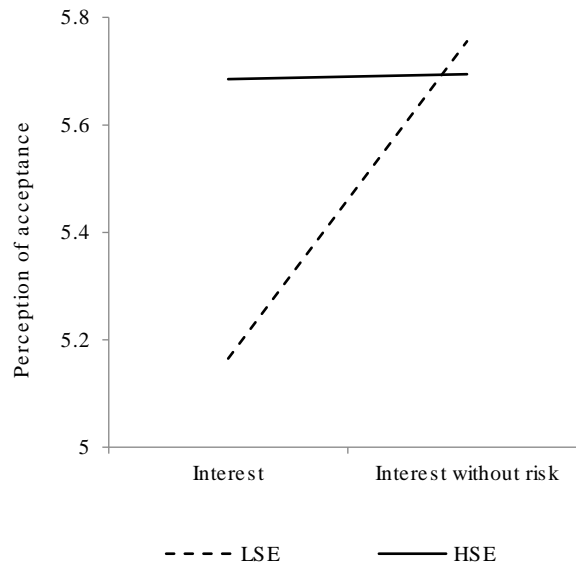
Figure 3. Perception of acceptance as a function of self-esteem level and target behavior (Study 2). LSE represent individuals at one standard deviation below the mean SE level while HSE represent individuals at one standard deviation above the mean. LSE but not HSE individuals perceived significantly lower acceptance in the interest (with risk) condition than the interest without risk condition. Perceptions of LSE and HSE individuals in the interest without risk condition did not differ significantly.

Discussion

In overall, higher SE predicted higher perceptions of acceptance and more stable SE predicted higher PSI. People perceived more sexual interest and acceptance from targets showing interest compared to one showing rejection. Supporting our main predictions and also congruent with findings from Study 1, SE only predicted PSI from attractive opposite sex strangers for singles and not for those in a committed relationship. On the other hand, SE effects on PA did not depend on one's availability as a mate.

Also, SE only predicted PSI in interactions with targets showing cues of interest, but not rejection, while PA was only predicted by SE in interactions with targets who participants were likely to meet again, regardless of whether or not the target was showing cues of interest. Unstable LSE singles estimated the lowest sexual interest from a target showing interest, in comparison to HSE and stable LSE singles who did not differ significantly in their estimations. Although unstable SE singles still perceived lower sexual interest than stable SE

singles, the *underestimation* bias of unstable LSE singles was less pronounced in the interest without risk condition. Inferring low acceptance may be used as a risk-prevention strategy employed by those with poor and volatile feelings of self-worth, to avoid experiences of rejection. In line with Cameron et al.'s (2010) contention and findings that SE only guides perceptions of acceptance in the presence of interpersonal risks, we found that LSE and HSE participants only showed significant differences in perception of acceptance from an interested target who they were likely to meet again and not from an interested target who they were less likely to meet again. Also, people with stable SE perceived more acceptance from a rejecting target than people with unstable SE. Based on our results, it appears that for PSI, SE biases will be present as long as the target is showing cues of interest as such situations retain the perceiver's interpersonal interest in the target whereas the requirement for such biases in PA is the presence of the risk of future rejection as such situations elicit more feelings of uncertainty in the perceiver.

One inconsistent finding in Study 2 was the absence of a relationship status difference in perception of acceptance. Whereas we found in Study 1 that singles perceived more rejection from others than those in a relationship, this was not the case for the perception of acceptance in Study 2. The difference in assessment method could account for this inconsistency. We had no control over the interaction partner and context in the diary study. It could be possible that people in a relationship are simply interacting with people they are more familiar with or closer to when they are not interacting with their partner while singles are interacting with a larger range of people, some of which may be more rejecting than others.

General Discussion

According to Leary and colleagues (Leary et al., 1995; Leary & Baumeister, 2000), SE functions as a sociometer that monitors one's success in satisfying belongingness needs, and these experiences of social acceptance and rejection over time, in turn, guides people's perceptions in future interpersonal interactions. Adapting Kirkpatrick and Ellis' (2001, 2006) proposition of, among others, a sociometer specific to the mating domain, but departing from previous research on the mating sociometer, which examined acceptance from potential romantic partners (e.g., Kavanagh et al., 2010, 2014) we argued for a more specific relation between perception of sexual interest and SE. Just as being accepted by others reflect one's

value as a social partner, being sexually desired reflects one's value as a mate for reproduction. SE as a state should increase following perception of sexual interest, and SE as a trait should predict the way people perceive sexual interest from others. We also tested the roles of SE instability and relationship status in addition to SE level as predictors of interpersonal perceptions.

Support for our proposition was found across two studies utilizing different methodological designs. In the first study, we showed that perception of sexual interest is only related to momentary SE when the target is either an actual mate or a potential one. While singles reported higher state SE after perceiving sexual interest from others (i.e., potential mates), those in a relationship only reported feeling SE boosts after perceiving sexual interest from their relationship partner (i.e., actual mate) and not from non-partners. Building on these findings, we also received support for domain-specific differences the way SE predicts interpersonal perceptions. First, the relationship between SE level and the likelihood of perceiving sexual interest from others in daily life was positive for singles but negative for partnered individuals. Secondly, SE only predicted how singles, but not those in a relationship, estimated the degree of sexual interest conveyed by an attractive target of the opposite sex. The associations between SE and perception of general interpersonal acceptance or rejection on both momentary and trait levels were not contingent on the perceiver's relationship status. These relationship status differences, especially the finding that relationship status only moderated the association between SE and perception of sexual interest but not acceptance or rejection from a potential mate, support our argument for the role of SE as not just a monitor of romantic inclusion or a *mating sociometer* (Kavanagh et al., 2010, 2014; Kirkpatrick & Ellis, 2001, 2006), but also a gauge of one's reproductive value.

Our findings contribute to the literature on risk regulation in close relationships (Murray et al., 2006, 2008) and in the context of relationship initiation (Cameron et al., 2010, 2013). The finding that LSE individuals significantly underestimate the acceptance of an interaction partner in situations that elicit higher feelings of uncertainty is consistent with the notion that LSE individuals are driven to avoid the undesirable consequences of rejection in the presence of a social risk (Cameron et al., 2010). The estimations of HSE individuals were not affected by the social risk. This, coupled with the finding that LSE and HSE individuals perceived similarly high acceptance from the interaction partner when social risk was absent, suggests that the presence of social risk activates the self-protective motive of LSE

individuals. This risk, however, does not appear to enhance, but rather preserve, HSE individuals' motivation to connect with others. Even though conclusions regarding the effect of social risk on self-protective vs. connection goals are beyond the scope of the current research, findings from Murray et al. (2008) suggest that HSE individuals, when faced with the threat of interpersonal rejection, suppress their self-protection goals.

Interestingly, the interplay between SE level and SE instability was consistently shown in both studies: Study 1 showed that partnered individuals with unstable LSE, relative to others, perceived the highest partner rejection. In Study 2, unstable LSE singles perceived the lowest sexual interest compared to others. These results contradict the idea that unstable LSE individuals may be more resilient and cope more adaptively under threat than stable LSE (Kernis et al., 1993; Kernis, Grannemann, & Mathis, 1991). Rather, it seems likely that unstable LSE individuals readily activate self-protective goals. On the one hand, this could be viewed as a protective factor since perceiving low acceptance or sexual interest from actual or potential mates may lead to withdrawal from or reduced investment in the interaction, which avoids further or actual rejection. On the other hand, it could also reflect vulnerability (Butler, Hokanson, & Flynn, 1994), as overlooking actual cues of acceptance or sexual interest may cripple opportunities for establishing friendships, or more intimate and sexual relations, which may further undermine SE over time. Moreover, when romantic or sexual advances go unnoticed in an existing platonic relationship, people can unknowingly lead others on and end up in an embarrassing interpersonal situation, jeopardize friendships or professional relationships, and in extreme cases, even be subjected to coercive behaviors and sexual violence (Abbey et al., 1998; Farris et al., 2008b; Johnson et al., 1991).

Our findings also highlight the importance of examining more than one facet of SE in SE research. For instance, SE instability predicted perception of rejection in daily life along with SE level. In addition, SE instability even surpassed SE level as a predictor of sexual perception from potential mates showing behavioral cues of interest, and also as a predictor of estimations of acceptance from a rejecting target. The question of when, or in what conditions do SE level or SE instability take precedence over the other or interact with each other as predictors of acceptance and/or sexual interest remains. Our suspicion is that for SE instability to predict social perceptions, the social outcome has to be significantly instrumental to the self-worth of perceiver, depending on the perceiver's predominant social role (Anthony, Holmes, & Wood, 2007); the more instrumental the outcome or the costlier an adverse outcome is, the more important it would be for one with volatile feelings of self-

worth to minimize the risk for potential harm to their self-worth. For instance, the SE of one who is single should be more attuned to experiences of being sexually desired by a potential mate compared one who already has a relationship partner. Also, not perceiving sexual interest from a relationship partner may be less threatening to one's feelings as a long-term mate than perceiving low partner acceptance. Because those in a relationship prioritize the role as a long-term mate or romantic partner over a short-term mate or sexual partner, their SE becomes attuned to perceptions of acceptance or rejection from their partner. We suspect that it is in such situations that SE instability differences in perceptions arise. As the data from our studies cannot reliably address this, future research is required to clarify this.

Caveats and future directions

The current studies feature several limitations that warrant interpretation of the results with caution. First, we were unable to have a fully controlled manipulation in Study 2. Our intention was to manipulate the interpersonal risk and interest levels of the target in the interaction. Since participants were shown all three vignettes, we could not keep the context of the interaction constant in all vignettes as that would have not only been artificial but also clearly exposed the variable under manipulation. Although our manipulation check showed that participants varied in their levels of uncertainty and interest in the targets in the different conditions as predicted, future research should try to replicate our findings with a between-subjects experimental design, which would allow for a cleaner manipulation.

We also acknowledge that the bias of our sample toward females could limit the generalizability of our results. Following the parental investment theory (Trivers, 1972), males, but not females, have a better advantage in reproductive success with a higher quantity of mating partners. Males therefore have more interest in short-term mating (Schmitt et al., 2003), and are more likely to anchor their general self-esteem on self-perceptions of mate value (Penke & Denissen, 2008) than females. However, our findings from Study 1 suggest that perceiving sexual interest is equally as rewarding to the immediate feelings of self-worth of females and males[3]. Moreover, given the (posited) greater attunement of males' SE to mate value, it would be more reasonable to expect the addition of more male participants to improve, rather than undermine, our results on the associations between SE and sexual interest perception.

To gain a more comprehensive understanding of our findings, future research will have to, in addition to also increasing the size and gender distribution of the sample, consider

exploring the more fundamental motivational processes proposed to underlie the effects of SE level and instability on interpersonal perceptions. While most of the discussions of our findings revolve around approach vs avoidance motivations, we did not test these directly in our research. An important next step would be to examine how these motivations vary with momentary self-esteem changes across time and between individuals, especially for those with unstable HSE vs. unstable LSE. Last but not least, future investigations should also test whether there is a causal relationship between perception of sexual interest and immediate feelings of SE as this was not achievable with the momentary assessment data.

Conclusion

People are generally driven to protect themselves from harm, and as social beings, create and promote social relationships. Self-esteem has been found to guide people's inclination towards these conflicting motivations, which in turn biases social perceptions: HSE inhibits self-protection goals and boosts the motivation for relationship promotion, whereas LSE bolsters the motive to avert interpersonal pain during interactions with a degree of uncertainty (Murray et al., 2006; 2008). Our studies revealed that SE effects for perception of sexual interest but not acceptance are contingent on relationship status, suggesting the existence of two similar but distinct sociometer systems, which serve different needs, in play – one for belongingness and another for reproductive needs. Finally, our findings also suggest that the tendency for LSE individuals to underestimate acceptance (or overestimate rejection) and sexual interest, possibly as a strategy to mitigate the risk of rejection, may be limited to those with unstable LSE. Despite some limitations, we consistently found support for the associations between SE and perception of sexual interest from a combination of a naturalistic momentary assessment of day-to-day experiences and a controlled experiment. Our findings therefore serve as a good foundation for further research on the function of SE as a tracker of mate value, in addition to relational value.

4

Structural Power

The Effect of Power on the Perception of Sexual Interest:
A Military Context

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Abstract The current research examined the effect of power on the perception of sexual interest within a military context. In three vignette-based experiments with male military samples, structural power (power induced by military rank) led to heightened sexual perceptions. Men who interacted with a hypothetical female target of a lower rank estimated higher sexual interest from the target, compared to targets of equal (Experiment 1) or higher ranks (Experiments 2 and 3). Mediation tests revealed that being in a relatively higher rank increased feelings of power over the target, which led to higher perception of sexual interest (Experiment 1). The effect of power was robust, irrespective of whether or not the target displayed behavioral and verbal cues of interest (Experiment 2). Furthermore, Experiment 3 revealed that the effect of power is qualified by psychopathy (a trait that is characterized by heightened egocentrism and a lack of empathy). Whereas the power effect was present for

men with low scores on psychopathy, those with higher scores consistently perceived higher sexual interest from the target, regardless of their rank relative to the target.

Keywords perception of sexual interest, power, mating, dark triad personality

Sexual harassment is a highly prevalent and pressing issue, with severe and pervasive consequences (Fayazrad, 2013). It has recently been estimated that 21.4% of women and 6.6% of men in the U.S. military experience sexual harassment (Morral et al., 2015). In 67% of these cases, perpetrators were military personnel of a higher rank, suggesting a link between sexual harassment and power (Harned, Ormerod, Palmieri, Collinsworth, & Reed, 2002; Williams, Gruenfeld, & Guillory, 2016). One antecedent of sexual harassment that has been linked to power, is sexual cognitions (Gruenfeld, Inesi, Magee, & Galinsky, 2008; Kunstman & Maner, 2011). For instance, power has been shown to heighten perceptions of sexual interest (i.e., people in power are more likely to think that another person is sexually interested in them; Kunstman & Maner) and the tendency to sexually objectify subordinates (Gruenfeld et al.). Despite the valuable contributions of existing research, experimental findings on the power and sex association have been mostly derived from university student samples (e.g., Gruenfeld et al.; Kunstman & Maner), whereas majority of sexual harassment-related studies conducted on military samples have relied on survey-based methodology, which do not offer causal explanations (for a review, see Turchik & Wilson, 2010).

Given the significance of this issue, and psychology's replication crisis (e.g. Open Science Collaboration, 2015), the current research pursues two goals: First, we seek to replicate the finding that power increases perception of sexual interest (e.g., Kunstman & Maner, 2011) in a military context. Our second goal involved the examination of individual differences and its potential interactional effects with power, as previous studies highlight the importance of such interplays (e.g., Bargh et al., 1995; Kunstman & Maner, 2011). Here, we turn our attention to personality traits that capture exploitative social tendencies such as narcissism, psychopathy and Machiavellianism – collectively known as the Dark Triad (Paulhus & Williams, 2002). Given their associations with proclivity towards sexual harassment (Zeigler-Hill, Besser, Morag, & Campbell, 2016) and power (Kajonius, Persson, & Jonason, 2015), we examined whether the Dark Triad traits override, qualify, or amplify the effects of power on the perception of sexual interest.

Power and sexual perception

Power can be defined in terms of one's control over resources, through which influence over others can be achieved (Fiske, 1993; Keltner et al., 2003). People in power possess control over some form of valuable asset, which can be employed for goal achievement and grants relative immunity to interpersonal punishments. Being in power thus activates a tendency to approach rewards (e.g., attention to rewards, automatic cognition, disinhibited behavior) while a lack of power activates inhibitory tendencies (e.g., attention to threats, systematic cognition, inhibited behavior) (for a review, see Keltner et al.). Power's activation of the approach system may extend to the activation of goals related to sex and mating since this approach system regulates functions that are fundamental to survival (Depue & Collins, 1999; Gray, 1973); this includes sex, which is a primary reward that is essential for production and gene propagation (Hull, 1943). Indeed, power has been found to automatically activate sexual concepts (Bargh et al., 1995) and prime mating goals (Kunstman & Maner, 2011), which may in turn sexualize interpersonal perceptions.

Kunstman and Maner (2011; Study 2) found that participants who were led to believe that they were the most qualified to lead their team expected more sexual interest from their (subordinate) team member than participants in the control group. The authors also showed that the effect of power on sexual perception is limited to individuals who are more willing to engage in casual sex, with chronically active sexual goals. On a related note, power has also been found to increase one's tendency to sexually objectify others (Civile & Obhi, 2016; Gruenfeld et al., 2008) or tendency to perceive people on the basis of their instrumentality or usefulness to an active mating goal rather than their other human attributes (Bartky, 1990; Nussbaum, 1999).

Past research has induced power via role assignment following false feedback of high leadership abilities (Gruenfeld et al. 2008; Kunstman & Maner, 2011), or via experiential priming, where participants are asked to recall a personal situation in which they had power over another person (Galinsky et al., 2003). In the present research, however, power manipulation was achieved through the military rank contrast between the perceiver and target without the provision of false feedback of subjective social power. We opted for this method rather than the methods used in past research based on our argument that one's military position or rank acts as a fundamental determinant of power within a culture that places high value on hierarchy (Zaleski, 2015; Zurbriggen, 2010). We hypothesized that

participants holding a rank higher than the target are more likely to perceive sexual interest from the target than participants holding a relatively lower rank (Hypothesis 1).

Dark Triad and sexual motivation

However, being a leader or having more power is not the sole driver of overperception of sexual interest (Bargh et al., 1995; Kunstman & Maner, 2011). We therefore included in the present research, an examination of personality traits expected to moderate the effect of power on sexual perception. Known as the Dark Triad of personality (Paulhus & Williams, 2002), narcissism, psychopathy and Machiavellianism are a set of traits characterized by their exploitative nature, which are commonly studied together due to their shared features of heightened egocentrism (Jones & Paulhus, 2011) and a lack of empathy (Jonason, & Krause, 2013; Jones & Paulhus).

Nevertheless, the three traits have their own distinguishing features (Paulhus, 2014). For instance, people scoring high in narcissism are generally driven by ego needs and power (Bradlee & Emmons, 1992; Foster, Shrira, & Campbell, 2006) with a sense of grandiosity and self-entitlement (Raskin & Terry, 1988). Psychopathy on the other hand is linked to hypersensitivity to rewards (Gorenstein & Newman, 1980). Being highly reward-driven, psychopaths show a tendency to be impulsive (Jones & Paulhus, 2011) with a priority for immediate over long-term rewards, and are willing to manipulate others as a means to achieve these rewards (Barnett & Thompson, 1985). While Machiavellianism is also characterized by high manipulative tendencies (Barnett & Thompson), those scoring high in this trait are more strategic and less impulsive (Jonason & Tost, 2010; Malesza & Ostaszewski, 2016). Put simply, narcissists are driven by ego needs, whereas psychopaths and Machiavellianists are driven by instrumental needs, with the former being more impulsive than the latter.

These traits may shape the effect of power on sexual perception in two different ways. First, people scoring high in the Dark Triad traits tend to prefer short-term mating strategies (Jonason, Li, Webster, & Schmitt, 2009), reflecting higher sexual motivation. More recent findings (Baughman, Jonason, Veselka, & Vernon, 2014; Jonason, Luevano, & Adams, 2012), however, suggest that narcissism and psychopathy may be more related to sexual motivation than Machiavellianism. As people have a tendency to project their own desires and motivations onto others when interpreting ambiguous interactions (Maner et al., 2005), we would expect perception of sexual interest to be associated with psychopathy and

narcissism but not Machiavellianism. More importantly however, and considering Kunstman and Maner's (2011) finding that power only increases sexual perception among those with higher chronic sexual motivation, one could expect the effect of power to be absent for men with low scores on narcissism and psychopathy (Hypothesis 2a). Second, psychopaths have been found to be inattentive to contextual cues when engaging in goal-directed behavior (Newman, 1998). Assuming that the drive for reward in the form of mating success takes precedence over the contextual information in the form of power, one would expect, contrary to the above, the power effect on sexual perception to be minimized in individuals high in psychopathy (Hypothesis 2b).

The present research

Three vignette-based experiments were conducted on military samples (a different sample per study). In Experiment 1, we examined whether power, induced by perceiver military rank, increased sexual perception. In Experiment 2, we manipulated power via the variation of target rank and additionally examined whether the power effect is robust in different situations (by varying target behavior). Finally, we tested whether the effect of power on sexual perception would be moderated by individual differences in exploitative social tendencies in Experiment 3. That is, in addition to finding support for Hypothesis 1 in all three experiments, Experiment 3 will test which of the two moderation Hypotheses (2a and 2b) is more likely to be correct.

Experiment 1

Method

Design and participants. One hundred and fifty-seven male military members, who were officer candidates of the Swiss Armed Forces (majority held the rank of a private first class), completed a short questionnaire as part of fulfilling the Joint Officer Training Course (JOTC) requirements. The JOTC takes place three times a year, with the aim to teach candidates the basic skills required of an officer. Admission into this course is selective, and limited to military members who have demonstrated leadership potential during their basic military training, as well as good leadership abilities during their time as a squad leader (squads consist of five to ten recruits) at cadre school. Our sample thus consisted of officer

candidates with three months to two years of military experience. Participants were randomly allocated into the two power conditions (power, control). After removing subjects who failed to answer the control question correctly (see below) and subjects with incomplete responses, we were left with a total of 144 participants. Their ages ranged from 18 – 29 years (M = 20.73, SD = 1.65).

Materials and procedure. Participants were presented with a hypothetical scenario, which portrayed a casual encounter in a military setting with an attractive female target who is a recruit. The target is described to approach the participant, as contact initiation is viewed as a nonverbal indicator of interest (Koeppel et al., 1993). Participants were asked to imagine themselves as a staff sergeant (*power condition*) or as a recruit (*control condition*). The scenario read as follows:

> You are a *staff sergeant* [Control: *recruit*] in the 6th week of the basic military training course and you are about to enter the dining area for dinner. On your way there, you meet recruit Stefanie Rocheray, whom you have never met. Recruit Stefanie Rocheray is attractive and smiles at you before approaching you to ask about the "optional off-base evening" tomorrow evening. Specifically, she asks for a restaurant recommendation near the barracks. You respond with a witty remark. She laughs and responds with another funny remark. You eventually recommend her a good pizzeria, for which she thanks you.

To verify if participants understood the situation correctly or read it carefully, we included a control question. They were asked if the hierarchy was clearly defined (there is a clear hierarchical difference in the power condition, but no difference in the control condition). Those who failed to answer the question correctly were excluded[4].

However, holding a higher rank may not necessarily equate to the subjective perception of holding higher power over the other (although we do expect this due to the hierarchical nature of the military), and vice versa (Bugental & Lewis, 1999). Thus, to check for manipulation success, participants were asked to rate the item "I have power over the target" on a 7-point Likert scale (1 = *not at all*, 7 = *most definitely*). Two items, "I think that she would be interested in a sexual encounter with me" and "I think that she was flirting with me" (r = .60), both rated on 7-point Likert scales (1 = *not at all, 7 = most definitely*) were used to capture perception of sexual interest[5].

Results and discussion

Manipulation check. Participants who imagined to be a staff sergeant reported experiencing higher power ($M = 4.61$, $SD = 1.78$) than those who imagined to be a recruit ($M = 2.81$, $SD = 1.98$), $t(141.93) = 5.717$, $p < .001$, $d = 0.96$. This result pattern suggests that our manipulation of power was successful.

Perception of sexual interest. Participants in the power condition reported higher sexual interest from the female target ($M = 4.08$, $SD = 1.59$) than those in the control condition ($M = 3.55$, $SD = 1.40$), $t(142) = -2.09$, $p = .04$, $d = .35$, thereby supporting our first hypothesis and replicating the findings of Kunstman & Maner (2011).

Despite the successful manipulation check, we further conducted a mediation analysis in order to test whether the differences regarding the perception of sexual interest was indeed mediated by subjective feelings of power. Regression analysis following the framework outlined by Hayes (2013; SPSS macro: Process Model 4) was used to investigate the mediation effect. Results indicated that military rank was a significant predictor of perceived power ($b = 1.80$, $se = .32$, $p < .001$) and that power was a significant predictor of perceived sexual interest ($b = .18$, $se = .06$, $p < .01$). Mediation analyses based on 1000 bootstrapped samples using bias-corrected and accelerated 95% confidence intervals (Preacher & Hayes, 2004) showed that the rank of target had a significant total effect on the level of sexual interest perceived [$TE = .52$, $se = .25$, $p = .04$], a nonsignificant residual direct effect [$DE = .20$, $se = .27$, $p = .46$], and a significant indirect effect [$IE = .32$, $se = .14$, $LL = .11$, $UL = .62$] via subjective feelings of power[6]. These results suggest that subjective feelings of power completely mediated the relationship between target rank and perception of sexual interest.

Experiment 2

The first experiment provided preliminary evidence that situational power induced by military rank manipulation affects the perception of a target's sexual interest. However, manipulating power by asking participants to imagine holding a specific military rank could have potentially influenced our results. Participants had to adopt a position that either (a) they have yet to experience (staff sergeant in the power condition) or (b) requires retrospective recall (recruit in the control condition) – both of which could be susceptible to biases, making it potentially challenging for them to respond from their own perspective (e.g., Swartzman & McDermid, 1993). To account for these potential confounding effects, we induced power by

manipulating the rank of the female target in Experiment 2 with the aim of replicating the results of Experiment 1.

Also, the hypothetical target in Experiment 1 did not convey any clear signals of (dis)interest. Thus, a secondary goal of Experiment 2 was to test whether the effect of power on sexual perception depended on target behavior. Does power only guide perception in ambiguous interactions or does it also affect perceptions in interactions in which the target expresses clearer behavioral cues of (dis)interest? Following the assumption that power activates mating goals and the approach system, we hypothesized that powerful men would consistently estimate higher sexual interest from targets than powerless men, regardless of target behavior. Moreover, targets showing interest should also be perceived as more sexually interested than targets showing disinterest.

Method

Design and participants. Our second experiment consisted of a 2 (power: high vs. low) X 2 (target behavior: disinterest vs. interest) design. Participants were, excluding 7 participants who failed to answer the control question correctly and 20 participants with incomplete responses, 153 male officer candidates of the Swiss Armed Forces (mostly privates first class) from a separate JOTC who completed the experiment as part of fulfilling the course's requirements. They were randomly allocated into the four conditions and they were on average 20.50 years old ($SD = 1.13$).

Materials and procedure. Participants were presented a hypothetical scenario similar to the one used in the first experiment, which describes an encounter with an attractive female military member in a military setting. Power was manipulated by varying the target's rank: a private in the *high power condition*, and a lieutenant in the *low power condition*. As done in Experiment 1, the scenario begins with the target approaching the participant to ask a question, which was regarding the JOTC in the current experiment. In the *disinterest condition*, the target only engages in brief eye contact, and greets an officer that walks by during the interaction. The interaction ends with the target verbally thanking the participant and wishing him luck in his military career. To emphasize this disinterest, participants also learned that the target is usually flirtatious toward others (which should further stress that the target is really not interested in the participant). In the *interest condition*, the target is engaged in the conversation, smiles at the participant, and plays with her hair. The interaction ends

with the target briefly touching the participant's arm, and wishing him luck in his military career. Again, to emphasize the target's interest, we included the information that the target is usually very reserved. The same items from Experiment 1 were used to measure felt power. Perception of sexual interest was captured with the two items from Experiment 1, with an additional item "The target probably found me attractive" (Cronbach's α for these 3 items was .86).

Results and discussion

Manipulation check. A 2 (power: high vs. low) X 2 (target behavior: disinterest vs. interest) ANOVA revealed a significant effect of power on felt power, $F(1,149) = 80.78$, $p < .001$, $\eta p^2 = .35$. Participants in the lower power conditions felt less in power ($M = 1.58$, $SD = 1.02$) than those in the higher power conditions ($M = 3.66$, $SD = 1.78$), which suggests that our manipulation was successful. In addition, we also found a marginally significant effect of the target's interest on subjective power, $F(1,149) = 2.811$, $p = .096$, $\eta p^2 = .019$. Participants felt more in power when the target showed interest ($M = 2.79$, $SD = 1.80$) rather than disinterest ($M = 2.22$, $SD = 1.65$). More importantly, however, the interaction effect between power and target's interest on perceived power was not significant, $p = .614$.

Perception of sexual interest. Another 2 (power: high vs. low) X 2 (target behavior: disinterest vs. interest) ANOVA resulted in a significant effect of power on the perception of sexual interest $F(1,149) = 4.09$, $p = .045$, $\eta p^2 = .027$. Participants holding a higher rank perceived more sexual interest from the target ($M = 4.14$, $SD = 1.54$) than participants holding a lower rank ($M = 3.58$, $SD = 1.48$). The effect of the target's behavior was also significant, $F(1,149) = 79.41$, $p < .001$, $\eta p^2 = .348$. As expected, participants perceived more sexual interest from a target showing interest ($M = 4.74$, $SD = 1.23$) than from one showing disinterest ($M = 2.93$, $SD = 1.23$). No interaction was found between power and target behavior, $p = .651$.

Even though these findings suggest that target behavior may have a stronger impact on sexual perceptions than the perceiver's power, the significant main effect of power and the lack of an interaction effect between power and target's behavior implies that power increases perception of sexual interest, irrespective of the target's behavior. This not only replicates our results from Experiment 1, but also allows us to additionally conclude that the

effect of power can be robust across different conditions (see Figure 1 for the means of the four different conditions).
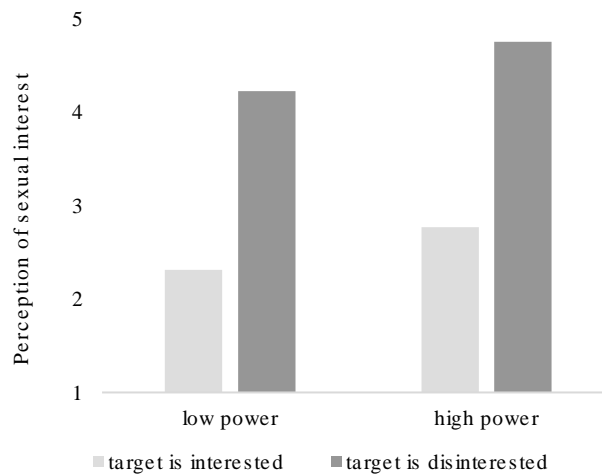

Figure 1. Perception of sexual interest as a function of perceiver's power and target's interest.

Experiment 3

Our first two experiments consistently showed that power, induced by military rank relative to the target, affects the perception of sexual interest. The goal of Experiment 3 was to account for individual differences in power's effect on the perception of sexual interest.

Method

Design and participants. Two hundred and thirty-three male officer candidates of the Swiss Armed Forces participated in this experiment as partial fulfilment of the JOTC requirements, and were randomly allocated into the two power conditions (high vs. low). Twelve participants were excluded based on their responses to the control question and one participant was excluded due to incomplete responses, leaving a final sample of 232 (218 privates first class, 10 sergeants, 2 staff sergeants, 2 unknown) with a mean age of 20.57 years ($SD = 2.08$).

Materials and procedure. Again, participants were given a scenario, which described an encounter with an attractive female member of the Swiss Armed Forces in a military setting. As in Experiment 2, power was manipulated by varying the female target's

rank (private vs. lieutenant). Participants completed a set of questions measuring their perceptions of sexual interest (identical to the second experiment, Cronbach's α was .81) and felt power, all rated on 7-point Likert scales (1 = *not at all*, 7 = *most definitely*).

Participants then completed a set of unrelated questionnaires, followed by the *Short Dark Triad* (SD3; Jones & Paulhus, 2014) which consists of 27 items rated on a 5-point Likert scale (1 = *Disagree strongly, 5 = Agree strongly*) measuring their adoption of a manipulative and callous social strategy. Of the 27 items, Machiavellianism (α = .64), narcissism (α = .61) and psychopathy (α = .64) were captured with 9 items each. The respective items were averaged as scores for each trait, along with a composite score to capture a general exploitative social style (α = .73).

Results and discussion

Manipulation check. Participants reported feeling more in power when imagining a target with a lower rank ($M = 2.92$, $SD = 1.88$) than a higher rank ($M = 2.19$, $SD = 1.32$) relative to themselves, $t(230) = -3.443$, $p = .001$, $d = 0.45$, indicating a successful manipulation.

Power and perception of sexual interest. Participants perceived significantly more sexual interest from a female military member holding a relatively lower rank ($M = 3.67$, $SD = 1.51$) than one holding a relatively higher rank ($M = 2.93$, $SD = 1.49$), $t(230) = -3.77$, $p < .001$, $d = .49$, further replicating the findings from Experiments 1 and 2.

Dark Triad and perception of sexual interest. As shown in Table 1, perception of sexual interest was significantly correlated with the Dark Triad as a whole, as well as narcissism and psychopathy as independent traits. A regression analysis was conducted to examine the unique contribution of each of the Dark Triad traits to the prediction of sexual perception while controlling for the other two traits. Perception of sexual interest was regressed on narcissism, psychopathy, and Machiavellianism. While the coefficients for narcissism ($β = .15$) and psychopathy ($β = .25$) were significant ($ps < .05$), Machiavellianism did not significantly predict sexual perception ($β = .03$, $p = .70$), supporting past research (Baughman et al., 2014; Jonason et al, 2012). These findings show that, in general, narcissism and psychopathy, but not Machiavellianism, have unique positive associations with perception of sexual interest.

Table 1

Intercorrelations and descriptive statistics of Experiment 3

	1	2	3	4	5
1. Dark Triad (composite)					
2. Machiavellianism	0.71***				
3. Narcissism	0.69***	0.29***			
4. Psychopathy	0.72***	0.23***	0.23**		
5. Perception of sexual interest	0.30***	0.13	0.21**	0.29***	
M	3.10	3.52	3.34	2.45	3.77
SD	0.37	0.52	0.49	0.57	1.38
N	232				

Notes. ** $p < .01$. ***$p < .001$.

Interactional effect between power and the Dark Triad. Next, we tested if the Dark Triad as a whole, and its three individual traits moderated the effect of power on sexual perception. We conducted moderation analysis following Hayes (2013; SPSS macro: Process Model 1), first with the Dark Triad composite score, situational power and their interaction term as predictors. This model explained a significant proportion of variance in sexual perception scores, $R^2 = 0.16$, $F(3, 228) = 13.89$, $p < .001$. Compositely, the Dark Triad moderated the effect of power on sexual perception, $b = -0.96$, $t(228) = -2.02$, $p = .045$. A simple effects test revealed that situational power increased perception of sexual interest among individuals with mean ($b = 0.66$, $t = 3.89$), and low Dark Triad scores, i.e., one standard deviation below Dark Triad mean ($b = 1.01$, $t = 4.66$), $ps < .001$, but not among those with high Dark Triad scores, i.e., one standard deviation above the mean, $b = 0.30$, $t = 1.13$, $p = .260$.

Table 2

Estimates of Dark Triad personality traits as moderators of the effect of power on perception of sexual interest

	Model 1		Model 2		Model 3	
	b		b		b	
	(SE)	p	(SE)	p	(SE)	p
Power	0.63 (0.17)	0.000	0.64 (0.17)	0.000	0.63 (0.17)	0.000
Psychopathy	0.55 (0.16)	0.001	-	-	-	
Machiavellianism	-	-	-0.10 (0.18)	0.569	-	-
Narcissism	-	-	-	-	0.37 (0.18)	0.042
Trait x Power	-0.65 (0.30)	0.035	-0.41 (0.35)	0.241	-0.38 (0.28)	0.281

Notes. Model 1 tested the moderation of psychopathy on the effect on power with Machiavellianism and narcissism included as covariates. Model 2 tested the moderation of Machiavellianism on the effect on power with narcissism and psychopathy included as covariates while Model 3 tested the moderation of narcissism with psychopathy and Machiavellianism included as controls.
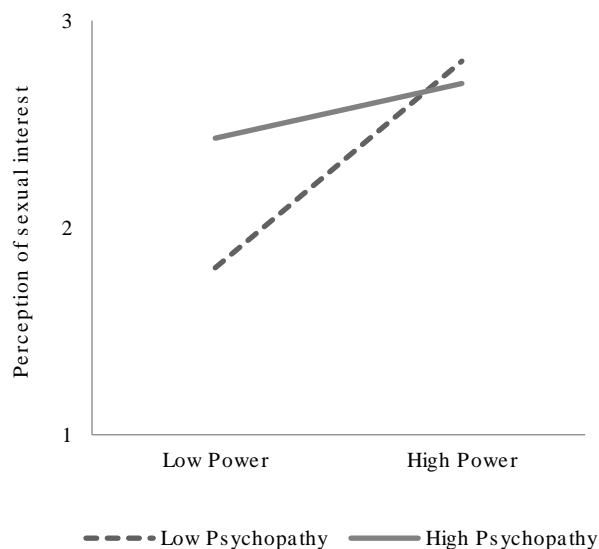

Figure 2. Perception of sexual interest as a function of situational power and psychopathy. Higher values represent higher estimations of sexual interest.

We then conducted the same analyses on the Dark Triad traits individually, each time controlling for the effects of the other two traits, as done in past research (e.g., Furnham, Richards, Rangel, & Jones, 2014; Zeigler-Hill et al., 2016). The estimates for these analyses are presented in Table 2. Only psychopathy significantly moderated the effect of power on sexual perception, $b = -0.65$, $t = -2.13$, $p = .035$, with the model explaining 17.47% of variance in sexual perception scores, $F(5, 226) = 8.98$, $p < .001$ (see Figure 2). Simple slopes revealed that the power effect was present for individuals with low or mean psychopathy with estimates 1.00, and 0.63 respectively, $ps < .001$, but not for individuals with high psychopathy, $b = 0.26$, $t = 1.03$, $p = .306$. This result pattern suggests that the moderating effect of the Dark Triad on the relationship between situational power and sexual perception was largely driven by psychopathy, thereby lending support to Hypothesis 2b, but not to Hypothesis 2a.

General discussion

Across three experiments, we found consistent evidence for the effect of power on males' sexual perceptions within a military context using relative rank manipulations. Males estimated higher levels of sexual interest from a hypothetical female target when they held a military rank that was higher, rather than equal to or lower, than the female target. Our results support the findings of Kunstman and Maner (2011), and are in line with other previous findings on power's association with sexual cognitive concepts (Bargh et al., 1995). Furthermore, the power effect on sexual perception was present, whether or not the target exhibited behavioral cues of interest (Experiment 2). Findings from Experiment 3 showed that narcissism and psychopathy, but not Machiavellianism emerged as significant predictors of sexual perception. Heightened sexual perception may reflect elevated sexual motivation (Baughman et al., 2014), driven perhaps by ego needs for those high in narcissism (Campbell & Foster, 2002; Foster, Shrira, & Campbell, 2006; Raskin & Terry, 1998), and need for stimulation and rewards for those high in psychopathy (Gorenstein & Newman, 1980). Furthermore, psychopathy, but not narcissism and Machiavellianism, moderated the effect of power on sexual perception. While men generally estimated lower sexual interest from a higher-ranking target compared to a lower-ranking target, this was not the case among those

high in psychopathy. Men high in psychopathy reported heightened estimations of sexual interest, which did not differ by power.

One possible explanation as to why psychopathy but not narcissism limited the effect of power would be the underlying driver of these traits, at least as captured by the SD3 (Jones & Paulhus, 2014) used in Experiment 3. Although both traits are marked by callousness and manipulative tendencies, only psychopathy is characterized by a disregard for laws and norms, and impulsivity. Thus, men high in psychopathy may be so driven by reward that they ignore other relevant information (Newman, 1998), for instance, the potential negative outcomes of making unwanted sexual advances on a superior. Our finding that people in power appear to perceive sexual interest similarly to those who tend to be impulsively approach-oriented and reward-driven, seems to support the proposition that power facilitates an approach orientation while a lack of power promotes attentiveness to and avoidance of threats (Keltner et al., 2003).

One potential limitation of our work could be a decreased generalizability due to the sole use of vignettes to test our hypotheses. Second, we acknowledge that perception of sexual interest scores reported in our experiments were, on average, rather low. This could be due to socially desirable self-reporting, which is not unlikely given the recognized issue of sexual harassment within the military. While vignette responses have been found to translate into reactions in real situations and can produce valuable results (e.g., Aguinis & Bradley, 2014; De Cremer & van Knippenberg, 2004), future studies should consider incorporating behavioral observations during face-to-face interaction tasks or implicit measures of sexual interest to address these limitations, and further complement our findings. Furthermore, participants in experiments 2 and 3 generally felt less in power ($Ms < 3.60$) despite manipulation checks confirming that participants felt significantly more in power in the power conditions relative to control conditions in all three experiments. The effect of the rank manipulations on felt power appeared to be smaller in the second and third experiments. It is thus also possible that this reduced power effect, likely due to the different power manipulation procedure, may have led to our observations of generally low sexual perception scores. In addition to that, the nature of our hypothetical scenarios, which depicted common novel social encounters within a military context (which do not involve sexually-tinged behaviors) could also have contributed to these low perception scores. However, we showed in Experiment 2 that sexual perception was higher when the target showed more cues of

interest. More importantly, the power effect persisted across target's expression of interest, indicating that the ambiguity of our scenarios did not limit our results.

In spite of these limitations, the current research offers useful insights, which could be applied in preventive interventions or training programs that target sexual harassment in military contexts. Our data suggest that it could be worthwhile for such programs to concentrate not only on the definition of harassing behaviors and the post-harassment reporting process, but also on the understanding of possible psychological "side-effects", such as undesirable perceptual biases, that may come automatically with a high rank and/or with certain dark personality traits.

Acknowledgements

5

Mood and Culture

Mood and the Perception of Sexual Interest in Different Cultural Contexts: A Comparison between a Malaysian and a Swiss Sample

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Abstract The current study examined, on the basis of past findings and theories on mood and cognition, whether people's perception of sexual interest would decrease when they are in a negative mood and increase when they are in a positive mood. Using repeated-measures experiments, university students in Switzerland (N = 117) and Malaysia (N = 117) went through mood induction procedures followed by participations in video-guided imagined interactions where they judged the sexual interest of their interaction partners. Results revealed a dampening effect of negative mood on sexual interest perceptions in the Swiss sample. No significant mood effects were found in the Malaysian sample. Moreover, we found that this sample difference could be explained by differences in endorsement of sociocentric values. The more people value social harmony and stability, the less likely they were to succumb to mood effects on sexual perception.

Keywords mood, sexual interest, perception, culture

Imagine that you are waiting for your bus when an attractive stranger approaches you to ask you a question about the bus schedule. This eventually develops into a conversation during which the stranger appears to be very engaged, with good eye contact and frequent smiles. Is this person showing sexual interest, or is this person just being friendly? Does your answer to this depend on who you are, or how you are feeling at the moment?

Research has shown that whether this stranger is perceived as being friendly or sexually interested may depend on several factors: For instance, heterosexual men are more likely than women to perceive higher sexual interest from opposite-sex targets (Abbey, 1982; Farris et al., 2008b; Koukounas & Letch, 2001; Perilloux, 2014), and people who are more oriented toward short-term mating strategies (Howell et al., 2012; Perilloux et al., 2012) tend to perceive higher sexual interest from others. It is difficult to reliably infer sexual interest because a perceiver often relies on other sources of information in addition to the actual behavior of the target to inform his or her judgment due to the ambiguous nature of sexual interest cues (Ekman, 2003; Treat, Viken, & Summers, 2015). This means that, apart from perceiver gender or personality, such perceptions may also be shaped by situational variables such as one's mood state. Understanding how transient mood states may influence the way people perceive sexual interest is of great value, given the universal experience of good and bad moods. In the present research, we examined if mood effects, which have been widely documented in social perception research (Forgas, 2013), extend to the perception of sexual interest. Moreover, we tested if these effects were present across two culturally distinct samples.

The most robust finding from three decades of research on sexual (mis)perception is the abovementioned gender effect. Offering an evolution-grounded explanation for this, the error management theory (EMT; Haselton & Buss, 2000) posits that men's tendency to perceive higher sexual interest (compared to women's report of interest) is a selected adaptation to minimize the reproductive costs of a missed mating opportunity, which is much higher for men than for women. Recent evidence, however, suggests that the male overperception could exist simply because women understate their own sexual interest and that men are, in fact, relatively accurate in their judgments of women's behavior (de Quandros-Wander & Stokes, 2008; Perilloux & Kurzban, 2015). It is therefore essential to identify more reliable predictors of sexual perception.

The current research seeks to address this concern by investigating how transient mood states affect people's estimations of sexual interest. Mood has been proposed to function as a

signal of one's environmental condition; positive mood signals a safe, benign environment while negative mood indicates the presence of potential threat or danger in the environment (Clore et al., 1994; Schwarz, 2002; Schwarz & Clore, 1983). Hence, negative mood promotes a more detailed and analytic bottom-up information processing style whereas positive mood conveys the absence of a need for such effortful information-processing (Bless, 2001; Fiedler, 2001). This pattern has been consistently shown across various social processes, including social perception (Schwarz, 2012). For instance, people have been found to rely more on stereotypes when forming first impressions of others when in a positive mood than when in a negative mood (Isbell, 2004; Unkelbach, Forgas, & Denson, 2008; for a review see Bless, Schwartz, & Kemmelmeier, 1996).

Along the same vein, we argue that people should perceive higher sexual interest when in a positive mood than when in a negative mood. People may let their guards down and more readily approach social rewards when they perceive the environment to be relatively safe. Positive mood induction would therefore increase feelings of sociability (Cunningham, 1988; Isen, 1987) or the positivity, leniency and optimism of people's perceptions and interpretations in ambiguous situations (Forgas, 2002). When a threat is signaled, the more functional strategy would be to increase vigilance to avoid any potential negative social outcomes. In this case, underperceiving sexual interest and risking the opportunity of a missed mating opportunity may be the less costly error to make.

Only one study, to the best of our knowledge, has examined the effect of mood on perceptions of sexual interest. De Quandros-Wander and Stokes (2008) subjected 60 undergraduates from an Australian university to both positive and negative mood inductions, and asked them to rate the degree to which a set of dating-related behaviors reflected interest in sex or commitment after each mood induction. One half of the sample was first induced into a positive mood followed by a negative mood whereas the other half was first induced into a negative mood followed by a positive mood. While the authors showed that a shift from negative to positive moods increased men's estimations of women's sexual interest, their findings were insufficient to conclude that people in a positive mood perceived higher sexual interest than when in a negative mood. This may be in part owing to their procedure, which involved the consecutive administration of the two mood conditions. As moods are relatively enduring affective states (Forgas, 2002), the successive induction of a contrasting mood state within a single test session of 45 to 60 minutes would likely not allow for a clean manipulation. It would be difficult to ensure the complete erasure of residual mood state from

the first mood induction. Additionally, in their study, like others (e.g. Haselton & Buss, 2000; Perilloux & Kurzban, 2015), estimation of sexual interest was based on verbal descriptions of behaviors, e.g. "touched thigh" and "held hands". While we acknowledge the utility of such measures in controlled experimental designs, the abovementioned behaviors, for instance, may not be (at least not commonly) present in real-life *novel* interactions with strangers, which is of the current study's interest.

A limitation of prior research on sexual perception is that the majority of the findings have been derived from Western samples (mostly from the USA), and only a few that involve cross-cultural comparisons. For instance, DeSouza and colleagues' (1992) study comparing samples from Brazil and the USA found that Brazilian participants attributed higher sexual intent in the behavior of others compared to American participants. Other studies conducted on non-American samples include replications of the male overperception effect on a Norwegian sample (Bendixen, 2014), as well as Spanish, Chilean, and French samples (Perilloux et al., 2015). Even though extant cross-cultural work has documented national differences in sexual perception, none has explicitly examined the factors underlying these variations. Thus, in addition to assessing if mood effects on perception would differ or replicate across different cultural samples, the present study examined cultural values as potential drivers of the cultural variation.

One of the most significant concepts that distinguishes one culture from another is the degree to which one values independence and individuality, versus interdependence and relationship harmony (Markus & Kitayama, 1991; Schwartz, 1994). Members of cultures that prioritize independence (e.g., Western and North European, and North American) tend to construe themselves as autonomous entities with a unique set of internal attributes. Members of cultures that prioritize interdependence (e.g., Asian, South American, South European, and African), on the other hand, define themselves as part of a larger social collective. Because of the significance of connectedness and harmony with other in-group members, people in such cultures tend to be more concerned about how relevant others think and feel about them. Relative to Western European cultures, Asian cultures pay more attention to relevant others within a social context and this information takes precedence over *inner* attributes such as private feelings and motivations (Triandis, 1994). This was reflected in Wu and Keysar's (2007) findings, which demonstrated that Chinese participants were more accurate in evaluating the intentions of others and less influenced by their own personal intentions compared to American participants, even though both cultures possess perspective-taking

abilities (Keysar, Lin, & Barr, 2003). These findings point to the possibility that culture may not affect people's abilities to attend to others, but instead conditions the automaticity of this process. Asian cultures would thus less likely rely on information from their *self*, such as their mood state, to inform their social judgments relative to Western European cultures. In support of this proposition, emotional factors have been found to play more significant roles in regulating behavior and life satisfaction (Suh, Diener, Oishi, & Triandis, 1998) and in life decisions (Levine, Sato, Hashimoto, & Verma, 1995) in individualist than collectivist cultures.

Another relevant difference between Asian and Western European cultures is the degree of concern shown over the loss of *face*, or "the respectability and/or deference, which a person can claim for himself from others by virtue of the relative position he occupies in his social network and the degree to which he is judged to have functioned adequately in that position" (Ho, 1976, p. 883). High concern over loss of *face* exists in East Asian cultures, and because *face* is a relatively volatile resource, the psychology of Asian cultures may revolve around a strong desire to maintain or avoid its loss (Hamamura & Heine, 2008; Hamamura, Meijer, Heine, Kamaya, & Hori, 2009; Heine, 2005). This makes members of these cultures more likely to prefer or adopt avoidance-oriented strategies, in comparison to Western European cultures whose members prefer more approach-based strategies (Elliot et al., 2001; Lee et al., 2000). We propose that Asian cultures, as guided by a focus to prevent harm to social reputations, may be more attuned to avoidance-oriented information than their European counterparts, making them more hesitant to take risks in sexual perceptions. Thus, people from Asian cultures, compared to those from European cultures, would likely estimate lower sexual interest in the behavior of others.

The current study

The aim of the current study was to examine the effect of transient mood states on sexual interest perception in two culturally-distinct samples. Similar to de Quandros-Wander and Stokes (2007), the present work employed a repeated-measures design. However, instead of inducing two mood states within a single experimental session, our participants, who were university students from Switzerland and Malaysia, attended several experimental sessions that were scheduled two weeks apart and underwent only a single mood induction in one experimental session. In our task to capture perception of sexual interest, video-guided imagined interactions rather than verbal descriptions of dating related behaviors (De Quandros-Wander & Stokes; Perilloux et al., 2015) were utilized. This was done in attempt to

address the ecological validity concerns that accompany such (latter) designs, as they lack in supporting contextual information (e.g., knowing how the target looks like, being able to observe behaviors in motion) that is important in social perception (Barrett & Kensinger, 2010; Treat et al., 2015). To operationalize culture, we assessed individual-level endorsement of sociocentric values that tap into the importance of social harmony and stability; these include key value priorities of security, tradition, and conformity, as well as humility and face (Schwartz et al., 2012; Welzel, 2010). We hypothesized that perception of sexual interest would be higher (H1) when one is in a positive mood than when one is in a negative mood, and (H2) among Swiss participants than Malaysian participants. We also hypothesized that (H3) the mood effect on perception of sexual interest would be more prominent in the Swiss sample than the Malaysian sample as driven by the sample differences in endorsement of sociocentric values.

Method

Participants

Participants were 243 university students from a Swiss university and a Malaysian university who identified as heterosexual. Four participants did not complete the study and 5 were excluded as they exceeded the age restriction of the study (18–30 years), leaving 117 (52 male, 65 female) in the Swiss sample and 117 (60 male, 57 female) in the Malaysian sample. Swiss participants were on average 21.71 years old (SD = 2.40) while Malaysian participants were on average 20.12 years old (SD = 1.23). Across the two samples, the distribution of relationship status differed, with approximately half of the Swiss sample and 30% of the Malaysian sample reporting being in a relationship. The Swiss sample had to be fluent in either German or French while the Malaysian sample had to be fluent in English. For their participation, Swiss participants were rewarded research credit hours while Malaysian participants were reimbursed MYR 60 (MYR 1 = USD 0.24) for their participation.

Procedure

This study was part of a larger research project that investigated the role of personality and arousal states on social perception. Participants were told that they would be participating in a research on "movie preferences, personality, and first impressions". Participants attended three 30-minute individual experimental sessions at a laboratory, with a minimum 2-week gap between each session. A different mood state was induced each session and the order of

these conditions was counterbalanced across participants. The experimental procedure along with the materials were provided in German, French or English, depending on the participant's preference. Four bilingual (2 German-English and 2 French-English) researchers translated the English version of the questionnaire into German and French. Six (3 German-English and 3 French-English) researchers back-translated the German and French questionnaires into English to ensure that all versions of the questionnaires had the same meaning for participants in both samples.

Prior to the experiments, participants first completed an online questionnaire which contained the values measure, demographic and other personality measures unrelated to the current study. Order of all questions within and between each measure was randomized across participants. Participants were instructed to not take any caffeine, alcohol or nicotine for at least two hours before their scheduled laboratory sessions.

Upon arrival at the laboratory for the first session, participants first read and signed the informed consent forms, and were then given a brief explanation of the experimental tasks. They were informed that each laboratory session would involve 2 (ostensibly) unrelated experiments: The first part of each session were tasks from a study on movie preferences (mood induction procedure) while the second part were tasks of another experiment on the effects of subtle differences in non-verbal behaviors on first impressions (sexual perception task). Each session began with a brief introduction of the procedure. Participants then watched 2 movie clips while having their facial responses and skin conductance activity recorded. At the end of the second movie clip, participants were asked to state their preferred movie clip. These tasks (facial and skin conductance recording, and preference statement) were included in order to reinforce the cover story. Participants were then directed to complete the second task, which was the *sexual perception task* (described in materials & measures section below) on a computer. Finally, participants completed a paper-and-pencil mood measure with additional distractor items. After each test session, especially the negative mood conditions, we made sure to eliminate any residual mood effects. At the end of the final test session, participants were given a full debriefing and we found no awareness of the specific aims of our study.

Materials and measures

Cultural values. Participants completed the Portrait Values Questionnaire (PVQ-R, revised from Schwartz et al., 2012), which included 57 brief statements or *verbal portraits* (3

statements/items to capture each of the 19 values) describing a goal that is important to a hypothetical person (e.g. "It is important to him/her to maintain traditional values or beliefs", "Stability and order in the wider society are important to him/her"). For each *portrait* or statement, participants rated how alike the person is to themselves on a 6-point scale (1 = *not like me at all*, 2 = *not like me*, 3 = *a little like me*, 4 = *moderately like me*, 5 = *like me*, 6 = *very much like me*). Higher scores reflect greater endorsement of the value captured by the item. Following Schwartz and Rubel's (2005) recommendations, participants' ratings of all 57 items were averaged form a mean value score, and utilized to correct for individual differences in scale use. Participant's responses for each item was centered around his or her mean value score prior to specific value score computations.

Of the 57 items, 21 capture conservation values of security (personal and societal), conformity (interpersonal and rules), tradition, humility and face. Due to our interest in values that capture concern for social harmony and dependence, two items that measured concern in personal security were not included in the computation of the value, societal security. The computation of other conservation values was done in accordance to Schwartz and Rubel's propositions[7]. With the exception for societal security, which was captured by 4 items (the original 3 items plus the third item measuring personal security), the ratings for three items were averaged as the score for each of the other values. Cronbach's α was .78 for societal security, .84 for tradition, .85 for conformity to rules, .75 for interpersonal conformity, .74 for face, and .57 for humility.

Mood induction. In the control condition, two emotionally neutral video clips selected from Schaefer, Nils, Sanchez and Philippot's (2010) database of pretested emotion-inducing film stimuli were presented. The first clip was a scene from the movie Blue (Code 55 in Schaefer et al.'s database) while the second clip was a scene from the movie The Lover (Code 58). To induce negative mood, we showed participants a scene from Schindler's List (Code 29) and a scene from the movie Sophie's Choice where Sophie is being forced by a Nazi SS officer to choose to save one of her two children while sacrificing the other. This has been recommended and used successfully in past studies (e.g. Beukeboom & Semin, 2006; Van Berkum, De Goede, Van Alphen, Mulder, & Kerstholt, 2013). To induce positive mood, participants watched a video of divers interacting with seal puppies that was accompanied by a cheerful pop song, and a snippet from a Turkish comedy game show. Findings from our pilot study with a sample of 60 Swiss (M_{age} = 21.93, SD_{age} = 1.76) and 60 Malaysian females

(M_{age} = 20.68, SD_{age} = 1.73) revealed that these videos are effective in inducing a positive mood.

Mood measure. To validate the mood induction, participants provided mood ratings on upon the completion of each session. Mood was captured with two bipolar items (happy–sad and good–bad) adapted from Forgas (2007) with anchors of 1 and 7 (both labeled "very"), which were introduced with the statement, "The first task made me feel…". The ratings on these two items were averaged to form a mood score (r_{SB} = .85 − .88). Higher scores indicate a more positive mood.

Figure 1. Snapshots of some videos from the sexual perception task. First column of photos depicts Malaysian actors while second column depicts Swiss actors.

Sexual perception task: Video stimuli. Participants were presented 8 video clips of an actor speaking into the camera, and asked to imagine that the target was approaching them on university grounds, either asking about a lecture or asking for recommendations on restaurants (see Figure 1 for snapshots). The 8 targets were two female and two male Swiss actors, and two female and two male Malaysian actors. Actors wore their own clothing, which were white, black or blue in color; read from a script and were instructed to behave as they would when approaching a stranger to ask a question. These videos were pilot tested to ensure that targets were generally rated as above average in physical attractiveness within their cultures[8]. To control for potential confounding effects of language, the audio in the videos were removed. Participants were led to believe that the videos contained subtle manipulations in non-verbal behavior (e.g. duration of pauses, smile frequency, degree of eye contact, and proximity to camera), which they may or may not detect, and that they were

shown different versions of each video in every session. In reality, participants were presented with a standard set of 8 videos each session (randomized presentation order).

Sexual perception task: Interpersonal perceptions. After each imagined interaction, participants provided their perceptions about their interaction partner on a set of items. Perception of sexual interest was measured by averaging the scores of two items rated on a scale of 1 (not at all) to 7 (very): "If you had to guess, do you think the target found you attractive?", and "If you had to guess, do you think the target would be interested in a sexual encounter (e.g. kissing, hooking up, etc.) with you?". To assess perception of behavioral cues conveying interest, the average of the items, "Kindly rate the degree of eye contact of the person in the video" and "Kindly rate the smile frequency of the person in the video", rated on a scale of 1 (low) to 7 (high) were computed. Higher scores indicated higher estimations.

Results

Effectiveness of mood induction procedure

To determine whether our mood inductions were effective, we conducted a mixed-design, 2 (Location: Swiss and Malaysian) X 3 (Mood condition: Positive, negative and control) ANOVAs on mood ratings. Given a violation of Levene's test for homogeneity of variances between the Swiss and Malaysian groups for the negative mood condition, $F(1,232) = 15.32$, $p < .001$ (no violations for the positive mood and control conditions, $ps > .05$), we conducted the analyses with log transformed mood scores. Analyses revealed a significant main effect of mood, $F(1.32, 305.75) = 245.13$, $p < .001$, partial $\eta^2 = .51$. Across samples, participants felt significantly better when in a positive mood, $F(1, 232) = 123.20$, $p < .001$, partial $\eta^2 = .35$, and significantly worse when in a negative mood, $F(1, 232) = 190.02$, $p < .001$, partial $\eta^2 = .45$, relative to control ($Ms = 5.92, 2.91, 4.86$ respectively). There was also a significant main effect of location, $F(1, 232) = 4.11$, $p = .044$, $\eta_p^2 = .02$, with mood ratings across mood conditions being more positive in the Swiss sample than Malaysian sample ($Ms = 4.53$ and 4.22 respectively). The mood X location interaction was not significant, $F(1.32, 305.75) = 1.18$, $p = .177$. These results suggest that the mood manipulation was equally effective across both samples.

Primary analyses

Due to the multilevel structure of our data with within-person predictors and outcomes and between-person predictors, hierarchical linear modeling (HLM 7; Raudenbush et al., 2010) with full maximum likelihood estimation was utilized in our data analyses. A 3-level regression analysis was conducted: participants' repeated estimations of sexual interest from 8 hypothetical interaction partners or targets of different genders and nationalities were nested within the control, positive mood and negative mood conditions, which were nested within 234 participants. The number of units was 5616 (234 participants X 3 conditions X 8 targets) for Level 1, 702 for Level 2 and 234 for Level 3. In these models, we included participant's location, relationship status, and gender as Level-3 predictors. Because the Swiss sample was significantly older than the Malaysian sample[9], age was included in the model as a Level-3 control variable (continuous score, grand mean centered).

The top panel of Table 1 presents the descriptive statistics from the unconditional models: the means, the within-mood (the target-level), within-individual (mood-level), and between-individual (person-level) variances of the outcome variables. The first set of analyses estimated associations between perceptions and Level-3 predictors. No predictors were entered for the Level-1 (Equation 1) and Level-2 (Equation 2) models:

$$y_{ijk} = \alpha_{0jk} + \varepsilon_{ijk}$$

(1)

In this model, y_{ijk} is either the estimation of sexual interest, or sexual interest cues conveyed by target i in the mood condition j by person k, α_{0jk} is a random coefficient representing the mean of y for person k (across the j conditions and i targets), ε_{ijk} represents the target-level or within-mood condition variation around this mean.

$$\alpha_{0jk} = \beta_{00k} + \delta_{0jk}$$

(2)

where β_{00k} is an individual's mean for perception of sexual interest or perception of interest cues, and δ_{0jk} is mood condition or within-person variation around this mean.

Table 1

Descriptives and estimated parameters of multilevel regression predicting interpersonal perceptions from models contrasting mood conditions against control (Model 1) and against negative mood (Model 2).

	Perception of sexual interest		Perception of interest cues	
	Model 1	Model 2	Model 1	Model 2
Multilevel summary statistics				
M	4.21		4.79	
Within-mood variance	1.27		1.38	
Within-person variance	0.09***		0.00	
Between-person variance	0.64***		0.29***	
Proportion of variance within mood conditions (%)	0.05		0.00	
Proportion of variance within persons (%)	0.32		0.17	
Associations between perceptions and perceiver location, gender, and relationship status across mood conditions and targets				
Perceiver location	-0.64 (0.11)***		-0.15 (0.09)	
Perceiver gender	-0.40 (0.11)***		-0.03 (0.08)	
Perceiver relationship status	-0.19 (0.11)†		-0.14 (0.08)	
Relationships between mood with perceptions taking into account perceiver location				
Target-level main effect (Level 1: N = 5616)				
Target nationality	-0.17 (0.12)	-0.09 (0.12)	1.06 (0.10)***	0.87 (0.10)***
Target gender	0.14 (0.12)	0.21 (0.12)	0.70 (0.09)***	0.79 (0.09)***
Within-participants main effect (Level 2: N = 702)				
Positive mood contrasted against control, PM against CT	0.09 (0.13)		0.04 (0.11)	
Negative mood contrasted against control, NM against CT	-0.30 (0.14)*		0.03 (0.11)	
Positive mood contrasted against negative mood, PM against NM		0.39 (0.15)**		0.01 (0.11)
Individual-level main effects (Level 3: N = 234)				
Perceiver location	-1.04 (0.15)***	-0.73 (0.16)***	-0.32 (0.13)*	-0.27 (0.13)*
Perceiver gender	-0.54 (0.15)***	-0.43 (0.15)**	-0.05 (0.12)	-0.11 (0.12)
Perceiver relationship status	-0.22 (0.14)	-0.07 (0.15)	-0.19 (0.12)	-0.25 (0.12)*
Individual-level moderators of within-participants slope				
Perceiver location X PM against CT	0.09 (0.14)		-0.03 (0.12)	
Perceiver location X NM against CT	0.31 (0.15)*		0.04 (0.11)	
Perceiver location X PM against NM		-0.22 (0.15)		-0.08 (0.12)

Note. Standard error is reported in the parentheses.

†p < .08. *p < .05. **p < .01. ***p < .001.

The roles of perceiver nationality, gender, along with covariates relationship status and age were examined at Level 3 with the following model:

$$\beta_{00k} = \gamma_{000} + \gamma_{001}(PerLoc) + \gamma_{002}(PerGen) + \gamma_{003}(PerRel) + \gamma_{004}(PerAge) + \nu_{00}$$

(3)

where γ_{000} is the overall mean of perception of sexual interest or perception of interest cues and ν_{00k} is between-individual variation around this mean. PerLoc is a dummy-coded variable for location (0 = Swiss, 1 = Malaysian), PerGen is a dummy-coded variable for perceiver gender (0 = male, 1 = female), PerRel is a dummy-coded variable for the perceiver's relationship status (0 = single, 1 = in a relationship), while PerAge is a continuous variable for the age of the perceiver. All dummy-coded variables were entered uncentered. PerAge was entered grand-mean centered.

The results of these analyses, which were summarized in the middle panel of Table 1, revealed that across targets and mood states, participants' estimations of the degree of interest cues expressed by targets were not predicted by the location, gender, or relationship status of the perceiver. Perceiver location and gender emerged as significant predictors of sexual interest estimations; participants who were either from the Swiss sample or male generally perceived higher sexual interest than participants who were either from the Malaysian sample or female. No other significant predictors were found.

The next set of analyses examined relationships between perceptions, target characteristics, perceiver mood, and perceiver characteristics. Our main aim was to examine whether perceptions differ by mood conditions, and if mood effects were present in both the Swiss and Malaysian samples. Nevertheless, it was also important to also whether or not these effects were specific to opposite-sex targets who are potential mates, or if there were target culture and perceiver location interactions. We thus conducted a planned contrast with positive mood and negative mood against control (equation 5a), followed by another planned contrast with positive mood and control against negative mood (equation 5b) on the Level-1 intercept and predictors. The Level-1 (Equation 4), and Level-2 models for these analyses were as follows:

$$y_{ijk} = \alpha_{0jk} + \alpha_{1jk}(TarNat) + \alpha_{2jk}(TarGen) + \varepsilon_{ijk}$$

(4)

where α_{1jk} is a random coefficient (slopes) representing the relationship between perceptions and target nationality (dummy-coded: 0 = Swiss, 1 = Malaysian) while α_{1jk} represents the relationship between target gender (dummy-coded: 0 = male, 1 = female).

$$\alpha_{0jk} = \beta_{00k} + \beta_{01k}(PM) + \beta_{02k}(NM) + \delta_{0jk}$$

(5a)

$$\alpha_{0jk} = \beta_{00k} + \beta_{01k}(PM) + \beta_{02k}(CT) + \delta_{0jk}$$

(5b)

PM, NM, and CT are dummy-coded variables (0 = absence of condition, 1 = presence of condition). In Equation 5a, β_{01k} represents the difference in perceptions of person k in the positive mood condition, while β_{02k} represents the difference in the negative mood condition, as compared to control. In Equation 5b, β_{01k} represents the difference in perceptions of person k in the positive mood condition, while β_{02k} represents the difference in the control condition, as compared to negative mood. The Level-3 predictors (as shown in Equation 3) were applied to all intercepts and slopes.

The coefficients showing the relationships between interpersonal perceptions and mood conditions and perceiver location are presented in the third panel of Table 1. In both models, there were neither significant cross-level 2-way interactions between both target-based variables (i.e., target gender and target nationality) and mood contrasts, nor significant 3-way interactions between target-based variables, mood contrasts, and perceiver-based variables (e.g., perceiver location, perceiver gender). We thus do not report these coefficients and do not discuss these further[10].

Perception of sexual interest

Relative to control, positive mood did not increase sexual interest estimations significantly and this was not conditional on the location, relationship status or gender of the perceiver. However, being in a negative mood significantly reduced sexual perceptions relative to control, and this difference appeared to be moderated by the location of the participant. Participants perceived higher sexual interest when in a positive mood than when in a negative mood. This mood effect was not moderated by the participant's location, relationship status or gender.

Perception of interest cues

In contrast with perception of sexual interest, participant's estimations of the intensity of interest cues conveyed by the targets did not vary across mood conditions. Similar to perceptions of sexual interest, the non-significant mood effect was not moderated by target-based variables.

Overall, our first set of results suggest that (1) our hypothesized perceiver mood effect on sexual perception is mainly a negative mood effect as perceptions did not differ between positive mood and control conditions, and (2) that mood effects were neither dependent on target characteristics, nor dependent on the match or mismatch between target and perceiver gender or location. Thus, we removed the Level-1 predictors (i.e., target nationality and target gender) and assessed only the effect of negative mood by conducting a contrast with negative mood against control and positive mood on the Level-1 intercept 1 in our subsequent analyses (instead of running two models with L2 equations 5a-b). The coefficients from these analyses are reported in Table 2.

Table 2

Estimated parameters of multilevel regression predicting interpersonal perceptions from models without level-1 predictors.

	Perception of sexual interest	Perception of interest cues
Within-participants main effect (Level 2: $N = 702$)		
Negative mood	-0.28 (0.09)**	-0.04 (0.07)
Individual-level main effects (Level 3: $N = 234$)		
Perceiver location	-0.70 (0.11)***	-0.16 (0.09)[†]
Perceiver gender	-0.41 (0.11)***	-0.01 (0.08)
Perceiver relationship status	-0.24 (0.11)*	-0.14 (0.08)
Individual-level moderators of within-participants slope		
Perceiver location X Negative mood	0.20 (0.09)*	0.06 (0.07)

Note. Standard error is reported in the parentheses.

[†]p < .08. *p < .05. **p < .01. ***p < .001.

The effect of negative mood on perceptions

Relative to positive mood and control, negative mood significantly decreased the perception of sexual interest and only participant location emerged as a significant moderator of the negative mood effect. As illustrated in Figure 2, simple slopes analyses showed that negative mood only significantly reduced sexual perceptions among Swiss (B = -0.28, p = .002) but not Malaysian participants (B = -0.08, p = .276). Participant's perception of interest cues did not differ by mood or sample.
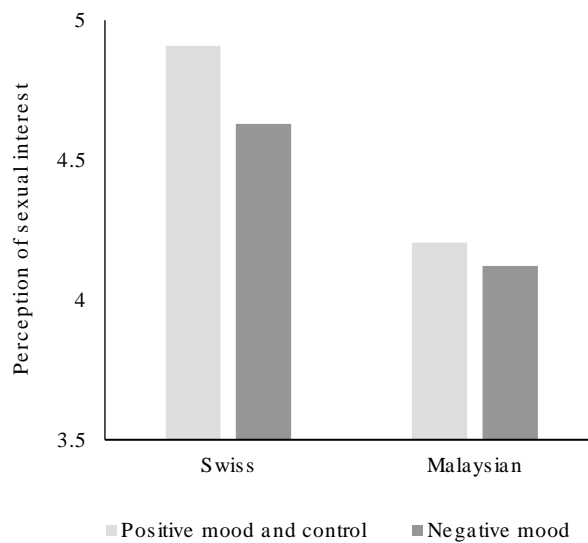

Figure 2. The effects of negative mood and location (Swiss, Malaysian sample) on perception of sexual interest conveyed by eight targets on average (mean ratings on 7-point scales).

The role of culture

To investigate whether the nationality differences in the effect of mood on sexual perception can be attributed to conservation values, we first assessed whether and which of the values differed by nationality using independent samples t-tests. The tests revealed that Swiss participants (M = -0.62, SD = 0.78) generally reported less concerns with societal security than Malaysian participants (M = -0.20, SD = 0.71), $t(232)$ = -4.27, p < .001, d = 0.56. Similarly, Swiss (M = -0.86, SD = 1.06) were less likely to value conformity to rules than Malaysians (M = -0.56, SD = 0.85), $t(232)$ = -2.36, p = .019, d = 0.31. Participants from both samples did not differ in the endorsement of the values of tradition, $t(221.58)$ = -1.23, p = .221, interpersonal conformity, $t(232)$ = -1.61, p = .110, humility, $t(232)$ = -0.71, p = .477, and face, $t(232)$ = -1.83, p = .069. We then tested whether the moderation of the negative

mood effect by sample can be explained by values for societal security and conformity to rules. Societal security, conformity to rules, along with perceiver location, gender, relationship status, and age as covariates were entered as predictors of the intercept (β_{00k}) and the negative mood slope (β_{01k}) at Level 3.

While the negative mood effect remained significant (p = .006) with a slope of 0.25, the inclusion of cultural values reduced the moderating effect of location to non-significance, *(B = 0.15, p = .135)*. Concern for societal security (*B* = 0.12, *p* = .043) but not conformity to rules (*B* = 0.01, *p* = .863) emerged as a significant moderator of the effect of negative mood on sexual perception. The removal of conformity to rules as a predictor at Level-3 did not change the pattern of findings. Finally, we removed location as a predictor to examine how concern for societal security interacted with mood to predict perception of sexual interest. The effect of negative mood remained significant (*B* = -0.16, *p* = .015), and this effect was significantly moderated by value for societal security (*B* = 0.14, *p* = .012). Simple slopes analyses revealed that among participants who valued societal security on average levels (*B* = -0.16, *p* = .014) or at low levels of 1 SD below the mean (*B* = -0.27, *p* < .001), being in a negative mood, relative to control or positive mood, reduced their estimations of sexual interest. Participants who highly valued societal security, at 1 SD above mean, did not differ in their sexual estimations across mood (*B* = -0.06, *p* = .459)[11].

Discussion

Our results showed that transient mood can affect people's perception of sexual interest. Relative to control, people tend to be more pessimistic in their estimations of sexual interest from others when they are in a negative mood, whereas being in a positive mood does not seem to make them more optimistic in their perceptions (partially supporting H1). This mood effect was found to be present whether or not people were imagining a hypothetical interaction with an opposite-sex target or imagining how members of the opposite-sex would make estimations when interacting with a potential mate, and also regardless of the nationality of the hypothetical interaction partner. Second, the Swiss sample consistently perceived higher sexual interest than the Malaysian sample (supporting H2). Furthermore, negative mood only reduced sexual interest estimations in the Swiss sample but not the Malaysian sample (supporting H3) and this moderation effect was explained by differences in cultural orientation. Mood differences in perception were found for participants who were

less sociocentric such as those from the Swiss sample, but not for those who endorsed more sociocentric values, such as those from the Malaysian sample.

In line with previous findings, men generally reported perceiving higher sexual interest from the behavior of others than women (e.g. Abbey, 1982; Farris et al, 2008b). However, no gender differences were found in the perception of interest cues. In other words, men and women did not appear to differ in the way they attended to behavioral cues of interest (i.e., level of eye contact and smile frequency) expressed by the targets, but rather their interpretation of these behaviors. More importantly, however, the current study extends previous work on mood in sexual perception (de Quandros-Wander & Stokes, 2008) and also mood effects on social judgments in general (e.g., Fiedler, 2001; Forgas & Bower, 1987; Forgas, Bower, & Kranz, 1984). Judging the degree of sexual interest from the behaviors of others can be a very challenging task; firstly because people generally convey sexual interest in ambiguous ways (Burgoon et al., 1989; Muehlenhard et al., 1986; Sawyer et al., 1993), which may already distort the message they are conveying, and secondly, because perceivers tend to rely more on salient but non-diagnostic cues when interpreting sexual interest (Treat et al., 2016) or project their own motivations onto seemingly ambiguous cues (Maner et al., 2005). It is for these reasons that sexual perception may be vulnerable to mood-congruent biases. The literature on mood effects in social psychology has consistently posited that people tend to think and behave in less restrictive, more risk-seeking ways when in a positive mood but become more conservative and cautious when making judgments in a negative mood (Fiedler, 2001). The current study demonstrated that people perceived lower sexual interest from interactions when in a negative mood, supporting the proposition that negative mood leads to more cautious judgments but failed to support the proposition that positive mood boosts the leniency of judgments. Moreover, estimations of degree of interest cues expressed by the target did not appear to differ by mood. This suggests that, similar to gender-based biases, mood-congruent biases likely color the interpretation or processing of target behaviors rather than selective attention to specific behaviors.

Nevertheless, the negative mood effect on sexual perception was found to be limited to the Swiss sample, and our findings imply that this sample difference can be explained by the degree to which people endorse sociocentric values, particularly concern over societal security. Participants with relatively stronger concern for societal security, such as those from Malaysia as compared to those from Switzerland, were less likely to show a mood bias in their estimations of sexual interest. As concern for societal security reflects a desire to

maintain stability and harmony in interpersonal relationships (Schwartz, 1994), our findings are accordance with the postulation that members of cultures that value interdependence attend more to other people or the environment around them and rely less on their inner attributes in their navigation of the world (Triandis, 1994; Wu & Keysar, 2007).

Limitations and future directions

Despite the significant within-person differences in sexual perception, we note that larger proportions of the variability in people's estimations of sexual interest were attributable to between-target differences and between-individual perceiver differences. Notwithstanding, this may be in part due to our experimental design. First, the hypothetical scenarios that were presented to the participants reflected initial encounters in casual, university settings. The environmental context itself (Treat et al., 2016) may have heightened the threshold for behaviors to be labeled as sexual. Second, our repeated-measures design, which allowed us to assess within-person mood effects may have also potentially weakened the mood effect since participants were presented identical sets of target videos each session. Further examination using a between-subjects design would help clarify this.

Another limitation of our study is that we cannot make causal conclusions regarding the cultural difference in reliance on *internal* (e.g., mood) vs. *external* (e.g., target behavior, social setting) information when making judgments. The finding that sexual interest perceptions in the Swiss, but not the Malaysian, sample varied significantly by mood is in line with the proposition that cultures that are less sociocentric tend to rely more on their internal attributes to inform their judgments in comparison to more sociocentric cultures (Suh et al., 1998; Triandis, 1994). However, this does not indicate if *external* information is a better or worse predictor of sexual interest perception than *internal* information. This was especially since we did not systematically manipulate *external* information: (1) All actors in the video were instructed to behave in friendly manner as they naturally would, and (2) all hypothetical scenarios were set in a university context. Future work could include experimental manipulations of *internal* vs. *external* information, and also priming of cultural values to allow the examination of causal relationships between these variables and sexual interest perception.

In addition, we were unable to test, with our current data, whether the absence of mood-biased sexual perception in the Malaysian sample is due to superior accuracy in interpreting the non-verbal behavior of others (Wu & Keysar, 2007) or an application of more stringent

threshold for behaviors to be interpreted as conveying sexual interest due to their stronger motivation to avoid loss of face (Hamamura & Heine, 2008; Hamamura et al., 2009; Heine, 2005) – for instance, from gaining a reputation as being promiscuous, or being rejected – as a consequence of such perceptual errors. That is, were they better decoders or simply more cautious ones? While past research suggests that people are more accurate in social judgments when in a negative mood (Forgas, 2013) thus hinting support for the former, it would be worthwhile to test this in future studies. Last but not least, future endeavors could consider measuring sexual perceptions implicitly or indirectly, in attempt to tease apart whether the cultural effects we found were a result of reporting bias driven by a motivation to appear socially desirable, or truly a perceptual bias driven by the sexual motivation of the perceiver.

Conclusion

In conclusion, the current study provided evidence that people's estimations of sexual interest depend not only on their gender, but may also vary across different mood states. People tend to perceive lower sexual interest when they are in a negative mood, relative to control or positive mood. However, our findings suggest that this mood effect may only be present in cultures that are less sociocentric or collectivistic, which highlights the importance for future research on mood effects to include tests of cultural generalizability. Despite the limitations, our findings are consistent with previous findings and existing theories on mood and cognition (Bless, 2001; Clore et al., 1994; Fiedler, 2001; Schwarz, 2002), as well as the effects of cultural orientation (Triandis, 1994). By showing that people's estimations of sexual interest can differ by mood state and culture, findings from the current study further underline the need for future researchers to examine sexual interest perception as a phenomenon that not only varies by gender, but also within and between individuals.

6

General discussion

The main aim of the work compiled in the current thesis was to advance the investigation of within- and between- individual differences in sexual interest perception, with a focus on perceiver-based factors. This final chapter begins with a summary of the main results and contributions of the studies, followed by a discussion of their limitations and suggestions for future research, and the practical implications of the findings from the current work.

Summary of the current work

Overall, we found support for our general hypothesis that perception of sexual interest would be higher in situations or dispositions that afford goal pursuit compared to those that promote self-protective motives. We first provided evidence for the function of self-esteem as a gauge of mate value (Kirkpatrick & Ellis, 2001; Penke & Denissen, 2008) in Chapter 3. Prior research on the attunement of self-esteem to mate value (Kavanagh et al., 2010, 2014; Kirkpatrick & Ellis; Penke & Denissen) have investigated only the perceptions of acceptance from a romantic partner, and not perception of sexual interest. While sexual interest and romantic acceptance may be similar concepts, we argued that they differ in the needs and goals they serve. Because sexual interest, rather than romantic acceptance, serve mating or reproductive needs more directly, links between self-esteem and perception of sexual interest but not acceptance or rejection should depend on the sexual access between the interaction target and perceiver. In support, findings from our daily diary study revealed that perceiving

sexual interest predicted increases in immediate feelings of self-worth, but only when interest was perceived from a potential or actual mate. This target-specificity was not found in the association between momentary self-esteem and perceptions of rejection. While people were likely to feel bad about themselves after perceiving rejection from their interaction partners in general, people only felt better about themselves after perceiving sexual interest from an actual or potential sexual partner. These findings suggest that the link between perception of sexual interest and self-esteem cannot be explained by the (general) sociometer theory (Leary & Baumeister, 2000; Leary et al., 1995) per se, but instead a more specialized sociometer that is attuned to mate value (Kavanagh et al., 2010, 2014; Kirkpatrick & Ellis).

Even though our sample for this study was predominantly female (84.25%), we argued that the same pattern would emerge with men based on prior research. For instance, Penke and Denissen (2008) have shown, using cross-sectional data, that both men's and women's level of self-esteem correlate positively with self-perceived mate value. Given their results, which revealed that these associations were even stronger for men than women, we believe that the relationship between sexual perceptions and momentary self-esteem would also be present, if not even stronger, for men. Besides complementing their cross-sectional findings, our findings can be viewed as more convincing evidence for the existence of a mate value sociometer, since we were able to study these processes as they occured naturally in day-to-day life over a relatively long duration of four weeks.

Applying the principles of the sociometer theory, we argued that the more often one perceives sexual interest, the more often that person experiences self-esteem boosts. In a similar way that these episodes of self-esteem boosts accumulate to a trait level of self-esteem, episodes of sexual interest perception accumulate to build up one's self-perceived mate value. This suggests the function of sexual interest perception as a resource for the cultivation of mate value. Given the attunement of self-esteem to mate value (Penke & Denissen, 2008), one's general level of self-esteem should, in turn, shape people's sexual interest expectations in upcoming social interactions. From an evolutionary standpoint, if one perceives himself to be a valuable mate, he would likely project his beliefs onto his potential mate(s), (Maner et al., 2005) thus estimating high sexual interest from them. From a social psychological perspective, the social (or sexual) confidence of people with high self-esteem would allow them to override their self-protective motivation and instead direct their efforts into obtaining a mate (Murray et al., 2006, 2008). Those with low self-esteem, on the other hand, possess a stronger need to protect their self-esteem from further decline. Their priority

is therefore on self-protection rather than mating success. We found support for these propositions with data from the aforementioned daily diary study and also a vignette-based experiment. As expected, our results revealed target-specificity effects; self-esteem traits only biased participants' estimations of the degree of sexual interest conveyed by attractive opposite-sex strangers if they were not in a committed romantic relationship. In other words, even though people with high self-esteem are theorized to prioritize the achievement of mating goals over the possibility of rejection, people only infer high sexual interest from others who are functionally relevant to their mating goals. It may be more functional for those in a relationship to project sexual interest onto their existing relationship partners, since the pursuit of new partners, from an evolutionary perspective, incurs additional costs. Understandably, some could argue that our findings may simply reflect the female tendency to invest more in their relationships (Trivers, 1972; for a more detailed discussion, see Chapter 3).

Findings from our research on power and sexual perception corroborated the abovementioned key findings from Chapter 3. This is not surprising since power is a concept that has been linked to self-esteem (Judge, Bono, Ilies, & Gerhardt, 2002; Wojciszke & Struzynska-Kujalowicz, 2007) and postulated as a criterion for mate value in men (Buss, 1989; Buss & Schmitt, 1993). Replicating Kunstman and Maner's (2011) main findings within a military context, we found that male military members perceived higher sexual interest from a female target who is also a member of the military when they held a rank that was higher rather than lower or equal to the female target. The power effect appeared to be robust, as it was present when the interaction featured a target that conveyed behavioral cues of disinterest, and also one that conveyed clear behavioral cues of interest.

In addition to power, the roles of sub-clinical psychopathy, narcissism, and Machiavellianism, collectively known as the Dark Triad (Paulhus & Williams, 2002) were investigated. Results revealed that men high in narcissism, psychopathy, and power generally perceived higher sexual interest from an attractive female military member compared to those with low narcissism, psychopathy, and power. Above all, men who scored high in psychopathy consistently reported heightened sexual estimations regardless of their rank relative to the target. The sexual estimations of people in power seem to correspond to the estimations of those high in psychopathy, whose defining characteristics include hypersensitivity to rewards and impulsive tendencies. For instance, psychopaths have been shown to be highly insensitive to contextual cues during reward pursuit (Newman, 1998). As

these characteristics are exemplifications of heightened approach tendencies, we interpreted our findings as support for power as a facilitator of approach orientation (Keltner et al., 2003). In brief, studies from Chapters 3 and 4 demonstrated how possessing psychological resources that regulate sensitivity to risk and rewards can shape goal-congruent biases in sexual interest perception. Having high self-esteem (Murray et al., 2008, 2006) or structural power (Guinote, 2007; Keltner et al., 2003) allows people to prioritize, in the case of sexual perception, the goal of obtaining a mate over the goal of protecting oneself from harm. The prioritization of a mating goal ignites a sexual motivation, which is in turn projected onto potential sexual partners − thus resulting in a greater tendency to interpret ambiguous (non-overtly sexual) behaviors as indicating high sexual interest.

In our final study (Chapter 5), we showed that relative to positive and neutral moods, negative mood decreased people's perception of sexual interest. Our findings are consistent with the proposition that negative mood acts as an indicator of a potential threat in the present environment (Schwarz, 2012). This "red flag" increases the need for self-protection at the expense of the pursuit of mating goals since it becomes more functional to deploy one's limited resources (Baumeister, Bratslavsky, Muraven, & Tice, 1998) for self-protective purposes rather than goal pursuit. Moreover, we found that mood only affected people's interpretation of sexual interest and not their attention to behavioral cues of interest. Participants reported perceiving the same amount of smiling and eye contact from their interaction partners when they felt good, neutral, or bad. Based on these results, it appears that perceptual biases more likely stem from biases in interpretation or processing, rather than selective attention. Along the same vein, negative mood has been theorized and shown to promote a more effortful, bottom-up processing style, where people are more systematic and less likely to take risks (Bless, 2001; Fiedler, 2001; Schwarz, 2002). In this case, a high amount of smiling combined with prolonged eye contact, which would usually be interpreted as potential sexual interest, may be overscrutinized and consequently judged as a mere expression of politeness when one is in a negative mood.

More importantly, results showed that the mood effect on sexual interest perception is conditional on one's culture. Specifically, mood effects were only present among those who were less sociocentric (i.e. Swiss sample). Mood did not predict the perception of sexual interest among people who highly valued societal security and stability. This ties in with Triandis' (1994) proposition that more sociocentric cultures attend more to relevant others in a social context. They therefore rely more on information from others than their own private

feelings and motivations in their judgments and general navigation of the world. However, this does not necessarily mean that more sociocentric cultures are more accurate in their sexual judgments, but simply that their judgments of the intentions of others vary less as a function of their within-person states.

The pattern of findings across the studies reported in Chapters 3 – 5 support the premise that perception of sexual interest may reflect the functional projection of one's currently active motivational state (Maner et al., 2005), which may depend on situational or dispositional factors. People are more likely to perceive higher sexual interest when they have high rather than low self-esteem, hold rather than lack power, or are feeling positive or neutral rather than negative.

It is important to note that findings from studies in the current thesis cannot be used to form solid conclusions about the underlying effects of sexual and self-protective motivations in sexual interest perception as these were not directly tested. Nevertheless, past research has shown that men who are primed with a mating goal show a tendency to sexualise attractive female faces (Maner et al.), suggesting the link between sexual motivation and sexualized perceptions. In fact, the effects of motivation on perception has been well-documented in psychological research (Touré-Tillery & Fishbach, 2014). That our present findings derived different methodological designs and psychological constructs reflect the same predicted pattern, offer compelling evidence for the value of utilizing the regulation of approach (obtaining a mate) vs. avoidance (preventing rejection) goals as a basic underlying framework in understanding how perception of sexual interest could differ across people and across situations. Put in signal detection terms (Green & Swets, 1996) and consequently tying in with the principles of error management theory (Haselton & Buss, 2003), situations or dispositions that afford mating goal pursuit increase one's willingness to strive for "hits" at the cost of false positives. Situations or dispositions that heigtened self-protective motivations, on the other hand, promote a desire to minimize one's chance for false alarms, which in turn heightens the likelihood of "misses".

Apart from sexual perception literature, the studies in this thesis also contribute to several other research areas. In Chapter 3, the investigation of the role of self-esteem encompassed the consideration of self-esteem as a state, and trait. In particular, when studying the effects of self-esteem as a trait, we examined not only the role of self-esteem level but also the role of self-esteem instability. Our findings underline the value of considering multiple aspects of self-esteem when studying the effects of self-esteem as a trait.

We also proposed the use of a different statistical index for the computation of self-esteem instability, which, in our opinion, captures temporal instability more precisely than the conventionally-used method (See Chapter 3; Study 1). In Chapter 4, we drew links between power and the Dark Triad personality factors whereas findings from Chapter 5 extended the examination of mood effects on social perception to the perception of sexual interest. On top of that, findings from Chapter 5 also highlight the overall importance of including tests for cross-cultural generalizability in psychological research.

In sum, the current work highlight the significance of social and personality factors in understanding biases in perception of sexual interest. However, one may still wonder: *is* there a gender difference in perception of sexual interest? The quick answer would be, yes, it appears so. The current work cannot provide a clear answer since we did not focus on gender differences. Only the study in Chapter 5 featured samples with relatively equal gender distributions. Recall that in this study, all participants were required to rate the sexual interest of both male and female targets. During hypothetical interactions with opposite-sex targets, participants responded from their own perspective. Participants were instructed to provide perception ratings from the perspective of an opposite-sex peer during imagined interactions with same-sex targets. The main results of this study showed that men generally perceived higher sexual interest from their interaction partners than women. Despite that, part of our analyses, which were not reported in Chapter 5[12], also showed that the sexual judgments for female participants were only lower than male participants in their ratings of male targets. Female targets were judged as similarly interested by both male and female participants. On one hand, this could be interpreted as support for Perilloux and Kurzban (2015) who showed that women's reporting of sexual interest were significantly lower than men's estimations when they reported their own sexual interest but did not differ when providing ratings of other women's *true* sexual interest. On the other hand, our findings could also imply that women tend to be more accurate in their estimations of the way men infer sexual interest from women in general. This can only be clarified with further inquiry, as it is beyond the scope of our current data.

Limitations and propositions for future research

Despite the strengths and significant contributions of the current work, there are some limitations that ought to be addressed. Besides that, findings from the current work also raise

several interesting questions to be explored in future research. In this section, some key limitations will be presented, followed by recommendations on how these limitations can be accounted for, as well as some ideas for further research.

Sampling concerns

The first broad limitation in the current work is the reliance on university samples. Although some of our studies were conducted on non-university student samples (Chapter 4), most of our participants were university students who were willing to respond to questions related to sex and sexual interest. This could potentially be a selection bias, as people who were not comfortable with such topics would not participate in our studies. This was a concern when recruiting participants in Malaysia since Malaysians generally tend to be more conservative with regards to sexual topics and sexual behavior (Okazaki, 2002). It could be possible that our Malaysian sample consisted only of people who held more liberal attitudes toward sex. Nevertheless, we would expect the addition of those who declined to participate to further emphasize, rather than undermine the differences reported in Chapter 5.

Additionally, the sample in Chapter 3 was predominantly female. While we do not expect findings to differ drastically with men, as explained in the section above, we strongly urge a replication of the study with a larger sample with more equal gender distribution. It would also be very interesting and potentially fruitful to examine perception of sexual interest in homosexual samples. The most obvious advantage would be the elimination of male vs. female differences in sexual perception, which would likely enable a cleaner examination of situational and dispositional differences.

Concerns with self-reported data

A second potential limitation is that all the studies reported in the current thesis relied on self-reported data. The problem with relying on explicit, self-report measures is that it always leaves the question of whether the results reflect biases in cognitive processes or behavioral reporting open. Future researchers should thus invest in developing supplementary measures of sexual interest perception. Nevertheless, such endeavors have to be done with caution as there are a number of issues that need to be considered when selecting or designing indirect measures. For example, behavioral observation of dyad interactions may not be reliable since it is based on the assumption that motivations are manifested in behavioral expression. As

expressed previously in the literature review, the same behavior may have distinct underlying motivations across individuals. For instance, people may either mask their *true* intentions with friendly behavioral cues as an avoidance strategy to prevent potential rejection. They may also mask their interest with non-responsive behaviors to appear more attractive to their interaction partner (Birnbaum, Ein-Dor, Reis, & Segal, 2014). Furthermore, people may convey false sexual interest through flirty behaviors that are intended to be fun rather than sexual (Henningsen, 2004). One potential solution would be to measure sexual interest using implicit association tests (as done in Lindgren et al., 2007) to obtain more automatic responses. The downside to the implicit association tests, however, is that it can be time-consuming and therefore impractical for repeated interactions with different targets in one session.

Dispositional x structural power effects

The following recommendation is based on a question that arose from our findings in Chapter 4. Follow-up studies on the effect of power on sexual perception should take into account the potentially different roles of various forms of power. In our research, we manipulated structural power, whereby differences in organizational ranks induced differences in power felt over the target. Despite findings that are consistent with previous empirical research and theories, we wondered if the effect of structural power on sexual interest perception applies only to military samples (and perhaps other samples that value hierarchy) or also samples that value hierarchy less. Also, can the variation in sexual interest perception in the military only be attributed to differences in structural power or also differences in psychological or dispositional power? To answer this question, further research could consider testing this experimentally by manipulating both structural power using rank differences and more general feelings of power using either an autobiographical or concept prime. This experiment can then be complemented with a quasi-experimental study that includes the measurement of one's dispositional power with a trait power measure (e.g., Sense of Power Scale; Anderson, John, & Keltner, 2012) rather than priming general feelings of power. For a more complete picture, these suggested studies should also be conducted on more than one sample; ideally, these samples should represent different subcultures, and/or include measures of cultural values.

Context dependency in sexual perception

In continuation from the recommendation above, another area for further inquiry would be the role of context as a potential moderator of other within-person or between-person effects on sexual interest perception. The second question that arose from our investigations in Chapter 4 is whether or not our participants (male military members) would perceive sexual interest differently, and if the power effect would remain if they were presented vignettes that depicted interactions outside the context of the military. It has been recently shown that the sexual relevance of the social environment affects men's judgment of women's sexual interest (Treat, Hinkel, Smith, & Viken, 2016; Treat et al., 2015). For example, women were seen as more sexually interested against the backdrop of a bar than an office. As such contextual effects likely reflect the workings of expectancy effects, it may be worthwhile to examine the degree of influence that the environmental context of an interaction has on the effect of power (or other predictors) on sexual interest judgments. In addition, studies have found that East Asians (Koreans and Japanese) pay more attention to the background context than do Americans when interpreting emotions (Ko, Lee, Yoon, Kwon & Mather, 2011; Masuda et al., 2008). This suggests that the likelihood that a certain type of social situation affects sexual misperception may also largely depend on culture. Future researchers interested in contextual effects on sexual perception could thus consider culture as a secondary variable in their investigations.

Dynamic perception of sexual interest

The key drawback in sexual perception research is that most studies, including the current work, generally captured judgments of sexual interest as a one-off event. In reality, however, such perceptions can vary from one time point to the next within a single interaction before the perceiver arrives at a final overall judgment of the interaction. A challenge for future researchers interested in examining sexual interest perception would be to devise methods in which perception of sexual interest or communication of sexual interest in general can be studied as a dynamic variable within an interaction. With such data, researchers can assess how sexual interest is perceived and conveyed, and also how these perceptions or expressions are responded to. Future studies could utilize computer-mediated-communication platforms (e.g., text-messaging computer applications designed for data collection) to examine how verbal indicators of sexual interest are exchanged on top of e-diary, experimental, or face-to-

face interaction approaches. Nevertheless, procedures would have to be carefully designed to address the concerns above (under the heading "concerns with self-reported data").

Practical implications

The set of findings from the current work can be integrated into existing sexual harassment prevention courses or interventions. Apart from teaching people the legal definitions and consequences of sexually harassing behaviors, and training people to identify, intervene, or report these behaviors, effort should also be made to educate people on the psychology behind sexual harassment. The program could include a presentation of possible precursors of inappropriate sexual conducts – for instance, a miscommunication or misunderstanding of sexual interests or intentions between the two parties involved. One component of sexual harassment prevention programs could focus on creating awareness on the ease in which mistakes in sexual interest perception may occur, and that seemingly mundane situations such as being in a different mood state could trigger biases in perception. As shown in Chapter 5, being in a positive rather than negative mood led people from less sociocentric cultures to perceive others as more sexually interested. Similarly, studies in Chapter 4 demonstrated that merely having a higher rank than a fellow female military member led male military members to infer higher sexual interest from her behavior, as opposed to having the same or lower rank than her (in fact, findings from Chapter 4 have already been reported to the cadre of the Joint Officer Training Course and will be integrated into the courses at the Military Academy at ETH Zurich). The psychoeducation should aim at fostering an understanding of the situational, perceiver-, and target-based variables that could contribute to sexual misperceptions, which a perceiver may unknowingly act on.

This synergistic approach may encourage people to understand that sexual harassment does not happen solely because the perpetrator is a "monster" with no regard for the rights of others or that the victim is helpless (although this may be the case for many incidents involving sexual violations), but that it may also be an undesired outcome of a series of unfortunate situationally-driven misperceptions and miscommunications (or more likely driven by a combination of situational and dispositional tendencies) between just "every day" people. Of course, perpetrators must be held accountable for their violating behaviors and misperceptions cannot be used as excuses for these behaviors. However, making people aware of the links between mistakes in sexual communication, sexual harassing behaviors

and the different factors that come into play, may help develop a more in-depth understanding of this issue. This understanding may, in turn, promote more open conversation or thoughts on the issue. This would, ideally, reduce stigma and empower people to more readily evaluate their own behaviors or intentions critically, and also more readily acknowledge opportunities for improvement as well as potential issues that need to be addressed, instead of having a rigid mindset about the issue of sexual harassment.

As acknowledged above, sexual harassment may also just occur because some perpetrators are "monsters". In more psychological terms, some people may show a dispositional inclination toward more sexualized perceptions and behaviors. Results from the final study presented in Chapter 4 suggest that people with high scores in sub-clinical psychopathy and narcissism tend to perceive others as conveying high sexual interest. This suggests that routine screening of existing or incoming members of the military for these personality traits, among others, may help identify and screen out those with alarming scores or target those with "at-risk" scores for specialized interventions. For instance, training programs aimed at building social responsibility can be implemented to reduce the likelihood of power abuse (McClelland & Burnham 1995). Such a procedure may be incorporated into existing screening procedures, which involve the inspection of criminal records.

Conclusion

In a nutshell, the studies included in this thesis showed that perception of sexual interest can vary across the behavior of the interaction partner, across mood states within a person, across different power positions held by an individual, and also, across individuals of different self-esteem levels, self-esteem instability, degree of psychopathy, degree of narcissism, and cultures. All these findings offer interesting and valuable contributions to the existing literature on sexual interest perception, and also practical utility within organizational and clinical settings. More importantly, the insights provided in this thesis suggest that perceiving sexual interest is not a straightforward process that can be captured by gender effects or any other of the aforementioned effects alone. In all six studies included in this thesis, we showed that within-person effects on sexual interest perception tend to be conditional on between-person differences. This was made possible from the combined employment of naturalistic (daily diary approach) and controlled experimental methods (between-subjects design and mixed design), as well as the utilization of more sophisticated data analysis techniques (multilevel modelling, in addition to ANOVAs and linear regressions). Last but not least, the current work highlights the utility of the basic approach-avoidance distinction when examining more proximate processes in sexual interest perception.

Appendix

Hypothetical scenarios used in Study 2, Chapter 3

INSTRUCTIONS:

For this task, we would like to assess how people's actions are perceived in cross-sex social interactions. You will be presented several scenarios describing common interactions with other people. We are interested in your thoughts during or after the interaction with a stranger in different situations. After each scenario, you will be presented a set of questions which aim to capture your thoughts and perceptions. You are to imagine yourself in the situations presented when reading the hypothetical scenarios, and that the person with whom you interact is attractive and about the same age as you.

Flirting target

It is the first day of university and there is a new male (female) student in one of your classes. He (She) sits next to you and starts a conversation with you. After the class, he (she) asks you the location of the cafeteria and since you were planning to eat there anyway, you tell him (her) that he (she) can join you for lunch and he (she) agreed. While having lunch, you ask him (her) about his (her) courses and a little bit about himself (herself) to be polite. He (She) teases you for asking him (her) such questions and playfully says, "Oh, so this is a date huh?"

Friendly target

You are waiting for your turn at the post office and there is a long queue – it is a busy day at the post office. A man (woman) who is also waiting his (her) turn looks at you and makes a joke about the situation. You laugh and eventually start a conversation with him (her). He (She) shows genuine interest in your conversation and maintains good eye contact when he (she) speaks. He (She) speaks with warmth and politeness. He (She) then excuses himself (herself) when his (her) number is announced.

Rejecting target

You meet a new colleague at work. During lunch break, you introduce yourself to him (her) but he (she) appears to be quite shy. You try to create a conversation by asking him (her) about him (her) duties. He (She) answers your question without looking directly at you and continues to make his (her) coffee. You then tell him (her) about your role in the workplace, adding a funny remark. He (She) gives a brittle smile and takes a sip from his (her) cup.

Note. Vignettes presented were designed for female participants. Pronouns and adjectives were altered, as shown in parentheses, for vignettes completed by male participants.

Notes

1 Self-esteem instability (as captured by the MSSD) correlated positively with the self-esteem variability (*SD*), $r = .86$, $p < .001$).

2 We also ran the analyses with the whole sample and found a significant four-way interaction between relationship status, SE level, SE instability and previous SE state with a coefficient of 0.35 ($t = 2.70$, $p = .007$). Due to concerns of having three forms of SE as predictors, we also ran a model to predict if the interaction between SE instability and SE level moderated the relationship between previous mood state and perception of sexual interest. Similarly, a three-way interaction between SE level, SE instability and previous mood state emerged with a coefficient of -3.13 ($t = -2.35$, $p = .024$).

3 Amongst our analyses, only one in Study 2 revealed a significant moderation of gender on the association between SE level and PSI for singles. This interaction was present in the *interest* and *interest without risk* conditions with coefficients of -2.38 ($p = .006$) and -1.84 ($p = .034$) respectively. SE level positively predicted PSI for females with a coefficient of 0.85 ($z = 2.54$, $p = .011$) but negatively predicted PSI for males with a slope of -1.54 ($z = -1.99$, $p = .047$) in the *interest* condition. When risk was absent, the negative relationship between SE level and PSI remained for males with a slope of -1.66 ($z = -2.14$, $p = .032$), but SE level no longer predicted PSI for females ($p = .584$). It is important to note, however, that despite the presence of this gender x SE level interaction, the SE level x SE instability interaction which we have reported in the results section of Study 2 remained significant with a coefficient of 6.95 ($t = 2.21$, $p = .030$).

4 Similar control questions were used in the second and third experiments.

5 Several other (distractor) items were included, for example "I think she is intelligent", "I think that she has good communication skills", "I think that she wants to know me better", and "I think that she is interested in a friendship with me". The same applied for the second and third experiments.

6 Sobel test: $z = 0.32$, $p = .01$.

7 Items that were not included in the security value score were "It is very important to him or her to avoid disease and protect his or her health" and "His or her personal

security is extremely important to him or her". Our decision to exclude these in the computation of security value and instead treat the 4 items as a unitary measure was based on low correlations between these items with the rest of the items designed to tap into concerns for societal security, $rs < .40$, and supported by factor analysis results which show that the 4 items reflected a single factor.

8   Separate pilot tests were conducted for the four sets of targets. All participants were aged below 30 years and were not students from the universities where the experiments were conducted. To select the two Swiss male targets, a sample of twenty European women rated the selection of Swiss male target videos (9 actors) on their attractiveness and degree of sexual interest. Twenty-four Malaysian women did the same for the selection of Malaysian male target videos (6 actors), Twenty European men rated the selection of Swiss female target videos (8 actresses) and twenty-one Malaysian men rated the selection of Malaysian female target videos (7 actresses). The selected videos featured targets who were average and above in attractiveness and moderately low to average in sexual interest.

9    $t(147.40) = 6.05, p < .001$.

10   If interested, information on these may be obtained from the first author.

11   The sample and cultural value moderation effect remained when perception of interest cues was added into the model as a Level 1 control variable. Similar pattern of results was also obtained when participant's own sexual interest (not presented in the current work) was entered as a Level 1 control variable.

12   We did not report this finding in the thesis, as it was not relevant to our main research question.

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Ich erkläre ehrenwörtlich, dass ich meine Dissertation selbständig und ohne unzulässige fremde Hilfe verfasst habe und sie noch keiner anderen Fakultät vorgelegt habe.