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Modeling interpersonal correlates of condomless anal sex among gay and bisexual men: An application of attachment theory

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Abstract

The existing literature has identified that beliefs about the interpersonal meaning of condom use are a significant predictor of condomless anal sex (CAS). Some have suggested that condom use in this context may function as a form of non-verbal communication. This study utilizes attachment theory as a framework and tests a hypothesized model linking adult attachment to CAS through communication skills and condom expectancies. An online survey was completed by 122 single, HIV-negative gay and bisexual (GB) men living in the U.S. They completed measures of adult attachment (anxious and avoidant), condom expectancies regarding intimacy and pleasure interference, communication skills, self-assessed mate value, and recent CAS with casual partners. There was a significant, positive bivariate association between anxious attachment and receptive CAS. In path model analyses, two over-arching pathways emerged. In the *other-oriented* pathway, anxious attachment, self-perceived mate value, and emotional communication predicted the belief that condoms interfere with intimacy. In turn, intimacy interference expectancies were positively associated with the odds of receptive CAS. In the *self-oriented* pathway, assertive communication skills mediated a link between avoidant attachment and the belief that condoms interfere with sexual pleasure. Pleasure interference expectancies were positively associated with the odds of insertive CAS. The findings highlight the importance of relational or interpersonal concerns in sexual risk-taking among single GB men. Attachment theory may serve as a framework for organizing these interpersonal correlates of CAS. Results are consistent with the conceptualization of condom use as a form of non-verbal attachment-related behavior. Implications for sexual health and risk-reduction interventions are explored in this context.

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Keywords

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1. INTRODUCTION

HIV infection remains a persistent public health challenge in the U.S. (CDC, 2016). Gay, bisexual (GB) and other men who have sex with men bear a disproportionate burden of HIV infection, accounting for 67% of new infections (CDC, 2016). Condomless anal sex (CAS) remains the most common cause of HIV transmission in this population (CDC, 2015). For much of the epidemic, CAS has largely been conceptualized as an individual-level health behavior. This thinking is embodied in research that has applied individual-focused health decision-making models—such as the Health Belief Model (e.g., Rosenstock, Strecher, & Becker, 1994)—to HIV transmission risk behaviors like CAS.

Conceptualizing condom use as an individual-level health behavior, however, overlooks the potential influence of relational concerns or interpersonal context. Research has indicated that concerns about intimacy and emotional closeness may contribute to this increased likelihood of CAS with main partners. For example, Mustanski, Newcomb, and Clerkin (2011) found that perceptions of relationship “seriousness” were positively correlated with the likelihood of CAS. Subsequently, Greene, Andrews, Kuper, and Mustanski (2014) indicated that the motivation to display commitment, intimacy, and trust was among GB men’s reasons for engaging in CAS. These findings echo earlier work which indicated that GB men may utilize the cessation of condom use (Blechner, 2002; Shernoff, 2005) or the exchange of semen (Schilder, et al., 2008) as an affirmation of relationship commitment or love.

These relational concerns—desires for emotional closeness and the belief that CAS may facilitate that closeness—have been linked to sexual behavior in unpartnered GB men as well. Golub, Starks, Payton, and Parsons (2012) identified three dimensions of condom perceptions: risk reduction beliefs, pleasure interference, and intimacy interference. Concerns about intimacy interference were found to predict CAS with casual male partners above and beyond HIV risk prevention beliefs and concerns that condoms interfere with pleasure. Subsequently, Starks, Payton, Golub, Weinberger, and Parsons (2014) found that the association between expectancies that condoms interfere with intimacy and sexual risk was greater for those men who experienced high levels of sexual orientation related stigma.

Attachment theory is a well-established framework for organizing beliefs and expectancies about interpersonal interactions—specifically, beliefs related to one’s acceptability to socially important others as well as beliefs about the potential availability of socially important others (Ainsworth, 1985; Bowlby, 1969, 1977). Although largely influenced by early interactions with primary caregivers, these attachment-related beliefs continue to be open to revision and movement throughout adult life if interactions with close others (whether romantic partners, close friends, or family members) challenge one’s existing beliefs about the availability of love and support (Bowlby, 1988).

While early formulations of attachment generally attempted to categorize people as having a global attachment “style,” which defined behavior across relationships (e.g., Ainsworth, 1985; Collins & Read, 1990; Hazen & Shaver, 1994), more recent research has taken a dimensional approach (e.g., Ciesla, Roberts, & Hewitt, 2004; Wei, Russell, Mallinckrodt, & Vogel, 2007). This work typically identifies two primary dimensions of adult attachment. Attachment anxiety subsumes concerns about how others will view the self or worries about potential rejection by socially valued others. Individuals high on attachment anxiety may anticipate that other people will reject or abandon them, and thus engage in behaviors intended to prevent this anticipated rejection. Attachment avoidance captures discomfort associated with emotional closeness to others or concerns that others are not trustworthy or reliable. Those high on attachment avoidance may behave in ways that create emotional or psychological distance from others who they believe are unreliable or untrustworthy. Secure attachment then is characterized by low levels of attachment anxiety and avoidance.

Existing research conducted in heterosexual samples provides support for the conclusion that attachment is meaningfully related to sexual behavior. Secure attachment has been linked with more effective sexual communication (Shaver & Mikulincer, 2006). Meanwhile, attachment anxiety has been linked with lower sexual self-efficacy (pertaining to perceived ability to communicate with partners, resist pressure, and negotiate condom use), increased fear that requests for sexual discussions will alienate partners (e.g. Feeney & Noller, 2004), a greater willingness to oblige their partners’ wishes (Pistole, 1989), and higher rates of condomless sex (Strachman & Impett, 2009). Similarly, attachment avoidance has been linked with decreased frequency of sexual intercourse within a relationship (Gentzler & Kerns, 2004) and increased rates of extra-relationship casual sex (Bogaert & Sadava, 2002).

Various studies have explored attachment style with relationship outcomes in GB men and lesbians, showing links with relationship attitudes and history (Ridge & Feeney, 1998) and relationship quality (Elizur & Mintzer, 2003; Mohr, Selterman, & Fassinger, 2013). Further, both anxious and avoidant attachment have been associated with heightened sexual expectancies of substance use (Starks, Millar, Tuck, & Wells, 2015). However, very few studies have applied attachment theory to the sexual risk behavior of GB men. Ciesla et al.’s (2004) study of 48 HIV-positive individuals included 27 gay men and found that fearful attachment was positively associated with number of sexual partners and the odds of CAS with HIV-negative partners. Elizur and Mintzer (2003) observed that insecure attachment was associated with a greater number of recent same-sex partners. In contrast, Ramirez and Brown (2010) found no differences in avoidant attachment for GB men in open vs. monogamous relationships. More recently, Starks and Parsons’ (2014) study of 172 male couples found that secure attachment was positively associated with sexual satisfaction and sexual frequency between main partners. Both avoidant and ambivalent attachment were associated with diminished sexual communication. Avoidant attachment was associated with an increased number of casual CAS partners. While the authors did not examine indirect pathways, it is plausible that the combination of impaired dyadic communication and diminished emotional connection is particularly conducive to engagement in sex with more partners.

While these existing studies indicate that attachment is relevant to sexual behavior, they have not clearly identified indirect pathways by which adult attachment may be linked with condom use. Sexual expectancies of condom use constitute one potential mechanism. It is plausible that global concerns about the availability and trustworthiness of others may predict behavior-specific expectancies about the interpersonal repercussions of condom use. In addition, two other interpersonal factors might be expected to play a role in pathways from attachment to CAS: communication skills and self-perceived mate value.

The existing literature provides indications that communication skills may be an important component of pathways linking adult attachment to condom use. As mentioned above, Starks and Parsons (2014) found that both anxious and avoidant attachment were negatively associated with sexual communication. Exploring the potential for communication skills to mediate the sex-attachment link, Feeney et al. (1999) suggested that attachment style influences one's ability to effectively communicate with a sexual partner, which thus affects sexual safety outcomes. The authors also found that the act of communicating one's wish for condom use was especially challenging for individuals with anxious-ambivalent attachment, given their increased fear of rejection and heightened desire for closeness. Consistent with this, Davis et al. (2006) found that communication directly predicted physical sexual satisfaction, and satisfaction with sexual control—and furthermore, the effects of attachment insecurities on sexual satisfaction were mediated by inhibited sexual communication skills.

More recent work has considered the possibility that the non-use of condoms may serve as form of non-verbal communication (Golub et al., 2012; Starks et al., 2014). Accordingly, items used to assess the belief that condoms interfere with intimacy ask participants to rate their agreement with statements such as: “having sex without a condom makes me feel more connected to my partner;” “not using a condom with a partner shows him that I trust him;” and “having sex without a condom shows a partner that I really want to see him again.” Essentially, foregoing condom use becomes a way of non-verbally communicating love, trust, or a desire for continued interaction (Golub et al., 2012).

Finally, research has indicated a link between attachment security and desire for romantic relationships (Eastwick & Finkel, 2008a). Anxious attachment encompasses expectancies that desired social others will not be available. It is therefore reasonable that attachment anxiety may be associated with diminished perceptions of one's value to potential partners and that this perception that one has limited appeal to potential partners may shape GB men's expectancies about the implications of condom use. In service of establishing and maintaining closeness with a prospective partner, the individual high in attachment anxiety who perceives that he has limited value to potential partners may be more motivated to forego condom use.

The existing literature points to the utility of conceptualizing CAS as a form of attachment-related behavior. The goal of the current study was to test a decision-making model which explores an array of potential indirect pathways linking attachment and sexual behavior in a sample of single GB men. Specifically, we hypothesized that: 1) attachment anxiety and avoidance would both be negatively associated with communication skills; 2) attachment anxiety (but not avoidance) would be negatively associated with self-perceived mate value;

3) attachment anxiety and avoidance would both be positively associated with expectancies that condoms would interfere with intimacy (no specific hypothesis was formed a priori about associations with pleasure interference expectancies); 4) communication skills would be negatively associated with intimacy and pleasure interference expectancies; 5) self-perceived mate value would be negatively associated with intimacy interference expectancies (no specific hypothesis was formed a priori about associations with pleasure interference expectancies), and; 6) pleasure interference and intimacy interference expectancies would predict the occurrence of insertive and receptive CAS. Secondly, we hypothesized that the indirect pathway from attachment to condom expectancies through communication skills and self-perceived mate value would be significant. Similarly, we hypothesized that indirect pathways from attachment to insertive and receptive CAS through condom expectancies and/or communication skills would be significant.

2. METHODS

2.1 Participants

Eligible participants included in the current analyses identified as gay or bisexual and biologically male. In addition, all participants reported that they: were not currently in a relationship; lived in the United States; were 18 or older; had the ability to complete a survey in English; completed at least one HIV test in the previous five years; and identified their HIV status as negative or unknown. A total of 854 individuals responded to recruitment messages and completed a preliminary eligibility screener. Of these, 541 (63.3%) were at least 18 years old, not currently in a relationship, and able to complete the survey in English. Of these participants who were preliminarily eligible, 535 (98.9%) started the baseline survey and 327 (62.6%) completed. Of these, 274 (87.8%) reported a US residence; 172 (62.8%) U.S. residents identified as male; 157 (92.3) men identified as gay or bisexual. Among gay and bisexual men, 122 (77.7%) reported a negative HIV status based upon an HIV test in the previous five years and were retained in the analytic sample for this study.

2.2 Procedures

Data were drawn from a study focused on the sexual health and dating behavior of GB men collected online between March and May 2014 (Starks et al., 2015). Participants were recruited online through Huffington Post and social networking sites, and incentivized snowball sampling. Participants who referred someone to the study received a promotional code which could be redeemed for a small discount at an online vendor (approximate value ranged between \$1.00 and \$10.00). While the current study focuses on data from male individuals who reported a gay or bisexual orientation, online recruitment materials indicated that the study was open to single individuals regardless of gender or sexual orientation. Materials contained study contact information and a direct link to the survey platform.

The study link directed participants to *ProofPilot*, an online survey platform. Potential participants created a password-protected user account and provided demographic information that could be utilized to determine preliminary eligibility, and to prevent duplicate responding (further confirmed by checks of IP addresses, geographic data, and

response times). Participants who were preliminarily eligible (those who were 18 years of age or older, reported they were not currently in a relationship, and indicated they were able to communicate in English) were given the option to view detailed consent information and enroll. Similar to the recruitment incentive, participants received a promotional code which could be redeemed for a discount (approximate value ranged between \$1.00 and \$10.00) at an online vendor upon completion. All procedures were approved by the institutional review board at Pace University.

2.3 Measures

2.3.1 Demographic characteristics—Participants reported their date of birth, racial and ethnic identity, and level of education. Participants also provided their zip code of residence, which was used to determine geographic region.

2.3.2 Adult attachment style—Adult attachment style was assessed using the Experiences in Close Relationships short form (Wei et al., 2007) scale. The scale is comprised of 12 items, divided across two subscales. Participants indicated their level of agreement with each item on a Likert-type scale from 1 (completely disagree) to 7 (completely agree) regarding their general experiences in romantic relationships. Six items assess the anxious dimension of attachment (e.g., “I need a lot of reassurance that I am loved by my partner”) and six assess the avoidant dimension of attachment (e.g., “I try to avoid getting too close to a partner”). Both subscales demonstrated adequate reliability (Cronbach’s $\alpha = .78$ and $.71$, respectively).

2.3.3 Condom-related attitudes—Perceptions that condoms interfere with intimacy (emotional closeness) and physical pleasure were assessed using a modified version of the condom-related attitudes scale proposed by Golub et al. (2012). Four items assessed perceptions of Intimacy Interference (“Having sex without a condom makes me feel more emotionally connected to my partner;” “Not using a condom with a partner shows him/her that I trust him/her;” “Not using a condom makes sex more intimate;” and “A guy coming inside you is an expression of love”). Three items assessed perceptions of Pleasure Interference (“Having sex with a condom is more pleasurable;” “It’s difficult to relax and enjoy myself when using condoms;” and “Unprotected sex is more spontaneous”). Participants indicated their level of agreement on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate stronger expectancies that condoms interfere with, or reduce, intimacy or pleasure. The scales demonstrated adequate reliability (Cronbach’s $\alpha = .87$ and $.69$, respectively).

2.3.4 Self-perceived mate value—Men’s perceptions of their value to potential relationship partners were assessed using a modified version of the self-perceived mate value scale (Eastwick & Finkel, 2008b). The scale includes three items which assess perceptions about the availability of relationship partners regardless of whether a relationship is desired. Originally utilized with heterosexual samples, the revised scale, named “Relationship Options,” has also been utilized with samples of gay and bisexual men (B. Mustanski, personal communication, 2014; Rosenthal & Starks, 2015). The items presented were modified to be relevant for men who experience same-sex attraction (“A lot of people would

want to date me,” “In general, I tend to have a lot of options for romantic partners,” and “People that I like tend to like me back”). Participants responded to the three items using a Likert-type scale of 1 (strongly disagree) to 5 (strongly agree), and a mean score was created (Cronbach’s $\alpha = .75$).

2.3.5 Communication skills—Participants completed the “assertive” and “emotional” subscales of the Interpersonal Communication Competence scale (Rubin & Martin, 1994). The assertive subscale included three items assessing the ability to stand up for one’s rights without denying the rights of the other (e.g., “I stand up for my rights”). The emotional subscale included three items assessing a person’s ability to open up or reveal personality elements to others through communication (e.g., “I allow friends to see who I really am”). Both subscales demonstrated adequate internal consistency (Cronbach’s $\alpha = .72$ and $.77$, respectively).

2.3.6 Sexual behavior—Participants reported whether or not they had any male sexual partners in the past 30 days. Those who reported having one or more sexual partners were asked to report the number of partners with whom they engaged in insertive and receptive CAS. Two dichotomous variables were created. The first variable distinguished between those who reported no receptive CAS (value = 0) and those who reported engaging in receptive CAS with at least one partner (value = 1). Similarly, the second variable distinguished between those who reported no insertive CAS (value = 0) and those who reported insertive CAS with at least one partner (value = 1).

2.4 Analytic Plan

Bivariate associations among demographic variables, communication skills, condom expectancies, and insertive and receptive CAS were evaluated using measures of bivariate association matched to variable distributions. In order to evaluate the direct association between adult attachment and CAS, insertive and receptive CAS were regressed on adult attachment, age, race and ethnicity, and education. Finally, a path analysis was calculated using Mplus version 7.2 (Muthen & Muthen, 1998–2015) to evaluate predictive relationships among variables in a multivariate context. The ultimate endogenous variables in the model were receptive and insertive CAS, which were predicted by condom expectancies, communication skills, and attachment. The model also specified that condom expectancies would be predicted by communication skills and attachment. Furthermore, it incorporated attachment as a predictor of condom expectancies. Age, race and ethnicity, and education were included as covariates for all endogenous variables in the model.

The significance of the indirect effects of attachment was tested using a model constraint. This approach compares the fit of two models. In one model, the product of the direct effects which comprise the indirect pathway being tested is constrained to be 0. The fit of this model is then compared to one in which the product of the constituent direct paths is allowed to vary freely using a X test. A significant X statistic resulting from this test indicates that the model constraint significantly reduces model fit and provides evidence that the indirect effect is significant. The examination of indirect effects in the absence of direct association is consistent with the recommendations of Hayes (2009). In his summary critique of the

causal step approach (Baron & Kenny, 1986), Hayes asserted that significant indirect effects may exist even in the absence of a significant direct effect. When multiple indirect pathways (of different direction) exist between predictor and outcome, the total direct effect may be null despite the presence of significant specific indirect associations. Note, a constraint approach to testing indirect effects was used because bootstrapping approaches to indirect effect testing rely on weighted least squares means and variances (WLSMV) estimation when endogenous outcomes are categorical (Muthen & Muthen, 1998–2015). The use of WLSMV resulted in problems during full model estimation. Therefore, full information maximum likelihood estimation was utilized for all reported models.

3.0 RESULTS

Demographic data for the sample are contained in Table 1. The average age of respondents was 33.0 years ($SD = 10.8$ years). The sample was majority White (65.6%) and 68.9% had earned at least a four-year college degree.

3.1 Bivariate associations

In tests of bivariate associations (see Table 2), pleasure interference expectancies were positively associated with insertive as well as receptive CAS. Similarly, intimacy interference expectancies were positively associated with insertive as well as receptive CAS. In addition, anxious attachment was positively associated with the odds of receptive CAS. Aside from CAS, condom expectancies were unrelated to other variables of primary interest. Bivariate associations between CAS and self-perceived mate value were non-significant as were associations between both forms of CAS and assertive as well as emotional communication.

Avoidant, but not anxious, attachment was negatively related to communication skills in bivariate tests of association—higher scores on avoidant attachment were significantly associated with lower assertive and emotional communication scores. In contrast, level of self-perceived mate value was negatively associated with anxious attachment. The correlation between self-perceived mate value and avoidant attachment was not significant.

3.2 Path model results

Tables 3, 4, and 5 contain coefficients for all variables in predictions of all endogenous variables contained in the model. Table 3 contains path analysis coefficients for insertive and receptive CAS. In path analyses controlling for age, race and ethnicity, and education as well as adult attachment, only pleasure interference expectancies were positively associated with insertive CAS. Intimacy expectancies did not significantly contribute to the prediction of insertive CAS. In contrast, intimacy interference expectancies were positively associated with receptive CAS. Coefficients associated with age, race and ethnicity, and education were all non-significant in the prediction of receptive as well as insertive CAS.

Table 4 contains path model coefficients associated with the prediction of pleasure and intimacy condom use expectancies. Assertive communication, but not emotional communication, was positively associated with pleasure interference expectancies. Neither anxious or avoidant attachment or self-perceived mate value significantly contributed to the

prediction of pleasure interference expectancies. In contrast, emotional communication, but not assertive communication, was negatively associated with intimacy interference expectancies of condom use. In addition, self-perceived mate value and anxious attachment were positively associated with intimacy interference expectancies. Meanwhile, avoidant attachment was not significantly associated with intimacy interference expectancies. With regard to covariates, White racial identity was associated with significantly higher levels of intimacy interference expectancies but did not contribute significantly to the prediction of pleasure interference expectancies. Age and education were not significantly associated with either pleasure or intimacy interference expectancies.

Table 5 contains path model coefficients associated with the prediction of communication skills and perceptions of self-perceived mate value. After controlling for age, race and ethnicity, and education, both anxious and avoidant attachment were negatively associated with assertive communication. In contrast, only avoidant attachment was negatively associated with emotional communication. Anxious attachment was not. White racial identification was associated with increased emotional communication scores but was not significantly associated with assertive communication. Age and education were not associated with emotional or assertive communication. Finally, anxious attachment was negatively associated with self-perceived mate value. Avoidant attachment was not. White racial identification predicted greater self-perceived mate value scores, while age and education were not significant predictors of self-perceived mate value.

3.3 Tests of indirect effects

Figure 1 displays statistically significant trends among constructs of primary interest to the current study. Evident in this figure are five possible indirect pathways linking adult attachment and CAS. An additional four indirect pathways between adult attachment and condom use expectancies are also present. Each of these indirect effects was tested using a model constraint test.

Results of these tests are provided in Table 6. All of the indirect pathways between adult attachment (both anxious and avoidant subscales) and CAS (both insertive and receptive) were non-significant. Consistent with proposed hypotheses, there were indications that communication skills may provide a link between at least some attachment dimensions and condom use expectancies. Model constraint testing indicated that the pathway from avoidant attachment to pleasure interference expectancies through assertive communication was statistically significant ($p = .05$). The pathway from avoidant attachment to intimacy interference expectancies through emotional communication was not ($p = .06$).

4.0 DISCUSSION

These results provide support for hypotheses that multiple pathways exist between adult attachment and CAS comprised of expectancies regarding condom use, communication skills, and self-perceived mate value. The observed path model results can be broadly organized into two over-arching pathways: an 'other-oriented' pathway characterized by concerns about intimacy with others, and a 'self-oriented' pathway characterized by the assertion of personal preferences and sexual pleasure. Although the indirect effects linking

attachment to CAS were non-significant, the individual constructs of anxious attachment and receptive CAS were significantly related at the bivariate level. Taken together, these results provide initial support for conceptualizing condom use as a form of non-verbal communication, which may serve as a form of attachment-related behavior.

The *other-oriented* pathway from attachment to CAS involves associations with intimacy interference expectancies. Intimacy interference was positively associated with increased odds of receptive CAS. There was a positive direct association between anxious attachment and these intimacy interference expectancies. While the indirect effect of anxious attachment on CAS was non-significant, this pattern of direct effects is consistent with the hypothesis that generally individuals with greater attachment anxiety, which is characterized by anxious concern about the availability of or potential rejection by others, are also more concerned about the potential effect of condoms on emotional closeness during sex (Feeney & Noller, 2004; Strachman & Impett, 2009), while concerns about one's own pleasure are not prominent.

Interestingly, findings related to self-perceived mate value point to a complex relationship between anxious attachment and intimacy interference expectancies. Anxious attachment was negatively associated with self-perceived mate value. This association is consistent with typical conceptualizations of anxious attachment. Individuals high on anxious attachment are generally concerned about the availability of others, and it is therefore reasonable that they might also anticipate fewer people would be interested in a potential relationship. Contrary to the hypothesized direction, self-perceived mate value was positively associated with intimacy interference expectancies, suggesting that participants who believed it would be easier to find a potential partner also had stronger beliefs related to the impact of condom use on emotional closeness. It is plausible that for these unpartnered men, the dissonance of believing one has relationship options (and yet being single) leads to an internal attribution (Heider, 1958) about why one is unpartnered. In other words, these single men who believe that potential partners exist may be attributing their relationship status to some personal flaw or shortcoming not captured by the self-perceived mate scale (Eastwick & Finkle, 2008b). This attribution may increase the likelihood that they would utilize the non-use of condoms to enhance closeness.

Together, these findings support the idea that anxious attachment and self-perceived mate value may lead individuals to use proximity-seeking means to obtain their desired romantic relationship (Eastwick & Finkel, 2008a). While this indirect pathway from anxious attachment to intimacy interference was not significant ($p = .10$), the set of associations suggest the possibility that the relationship between anxious attachment and intimacy interference expectancies is multifaceted and may involve multiple indirect pathways which vary in direction.

The *self-oriented* pathway from attachment to CAS involves associations with pleasure interference expectancies. In this pathway, attachment anxiety and avoidance were associated with lower assertive communication skills. In turn, individuals with higher assertive communication skill scores reported more concerns related to the impact of condoms on physical sexual pleasure. These individuals were in turn more likely to report

insertive, but not receptive, CAS. Interestingly, this pathway suggests that in some instances more secure attachment may be implicated in processes that lead to increased sexual risk-taking. Taken together, this pattern of associations indicates a self-confident style of associating with others—one which may lead to sexual risk-taking because it prioritizes personal physical pleasure. Similar to previous studies, attachment avoidance has been associated with greater likelihood of CAS with casual partners (Bogaert & Sadava, 2002; Starks & Parsons, 2014). Furthermore, building on dimensional approaches to attachment, those with greater attachment avoidance may use CAS as a way to avert conversations about condom use and in turn evade emotional closeness.

Findings related to the role of communication skills provide support for the conceptualization of condom use as a form of non-verbal communication (Golub et al., 2012; Starks et al., 2014). Subscales of communication skills were related to condom expectancies in a domain-specific manner. Emotional communication skills were negatively associated with intimacy interference expectancies and assertive communication skills were positively associated with pleasure interference expectancies. This pattern suggests the possibility that deficits in an individual's capacity to communicate their emotions may result in their reliance on the non-use of condoms to express emotions like love and trust. It further suggests that individuals who communicate in a highly assertive style may be particularly attuned to the effects of condoms on their experience of physical pleasure and less hesitant in asserting their pleasure as a priority.

The indirect pathway from avoidant attachment to pleasure interference expectancies through assertive communication was statistically significant. These results suggest that communication skills may explain links between the general interpersonal expectancies which comprise adult attachment and behavior-specific expectancies about the effects of condom use on sex (Davis et al., 2006; Feeney et al., 1999). These results are generally consistent with the tenet that condom use is an interpersonal behavior as much as it is an individual-level health decision. The model suggests that some fear-based HIV prevention messages intended to promote sexual safety run the risk of activating relational concerns which are associated with decreased condom use. This includes messages which promote condom use by emphasizing that sexual partners may not be reliable or trustworthy. Campaigns which frame condom use as a way of “getting close” or “taking care of one another” may be more effective when relational factors are a barrier to condom use. This model also implies potentially innovative pre-exposure prophylaxis (PrEP) messaging campaigns. Messages which emphasize PrEP's ability to reduce HIV risk without the need for negotiation with sex partners may appeal to individuals who have limited communication skills and/or substantial relational concerns which inhibit condom use.

These findings highlight the need for a balanced and comprehensive approach in sexual health interventions, one which integrates cognitive, emotional, and relational correlates of sexual risk behavior. Path model results suggest that interpersonal concerns regarding potential rejection and an assertive focus on one's own sexual pleasure are involved in pathways predicting CAS. To maximize effectiveness, interventions may need to incorporate skills necessary to establish interpersonal closeness and also satisfy personal sexual needs, while also ascertaining and negotiating the influence of one's partner in the sexual situation.

Such a relational approach to intervention might be modeled on work related to social-information-processing theory (Crick & Dodge, 1994; Lemerise & Arsenio, 2000), in which effective social behavior is seen as a function of social-cue perception, the repertoire of potentially adaptive behaviors, and feedback from others involved in the social exchange. The results of the current study suggest that social skills training interventions (Spence, 2003) developed within this paradigm may be relevant to sexual health behavior. Such programs often incorporate components focused on increasing the accuracy of social perception, enhancing anxiety regulation skills, reducing avoidance of social interactions, and practicing adaptive social behaviors (Spence, 2003).

These findings must be viewed in light of several limitations. These self-reported, cross-sectional data were collected from a sample of HIV-negative, well-educated, and mostly White single GB men across the U.S., linked from a popular online media site, which may limit generalizability to other populations. In particular, HIV-positive individuals may experience HIV-related stigma, and concerns about potential rejection on the basis of HIV status may serve as important interpersonal determinants of sexual behavior for these men (Palmer & Bor, 2001). Future studies of condom use among HIV-positive men should examine the role of HIV-related stigma and rejection concerns in the context of communication skills, condom expectancies, and attachment. Data on attitudes towards and uptake of PrEP were not available in the current study. Future studies should incorporate data on PrEP uptake to better contextualize CAS and inform targeting of PrEP interventions. While the current analyses were limited to men who were not in relationships, future research should attend to potential differences between partnered and unpartnered men. Furthermore, it may be useful for such studies to examine how condom expectancies, communication skills, and attachment function in the prediction of sexual behavior with main as well as casual partners for men in relationships. In the present study, a number of indirect effects were non-significant. The primary contribution of this study is to illustrate the utility of the attachment framework as applied to sexual HIV risk. Non-significant indirect effects may have been the result of limited power. This is especially true given that CAS outcomes were dichotomized. They warrant further examination in future studies with access to larger samples. Finally, sexual behavior was gathered in the aggregate, thus preventing consideration of event-level communication during specific sex events.

In conclusion, these findings highlight the relevance of interpersonal factors—attachment, communication skills, condom expectancies, and self-perceived mate value—to CAS among GB men. They suggest that both concerns about emotional closeness and an assertive focus on personal sexual pleasure may be involved in pathways leading to CAS. Attachment theory may serve as a framework for organizing these correlates of CAS. Results are consistent with the conceptualization of condom use as a form of non-verbal attachment-related behavior. Future research may explore whether condom use among GB men could be better leveraged through the integration of this other-focus and self-focus in an orientation that better balances both and serves to increase sexual safety for oneself and one's sex partner.

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Figure 1.

Path model results: Pathways from attachment to CAS.

NOTE: Non-significant paths are not displayed. All visible paths are significant ($p < .05$) and standardized regression coefficients (β) are displayed unless otherwise specified.

Table 1.

Demographic characteristics

	<i>n</i> (%)
Overall	122 (100.0)
Sexual Orientation	
Gay	106 (86.9)
Bisexual	12 (9.8)
Queer/Uncertain	4 (3.3)
Race and Ethnicity [†]	
White	80 (65.6)
African American	12 (9.8)
Latino	14 (11.5)
Other	7 (5.7)
Completed College	
Less than four years	38 (31.1)
Four or more years	84 (68.9)
Region	
Northeastern	30 (24.6)
Midwestern	24 (19.7)
Southern	32 (26.2)
Pacific	36 (29.5)
	<i>M</i> (<i>SD</i>)
Age (range = 19 – 66 years)	33.0 (10.8)

[†]Variable contains missing data for some cases.

Table 2.

Bivariate correlations

	1	2	3	4	5	6	7	8	<i>M(SD)</i>
1. Pleasure Interference	-	-	-	-	-	-	-	-	8.7 (3.17)
2. Intimacy Interference	.54**	-	-	-	-	-	-	-	10.7(4.68)
3. Self-perceived mate value	.03	.16	-	-	-	-	-	-	8.9 (2.69)
4. Anxious Attachment	.03	.15	-.23*	-	-	-	-	-	24.6 (8.25)
5. Avoidant Attachment	.07	-.06	-.11	-.03	-	-	-	-	18.0 (5.67)
6. Assertive Communication	.13	.05	-.03	-.14	-.35**	-	-	-	10.4 (2.34)
7. Emotional Communication Condomless Anal Sex	-.10	-.03	.13	.12	-.38**	.24**	-	-	10.8 (2.32)
Condomless Anal Sex									<i>n(%)</i>
8. Insertive CAS	.28**	.25**	.16	-.04	-.10	-.05	-.01	-	14 (11.5)
9. Receptive CAS	.25**	.29**	.07	.22*	-.05	.05	-.01	.68**	23 (18.9)

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

NOTE: Bivariate associations were assessed using Pearson product moment correlations (r ; between normally distributed variables), point-biserial correlations (between dichotomous and continuous variables), and ϕ coefficients (between dichotomous variables).

Table 3.

Path model coefficients: CAS

	Odds of insertive CAS				Odds of receptive CAS			
	<i>B</i>	95% CI	β	expB	<i>B</i>	95% CI	β	expB
Age	0.03	(-0.06, 0.11)	.12	1.03	0.01	(-0.05, 0.06)	.04	1.01
Race and Ethnicity	-0.11	(-1.81, 1.59)	-.02	0.89	-0.80	(-2.19, 0.59)	-.17	0.45
Education	1.74	(-0.45, 3.92)	.34	5.69	1.10	(-0.21, 2.41)	.24	3.01
Attachment								
Anxious	-0.03	(-0.11, 0.05)	-.11	0.97	0.07	(-0.01, 0.14)	.25	1.07
Avoidant	-0.05	(-0.16, 0.06)	-.12	0.95	0.00	(-0.09, 0.08)	.00	1.00
Condom Expectancies								
Pleasure Interference	0.31 *	(0.04, 0.59)	.42	1.37	0.13	(-0.09, 0.35)	.19	1.14
Intimacy Interference	0.12	(-0.01, 0.26)	.24	1.13	0.13 *	(0.01, 0.24)	.28	1.14

* $p < .05$

** $p < .01$

Table 4.

Path model coefficients: Condom expectancies

	Pleasure Interference $R^2=.08$			Intimacy Interference $R^2=.18$		
	<i>B</i>	95% CI	β	<i>B</i>	95% CI	β
Age	0.00	(-0.05, 0.05)	.00	-0.05	(-0.13, 0.04)	-.10
Race and ethnicity	0.83	(-0.56, 2.22)	.12	2.69**	(0.85, 4.53)	.26
Education	0.37	(-0.84, 1.59)	.05	1.23	(-0.51, 2.98)	.12
Attachment						
Anxious	0.04	(-0.03, 0.10)	.11	0.13*	(0.02, 0.23)	.22
Avoidant	0.05	(-0.08, 0.17)	.08	-0.09	(-0.25, 0.07)	-.11
Communication						
Assertive	0.31**	(0.07, 0.55)	.23	0.27	(-0.09, 0.64)	.13
Emotional	-0.21	(-0.49, 0.07)	-.16	-0.39*	(-0.77, -0.01)	-.20
Self-perceived mate value	0.08	(-0.13, 0.28)	.07	0.30*	(0.02, 0.57)	.17

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

Table 5.

Path model coefficients: Communication skills

	Emotional communication $R^2 = .22$			Assertive communication $R^2 = .15$			Self-perceived mate value $R^2 = .13$		
	<i>B</i>	95% CI	β	<i>B</i>	95% CI	β	<i>B</i>	95% CI	β
Age	-.02	(-0.05, 0.01)	-.09	-.01	(-0.05, 0.02)	-.06	-.02	(-0.06, 0.02)	-.09
Race and Ethnicity	.09 [*]	(0.00, 1.81)	.18	-.54	(-1.40, 0.32)	-.11	1.21 [*]	(0.23, 2.21)	.21
Education	0.39	(-0.46, 1.24)	.08	0.15	(-0.69, 0.99)	.03	0.43	(-0.44, 1.30)	.07
Attachment									
Anxious	0.03	(-0.02, 0.07)	.10	-.05 [*]	(-0.09, 0.00)	-.16	-.08 ^{**}	(-0.14, -0.03)	-.25
Avoidant	-.017 ^{**}	(-0.24, -0.11)	-.41	-.14 ^{**}	(-0.22, -0.07)	-.34	-.08	(-0.17, 0.02)	-.16

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

Table 6.

Indirect effect testing

Outcome	Effect	Wald $\chi^2(1)$	p value
Insertive CAS	Anxious attachment through assertive communication and pleasure interference	1.73	0.19
Insertive CAS	Avoidant attachment through assertive communication and pleasure interference	2.20	0.14
Receptive CAS	Anxious attachment through intimacy interference	2.40	0.12
Receptive CAS	Anxious attachment through self-perceived mate value and intimacy interference	1.59	0.21
Receptive CAS	Avoidant attachment through emotional communication and intimacy interference	2.03	0.15
Intimacy interference	Anxious attachment through self-perceived mate value	2.74	0.10
Intimacy interference	Avoidant attachment through emotional communication	3.52	0.06
Pleasure interference	Anxious attachment through assertive communication	2.63	0.10
Pleasure interference	Avoidant attachment through assertive communication	3.95	0.05