Attachment Insecurity and Sexual Communication in Cohabiting Mixed-Sex Couples

by

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Ethics Statement

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Abstract

Talking openly and constructively about sexual issues, such as sexual needs and preferences, is critical to the development and maintenance of mutually satisfying sexual relationships (e.g., Cupach & Comstock, 1990). Attachment insecurity (i.e., attachment anxiety and avoidance) may impede individuals' and their partners' sexual communication, and thus poor quality sexual communication could mediate negative associations between attachment insecurity and individuals' and partners' sexual satisfaction. Using an Actor-Partner Interdependence Mediation Model (APIMeM; Ledermann, Macho, & Kenny, 2011), I tested this mediation model cross-sectionally and longitudinally with a dyadic parallel process latent growth curve model in 125 couples over one year. Contemporaneously, both partners' perceptions of sexual communication mediated negative indirect effects of attachment anxiety on individuals' and partners' sexual satisfaction, and a negative indirect effect of attachment avoidance on individuals' sexual satisfaction. Unexpectedly, attachment avoidance was positively associated with partners' perceptions of sexual communication, and there was a positive indirect effect of attachment avoidance on partner sexual satisfaction. Further, attachment anxiety and avoidance were not associated with declines in sexual communication quality or sexual satisfaction over one year, but for women, declines in sexual communication predicted declines in sexual satisfaction. In sum, attachment insecurity was associated with individuals' and partners' (for anxiety) contemporaneous perceptions of poorer quality sexual communication and lower sexual satisfaction, and declines in sexual communication eroded sexual satisfaction over time for women. Thus, improving sexual communication may be an important pathway to increasing sexual satisfaction.

Keywords: adult attachment; sexual satisfaction; communication; couples

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Introduction

Talking about sexual issues and concerns, such as differences in desire, likes and dislikes, or dysfunction, can be challenging because it requires romantic partners to share intimate aspects of themselves, to be vulnerable, and to risk discomfort, embarrassment, shame, and rejection from partners (Metts & Cupach, 1989). Attachment insecurity (i.e., attachment anxiety or attachment avoidance) may make sexual communication particularly difficult for individuals and their partners because it may impede constructive sexual discussion (e.g., Davis et al., 2006; McNeil, Rehman, & Fallis, 2018). Effective sexual communication is critical for couples to develop and maintain mutually sexually satisfying relationships (e.g., Cupach & Comstock, 1990; Rehman, Rellini, & Fallis, 2011), and thus, poor quality sexual communication may mediate negative associations between attachment insecurity and individuals' and partners' sexual satisfaction.

Attachment and Sexuality in Intimate Relationships

Attachment theory proposes that early interactions with important others influence individuals' attachment security, which powerfully shapes their thoughts, feelings, and behaviours in adult intimate relationships (see Bowlby, 1969, 1982; Hazan & Shaver, 1987; Mikulincer & Shaver, 2007). Attachment security is conceptualized as varying along two theoretically distinct dimensions: attachment anxiety and attachment avoidance. Attachment anxiety is characterized by craving closeness and care from partners but simultaneously doubting deservingness of love and fearing abandonment. Attachment avoidance is characterized by a lack of closeness or dependence on partners because of expectations that partners will not be available in times of need. Secure attachment is conceptualized as low attachment anxiety and low attachment avoidance, and thus is reflected by feeling worthy of care, being comfortable with intimacy, and expecting that partners will provide support in times of distress.

The attachment behavioural system interacts with the sexual behavioural system in the context of intimate relationships to influence individuals' and partners' sexual satisfaction and functioning (Hazan & Shaver, 1987). Attachment anxiety and avoidance are negatively associated with sexual satisfaction (e.g., Butzer & Campbell, 2008) and

positively associated with sexual dysfunction (see Stefanou & McCabe, 2012 for a review). Further, they predict sexual motives, attitudes, and behaviour that correspond to the specific attachment-related concerns associated with each dimension (i.e., fear of rejection, discomfort with intimacy; see Mikulincer & Shaver, 2016 for a review).

Attachment anxiety may interfere with sexual relationships because relatively anxiously attached individuals may view sexual behaviour as a valuable opportunity to connect with partners and to attain intimacy, but also consider it to be an avenue to disappointment and anticipated rejection if partners are not sexually fulfilled (Mikulincer, Shaver, Bar-On, & Ein-Dor, 2010). Given this conflict, it is unsurprising that attachment anxiety is associated with negative and positive sexual outcomes. For example, attachment anxiety is positively associated with endorsement of avoidance sexual motives (e.g., engaging in sexual activity to reduce relationship insecurities; Schachner & Shaver, 2004), lower levels of sexual arousal, and lower orgasmic frequency (e.g., Birnbaum, 2007), but it is also positively associated with erotophilia (i.e., tendency toward positive affective-evaluative responses to sexual stimuli; Bogaert & Sadava, 2002), endorsement of approach sexual motives (e.g., having sex to increase intimacy and express love; Davis et al., 2004), and higher sexual frequency (Brassard, Shaver, & Lussier, 2007).

In addition, there is evidence that relatively anxiously attached individuals' ambivalent and needy approach to sexuality affects their partners' sexual experiences. For example, men's attachment anxiety is positively associated with female partners' endorsement of having sex to please their partners and to prevent them from getting angry (Impett, Strachman, Finkel, & Gable, 2008) and negatively associated with female partners' sexual satisfaction (Brassard et al., 2012). Thus, although relatively anxious individuals highly value sexual experiences within relationships, their attachment-related concerns may preclude them and their partners from satisfying sexual experiences.

Discomfort with physical and psychological closeness that is characteristic of attachment avoidance results in a relatively erotophobic (i.e., tendency toward negative affective-evaluative responses to sexual stimuli) or emotionally disengaged approach to sexual activity (Birnbaum, 2010; Birnbaum et al., 2006). In committed relationships, this discomfort manifests in feelings of alienation and a lack of enjoyment during sexual activity (Birnbaum et al., 2006; Brassard et al., 2007), avoidance sexual motives (e.g.,

consenting to sex out of feelings of relationship obligation or to avoid relational conflict; Impett & Peplau, 2002; Impett et al., 2008), and lower sexual frequency (e.g., Brassard et al., 2007).

Attachment avoidance also affects partners' sexual experiences, perhaps because partners perceive relatively avoidantly attached individuals' discomfort or efforts to distance themselves from sexual activity. For example, partners may respond to avoidantly attached individuals' emotional detachment during sexual activity by focusing on more self-interested sexual goals, which is consistent with the positive association between partner attachment avoidance and endorsement of having sex to pursue one's own pleasure (Impett et al., 2008). Women's attachment avoidance is also negatively associated with male partners' sexual satisfaction in mixed-sex couples (Brassard et al., 2012). Therefore, relatively avoidant individuals' desire to avoid intimacy, which is inherent in sexual activity, may interfere with both partners' sexual satisfaction.

Attachment and Sexual Communication

Growing research supports a negative association between attachment insecurity and sexual satisfaction, but the relationship processes through which attachment anxiety and avoidance may influence couples' sexual relationships are less understood. One possibility is that attachment insecurity may impede individuals' and their partners' discussion of sexual issues and problems, which in turn could limit their ability to develop and maintain satisfying sexual relationships. Extant literature on attachment anxiety and sexual communication has yielded conflicting findings. Attachment anxiety has been negatively associated with individuals' perceptions of sexual communication (Davis et al., 2006; Goldsmith et al., 2016) and sexual communication quality for individuals in relationships longer than nine months (Khoury & Findlay, 2014), but in other work attachment anxiety is not associated with sexual communication behaviour (McNeil et al., 2018). The research on attachment avoidance is more consistent, with attachment avoidance negatively associated with individuals' perceptions of sexual communication (Davis et al., 2006; Khoury & Findlay, 2014; Goldsmith et al., 2016) and predictive of less positive and more negative sexual communication behaviour (McNeil et al., 2018).

Although the research has been mixed, theoretically I would expect attachment anxiety to interfere with calm and constructive sexual discussion in intimate

relationships. Relatively anxiously attached individuals' hypersensitivity to relationship threat and hypervigilance toward partner responsiveness may result in distress and engagement in negative, relationship-damaging behaviour during sexual discussions, just as it does in general conflict discussions (Campbell, Simpson, Boldry, & Kashy, 2005; Simpson, Rholes, & Phillips, 1996). Sexual anxiety, and a desire to avoid rejection, may also prevent relatively anxiously attached individuals from expressing sexual needs (Davis et al., 2006) and instead promote deference to the sexual wishes of their partners. Attachment avoidance may also contribute to negative perceptions of sexual communication (e.g., Davis et al., 2006) and impair individuals' ability to engage in effective sexual communication (McNeil et al., 2018), but for different reasons. Attachment avoidance may prevent relatively avoidantly attached individuals from raising and tackling sexual topics with their partners because it is associated with less self-disclosure generally (e.g., Bradford et al., 2002) and with heightened sexual anxiety and lower love and concern for partners (Davis et al., 2006).

Whether individuals' attachment insecurity relates to their partners' sexual communication is unclear because there is only one study that has included couples rather than individuals. McNeil et al. (2018) found that attachment anxiety was unassociated with partners' sexual communication behaviour and attachment avoidance predicted less constructive partner sexual communication behaviour. Given that sexual communication is a dyadic process, it is reasonable to expect that attachment insecurity would have partner effects. For example, relatively anxiously attached individuals' destructive behaviour and negative perceptions of sexual conversations could shape their partners' behaviour and perceptions of sexual communication quality. The partners may reciprocate negative emotions (e.g., Gaelick, Bodenhausen, & Wyer, 1985) or limit their self-disclosure (e.g., Bradford, Feeney, & Campbell, 2002) to avoid exacerbating relatively anxious individuals' insecurities during sexual discussions. Likewise, relatively avoidantly attached individuals' approach to sexual communication may result in their partners' perceiving lower quality sexual communication, perhaps because partners' attempts at discussion may be met with silence or dismissal. Any sexual discussion that does occur may not be constructive because attachment avoidance is associated with individual and partner negative behaviour during stressful situations (e.g., Campbell, Simpson, Kashy, & Rholes, 2001).

If attachment anxiety and avoidance are negatively associated with individuals' and their partners' perceptions of sexual communication quality, I expect it to translate to lower sexual satisfaction through difficulty developing mutually satisfying sexual interactions, lower intimacy, or lower relational satisfaction (MacNeil & Byers, 2005). Poor quality sexual communication could prevent insecure individuals and their partners from exploring and expressing their sexual expectations and perspectives, which could interfere with the maintenance of a dyadic sexual script that maximizes both partners' rewards (e.g., pleasure) and minimizes their costs (e.g., discomfort; Metts & Cupach, 1989). Perceptions of sexual communication mediated contemporaneous within-partner negative associations between attachment anxiety and avoidance and sexual satisfaction (Davis et al., 2006; Goldsmith et al., 2016; Khoury & Findlay, 2014); however, these findings must be interpreted cautiously because of potential methodological or statistical artefacts. Specifically, in two of these three studies (Davis et al., 2006; Khoury & Findlay, 2014), sexual communication was measured using a questionnaire in which over half of the items concerned other sexuality-related variables, including some variables empirically associated with attachment insecurity (e.g., comfort with sexuality), rather than communication processes. In addition, Khoury and Findlay (2014) found evidence of an indirect effect of attachment anxiety on sexual satisfaction only for individuals in relationships longer than nine months, with the 9-month cut-point "arbitrarily chosen for statistical convenience" to represent couples past the initial honeymoon period of their relationships. This data analytic decision is problematic because it was made without strong theoretical rationale, increasing the probability of capitalizing on type I error and the need for replication.

Current Study and Hypotheses

Conclusions about the nature of associations among attachment insecurity, sexual communication and sexual satisfaction are inconsistent, perhaps because of methodological limitations. First, prior research is cross-sectional, and if attachment anxiety and avoidance are negatively associated with perceptions of sexual communication contemporaneously, it is essential to determine whether communication deficits relate to declines in sexual satisfaction. Second, existing studies have generally included only individuals, and partner effects could not be examined. Third, previous studies have largely included people in dating relationships, and it is important to examine this mediation model in longer-term, established relationships (i.e., cohabiting

or married couples) because the strength of the association between sexual communication and sexual satisfaction may increase with relationship duration (Montesi et al., 2011). Finally, some previous studies have used measures of sexual communication that overlapped with security or sexual satisfaction. I addressed these gaps by using well-validated measures without conceptual overlap, including couples so that partner effects could be modelled, and conducting a longitudinal analysis of the mediation model.

I predicted that both partners' perceptions of sexual communication quality would mediate contemporaneous negative indirect effects of attachment anxiety and avoidance on individual and partner sexual satisfaction, and that changes in sexual communication would mediate between attachment insecurity and changes in sexual satisfaction over one year. Finally, based on gender differences observed in actor and partner effects in the attachment and sexuality literature (e.g., Brassard et al., 2012; Impett et al., 2008) and in prior research on sexual communication (e.g., Byers & Demmons, 1999), I also explored whether the hypothesized effects were different by gender.

Method

Participants

Participants were 129 mixed-sex couples who participated in a one-year longitudinal study of communication and sexuality in relationships. Eligible couples were unmarried, childless, and had been dating and cohabiting for at least one year. Cohabiting couples without children were included to avoid the potential influence of sexual changes (e.g., decrease in sexual frequency) associated with marriage and parenthood (Kahn & Udry, 1986; Greenblat, 1983). Participation was also limited to individuals aged 19-45 years because of potential age-related biological and psychological changes that have been linked to changes in sexual factors (e.g., decreased sexual desire and frequency; DeLamater & Moorman, 2007; DeLamater & Sill, 2005). Participants were also required to be fluent in English and living in the Metro Vancouver area to attend a lab session. At baseline, couples' relationships averaged 4.12 years in length (*SD* = 2.63 years, range = 1.06-13.35 years) and 2.71 years (*SD* = 2.15 years, range = 0.95-11.19 years) of cohabitation, and 87.2% of couples were exclusively dating, 8.8% were in consensually non-monogamous relationships (e.g., open relationships, polyamorous), and in 4% of couples, individuals described their relationship status differently than their partner.

At Time 1 (T1), women averaged 25.94 years of age (*SD* = 4.21 years), averaged 15.81 years of education (*SD* = 2.49 years), and earned an average income between $10,000 –$29,999. Almost half of the women (45.2%) were full-time students, 11.3% were part-time students, 43.5% were not enrolled in school, and 0.8% did not report school status. Approximately one third of women (36.8%) worked full-time, 31.2% worked part-time, 31.2% were not working, and 0.8% did not report work status. Of the women, 69.6% identified as Caucasian, 16.8% as Asian Canadian or Asian, 3.2% as Indo-Canadian or East Indian, 1.6% as First Nations, 1.6% as Middle Eastern, and 7.2% identified as "Other." Regarding religious affiliation, 35.2% of women identified as not religious but spiritual, 27.2% as atheist, 15.2% as agnostic, 8.8% as Roman Catholic, 4.8% as Christian, 3.2% as Muslim, 0.8% as Sikh, 4.0% as other, and 0.8% as no affiliation.

Men averaged 27.69 years of age (*SD* = 4.90 years), averaged 15.13 years of education (*SD* = 2.71 years), and earned an average income between $10,000 – $29,999. Approximately one third of the men (34.4%) were full-time students, 12.8% were part-time students, and 52.8% were not enrolled in school. Almost half of the men (48%) worked full-time, 31.2% worked part-time, and 20.8% were not working. Of the men, 72.8% identified as Caucasian, 10.4% as Asian Canadian or Asian, 3.2% as Latino, 2.4% as Indo-Canadian or East Indian, 2.4% as First Nations, 1.6% as Middle Eastern, 0.8% as African Canadian, and 6.4% as "Other." Nearly one third of men (32.8%) identified as atheist, 22.4% as agnostic, 14.4% as not religious but spiritual, 8.8% as Christian, 4.8% as Roman Catholic, 0.8% as Buddhist, 0.8% as Jewish, 0.8% as Protestant, 8.8% as other, 1.6% as no affiliation, and 0.8% did not provide an answer for religious affiliation.

Procedures

All study procedures were approved by the Simon Fraser University (SFU) Research Ethics Board. Couples were recruited to participate in a one-year study that included four questionnaires (T1-T4) completed every four months and a lab session shortly following T1. Couples received $50 for the T1 questionnaires and lab session and $25 for each follow-up questionnaire for a total of $125. Approximately half of couples (47.2%) were recruited through internet advertisements (including Craigslist, Kijiji, Reddit, and Facebook), 20.0% from emails to SFU departmental listservs, 12.0% from advertisements in the Vancouver 24 Hours newspaper, 10.4% from posters on SFU campuses and in the community, and 10.4% from other sources (e.g., word of mouth).

Detailed information about study recruitment is provided in Figure 1. A member of the project staff spoke by telephone with 375 of the 618 individuals who contacted the lab via telephone or email in response to recruitment efforts. The staff member provided information about the study and conducted a 10-minute screening interview to determine eligibility. Of the 243 individuals who were not screened, 199 were unreachable, 42 were ineligible based on information they provided in their initial email to the lab and thus did not complete the screening, and two people contacted the lab after recruitment had ended. Of those screened, 209 couples were eligible and invited to participate in the project and 155 couples agreed to participate. Participating couples received electronic copies of the consent form and links to the T1 questionnaires via email. Of the 155

couples who received T1 questionnaires, 129 couples completed T1 questionnaires, 21 couples dropped out before completing any questionnaires, and five couples dropped out after only one partner completed T1 questionnaires. Eligible couples who completed T1 questionnaires (n = 129) did not differ from eligible couples who did not agree to participate or who dropped out prior to both partners completing T1 questionnaires (n = 80) on age, ethnicity, education, relationship length, duration of cohabitation, or relationship satisfaction as assessed with the Couple Satisfaction Inventory-4 (Funk & Rogge, 2007) administered to one partner during the phone screening interview. Of the 129 couples who completed T1 questionnaires, three couples were excluded from data analysis due to missing data on study variables, and one couple requested that their data be deleted, yielding a final T1 sample of 125 couples for cross-sectional analyses.

Of the 125 couples included in T1 analyses, 105 men and 109 women completed T2, 90 men and 104 women completed T3, and 97 men and 97 women completed T4. Eight couples and one man dropped out of the study, 18 couples separated, and some individuals or couples skipped some follow-up questionnaires but remained in the study. Given that longitudinal data analysis can be conducted with missing data, all data from the 125 couples included in T1 analyses were included in longitudinal analyses. If individuals were missing less than 20% of items on a measure, missing items were imputed using individual mean substitution (i.e., the individual's mean score for complete responses on a given scale was substituted for any missing items on that scale), which is recommended when the proportion of missing data is small (Shrive et al., 2006; Hawthorne & Elliot, 2005). If individuals were missing more than 20% of items on a measure, the scale score was treated as missing and not imputed.

Participants who did not complete the study (i.e., eight couples and one man who dropped out and 18 couples who separated; n = 35) did not differ from couples who remained in the study (n = 90) with respect to age, education, women's ethnicity, dating length, cohabitation length, or T1 relationship satisfaction. Men who did not complete the study were more likely to report minority ethnicity than men who completed the study ($\chi^2(1) = 11.48$, $p = .001$, $V = .30$). Completers and non-completers did not differ on sexual satisfaction, men's sexual communication, men's attachment variables, or women's attachment anxiety at T1. Women who did not complete the study reported higher attachment avoidance at T1 (M = 2.12, SD = 0.80) than women who completed the study (M = 1.67, SD = 0.69, $t(123) = 2.91$, $p = .004$, $d = .60$). In addition, women

who did not complete reported lower sexual communication quality at T1 (M = 56.93, SD = 13.43) than women who completed the study (M = 63.18, SD = 11.00, t(123) = -2.49, p = .014, d = .51).

Measures

Attachment insecurity. The Experiences in Close Relationships-Revised Scale (ECR-R; Fraley, Waller, & Brennan, 2000) is a 36-item measure of two dimensions of adult attachment insecurity: anxiety (18 items) and avoidance (18 items). Attachment anxiety items include "I often worry that my partner doesn't really love me," and "I'm afraid that I will lose my partner's love." Attachment avoidance items include "I prefer not to show a partner how I feel deep down," and "It helps to turn to my romantic partner in times of need" (reverse-scored). All items are rated on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Attachment anxiety and attachment avoidance scores were calculated by averaging participants' responses on the 18 relevant items, with higher scores indicating greater attachment anxiety and avoidance respectively. Coefficient alphas met or exceeded .93 at each time point and averaged .94 for women and .94 for men across the four time points.

Sexual communication. Perceptions of dyadic sexual communication were measured using the 13-item Dyadic Sexual Communication Scale (Catania, 1986, 2013). This dyadic measure of communication reflects individuals' perceptions of how constructively they and their partner talk about sexual issues. Sample items include "There are sexual issues or problems in our sexual relationship that we have never discussed," (reverse-scored) and "My partner and I can usually talk calmly about our sex life." Items are rated on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Participants' responses were summed with higher scores indicating greater perceived quality of sexual communication (cf. Holmberg & Blair, 2009). Coefficient alphas met or exceeded .83 at each time point and averaged .87 for women and .86 for men across the four time points.

Sexual satisfaction. The 6-item sexual satisfaction subscale of the Quality of Sex Inventory (QSI; Shaw & Rogge, 2016) measured individuals' sexual satisfaction in their relationship. Sample items include "My sex life is fulfilling," and "My partner really pleases me sexually." Items are rated on a 6-point scale ranging from 0 (not at all true)

to 5 (completely true). Sexual satisfaction scores were calculated by summing items, and higher scores indicate greater sexual satisfaction. Coefficient alphas met or exceeded .95 at each time point and averaged .96 for women and .96 for men across the four time points.

Results

Descriptive Analyses

Means and standard deviations for study variables at each time point (T1-T4) are in Table 1. Screening the data for skewness and kurtosis indicated no notable departures from normality for study variables (i.e., skew index < 3.0 and kurtosis index < 10.0; Kline, 2011). Sexual satisfaction averages for men and women were above the total score midpoint and comparable to means for individuals in Shaw and Rogge's (2016) large online sample of 3060 participants in sexually active romantic relationships (i.e., women M = 20.6, SD = 8.0; men M = 20.0, SD = 8.0). Means for sexual communication quality were in the upper end of the scale range (from 13-78) for women and men, suggesting that couples perceived their discussions about sexual matters as relatively constructive, and that they were more similar to people who do not report sexual problems (M = 63.7, SD = 10.2) than those reporting sexual problems (M = 53.0, SD = 13.0; see Catania, 1986). There was only one difference between men and women on study variables; men reported higher T1 attachment avoidance (M = 2.09, SD = 0.94) than women (M = 1.77, SD = 0.73, $t(124) = 3.77$, $p < .001$, $d = .32$). At T1, men's age was negatively associated with sexual communication (r = -.20, p = .023) and satisfaction (r = -.37, $p < .001$) and years of education was negatively associated with sexual communication (r = -.21, p = .022). Age and years of education were not associated with T1 study variables for women. Relationship length at T1 was negatively associated with men's attachment avoidance (r = -.20, p = .027) and women's attachment anxiety (r = -.26, p = .003).

Correlations among study variables are in Table 2. An examination of within-partner correlations for women above the diagonal and within-partner correlations for men below the diagonal indicates that attachment anxiety and avoidance were generally negatively associated with sexual communication and satisfaction at each time point. Sexual communication and sexual satisfaction were generally positively associated within-partner at each time point. Cross-partner correlations for women and men, which appear bolded on the diagonal, reveal that attachment variables, sexual communication, and sexual satisfaction were generally positively associated.

Overview of Contemporaneous Cross-sectional Mediation Analyses

Data were non-independent, and thus study hypotheses were tested using an Actor-Partner Interdependence Mediation Model (APIMeM; see Ledermann, Macho, & Kenny, 2011). The APIMeM extends the standard Actor-Partner Interdependence Model (APIM; Kashy & Kenny, 2000), which consists of two pairs of variables (i.e., one predictor and one outcome variable per person in a dyad), by adding a third pair of variables (i.e., mediator variables) to allow for testing of mediation in dyadic data. The model tested is in Figure 2. As shown, the APIMeM allows for the testing of actor and partner effects. Actor effects are the effect of individuals' characteristics on their own outcomes, whereas partner effects are the effect of individuals' characteristics on their partners' outcomes, and reflect the interdependent nature of relationships.

Mixed-sex couples are distinguishable dyads, because each member of a mixed-sex dyad can be meaningfully assigned to one of two groups (i.e., men or women) and estimates are calculated separately for each group. As per Ledermann et al.'s (2011) recommendations, I compared an APIMeM model for distinguishable dyads, which tests effects for men and women separately, to an APIMeM model that treated dyads as empirically indistinguishable by constraining direct effects to be equal for men and women. Comparison of each constraint individually indicated no significant changes in model fit, so the model with direct effects constrained to be equal was retained.

Constraining direct effects to be equal between men and women reduces the number of possible mediation paths connecting predictors (i.e., attachment variables) and outcomes (i.e., sexual satisfaction variables) by half, from eight to four in this case. Total actor effects (e.g., the effect of individuals' attachment anxiety on their own sexual satisfaction) can be mediated by actor (i.e., individuals') and partner (i.e., their partners') perceptions of sexual communication. Similarly, total partner effects (e.g., the effect of individuals' attachment anxiety on partners' sexual satisfaction) can be mediated by actor (i.e., individuals') and partner (i.e., their partners') perceptions of sexual communication.

Predictor and mediator variables were centered around the grand mean across men and women. Predictor variables were correlated between partners and residual terms were correlated between partners in the model to account for unmeasured common causes, although this is not shown in Figure 2 for simplicity. To obtain standardized direct effect estimates, the analysis was re-run with all variables

standardized using the grand mean and standard deviation across men and women (see Kenny, Kashy, & Cook, 2006).

Path analyses were conducted using the statistical software AMOS Version 24 (Arbuckle, 2016) and full information maximum likelihood estimation was used to account for missing data. Based on recommendations by Kline (2011), the model chi-square and several approximate fit indexes were examined when evaluating model fit: Root Mean Square Error of Approximation (RMSEA), Jöreskog–Sörbom Goodness of Fit Index (GFI), Bentler Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR). Non-significant chi-square values ($p > .05$), RMSEA values ≤ .06 (presented with 90% CIs), GFI and CFI values ≥ .95, and SRMR values ≤ .08 are consistent with acceptable fit (cf. Hu & Bentler, 1999; Hooper, Coughlan, & Mullen, 2008).

To estimate, test, and contrast the specific effects that comprise each indirect effect in the model, the phantom model approach outlined by Macho and Ledermann (2011) was used. This approach involves creating separate "phantom" models to test along with the main model; each phantom model consists of latent variables and has all parameters fixed or equated to parameters within the main model. A specific effect of interest or contrast between effects from the main model is expressed as a total effect within the phantom model. A structural equation modelling (SEM) program can estimate, test, and calculate bootstrapped confidence intervals for the total effect in the phantom model to obtain information about the specific effect or contrast of interest. Testing a phantom model has no effect on the main model. An example of this approach testing the specific actor-actor effect of attachment avoidance on sexual satisfaction is in Figure 3. The phantom model approach is advantageous over other methods when testing complex models like the APIMeM and when using the AMOS program, which does not allow for specific effects to be represented using algebraic expressions (see Macho & Ledermann, 2011 for more information about the phantom model approach relative to other approaches).

Results for Contemporaneous Cross-sectional Mediation APIMeM

The contemporaneous cross-sectional APIMeM model in Figure 2 provided acceptable fit to the data ($\chi^2(10) = 9.44$, $p = .49$; RMSEA = .00, 90% CI [.00, .09]; GFI =

.98; CFI = 1.00; SRMR = .037) and results are in Table 3. Individuals' attachment anxiety and avoidance were negatively associated with their own perceptions of sexual communication quality and sexual satisfaction as predicted. Sexual communication was positively associated with sexual satisfaction within partners as expected. Regarding partner effects, attachment anxiety was negatively associated with partner sexual communication quality and sexual satisfaction. In contrast to expectations, the association between attachment avoidance and partner sexual communication was positive and there was no association between attachment avoidance and partner sexual satisfaction. Sexual communication was positively associated with partner sexual satisfaction as predicted.

As shown in Table 3, there were simple indirect effects of attachment anxiety on individual sexual satisfaction mediated by actor and partner perceptions of sexual communication. The specific effect through actor perceptions was significantly stronger than the specific effect through partner perceptions of sexual communication (point estimate of the difference between these two effects = 0.62, 95% CI [0.23, 1.19], p = .001). Actor and partner perceptions also significantly mediated simple indirect effects of attachment anxiety on partner sexual satisfaction, and there was no significant difference in the size of these specific effects (point estimate of the difference between these two effects = -2.60, 95% CI [-0.73, 0.08], p = .140).

Simple indirect effects of attachment avoidance on individual sexual satisfaction were mediated by actor and partner perceptions of sexual communication. The specific effect through partner sexual communication was unexpectedly positive, whereas the specific effect through actor sexual communication was negative and significantly different (point estimate of the difference between these two effects = -1.20, 95% CI [-1.77, -0.70], p = .001). There were simple indirect effects of attachment avoidance on partner sexual satisfaction also mediated by actor and partner perceptions of sexual communication, and a contrast of these specific effects yielded the same pattern. The specific effect of attachment avoidance on partner sexual satisfaction through partner sexual communication was positive, whereas the specific effect through actor sexual communication was negative and significantly different (point estimate of the difference between these two effects = -0.95, 95% CI [-1.55, -0.38], p = .002).

Overview of Longitudinal Mediation Analyses

To test the hypothesized mediation model longitudinally, data from T1-T4 were analyzed using a dyadic parallel process latent growth curve model (see Cheong, MacKinnon & Khoo, 2003 and Peugh, DiLillo, & Panuzio, 2013). The mediation process was tested by examining whether individuals' T1 attachment variables were associated with change (i.e., growth) in individuals' and partners' sexual communication quality (i.e., the mediators), and whether change in sexual communication was in turn associated with changes (i.e., growth) in individuals' and partners' sexual satisfaction (i.e., the outcomes). Point estimates of the indirect effects can be calculated using a phantom model approach and bootstrapped confidence intervals can be obtained using parametric bootstrapping because AMOS (like most SEM programs) does not permit bootstrapping of confidence intervals when there is missing data (see Macho & Ledermann, 2011). Dyadic parallel process latent growth curve modelling has the advantages of SEM (e.g., permits testing of model fit), allows for maximal use of the data (e.g., mediator and outcome data across all time points), and can be calculated with missing data (Preacher, 2010).

I first estimated dyadic growth curve models for the mediator and outcome variables separately. Growth of the mediator and outcome variables were modelled as linear, with slope loadings fixed to 0 for T1 and then 1, 2, and 3 for the remaining three time points, such that the intercepts represented the mean score predicted at T1 and the slopes indicated the mean level of linear change predicted per four-month interval. Intercept and slope factors were correlated within partners, with two exceptions. Men's sexual communication and women's sexual satisfaction intercepts and slopes were uncorrelated within-partner because the models would not produce admissible solutions otherwise. Intercepts, slopes, and residual variables at each time point were correlated between partners.

These two dyadic growth curve models were then combined into a dyadic parallel process latent growth curve model with the predictor variables (attachment variables at T1) grand mean centered across men and women. Actor and partner effects of attachment anxiety and avoidance on the sexual communication intercept and slope and the sexual satisfaction intercept and slope were included in the model. Actor and partner effects of the sexual communication intercept on the sexual satisfaction slope, and vice versa, the sexual satisfaction intercept on the sexual communication slope,

were also included. Finally, actor and partner effects of the sexual communication slope on the sexual satisfaction slope were in the model.

As with the contemporaneous analyses, I examined fit when model paths were constrained to be equal between men and women. Comparison of each constraint individually indicated no significant changes in model fit when men's and women's direct effects were constrained to be equal, with one exception. Constraining the actor effect of individuals' sexual communication slope on their sexual satisfaction slope to be equal for men and women significantly reduced model fit. Thus, this parameter was left unconstrained and all other direct effects were constrained to be equal for men and women.

Residual terms for sexual communication and sexual satisfaction were set to be equal across time points within partners, which is customary practice in latent growth curve modelling and based on the assumption that the same entity is being repeatedly assessed (see Grimm, Ram, & Hamagami, 2011), and correlated within partners and between partners at each time point. Residual terms for the slope and intercept factors were correlated within and between partners with two exceptions. Women's sexual satisfaction intercept and slope residual terms and women's sexual communication and sexual satisfaction slope residual terms were uncorrelated because the model would not produce an admissible solution with these terms correlated.

Results of Longitudinal Mediation Analyses

Fixed-effect and variance component estimates for the dyadic growth curve models for sexual communication and sexual satisfaction are in Table 4. For sexual communication, fit indexes indicated acceptable model fit ($\chi^2(19) = 22.23$, $p = .273$; RMSEA = .04, 90% CI [.00, .09]; CFI = .99). GFI and SRMR are not reported for longitudinal analyses because AMOS cannot calculate these fit indexes when there is missing data. Men's and women's average sexual communication predicted at T1 (i.e., intercepts) varied significantly across dyads. Men's sexual communication declined over time, by an average of 2.31 points per year, whereas women's sexual communication did not change linearly. There was significant variability in changes in sexual communication quality over time (i.e., slopes) across dyads for men only.

For sexual satisfaction, the model also provided acceptable fit to the data ($\chi^2(19) = 29.66$, $p = .056$; RMSEA = .07, 90% CI [.00, .11]; CFI = .98). There was significant variability in men's and women's average sexual satisfaction predicted at T1 (i.e., intercepts) across dyads. Men's sexual satisfaction declined over one year as expected, but women's did not. Declines were small, with men's sexual satisfaction decreasing an average of 1.35 points per year. There was significant variability in only men's slopes across dyads.

Results for the dyadic parallel process latent growth curve model are in Table 5 and paths critical to examining the hypothesized mediation are shown in Figure 4. The model provided acceptable fit to the data: $\chi^2(140) = 167.56$, $p = .056$; RMSEA = .04, 90% CI [.00, .06]; CFI = .98. The cross-sectional APIMeM results were replicated; attachment anxiety was negatively associated with individuals' and partners' sexual communication and satisfaction intercepts and attachment avoidance was negatively associated with individuals' sexual communication and sexual satisfaction intercepts. Attachment avoidance was positively associated with partners' sexual communication intercept but not with partners' sexual satisfaction intercept. Men's and women's sexual communication and sexual satisfaction did not significantly decline on average, which was inconsistent with the dyadic growth curve models for men.

Contrary to predictions, attachment anxiety and attachment avoidance were not associated with mean change in individuals' or partners' perceptions of sexual communication or sexual satisfaction over time. For women only, declines in sexual communication quality predicted declines in sexual satisfaction. Individuals' sexual communication intercept did not predict change in individuals' or partners' sexual satisfaction over time. Similarly, individuals' sexual satisfaction intercept was not associated with change in sexual communication for individuals or partners. Given that attachment variables were not associated with growth in individuals' or partners' sexual communication, no support for the hypothesized mediation was found and thus no indirect effects were tested.

Discussion

I examined whether perceptions of sexual communication quality mediated negative effects of attachment anxiety and avoidance on individual and partner sexual satisfaction contemporaneously and over one year in mixed-sex cohabiting couples. Contemporaneously, there was evidence for the predicted indirect effects of attachment anxiety on individual and partner sexual satisfaction and of attachment avoidance on individual sexual satisfaction through both partners' perceptions of sexual communication. Effects of attachment anxiety and avoidance on individuals' perceptions of sexual communication and evidence for cross-sectional mediation within partners were generally consistent with prior literature; however, comparisons must be made with caution because of differences between this study and prior research. Results of the dyadic parallel process latent growth curve model did not support the hypothesized longitudinal mediation model. Attachment anxiety and avoidance were not associated with declines in sexual communication quality, although changes in sexual communication predicted changes in sexual satisfaction over one year, but only for women.

Supporting my hypotheses, attachment anxiety negatively predicted individuals' and partners' contemporaneous perceptions of sexual communication, which in turn negatively predicted individuals' and partners' sexual satisfaction. Because attachment anxiety predicts individuals' perceptions that sexual satisfaction in an important indicator of relationship quality (Birnbaum et al., 2006), sexual issues may be perceived as serious threats to relationships, which intensify anxious attachment-related concerns (e.g., perceived lack of partner responsiveness) and poor conflict communication behaviour (e.g., Simpson et al., 1996), and make constructive discussion impossible. For example, if their partner experiences a sexual problem (e.g., erectile dysfunction), relatively anxiously attached individuals may interpret it as a devastating sign of a lack of love from their partner and a harbinger of relationship dissolution. They may behave in distressed, angry ways (e.g., making threats or accusations) during discussions of the problem, which would impede effective problem-solving and in turn decrease both partners' sexual satisfaction. Attachment anxiety may also manifest in inhibited self-expression in deference to partners (Davis et al., 2006) and needy reassurance-seeking behaviour (e.g., Shaver, Schachner, & Mikulincer, 2005), which prevents effective

discussion and fuels a self-perpetuating cycle of sexual and relationship worries (Birnbaum, 2010). Further, highly distressed and relationship-damaging behaviour during sexual discussions may evoke reciprocation of negative feelings and behaviour from partners (e.g., Gaelick, Bodenhausen, & Wyer, 1985), which further erodes discussion quality. In addition, partners may behave extremely cautiously during sexual conversations to avoid exacerbating relatively anxiously attached individuals' relationship insecurities, which could impede intimate disclosure and ultimately lead to anxious individuals and their partners avoiding sexual topics perceived as too upsetting to address.

Highlighting the importance of testing partner effects for relationship processes, there were unexpected differences between contemporaneous effects of attachment avoidance on individuals' and partners' perceptions of sexual communication and sexual satisfaction. Attachment avoidance was negatively associated with individuals' perceptions of sexual communication and satisfaction, but positively associated with partners' perceptions of sexual communication and, indirectly, satisfaction. For relatively avoidantly attached individuals, an erotophobic or emotionally disengaged approach to sexuality (Birnbaum, 2010; Birnbaum et al., 2006) and a relative lack of love, commitment (e.g., Ridge & Feeney, 1998), and trust (e.g., Pistole, 1993) toward partners likely interfere with broaching and intimately discussing sexual concerns (Davis et al., 2006). Relatively avoidant individuals may therefore have negative perceptions of sexual communication quality and lower sexual satisfaction more generally because their needs and preferences are not addressed. It is possible that partners may not recognize that there are problems with sexual communication quality, especially if attachment avoidance primarily prevents individuals from raising concerns or fully expressing themselves on sexual topics and does not contribute to overtly negative behaviour such as intense anger or contempt during sexual discussions. Thus, relatively avoidant individuals may be more likely to keep problems to themselves, and their partners may misinterpret their relative silence as no complaints, and consequently misperceive the absence of communication as being constructive communication. This misperception may make partners of relatively avoidantly attached individuals feel satisfied with communication and ultimately more satisfied sexually because they think there are no sexual issues, or that they have been adequately addressed. Further, if individuals' attachment avoidance prevents participation in sexual discussions, their

partners may control the negotiation of the couple's sex life, such that the sexual relationship becomes more focused on partner needs and preferences and thus more sexually satisfying for partners.

Declines in women's perceptions of sexual communication quality predicted declines in their sexual satisfaction over one year as expected, providing evidence that decreases in sexual communication quality erode sexual satisfaction over time. Women's declines in sexual communication quality may have contributed to less satisfying sexual interactions through decreased partner understanding of their sexual likes and dislikes and decreased intimacy and relationship satisfaction, which provide important context for women's sexuality (see Peplau, 2003 for review; MacNeil & Byers, 2005). Unexpectedly, changes in men's perceptions of sexual communication quality did not predict changes in their sexual satisfaction. Although women's sexual self-disclosure may be associated with sexual satisfaction through emotional (e.g., intimacy) and instrumental (e.g., partner understanding of preferences) benefits, men's sexual self-disclosure may contribute to sexual satisfaction only through instrumental means (MacNeil & Byers, 2005). Men's declines in sexual communication quality were relatively small on average, and thus declines may not have been sufficient to translate to less satisfying sexual scripts and therefore to less satisfying sexual interactions over one year.

Although cross-sectional APIMeM analyses provided some support for contemporaneous mediation hypotheses, results of the dyadic parallel process latent growth curve model did not support the longitudinal mediation hypotheses. Of importance, the different questions asked by the data analytic approaches used to examine the hypothesized mediation model may help explain their disparate findings. In the cross-sectional mediation analyses, I examined indirect effects of attachment anxiety and avoidance on sexual satisfaction at one point in time: the first phase of the study. These results should be interpreted cautiously because although they provide evidence of correlation, they do not provide evidence for the temporal precedence required in determining causal relationships and can reveal indirect effects even when the true longitudinal indirect effects are not significant (see Maxwell, Cole, & Mitchell, 2011). In contrast, the longitudinal analyses took time into account by directly examining whether baseline attachment anxiety and avoidance predicted changes in perceptions of sexual communication (i.e., mediator variables) over time, and whether changes in sexual

communication predicted changes in sexual satisfaction (i.e., outcome variables) over time. Thus, although attachment insecurity, sexual communication, and sexual satisfaction are contemporaneously associated within partner and between partners (for anxiety only) as expected, the hypothesized mediation model could be inaccurate.

Constructs not included in the model could explain contemporaneous associations between attachment insecurity, sexual communication quality, and sexual satisfaction. For example, relationship satisfaction is negatively associated with attachment insecurity (e.g., Feeney, 1994), sexual communication (e.g., Rehman et al., 2011), and sexual satisfaction (e.g., Lawrance & Byers, 1995), and could account for the contemporaneous negative associations between study variables. Alternatively, the mediation model could be accurate; however, the nature of this study and its limitations could have precluded finding longitudinal evidence. For example, limited variability in the rate of change in outcomes across dyads (i.e., variance in slopes), particularly for women, indicated that participants tended to experience similar rates of change in outcomes over time and thus there was limited opportunity to predict growth curve outcomes with attachment variables. It is also possible that attachment insecurity negatively influences sexual communication and sexual satisfaction over a longer period, and these mediational processes could not be captured when measuring changes over one year with four-month lags. Measuring sexual communication and sexual satisfaction over longer than one year may provide greater opportunity to detect and to predict changes in sexual communication and sexual satisfaction.

Clinical Implications

Contemporaneously, attachment anxiety and avoidance are negatively associated with individuals' perceptions of sexual communication and sexual satisfaction, and attachment anxiety is negatively associated with partners' perceptions of sexual communication and satisfaction. Consistent with an emotionally-focused couple therapy approach to the treatment of sexual issues (e.g., Johnson & Zuccarini, 2011), adult attachment orientations may provide important context for conceptualization of couples' sexual communication. For example, knowledge that one member of the couple is relatively anxiously attached and experiencing sexual dissatisfaction could facilitate hypothesis generation and testing about individual and partner contributions to sexual communication quality and potential interventions strategies. Given the

differential associations between attachment avoidance and individuals' and partners' perceptions of sexual communication quality, it may be important for clinicians to actively inquire about both partners' perceptions, and to also ask each member of the couple separately. Inquiring about sexual communication quality with relatively avoidantly attached people one-on-one could provide a valuable opportunity for them to speak freely about any communication concerns that may not be known about or shared by their partners.

Results of this study suggest that, consistent with prior literature, poor quality sexual communication is problematic and associated with lower sexual satisfaction, and that lower quality sexual communication erodes sexual satisfaction (at least for women). As sexual issues are common in couples presenting for therapy (e.g., Doss, Simpson, & Christensen, 2004), helping partners to discuss sexual issues openly and constructively, without being overwhelmed by anxiety, discomfort, or attachment-related concerns, may be an essential point of intervention.

Limitations and Future Directions

A major limitation of this study is that all measures were self-report. Although attachment anxiety was associated with couple's perceptions of sexual communication in this study, in a previous study there was no association between attachment anxiety and couple's sexual communication behaviour (see McNeil et al., 2018), suggesting there may be differences between couples' perceptions and their actual behaviour. An objective and nuanced measure of sexual communication quality (e.g., observations of couples' sexual communication behaviour) used in conjunction with self-reported perceptions would provide valuable insight into how attachment insecurity may affect couple's sexual communication processes.

Although the Dyadic Sexual Communication Scale (Catania, 1986, 2013) is a well-validated measure of perceptions of sexual communication, its generality and brevity did not allow for detailed examination of how attachment insecurity related to aspects of couples' sexual communication or to the aspects of sexual communication quality that may have changed. For example, attachment anxiety is associated with perceptions of poorer quality sexual communication, but the specific maladaptive behaviours that individuals and partners engaged in that explain this association cannot

be determined from these data. Attachment anxiety may be associated with negative behaviour during couples' sexual discussions or with inhibited expression and avoidance because of mutual desire to avoid relationship conflict. Future investigations may benefit from obtaining more detailed reports of the quality of couples' sexual discussions, for example by asking participants to report on sexual communication over the course of a dyadic daily diary study.

Another important limitation concerns the generalizability of these results to the general population because of potential self-selection bias of participants and the sample's demographic homogeneity. Self-selection bias is relevant to all sexuality research, because people who volunteer to participate in sexuality research often report more positive attitudes toward sex and more sexual experience (Morokoff, 1986; Wiederman, 1999). To minimize self-selection, recruitment materials described the project as the "Couples Communication Study" (i.e., there was no overt focus on sexuality in the project name or advertising); however, couples were informed of the study's focus on sexual aspects of relationships prior to consenting to participate and a significant number of eligible couples declined to take part. Nonetheless, couples who participated in this study reported sexual communication and satisfaction similar to large convenience samples in prior research (e.g., Shaw & Rogge, 2016). In future research, embedding sexual communication and satisfaction measures in a larger study without a primary sexuality focus may help to minimize self-selection processes and result in a sample with greater variability in sexual communication quality across dyads, contemporaneously and over time.

In addition, perhaps in part because approximately one third of participants were recruited from flyers on university campuses or emails to academic departmental listservs, many individuals in the sample were full- or part- time university students and reported mean income lower than average for individuals in Vancouver (Statistics Canada, 2017). Future research could therefore also benefit from recruiting participants from diverse educational, employment, and income backgrounds to facilitate generalizability of results to the general population.

Conclusions

Although sexual communication can be challenging for couples to navigate, positive perceptions of sexual communication are associated with sexual satisfaction and declines in sexual communication may erode sexual satisfaction (at least for women). Insecure individuals and their partners may find themselves in difficult situations because attachment anxiety and avoidance are associated with individuals' and partners' (for anxiety only) contemporaneous perceptions of poorer sexual communication quality and lower sexual satisfaction. Thus, insecure individuals and their partners may have much they could benefit from talking about sexual issues but tend not to engage in the constructive sexual communication that could yield important instrumental (e.g., increased sexual rewards) and emotional (e.g., increased intimacy and passion) benefits for their sexual relationships (MacNeil & Byers, 2005). Sexual communication may be an important point of intervention to improve sexual satisfaction and to facilitate fulfilling and lasting relationships generally, because sexual satisfaction is an important contributor to couples' overall relationship satisfaction and stability (see Sprecher & Cate, 2004 for review).

Tables and Figures

Table 1. Means and Standard Deviations for Study Variables

	Men			Women		
	M	*SD*	*N*	*M*	*SD*	*N*
Attachment Anxiety						
Time 1	2.13	0.91	125	2.36	1.14	125
Time 2	2.15	0.99	105	2.28	1.20	108
Time 3	2.04	0.89	88	2.29	1.13	103
Time 4	2.12	0.96	86	2.34	1.26	89
Attachment Avoidance						
Time 1	2.09	0.94	125	1.77	0.73	125
Time 2	2.17	0.96	105	1.82	0.87	108
Time 3	2.14	1.09	88	1.87	0.81	103
Time 4	2.35	1.08	86	2.01	1.11	89
Sexual Communication						
Time 1	61.30	11.30	125	61.83	11.80	125
Time 2	60.89	10.25	97	62.03	12.02	107
Time 3	61.26	12.55	86	61.35	11.27	97
Time 4	60.13	10.89	78	63.06	11.49	86
Sexual Satisfaction						
Time 1	20.28	8.01	125	19.94	6.95	125
Time 2	20.59	7.32	99	19.76	7.73	105
Time 3	20.45	7.69	87	19.41	8.27	98
Time 4	19.44	7.78	93	19.20	8.24	95

Table 2. Correlations Among Study Variables at Each Time Point

	Attachment Anxiety				Attachment Avoidance				Sexual Communication				Sexual Satisfaction			
	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
Attachment Anxiety																
Time 1	.16	.78**	.66**	.69**	.53**	.47**	.36**	.46**	-.37**	-.36**	-.27**	-.37**	-.25**	-.32**	-.18	-.26*
Time 2	.75**	.30**	.75**	.74**	.43**	.61**	.38**	.42**	-.20*	-.47**	-.26*	-.36**	-.20*	-.36**	-.22*	-.24*
Time 3	.59**	.71**	.28**	.77**	.39**	.55**	.62**	.56**	-.13	-.54**	-.52**	-.46**	-.21*	-.44**	-.41**	-.22*
Time 4	.58**	.66**	.73**	.23*	.39**	.52**	.53**	.68**	-.22*	-.60**	-.40**	-.56**	-.34**	-.47**	-.39**	-.47**
Attachment Avoidance																
Time 1	.47**	.43**	.39**	.33**	.38**	.77**	.64**	.59**	-.40**	-.40**	-.40	-.41**	-.31**	-.38**	-.26**	-.21*
Time 2	.49**	.65**	.54**	.38**	.79**	.39**	.66**	.66**	-.23*	-.47**	-.45**	-.46**	-.28*	-.41**	-.35**	-.33**
Time 3	.37**	.52**	.58**	.38**	.74**	.87**	.50**	.65**	-.23*	-.47**	-.56**	-.48**	-.23*	-.38**	-.51**	-.23*
Time 4	.30**	.44**	.45**	.57**	.72**	.73**	.80**	.47**	-.16	-.51**	-.41**	-.62**	-.37**	-.43**	-.50**	-.58**
Sexual Communication																
Time 1	-.40**	-.32**	-.29**	-.14	-.44**	-.38**	-.39**	-.35**	.56**	.63**	.58**	.51**	.58**	.50**	.36**	.38**
Time 2	-.48**	-.50**	-.43**	-.31**	-.52**	-.59**	-.48**	-.49**	.72**	.43**	.72**	.76**	.48**	.67**	.52**	.48**
Time 3	-.34**	-.32**	-.44**	-.43**	-.32**	-.40**	-.52**	-.56**	.67**	.71**	.36**	.72**	.51**	.62**	.70**	.46**
Time 4	-.33**	-.28*	-.30*	-.54**	-.29*	-.30**	-.37**	-.59**	.52**	.65**	.83**	.50**	.43**	.61**	.57**	.59**
Sexual Satisfaction																
Time 1	-.43**	-.35**	-.31**	-.18	-.45**	-.48**	-.43**	-.41**	.63**	.55**	.47**	.39**	.58**	.71**	.68**	.72**
Time 2	-.34**	-.34**	-.28**	-.10	-.49**	-.57**	-.51**	-.54**	.56**	.61**	.52**	.43**	.82**	.45**	.76**	.68**
Time 3	-.36**	-.33**	-.33**	-.08	-.41**	-.48**	-.56**	-.48**	.58**	.62**	.65**	.43**	.73**	.79**	.51**	.73**
Time 4	-.37**	-.38**	-.16	-.21	-.39**	-.49**	-.44**	-.53**	.56**	.65**	.50**	.59**	.67**	.73**	.75**	.48**

Note. Within-partner correlations for women appear above the bolded diagonal and within-partner correlations for men appear below the bolded diagonal. Cross-partner correlations for women and men appear bolded on the diagonal. T = Time. *$p < .05$. **$p < .01$.

Table 3. Contemporaneous Actor-Partner Interdependence Mediation Model

	Direct Effect Estimates			
Effect	Estimate	SE	p	Standard Estimate
a Effects (*X* → *M*)				
Attachment anxiety → sexual communication				
Actor effect	-3.11**	0.76	< .001	-.28
Partner effect	-2.15**	0.75	.004	-.19
Attachment avoidance → sexual communication				
Actor effect	-3.63**	0.88	< .001	-.27
Partner effect	2.12*	0.90	.018	.16
b Effects (*M* → *Y*)				
Sexual communication → sexual satisfaction				
Actor effect	0.27**	0.04	< .001	.42
Partner effect	0.10**	0.04	.008	.16
c' Effects (*X* → *Y*)				
Attachment anxiety → sexual satisfaction				
Actor effect	-0.40	0.45	.376	-.06
Partner effect	-0.43	0.45	.336	-.06
Attachment avoidance → sexual satisfaction				
Actor effect	-1.44**	0.55	.009	-.16
Partner effect	0.45	0.54	.407	.05

	Indirect Effect Estimates		
Effect	Estimate	95% CI	*p*
Actor Indirect Effects			
Attachment anxiety → sexual satisfaction			
Actor-actor simple IE	-0.837**	-1.444, -0.391	< .001
Partner-partner simple IE	-0.220**	-0.608, -0.032	<.010
Attachment avoidance → sexual satisfaction			
Actor-actor simple IE	-0.979**	-1.596, -0.484	< .001
Partner-partner simple IE	-0.218**	-0.020, -0.591	<.022
Partner Indirect Effects			
Attachment anxiety → sexual satisfaction			
Actor-partner simple IE	-0.318**	-0.753, -0.070	<.007
Partner-actor simple IE	-0.578**	-1.103, -0.157	<.007
Attachment avoidance → sexual satisfaction			
Actor-partner simple IE	-0.373**	-0.772, -0.088	<.009
Partner-actor simple IE	-0.572**	-0.087, -1.103	<.022

Note. X = attachment variable; *M* = sexual communication; *Y* = sexual satisfaction; *SE* = standard error; CI = bias-corrected confidence interval; IE = indirect effect. Standard direct effect estimates were obtained by re-running the analysis with all variables standardized using the grand mean and standard deviation across men and women.
*p < .05. **p < .01.

Table 4. Dyadic Growth Curve Models for Sexual Communication and Sexual Satisfaction

	Mean of Intercept	Intercept Variance	Mean of Slope	Slope Variance
Sexual Communication				
Women	61.74**	78.46**	-0.23	2.58
Men	61.44**	89.47**	-0.78*	7.07**
Sexual Satisfaction				
Women	19.89**	39.48**	-0.34	0.89
Men	20.56**	52.93**	-0.45*	2.09**

*$p < .05$. **$p < .01$.

Table 5. Direct Effect Estimates for Dyadic Parallel Process Latent Growth Curve Model

Effect	Estimate	*SE*	*p*
Attachment anxiety → sexual communication intercept			
Actor effect	-3.20**	0.63	<.001
Partner effect	-2.48**	0.63	<.001
Attachment avoidance → sexual communication intercept			
Actor effect	-4.00**	0.74	<.001
Partner effect	2.15**	0.68	.002
Attachment anxiety → sexual communication slope			
Actor effect	0.07	0.19	.725
Partner effect	0.08	0.19	.666
Attachment avoidance → sexual communication slope			
Actor effect	0.42	0.30	.153
Partner effect	-0.19	0.26	.474
Sexual communication intercept → sexual satisfaction slope			
Actor effect	0.04	0.03	.250
Partner effect	-0.01	0.03	.777
Sexual satisfaction intercept → sexual communication slope			
Actor effect	0.05	0.07	.482
Partner effect	-0.01	0.05	.871
Sexual communication slope → sexual satisfaction slope			
Actor effect for women	0.41*	0.20	.039
Actor effect for men	-0.79	0.76	.299
Partner effect	0.01	0.09	.938
Attachment anxiety → sexual satisfaction intercept			
Actor effect	-1.33**	0.42	.002
Partner effect	-1.17**	0.40	.004
Attachment avoidance → sexual satisfaction intercept			
Actor effect	-2.55**	0.52	<.001
Partner effect	-0.01	0.05	.871
Attachment anxiety → sexual satisfaction slope			
Actor effect	0.03	0.18	.881
Partner effect	-0.08	0.19	.599
Attachment avoidance → sexual satisfaction slope			
Actor effect	0.54*	0.28	.055
Partner effect	-0.01	0.25	.964

Note. Unstandardized regression coefficients are reported. Where not otherwise indicated, actor and partner effect estimates are for men and women.
SE = standard error.
*$p < .05$. **$p < .01$.

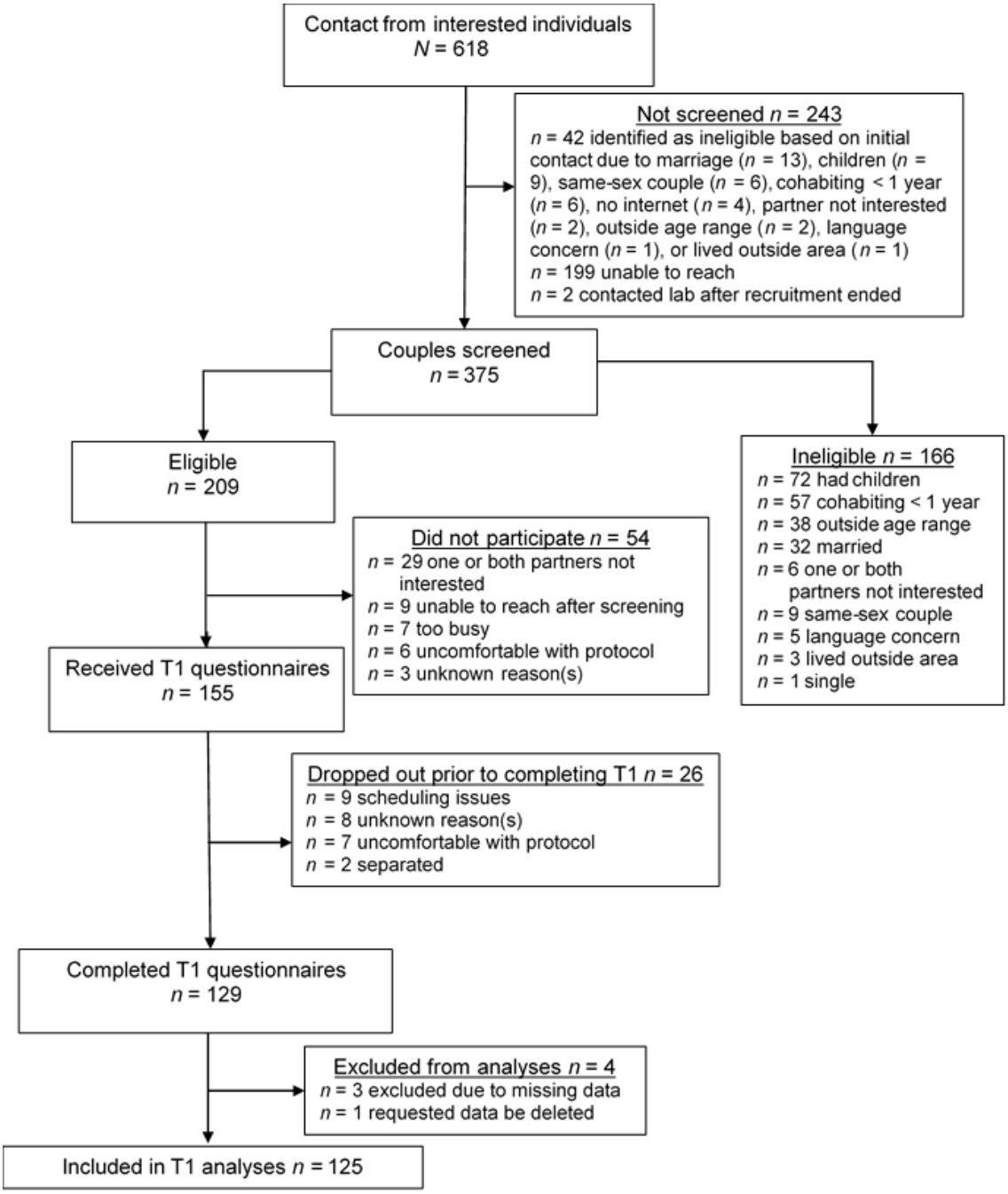

Figure 1. Recruitment flowchart showing process from initial contact to couples included in Time 1 (T1) analyses

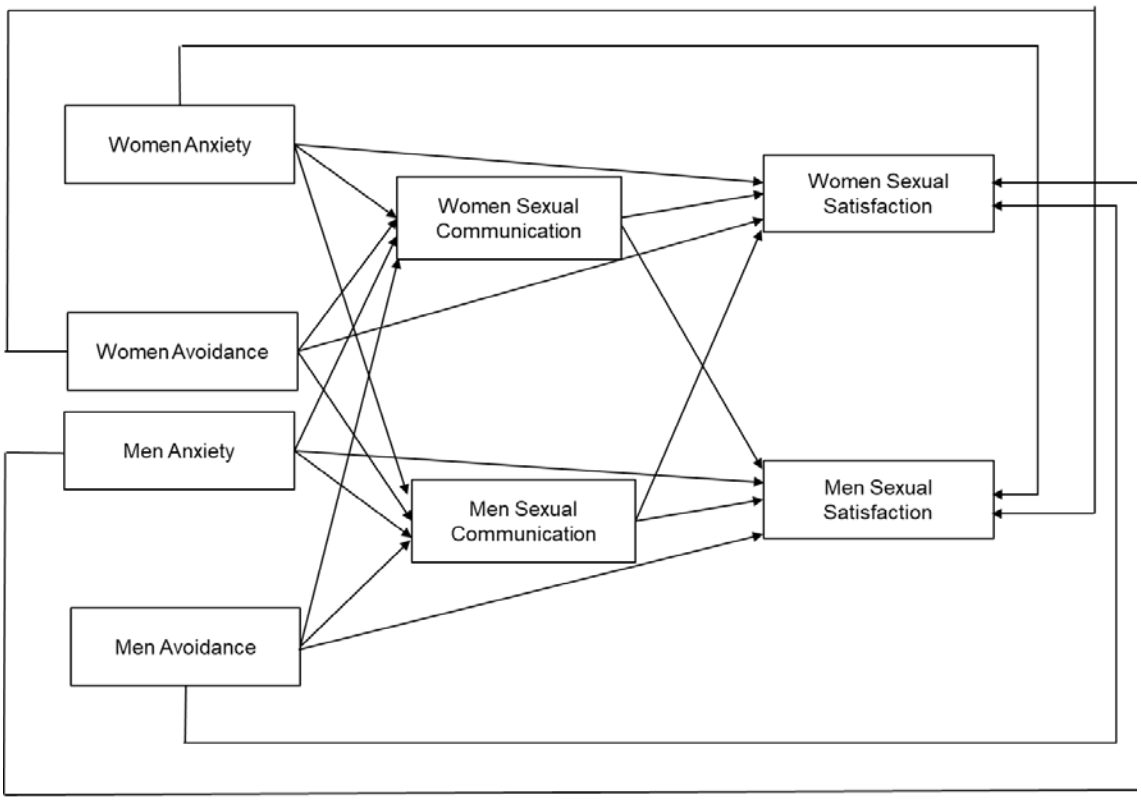

Figure 2. Actor-Partner Interdependence Mediation Model
All direct effects are constrained to be equal between men and women. Correlations between predictors, residual terms, and correlations among residual terms not shown for simplicity.

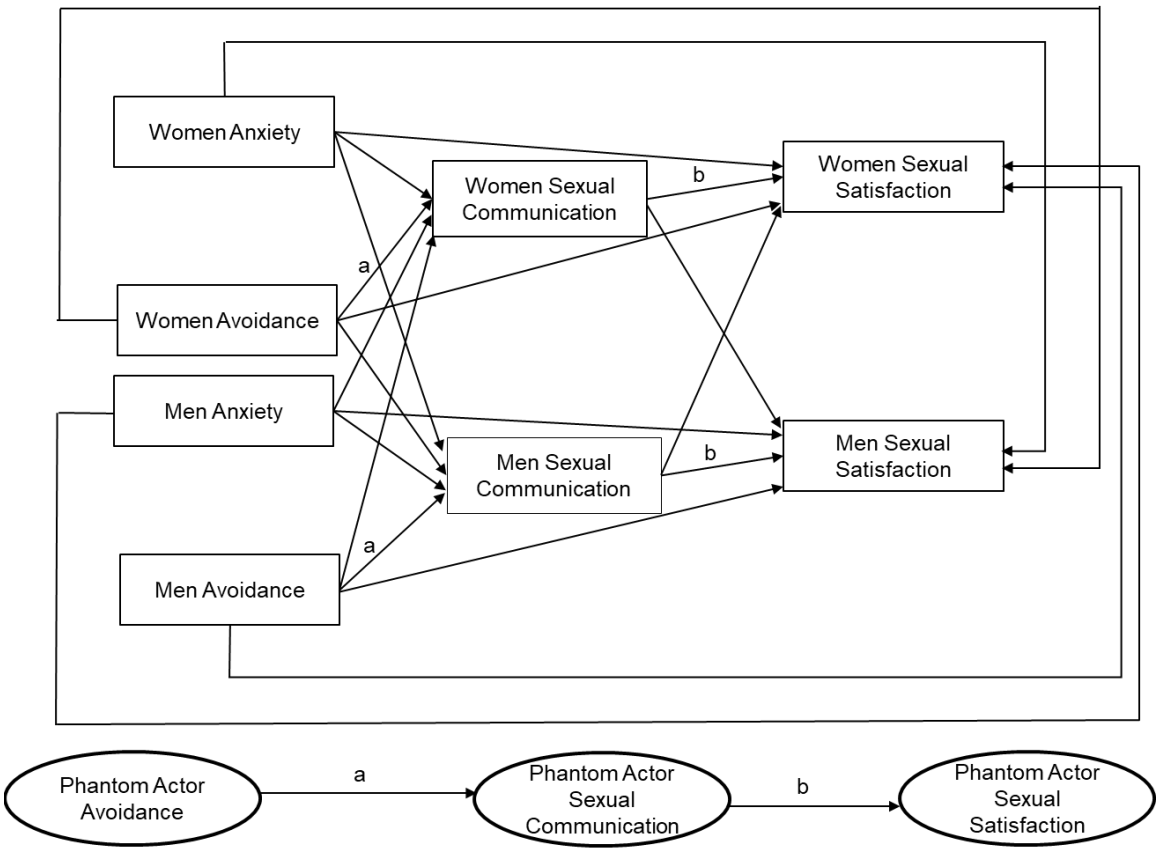

Figure 3. Actor-Partner Interdependence Mediation Model with phantom model to test actor-actor effect of attachment avoidance on sexual satisfaction

Paths 'a' and 'b' are fixed to be equal in APIMeM and phantom models. All direct effects are constrained to be equal between men and women. Correlations between predictors, residual terms, and correlations among residual terms not shown for simplicity.

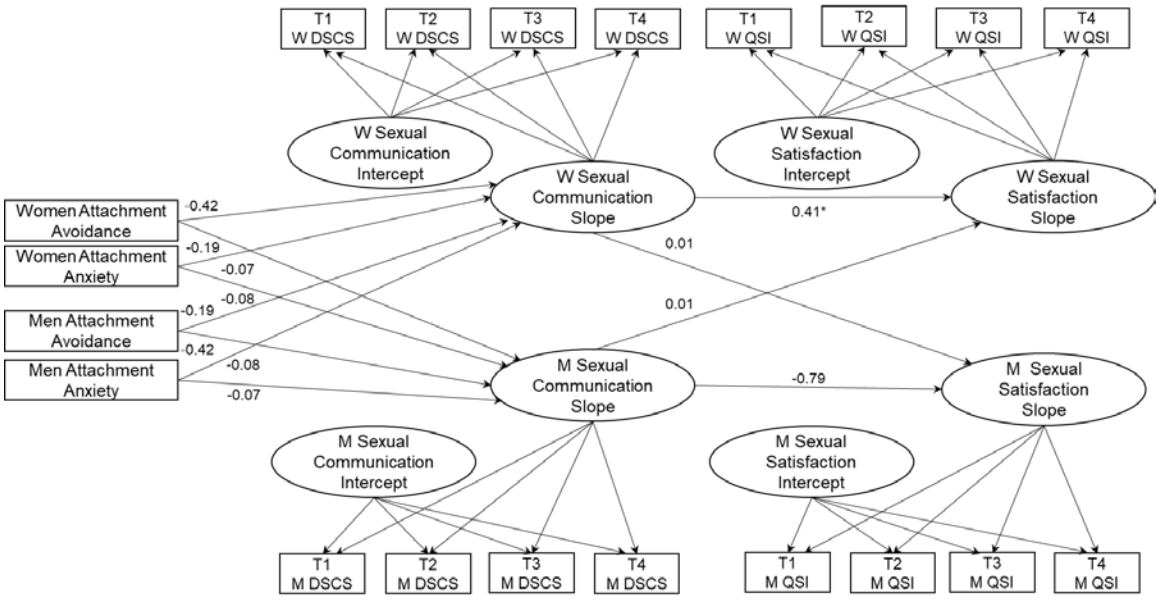

Figure 4. Dyadic parallel process latent growth curve model used to test mediation

For simplicity, only paths critical to testing mediation are shown. Actor and partner effects of attachment variables on the sexual communication intercept and on the sexual satisfaction intercept and slope are not shown. Actor and partner effects of the sexual communication intercept on the sexual satisfaction slope, and vice versa, the sexual satisfaction intercept on the sexual communication slope, are also not shown. Residual terms are not shown. Fixed loadings for intercept and slope variables and residual terms and actor and partner correlations among predictors and residual terms are also not shown. W = Women; M = Men; DSCS = Dyadic Sexual Communication Scale score; QSI = Quality of Sex Inventory 6-item sexual satisfaction subscale score; T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4.
$^{*}p < .05$.

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