



No strings attached? How attachment orientation relates to the varieties of casual sexual relationships

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ABSTRACT

Previous research has conflated different types of casual sex, potentially obscuring patterns that may vary across categories. Using data from two large online community samples, we examined whether differences in attachment orientation predict experiences in casual sex encounters (i.e., One-Night Stand, Booty Call, Fuck Buddies, Friends With Benefits). We construed these encounters as ranging on levels of intimacy, and hypothesized that anxious individuals would most enjoy more intimate forms of casual sex and avoidant individuals would most enjoy less intimate forms. We asked individuals engaging in casual sex about their most recent sexual encounter. Results suggest that anxious and avoidant individuals report lower well-being in casual sex contexts relative to more secure individuals; however, the specific type of encounter moderated these associations. Regardless of the type of encounter, anxious individuals experience fewer orgasms. Attachment orientation predicted motivations for engaging in, and expectations for, casual sex relationships. For avoidant individuals, physical pleasure during sex is contingent on the type of encounter (reporting the highest levels of physical pleasure in Fuck Buddies encounters). This study is the first to provide evidence that the type of casual sexual encounter influences how anxious and avoidant individuals experience sex, both emotionally and physically.

1. Introduction

Uncommitted sexual encounters, or casual sex encounters—sex outside the confines of long-term romantic relationships—are common in Western cultures, particularly among young adults. Approximately 60–80% of college students report having engaged in at least one uncommitted sexual encounter (Garcia, Reiber, Massey, & Merriwether, 2012; Paul, McManus, & Hayes, 2000). In fact, casual sex behaviors seem to be replacing traditional dating and courtship behaviors, as university students have twice as many “hookups” as first dates (Bogle, 2008; Bradshaw, Kahn, & Saville, 2010). Although young adults generally report that casual sex is a more positive than negative emotional experience (Owen & Fincham, 2011), the effects of casual sex on psychological well-being are still unclear, as research on the topic has yielded divergent conclusions. For instance, some studies have found greater engagement in uncommitted sexual encounters to be related to increases in drug and alcohol consumption (Bersamin et al., 2014), depressive symptoms (Mendle, Ferrero, Moore, & Harden, 2013) loneliness (Owen & Fincham, 2011), as well as lower self-esteem (Paul et al., 2000). In contrast, other studies have found positive effects of engaging in casual sex on well-being and sexual functioning such as greater confidence, satisfaction, and self-knowledge (Felder & Carey, 2010;

Grello, Welsh, & Harper, 2006; Owen, Rhoades, Stanley, & Fincham, 2010). Evidently, the association between casual sex and well-being is complex, and is likely to depend on individual differences (e.g., sociosexuality; Vrangalova & Ong, 2014). The present study examined how one individual difference—attachment insecurity—is linked to engaging in different types of uncommitted sexual encounters and the associations between such encounters and anxious and avoidant individuals' motives for engaging in sex, and their physical and emotional experience of sex.

Given that the majority of research on this topic has examined uncommitted sexual encounters that occur among young students in college settings, we chose to examine an older community sample to ensure our results generalize to this population. Casual sex is common among young adults, particularly those who live in college campus settings (Garcia et al., 2012). However, middle-aged adults (i.e., aged 40 or older) engage in casual sex as well (Schick et al., 2010; Schwartz, Diefendorf, & McGlynn-Wright, 2014). During the sexual revolution of the 1960s and 1970s, young adults became more sexually liberated, with the rise of feminism, growth of college party events, widespread availability of birth control, and deposing of parental expectations as central to mating and marriage (Stinson, 2010; Twenge, Sherman, & Wells, 2014). This cultural shift in openness and acceptance of casual

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sex involved a) the Baby Boomer generation (born 1945–1964), who embraced more sexually permissive attitudes and behaviors than did previous generations (e.g., Singh, 1980; Smith, 1990; Walsh, 1989), and b) Generation X (born 1965–1981), who continued this trend with more acceptance of pre-marital sex, a younger age at first intercourse, and a higher teen pregnancy rate (e.g., Wells & Twenge, 2005). Adults affected by the sexual revolution of the 1960s are now middle-aged or older and may be more accepting of and more likely to engage in casual sex. Further, U.S. General Social Survey data has found no evidence of substantial changes in sexual behavior that would indicate a new or pervasive pattern of casual sex among contemporary college students (Monto & Carey, 2014). Sexually active respondents from young adults in the current era (2004–2012 waves) did not report higher numbers of total or recent sexual partners or more frequent sex than young adults from an earlier era (1988–1996), meaning young adults from both current and previous eras engaged in similar levels of casual sex (Monto & Carey, 2014).¹

Although it may be common for middle-aged adults to engage in casual sex, we believe that their psychological experience of casual sex may be different from that of young college students. First, the college environment is unique: students on campus are often surrounded by people like themselves in a close-knit living situation, they have a sense of camaraderie because they attend the same school, and often define their college years as a ‘time to party’ (Bogle, 2007, 2008). Thus, the social rituals and sexual scripts of young college students cannot be considered a representation of the sexual behavior of adults in the general public (Bogle, 2008). Moreover, middle-aged adults may experience more stigma for being single and engaging in casual sex (DePaulo & Morris, 2005). For example, a study examining negative stereotypes of unmarried individuals found that single targets were perceived more negatively (i.e., more socially immature and maladjusted) when described as being 40 than when described as being 25 (DePaulo & Morris, 2005). Thus, our study seeks to examine the casual sex experiences of individuals beyond the college years, who are nevertheless engaging in casual sex encounters, but in a different context than that of previous research.

1.1. Conceptualizing casual sex

Uncommitted sexual encounters can take many forms. Therefore, in order to systematically examine casual sex, researchers must first agree on how it should be defined (Vrangalova, 2015). In the available literature, researchers have used various terms to describe uncommitted sexual encounters, such as “sex outside a committed relationship” (Regan & Dreyer, 1999), “hooking up” (Bogle, 2008), “casual sex”, “unrestricted sex”, and “anonymous sex” (Grello et al., 2006); however, this lack of consensus on an operational definition makes it difficult for researchers to interpret results and compare findings across studies. For instance, subsuming all types of encounters under all-encompassing terms like “hooking up” fails to capture the specificities that exist within uncommitted sexual encounters and potentially conceals important patterns that might vary across categories. For example, engaging in sex with someone you have known for < 24 h (e.g., Fisher, Worth, Garcia, & Meredith, 2012) is likely to have a different psychological impact than engaging in casual sex in the more committed context of ongoing Friends with Benefits (FWB) relationships (Vanderdrift, Lehmler, & Kelly, 2012). Indeed, supporting the distinctiveness of uncommitted sexual encounter types, one study found that women were more discontent with hookups with someone they just met than with those with whom they were better acquainted (although

¹ Yet, consistent with our earlier mention that courtship behaviors may be declining, current era young adults were more likely to report having sex with a casual date, pickup or friend relative to a spouse or regular partner than those of the previous era (Monto & Carey, 2014).

level of acquaintanceship did not affect men's contentment with hookups; LaBrie, Hummer, Ghaidarov, Lac, & Kenney, 2014).

Wentland and Reissing (2011) used qualitative focus groups with a mix of college students and community sex educators to delineate definitions for the different types of uncommitted sexual encounters and the subtle nuances that differentiate them. Their study identified four main types of encounters: One-Night Stand, Booty Call, Fuck Buddies, and Friends with Benefits, detailed below. These types of encounters range according to levels of intimacy and self-disclosure, frequency and type of contact, and friendship (Wentland & Reissing, 2011). Given these differences, these encounter types may have differing associations with psychological well-being. Further, in Wentland and Reissing's (2011) study, all these types of casual sex were reliably identified by the majority of participants regardless of gender or previous personal experience, suggesting the robustness of these definitions at least in a North American context. Thus, we employed the same four types of uncommitted sexual encounters in the current study, described below in order from least to most intimate (Wentland & Reissing, 2011).

Firstly, One-Night Stand is an uncommitted sexual encounter that develops between strangers or brief acquaintances and that occurs only once. This is the least emotionally intimate encounter. Next, Booty Call is an uncommitted sexual encounter in which one person calls or texts the other for immediate sexual purposes, often late at night. Individuals in a Booty Call share minimal intimacy. Fuck Buddies is the term used to describe an uncommitted sexual encounter in which individuals who are acquaintances engage in sexual activity with each other. Even though a friendship might develop between these individuals, sexual activity is the reason they spend time together (Wentland & Reissing, 2011). Lastly, Friends with Benefits is an uncommitted sexual encounter that develops between individuals who have an existing friendship prior to sexual activity. If the sexual aspect of the relationship were to end, the individuals in Friends with Benefits encounters would remain friends.

The four types of uncommitted sexual encounters identified by Wentland and Reissing (2011) imply a hierarchy of closeness and intimacy in which the encounters vary on different dimensions (e.g., existing friendship, quality of time spent together, discussion of the relationship/monogamy, secrecy, frequency of contact, intimate disclosure, type and level of communication; see Wentland & Reissing, 2011). Nevertheless, intimacy (and more specifically, affectionate behaviors like cuddling) can happen in uncommitted sexual encounters and indeed may be common within them (Garcia, Gesselman, Massey, Seibold-Simpson, & Merriwether, 2018). In the present study, we use these categories as proxies for closeness and intimacy based on Wentland and Reissing's (2011) findings; however, our implicit taxonomy of intimacy behaviors likely does not apply to all instances (e.g., intimacy and affectionate behaviors are likely part of some One-Night Stand experiences; Garcia et al., 2018). In other words, although intimacy in casual sex encounters may generally vary in the way we suggest here (where One Night Stands are the least intimate, and Friends with Benefits the most intimate casual encounters), individual instances of these casual sex experiences may not always neatly follow this ordering.

1.2. Adult attachment and sexual experiences

The associations between casual sex and well-being might depend not only on the type of encounter, but also on individual characteristics such as attachment orientation. Indeed, a body of past research suggests that attachment orientation plays an important role in individuals' sexual attitudes and behaviors (e.g., Gentzler & Kerns, 2004; see reviews by Dewitte, 2012; Muise, Maxwell, & Impett, 2018; Stefanou & McCabe, 2012). Yet what is missing from the extant literature on attachment and sex is a thorough examination of how attachment is associated with experiences — and not just willingness to engage — in casual sex encounters. According to attachment theory, early life

experiences cause people to develop relatively stable views of themselves and others in romantic relationships (Bowlby, 1980), known as attachment orientation. Research has confirmed that two relatively unrelated dimensions underlie differences in attachment orientation: 1) anxiety about abandonment (attachment anxiety) — reflects the degree to which individuals fear rejection and crave reassurance that they are loved — and 2) avoidance of intimacy in relationships (attachment avoidance; Fraley, Hudson, Hefferman, & Segal, 2015; Hazan & Shaver, 1987). Below we briefly review findings regarding attachment and sex in romantic relationships that are particularly useful when generating hypotheses about the role of attachment in casual sex experiences.

Securely attached individuals (i.e. those who are low in attachment anxiety and avoidance) are generally comfortable engaging in committed relationships (Davis et al., 2006; Hazan & Shaver, 1987; Kirkpatrick & Hazan, 1994), and are more likely to experience positive affect and satisfaction in close relationships (Feeney & Noller, 1990; Hazan & Shaver, 1987; Mikulincer & Nachson, 1991). When it comes to sexual experiences, these individuals prefer sexual activity in committed romantic relationships (Birnbau, 2007; Birnbau, Reis, Mikulincer, Gillath, & Orpaz, 2006; Stephan & Bachman, 1999), and are more likely to engage in frequent and satisfying sexual activity to express love for their romantic partner (Tracy, Shaver, Albino, & Cooper, 2003).

Like secure attachment, anxious attachment has been linked to engaging in more intimate behaviors in romantic relationships (Guerrero, 1996). However, individuals high in attachment anxiety experience lower levels of satisfaction with relationships relative to less anxious individuals (Bartholomew & Horowitz, 1991). When it comes to physical affection, individuals high in attachment anxiety are more likely to engage in behaviors such as cuddling, kissing, and holding hands (Hazan, Zeifman, & Middleton, 1994). Moreover, they use sexual activity as a barometer for relationship quality (Davis et al., 2006), and engage in sex due to fear of losing their romantic partners (Davis, Follette, Vernon, & Shaver, 2001; Tracy et al., 2003). Ironically, individuals high in attachment anxiety may inhibit the expression of their own sexual needs in order to please their partner (Davis et al., 2006), and the resulting frustration may translate into relational difficulties, thus creating a cycle of sexual and relationship dissatisfaction (Birnbau, 2007, 2010; Birnbau et al., 2006).

In contrast, individuals high in attachment avoidance tend to minimize the amount of intimacy in their sexual encounters (Gentzler & Kerns, 2004). Thus, they are more likely to report less restrictive sexual beliefs (e.g., believe sex without commitment is acceptable) and are more likely to engage in casual sex (Gentzler & Kerns, 2004). Similarly, they are less likely to express physical affection (Guerrero, 1996; Hazan et al., 1994), are less likely to report engaging in sexual activity to express love for their partner (Tracy et al., 2003), and are more likely to report aversive feelings and cognitions about sex (e.g., estrangement, disappointment; Birnbau et al., 2006).

1.3. Adult attachment and motivations for sex

Not only do individuals' sexual attitudes and behaviors differ based on their attachment orientation, but so too do their reasons for having sex. Sexual activity serves functions that are influenced by people's attachment orientation (Birnbau, 2010; Davis, Shaver, & Vernon, 2004) and subjective motivations for sex contribute significantly to people's experiences of casual sex encounters (de Jong, Adams, & Reis, 2018). However, these previous studies are limited in that they did not differentiate between motivations for sex in committed relationships versus motivations for casual sex, and did not assess attachment (e.g., de Jong et al., 2018). Previous research investigating attachment-orientation differences in motivations for sex in general has found that relative to those lower in attachment anxiety, individuals high in attachment anxiety report higher levels of relationship reassurance as a motive for sexual activity (i.e. engaging in sex to feel loved). Because

avoidant individuals are less likely to use sex to become close with their partner (relative to those lower in avoidance), they are less likely to report emotional closeness and reassurance as a motive for sex (Davis et al., 2004; Fraley, Davis, & Shaver, 1998).

1.4. Adult attachment and sexual satisfaction

Sexual satisfaction has a crucial role in psychological well-being. Sexually satisfied individuals are more likely to report feeling desire for their partners and feeling desired by their partners, reaching orgasm during sex, and higher levels of emotional closeness and hugging/cuddling after sex (Frederick, Lever, Gillespie, & Garcia, 2017).

Insecurely attached individuals report lower levels of sexual satisfaction (Butzer & Campbell, 2008; Gewirtz-Meydan & Finzi-Dottan, 2018) more sexual dysfunction (Brassard, Shaver, & Lussier, 2007; Ozcan et al., 2015; Rajkumar, 2015), higher levels of sexual anxiety and dissatisfying sexual outcomes (Davis et al., 2006). This correlation between attachment orientation and sexual satisfaction is stronger in women than in men (Gewirtz-Meydan & Finzi-Dottan, 2018). Although anxiously attached women engage in frequent sex (Brassard et al., 2007) they experience less sexual arousal, intimacy, orgasm, and sexual satisfaction (Birnbau, 2007) and are more likely to experience painful intercourse (Granot et al., 2018) and difficulties with lubrication (Stephenson & Meston, 2010) relative to securely attached individuals. Avoidantly attached women also experience less sexual arousal, intimacy and excitement during sex relative to securely attached individuals (Birnbau, 2007), suggesting that perhaps women on average benefit more from secure attachment to a partner in terms of their sexual satisfaction.

Although previous research has thoroughly examined the association between sexual satisfaction and attachment orientation, most of these findings are limited to sex in committed relationships. A body of research supports the claim that sex in committed relationships is of higher quality than sex in uncommitted sexual encounters. For instance, because the conditions conducive to orgasm (e.g., oral sex, direct clitoral stimulation) are more likely to be met in the context of a committed relationship than in casual sex, women experience orgasms more often in committed relationships than in 'hookups' (Armstrong, England, & Fogarty, 2012). Nevertheless, these studies have failed to examine sexual satisfaction and attachment orientation across the different types of casual sex encounters.

1.5. The present study

Although previous studies have focused on the association between attachment and willingness to engage in casual sex generally, to our knowledge little research has examined the role of attachment in the motivation to engage in casual sex and the emotional experience of casual sex. Further, in addition to not examining attachment, most findings on casual sex are limited to uncommitted sexual encounters that occur among young students in college settings and have failed to differentiate between different types of casual sex encounters (e.g., Owen & Fincham, 2011). We stipulate that sexual behavior serves the needs of the attachment system (e.g., Birnbau, 2010; Davis et al., 2004), and that this assertion extends to sexual behavior in the context of casual relationships. Thus, the main goal of our research was to examine how individual differences in attachment security relate to the four different types of uncommitted sexual encounters identified by Wentland and Reissing (2011) using two broad community samples. Given their similarity, we combine the two samples whenever possible to increase statistical power.

Specifically, we examined anxious and avoidant individuals' motivations for engaging in each of the types of encounters, as well as how much individuals enjoy the encounters, both physically (e.g., by reaching orgasm and experiencing physical pleasure) and psychologically (e.g. by experiencing positive/negative emotions). Moreover, in

order to examine how casual sex differs from sex in committed relationships we recruited participants in committed relationships as a comparison group in Sample 2.

Previous studies have found that whereas insecurity on both dimensions of attachment is associated with aversive sexual affect and cognitions, anxiety is more strongly related to negative affect following sexual encounters (Gentzler & Kerns, 2004) and is possibly more detrimental to sexual well-being (Birnbaum, 2007) than avoidance. Thus, we had firmer predictions for the role of anxiety. In line with previous studies (Davis et al., 2004), we hypothesized that anxious individuals would be more likely to report engaging in casual sex to attain emotional closeness and reassure themselves they are loved (i.e. relationship reassurance), relative to less anxious individuals. In contrast, because avoidant individuals see sex and intimacy as distinct, they would be less likely to report engaging in casual sex to reassure themselves about their relationship. We further hypothesized that anxious individuals would be more likely to reach orgasm and experience physical pleasure and positive emotions and less likely to experience negative emotions in highly intimate encounters (i.e. Fuck Buddies, Friends With Benefits, committed relationships) relative to less intimate encounters (i.e. One-Night Stand, Booty Call), because highly intimate encounters should satisfy their need for reassurance and intimacy, but low intimate encounters should not. Finally, because avoidant individuals do not seek reassurance and intimacy in their relationships, we expected that their likelihood of experiencing physical pleasure and positive/negative emotions would not be contingent on the type of encounter.

2. Materials and methods

2.1. Participants

2.1.1. Sample 1

We recruited 482 participants from the United States and Canada online through Amazon's Mechanical Turk in 2013. Due to the personal and sexual nature of the measures in our study, we used an online survey to ensure that participants felt comfortable and anonymous when responding to the questions (Tourangeau, Rips, & Rasinski, 2000). We advertised the study on Mechanical Turk as one that examines individuals' sexual experiences. We compensated participants \$1.00 for completing the survey, which took approximately 20 min, and incentivized them to pay attention by granting a \$0.20 bonus if they passed the two attention checks embedded in the survey². We required participants to be single, heterosexual³, and required they had engaged in an uncommitted sexual encounter – defined as a sexual act that occurs outside the context of a committed romantic/dating relationship – in the past two years. Because we wanted to examine the association between casual sex and psychological well-being during middle adulthood (as opposed to emerging adulthood, during which casual sex is normative; Lambert, Kahn, & Apple, 2003) we recruited only participants over the age of 30. Additionally, we wanted to compare individuals engaging in casual sex at different stages of adulthood, and thus we purposefully sampled equal numbers of participants in each age group (i.e., 30 to 40, 40 to 50 and 50+), as well as equal numbers of participants by gender. We achieved this by posting several separate MTurk hits.

We excluded 40 (8%) participants for not meeting the study

² For both studies, the two attention checks involved items embedded within the broader scale asking participants to select a particular answer; e.g., “I am paying attention (if so, select answer choice four)”.

³ We first wanted to establish our findings in the heterosexual context, as the definitions of casual sex types we used were predominately for heterosexual interactions (Wentland & Reissing, 2011), and there are unique considerations for casual sex encounters in same-sex attracted individuals (e.g., Licoppe, Rivière, & Morel, 2016; Mao et al., 2006).

eligibility criteria, and 49 (10%) participants for failing to pass the two attention checks. The final sample consisted of 393 individuals and included 190 (48%) males and 203 (52%) females between the ages of 30 and 73 ($M = 43.94$, $SD = 9.79$; see Table 1 for sample breakdown by type of casual sex). Eighty percent of the participants in the sample were White/Caucasian (see Table 2 for sample breakdown by ethnicity).

2.1.2. Sample 2

We recruited 1008 participants from the United States or Canada, recruited online through Amazon's Mechanical Turk in 2014. We compensated participants \$0.80 for completing the survey, which took around 20 min to complete, and incentivized them to pay attention by granting a \$0.30 bonus if they passed the two attention checks embedded in the survey. We required participants to be heterosexual and fall into one of the two following conditions: 1) be currently involved in a committed exclusive romantic relationship or 2) have engaged in an uncommitted sexual encounter – defined as a sexual act that occurs outside the context of a committed romantic/dating relationship – in the past month, and be single (not currently dating). Note that these criteria exclude individuals who are simultaneously pursuing casual sex while in a committed relationship (such as infidelity or consensual non-monogamous relationship). Because we wanted to compare individuals engaging in casual sex to individuals in committed romantic relationships, we purposefully sampled equal numbers of participants in the casual sex and committed relationship conditions, as well as equal numbers of participants by gender.

We excluded 50 (5%) participants for failing to pass the two attention checks. The final sample consisted of 958 individuals and included 474 (49.5%) males and 479 (50%) females (5 participants did not disclose their gender) between the ages of 20 and 77 ($M = 31.95$, $SD = 9.53$). A total of 471 participants (49.1%) reported having engaged in an uncommitted sexual encounter the past month, and 487 participants (50.8%) reported being involved in a committed romantic relationship at the time of the study (see Table 1 for sample breakdown by relationship type). The mean relationship length was 7 years 1 month ($SD = 101$ months) for participants in committed romantic relationships. The mean sexual relationship length was 21 months ($SD = 41$ months) for participants engaging in casual sex (excluding those who had engaged in One-Night Stand encounters, as these by definition are not ongoing relationships). Forty percent of the participants in committed romantic relationships were married. Seventy-four percent of the participants in the sample were White/Caucasian (see Table 2 for sample breakdown by ethnicity).

2.2. Measures and procedure

After consenting to participate in our study, participants responded to demographic measures and a measure of attachment style (Experiences in Close Relationships Scale - Short Form; Wei, Russell, Mallinckrodt, & Vogel, 2007). They next reported on when their most recent sexual encounter occurred, and were given definitions to identify which type of encounter it was (e.g. Relationship, One-Night Stand, Booty Call, Fuck Buddies, Friends with Benefits; Wentland & Reissing, 2011). Participants provided descriptive information about the encounter and their relationship with their sexual partner, their motivations for engaging in the encounter (detailed below), the physical pleasure they experienced, and their emotions after the encounter (Emotional Reactions to Hooking Up Scale; Owen & Fincham, 2011). Participants also completed measures we included for hypotheses we did not test or report in the present research paper (see https://osf.io/tgph4/?view_only=c2a9752442414ac792a21183a1047f84 for all questionnaires). Participants then read a debriefing form and we compensated them via Amazon's Mechanical Turk.

Table 1
Participants in Sample 1, Sample 2, and combined samples by type of relationship.

	Number of participants	Percentage
Sample 1		
Friends With Benefits	182	46%
Fuck Buddies	73	19%
Booty Call	36	9%
One-Night Stand	102	26%
Sample 2		
Committed Relationship	487	51%
Friends With Benefits	156	16%
Fuck Buddies	110	12%
Booty Call	57	6%
One-Night Stand	148	15%
Combined Samples		
Committed Relationship	487	36%
Friends With Benefits	338	25%
Fuck Buddies	183	13.5%
Booty Call	93	7%
One-Night Stand	250	18.5%
Total	1351	

2.2.1. Experiences in close relationships scale – short form (ECR-S; Wei et al., 2007)

To assess participants' adult attachment style, we asked participants to consider how they feel about their “relationships in general” (given participants reporting on casual sex are not currently in a romantic relationship). Participants identified the extent to which they agree with six items representing attachment anxiety (e.g., “I need a lot of reassurance that I am loved by my partner”, $M = 3.54, SD = 1.33, \alpha = 0.80$) and six items representing attachment avoidance (e.g., “I try to avoid getting too close to my partner”, $M = 2.98, SD = 1.23, \alpha = 0.81$) on a scale from *strongly agree* (1) to *strongly disagree* (7). Higher scores indicate higher levels of attachment anxiety and avoidance, respectively.

2.2.2. Motivations for sex

In Sample 1, we asked participants their reasons for engaging in casual sex in general (i.e. not for a particular encounter) by presenting them a list of 13 motives (inspired by the existing literature; e.g., Davis et al., 2004; Garcia & Reiber, 2008; Weaver & Herold, 2000; and brainstormed by the second and third author) and asking them to check off all motives that applied. We improved upon this measure in Sample 2 by adding additional motives (including those Sample 1 participants identified in an open-ended question) and by asking participants to rate the extent to which *each* of the 30 reasons influenced their decision to engage in their most recent sexual encounter on a scale from 1 = *not at all* to 7 = *very much*. We use the continuous motivation measure from Sample 2 in analyses. We conducted an exploratory factor analysis of the items (see Supplemental material for details) which revealed four separate types of motivations: relational (e.g., “I engaged in my most recent sexual encounter to feel secure about my partner's feelings for me”, 6 items, $M = 4.31, SD = 1.70, \alpha = 0.90$), ulterior (e.g., “To get other things I want from my partner,” 7 items, $M = 1.74, SD = 1.04, \alpha = 0.85$), self (e.g., “I engaged in my most recent sexual encounter to feel good about myself”, 3 items, $M = 3.51, SD = 1.66, \alpha = 0.79$), and pleasure (e.g., “To fulfill sexual fantasies/kinks”, four items, $M = 3.79, SD = 1.46, \alpha = 0.72$).

2.2.3. Orgasm and physical pleasure

Participants in both studies reported whether they experienced an orgasm during their last sexual encounter (e.g., “yes”, “no” or “I don't remember”). However, because pleasure can be experienced in the absence of orgasm, we did not want to emphasize orgasm as the end goal for sex and sought to get a more comprehensive measure of physical pleasure. Thus, participants in Sample 2 also reported how much

Table 2
Ethnicity breakdown of participants in Sample 1, Sample 2, and combined samples.

	Number of participants	Percentage
Sample 1		
White/Caucasian	315	80.2%
Black	38	9.7%
European	32	8.1%
Arab/West	3	0.8%
Asian	6	1.5%
Aboriginal	30	7.6%
Latin American	1	0.3%
Japanese	4	1%
Chinese	6	1.5%
Filipino	0	0%
Korean	1	0.3%
South Asian		
South East Asian	1	0.3%
No answer	6	1.5%
Other	5	1.3%
Sample 2		
White/Caucasian	709	74%
Black	96	10%
European	97	10.1%
Arab/West	4	0.4%
Asian	25	2.6%
Aboriginal	51	5.3%
Latin American	3	0.3%
Japanese	15	1.6%
Chinese	13	1.4%
Filipino	9	0.9%
Korean	8	0.8%
South Asian		
South East Asian	5	0.5%
No answer	7	0.7%
Other	9	0.9%
Combined samples		
White/Caucasian	1024	75.8%
Black	134	9.9%
European	129	9.5%
Arab/West	7	0.5%
Asian	31	2.3%
Aboriginal	81	6%
Latin American	4	0.3%
Japanese	19	1.4%
Chinese	19	1.4%
Filipino	9	0.7%
Korean	9	0.7%
South Asian		
South East Asian	6	0.4%
No answer	13	1%
Other	14	1%

Note. Participants could select multiple ethnicities. $N = 1351$.

physical pleasure they experienced on a 7-point scale ranging from *no pleasure at all* (1) to *extreme pleasure* (7) ($M = 5.57, SD = 1.25$). Additionally, participants in Sample 2 reported how much they felt that their partner was trying to please them sexually ($M = 5.52, SD = 1.41$) on a 7-point scale ranging from *not trying at all* (1) to *trying extremely hard* (7).

2.2.4. Nature of the encounter and relationship with partner

For broader study goals participants answered questions regarding the nature of the encounter (e.g., “Who initiated the encounter? Which sexual acts did you and your partner perform?”) and their relationship with their sexual partner (e.g., “Are you still in contact with him/her? If so, how often do you typically see each other?”).

2.2.5. Emotional reactions to hooking up (Owen & Fincham, 2011)

We measured participants' positive (e.g. happy, desirable, $M = 4.02, SD = 0.93, \alpha = 0.94$) and negative (e.g. awkward, empty, $M = 1.53, SD = 0.80, \alpha = 0.96$) reactions to their last sexual encounter using this 10-item scale. For their last uncommitted sexual encounter,

Table 3
Attachment and odds of reporting on each type of casual sex encounter relative to a committed relationship (multinomial regression).

Encounter type vs. committed relationship		Odds ratio	p	95% CI	
				Lower	Upper
Friends With Benefits	Anxiety	1.168	.010	1.038	1.314
	Avoidance	2.565	< .001	2.207	2.981
Fuck Buddies	Anxiety	1.111	.152	0.962	1.284
	Avoidance	3.429	< .001	2.859	4.111
Booty Call	Anxiety	1.217	.033	1.016	1.457
	Avoidance	3.258	< .001	2.606	4.075
One Night Stand	Anxiety	1.111	.109	0.977	1.265
	Avoidance	2.87	< .001	2.439	3.377

participants identified the degree to which they experienced each emotion right after the encounter on a 5-point scale ranging from *not at all* (1) to *very much* (5). Higher scores indicate more positive or negative emotional reactions, respectively.

3. Results

We tested all our hypotheses using multiple regression analyses, zero-inflated Poisson regressions (when examining number of casual sex encounters), and logistic regression (when examining orgasm likelihood) in SPSS. In all models, we entered attachment anxiety and attachment avoidance (grand-mean centered) simultaneously to examine the independent effects of each (e.g., Fraley, Heffernan, Vicary, & Brumbaugh, 2011). In the text we report the results of the combined analyses (except for those analyses involving the measures of physical pleasure and motives for sex which we only administered in Sample 2), but in the tables we report analyses separated by sample for interested readers (see Tables 3 to 8). All data analysis code can be found at https://osf.io/tgph4/?view_only=c2a9752442414ac792a21183a1047f84 and data is available upon request.

When testing for interactions by type of encounter, because type of sexual encounter was a categorical variable with 5 levels, it was entered in the regression model as four effect-coded terms. Thus, to assess whether attachment anxiety interacted with type of encounter, we controlled for attachment avoidance and the interaction between avoidance and encounter type (represented as four terms in the model), and conducted a hierarchical regression wherein we entered the attachment anxiety by type interaction (represented as four terms in the model) in a separate step and examined the subsequent change in R^2 , whereby a significant change in R^2 indicates a significant interaction. We followed the same procedure for attachment avoidance whereby we controlled for anxiety and the anxiety by encounter type interaction, and then assessed the change in R^2 when the avoidance by encounter type terms were added to the model. We then conducted follow-up analyses within each encounter type by creating four dummy-coded

Table 4
Sample 1. Predicting the number of each type of encounter the participant engaged in over the past 2 years from participants' attachment orientation (zero-inflated Poisson regression).

		z score	p
Friends With Benefits	Anxiety	-0.724	.469
	Avoidance	1.512	.131
Fuck Buddies	Anxiety	-2.048	.041
	Avoidance	3.099	.002
Booty Calls	Anxiety	0.475	.635
	Avoidance	4.42	< .001
One Night Stand	Anxiety	-3.127	.002
	Avoidance	3.907	< .001

variables where that particular encounter type received a value of 0 in all four columns, and report the associations (including main effects) of avoidance and anxiety from the full model, accounting for both the anxiety and avoidance by encounter interactions. We follow this approach throughout when examining the attachment by encounter type interaction.

3.1. Descriptives: attachment differences across encounter type

For descriptive purposes we first examined whether attachment anxiety and avoidance predicted the likelihood of reporting on each type of casual encounter versus a committed relationship using multinomial logistic regression with committed relationship as the reference category (see Table 3). In other words, this analysis tells us whether attachment anxiety and avoidance levels are higher in those who reported on a casual encounter versus those currently in romantic relationships. Higher attachment anxiety predicted significantly greater odds of one's most recent sexual encounter being a Friends with Benefits or Booty Call (but not Fuck Buddy or One Night Stand) versus a committed relationship. Higher attachment avoidance was associated with significantly greater odds of one's most recent sexual encounter being any form of casual encounter relative to in a committed relationship. Additionally, in Sample 1, participants indicated how many instances of each encounter type they had over the past two years. We ran four zero-inflated Poisson regressions (because many individuals had not engaged in each type of encounter) predicting participants' frequency of Friends With Benefits, Fuck Buddy, Booty Call and One Night Stands over the past two years from their anxiety and avoidance. As can be seen in Table 4, higher attachment anxiety was associated with lower numbers of Fuck Buddy and One Night Stand relationships, whereas higher levels of attachment avoidance were associated with greater numbers of Fuck Buddy, Booty Call and One Night Stand encounters.

3.2. Attachment and motives

To test whether individuals' motivations for casual sex differed by attachment orientation (assessed in Sample 2), we conducted a multivariate linear regression predicting the relational, ulterior, self and sexual enjoyment motivations from attachment anxiety and avoidance. The results of the multivariate test revealed that, as a whole, motivation for one's most recent sexual encounter was predicted by attachment anxiety, $F(4, 952) = 29.48, p < .001$, and attachment avoidance, $F(4, 952) = 124.84, p < .001$. Attachment anxiety was positively related to all types (i.e. relational, ulterior, self and pleasure) of motivations for sex (see Table 5). In contrast, attachment avoidance was negatively related to relational motives, and positively related to ulterior, self and pleasure motives.

For interested readers, we report analyses testing whether the association between attachment and sexual motivations differed by the type of encounter in the Supplemental Materials. These analyses reveal that individuals higher in attachment anxiety were more likely to say they had both committed sex and casual sex for relational purposes, and had casual sex for ulterior motives. Individuals higher in attachment avoidance were less likely to say they had sex for relational purposes, and more likely to say they had sex for ulterior motives—but only in high intimacy encounters (i.e. committed relationships and Friends with Benefits). The associations between attachment styles and self and pleasure motives did not differ by encounter type.

3.3. Attachment and likelihood of orgasm

To test whether anxiety and avoidance were associated with a lower likelihood of orgasm we conducted a stepwise logistic regression in which we predicted participants' orgasm during their last encounter (1 = orgasm 0 = no orgasm or unsure). We conducted a hierarchical regression wherein the last step we added the anxiety by encounter type

Table 5
Sample 2. Multivariate regression predicting motivations for most recent sexual encounter from attachment orientation.

Dependent variable		b	SE	t	p	95% CI	
						Lower	Upper
Relational motivation	Anxiety	0.18	0.04	4.80	< .001	0.11	0.25
	Avoidance	-0.67	0.04	-17.21	< .001	-0.75	-0.60
Ulterior motivation	Anxiety	0.14	0.03	5.72	< .001	0.09	0.19
	Avoidance	0.19	0.03	7.17	< .001	0.14	0.24
Self-motivation	Anxiety	0.38	0.04	9.73	< .001	0.30	0.45
	Avoidance	0.21	0.04	5.14	< .001	0.13	0.29
Pleasure motivation	Anxiety	0.08	0.04	2.22	.027	0.01	0.15
	Avoidance	0.11	0.04	2.82	.005	0.03	0.18

Table 6
Logistic regression predicting likelihood of orgasm for most recent sexual encounter from attachment orientation.

	Anxiety				Avoidance			
	β	SE	Odds ratio	95% CI	β	SE	Odds ratio	95% CI
Sample 1								
Friends with Benefits	-0.342 [†]	0.146	0.711	[0.534-0.945]	0.091	0.192	1.095	[0.751-1.596]
Fuck Buddies	-0.524 [†]	0.291	0.592	[0.335-1.047]	0.392	0.362	1.480	[0.728-3.009]
Booty Call	-0.040	0.342	0.961	[0.491-1.880]	-0.231	0.336	0.794	[0.411-1.534]
One-Night Stand	-0.320 [†]	0.172	0.726	[0.518-1.018]	-0.156	0.207	0.856	[0.579-1.285]
Sample 2								
Committed Relationship	-0.060	0.115	0.942	[0.752-1.181]	-0.185	0.137	1.834	[0.636-1.086]
Friends With Benefits	-0.455**	0.159	0.634	[0.464-0.867]	0.032	0.193	1.033	[0.708-1.507]
Fuck Buddies	-0.567**	0.227	0.567	[0.364-0.884]	-0.296	0.274	0.744	[0.434-1.273]
Booty Call	0.128***	0.217	1.137	[0.742-1.740]	0.419	0.261	1.521	[0.921-2.536]
One-Night Stand	-0.064	0.153	0.938	[0.695-1.267]	-0.034	0.210	0.967	[0.641-1.459]
Combined samples								
Committed Relationship	-0.040	0.121	0.961	[0.758-1.219]	-0.166	0.143	0.847	[0.640-1.121]
Friends With Benefits	-0.498**	0.118	0.608	[0.482-0.767]	0.022	0.149	1.023	[0.763-1.370]
Fuck Buddies	-0.538**	0.172	0.584	[0.417-0.817]	-0.066	0.217	0.936	[0.612-1.431]
Booty Call	0.126	0.186	1.134	[0.788-1.633]	0.192	0.200	1.211	[0.819-1.791]
One-Night Stand	-0.184	0.115	0.832	[0.664-1.042]	-0.108	0.147	0.898	[0.673-1.197]

[†] *p* < .10.
^{*} *p* < .05.
^{**} *p* < .01.
^{***} *p* < .001.

interaction (represented by four effects-coded variables), controlling for the avoidance by encounter type interactions, and examined the improvement in model fit (denoted by a significant $\Delta\chi^2$). We repeated the analyses for the avoidance by type interactions. We found that adding the anxiety by encounter type interaction significantly improved model fit, $\Delta\chi^2(4) = 15.24, p = .004$, whereas adding the avoidance by encounter type interaction did not significantly improve model fit, $\Delta\chi^2(4) = 2.53, p = .640$. Thus, we conducted simple slopes follow-ups where we looked at the association between anxiety and orgasm within each encounter type (see Table 6 for results). Anxiety predicted a lower likelihood of orgasm in Friends With Benefits and Fuck Buddies encounters, but not in relationships, One Night Stands or Booty Call encounters (Table 6).

3.4. Attachment and physical pleasure

Using the continuous measure of physical pleasure we used for Sample 2, we then examined whether physical pleasure was contingent on the type of encounter. As expected, there was a negative main effect of attachment anxiety on physical pleasure, $\beta = -0.09, p = .013$, but contrary to our predictions, there was no interaction between anxiety and type of encounter on physical pleasure, $\Delta R^2 = 0.008, \Delta F(4, 943) = 2.12, p = .076$, suggesting that anxious individuals' physical pleasure does not significantly differ across sexual encounters (Fig. 1). We also found a significant negative main effect of attachment avoidance on physical pleasure, $\beta = -0.21, p < .001$, and an interaction

between avoidance and type of encounter on physical pleasure, $\Delta R^2 = 0.019, \Delta F(4, 943) = 5.22, p < .001$. Specifically, higher avoidance was associated with less physical pleasure in highly intimate encounters such as committed relationships, $\beta = -0.45, p < .001$, and Friends With Benefits, $\beta = -0.32, p < .001$, as well as in low intimacy encounters, such as One-Night Stand, $\beta = -0.32, p = .001$, but not in moderately intimate encounters (Booty Call, Fuck Buddies, *ps* > .381). Interestingly, highly avoidant individuals (+1 SD) reported the highest levels of physical pleasure in Fuck Buddies encounters, followed by other casual encounters, and the lowest levels of pleasure in committed relationships (Fig. 2).

Lastly, we examined whether attachment predicted individuals' perception that their partner was trying to please them, and whether or not this was moderated by type of sexual encounter. Overall, those higher in anxiety, $\beta = -0.14, t(943) = -3.69, p < .001$, and avoidance, $\beta = -0.12, t(943) = -2.60, p = .009$, were less likely to report that their partner was trying to please them during their most recent sexual encounter.⁴

⁴ The association between anxiety and participants' perceptions their partner was trying to please them did not differ depending on encounter type ($\Delta R^2 = 0.005, \Delta F(4, 943) = 1.22, p = .302$), whereas there was a trend that the association between avoidance and perceptions depended on encounter type ($\Delta R^2 = 0.009, \Delta F(4, 943) = 2.23, p = .064$). Follow-up analyses indicated that the negative association between avoidance and participants' perceptions a partner was trying to please them emerged in more intimate encounters:

Table 7
Associations between attachment anxiety and avoidance with positive emotions by type of encounter. Effect size *r* is reported.

	Anxiety			Avoidance		
	β	<i>r</i>	95% CI for unstandardized estimate	β	<i>r</i>	95% CI for unstandardized estimate
Sample 1						
Friends With Benefits	-0.156*	-0.114	[-0.213, -0.014]	-0.028	-0.019	[-0.153, 0.104]
Fuck Buddies	-0.294*	-0.116	[-0.399, -0.030]	0.073	0.031	[-0.143, 0.271]
Booty Call	0.089	0.023	[-0.224, 0.354]	-0.535**	-0.165	[-0.753, -0.188]
One-Night Stand	-0.313***	-0.169	[-0.362, -0.094]	0.004	0.002	[-0.155, 0.163]
Sample 2						
Committed Relationship	0.008	0.005	[-0.065, 0.076]	-0.428	-0.225	[-0.397, -0.225]
Friends With Benefits	-0.265	-0.115	[-0.285, -0.082]	-0.359	-0.135	[-0.383, -0.138]
Fuck Buddies	-0.226*	-0.082	[-0.277, -0.035]	-0.111	-0.034	[-0.231, 0.070]
Booty Call	0.061	0.018	[-0.110, 0.195]	0.236†	0.059	[-0.014, 0.357]
One-Night Stand	-0.106	-0.046	[-0.176, 0.029]	-0.311**	-0.103	[-0.365, -0.086]
Combined samples						
Committed Relationship	0.008	0.004	[-0.068, 0.079]	-0.411***	-0.183	[-0.401, -0.221]
Friends With Benefits	-0.196***	-0.107	[-0.206, -0.069]	-0.198**	-0.094	[-0.235, -0.064]
Fuck Buddies	-0.254***	-0.097	[-0.276, -0.080]	-0.017	-0.006	[-0.132, 0.107]
Booty Call	0.010	0.003	[-0.126, 0.141]	-0.086	-0.023	[-0.215, 0.085]
One-Night Stand	-0.170**	-0.081	[-0.198, -0.040]	-0.176**	-0.071	[-0.234, -0.033]

† *p* < .10.
* *p* < .05.
** *p* < .01.
*** *p* < .001.

Table 8
Associations between attachment anxiety and avoidance with negative emotions by type of encounter. Effect size *r* is reported.

	Anxiety			Avoidance		
	β	<i>r</i>	95% CI for unstandardized estimate	β	<i>r</i>	95% CI for unstandardized estimate
Sample 1						
Friends With Benefits	0.298***	0.228	[0.117, 0.294]	-0.061	-0.045	[-0.165, 0.063]
Fuck Buddies	0.448***	0.186	[0.145, 0.473]	-0.073	-0.033	[-0.244, 0.123]
Booty Call	0.256	0.069	[-0.081, 0.433]	0.469**	0.155	[0.139, 0.642]
One-Night Stand	0.471***	0.265	[0.206, 0.444]	0.068	0.040	[-0.085, 0.198]
Sample 2						
Committed Relationship	0.087†	0.059	[-0.004, 0.106]	0.292***	0.168	[0.112, 0.247]
Friends With Benefits	0.515***	0.236	[0.222, 0.380]	0.392***	0.159	[0.145, 0.337]
Fuck Buddies	0.243**	0.096	[0.047, 0.236]	0.271**	0.090	[0.049, 0.285]
Booty Call	0.188†	0.059	[-0.010, 0.229]	-0.181	-0.049	[-0.257, 0.034]
One-Night Stand	0.407***	0.187	[0.158, 0.318]	0.230*	0.082	[0.032, 0.250]
Combined samples						
Committed Relationship	0.085†	0.047	[-0.008, 0.110]	0.276***	0.133	[0.108, 0.252]
Friends With Benefits	0.373***	0.215	[0.170, 0.279]	0.137*	0.070	[0.021, 0.158]
Fuck Buddies	0.296***	0.121	[0.100, 0.257]	0.130†	0.047	[-0.011, 0.180]
Booty Call	0.274**	0.083	[0.058, 0.272]	0.049	0.014	[-0.088, 0.152]
One-Night Stand	0.424***	0.212	[0.192, 0.318]	0.154*	0.067	[0.020, 0.180]

† *p* < .10.
* *p* < .05.
** *p* < .01.
*** *p* < .001.

3.5. Attachment and positive/negative emotions

We first conducted an exploratory factor analysis (Maximum Likelihood estimation, Promax rotation) of the items in the Emotional Reactions to Hooking Up Scale (Owen & Fincham, 2011) to confirm that participants' positive and negative emotions experienced immediately after the encounter loaded onto separate positive and negative factors,

(footnote continued)

committed relationships ($\beta = -0.28, p < .001$) and Friends With Benefits (avoidance: $\beta = -0.23, p = .009$), but not in less intimate encounters: Fuck Buddies ($\beta = 0.01, p = .896$), Booty Call ($\beta = 0.04, p = .795$), or One-Night Stand ($\beta = -0.13, p = .202$).

and thus we computed scores on recalled positive and negative emotions.

3.5.1. Positive emotions

We examined whether positive emotions experienced immediately after the encounter were contingent on attachment orientation. As expected, we found significant negative main effects of both anxiety, $\beta = -0.12, p < .001$, and avoidance, $\beta = -0.18, p < .001$, on positive emotions. Examining the anxiety by encounter type interactions improved the model fit, $\Delta R^2 = 0.009, \Delta F(4, 1336) = 3.52, p = .007$. Greater anxiety predicted significantly lower positive emotions when engaging in Friends With Benefits, $\beta = -0.20, p < .001$, Fuck Buddy, $\beta = -0.25, p < .001$, and One-Night Stand, $\beta = -0.17, p = .003$, but not when engaging in committed relationships, $\beta = 0.008, p = .882$,

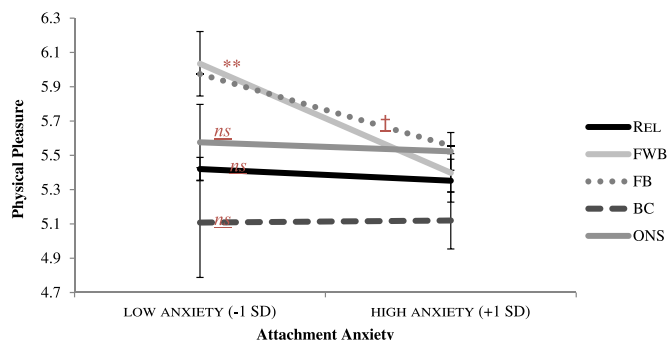


Fig. 1. Attachment anxiety and physical pleasure (Sample 2). Possible scores ranged from 1 to 7. † $p < .063$, ** $p < .01$.

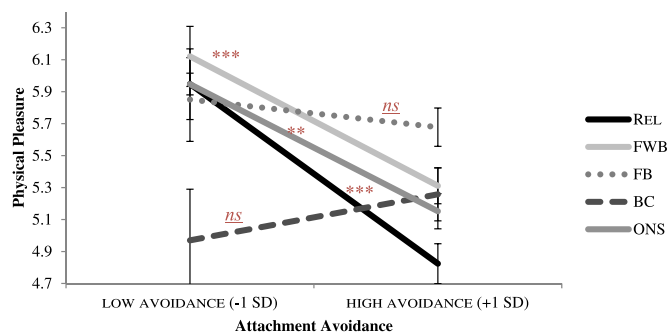


Fig. 2. Attachment avoidance and physical pleasure (Sample 2). Possible scores ranged from 1 to 7. ** $p < .01$, *** $p < .001$.

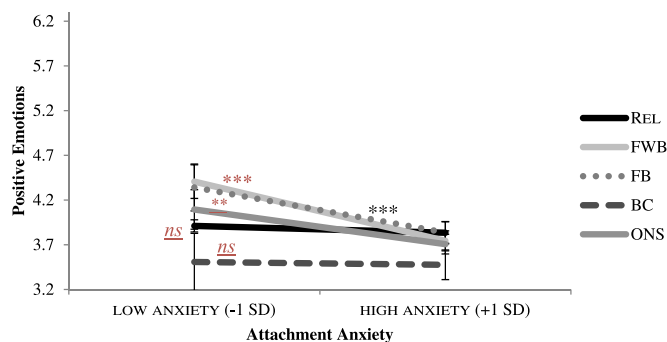


Fig. 3. Attachment anxiety and positive emotions. Possible scores ranged from 1 to 5. ** $p < .01$, *** $p < .001$.

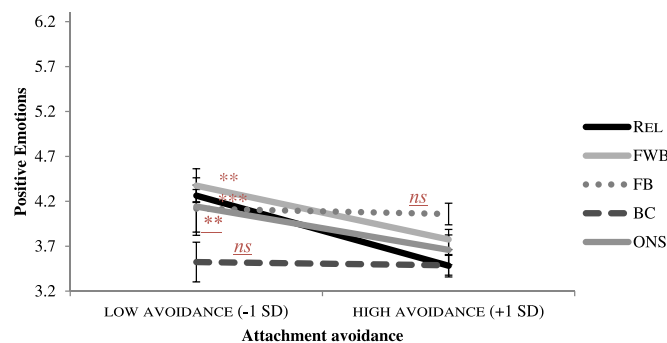


Fig. 4. Attachment avoidance and positive emotions. Possible scores ranged from 1 to 5. ** $p < .01$, *** $p < .001$.

and Booty Call encounters, $\beta = 0.01$, $p = .914$ (see Fig. 3).

The association between avoidance and positive emotions was also contingent on the type of encounter, $\Delta R^2 = 0.012$, $\Delta F(4, 1336) = 4.66$, $p = .001$. Specifically, greater avoidance predicted significantly less positive emotions when engaging in encounters with high levels of intimacy (Table 7): committed relationships, $\beta = -0.41$, $p < .001$, and Friends With Benefits, $\beta = -0.20$, $p = .001$, as well as in encounters with low levels of intimacy: such as One-Night Stand, $\beta = -0.18$, $p = .009$ but not in encounters with moderate levels of intimacy: Booty Call, Fuck Buddies, $ps > .395$. Interestingly, highly avoidant individuals (+1 SD above the sample mean; West, Aiken, & Krull, 1996) reported higher levels of positive emotions in Fuck Buddies encounters than in other encounters (see Fig. 4).

3.5.2. Negative emotions

Similarly, we found a significant positive main effect of both anxiety, $\beta = 0.29$, $p < .001$, and avoidance, $\beta = 0.15$, $p < .001$, on negative emotions. The association between anxiety and negative emotions was contingent on the type of encounter, $\Delta R^2 = 0.015$, $\Delta F(4, 1335) = 6.64$, $p < .001$. The association between avoidance and negative emotions was not contingent on the type of encounter, $\Delta R^2 = 0.003$, $\Delta F(4, 1335) = 1.48$, $p = .207$. Greater anxiety was associated with significantly more negative emotions relative to lower anxiety in all types of encounters, but the associations differed in magnitude (Table 8), which in order from highest to lowest were: One-Night Stand encounters, $\beta = 0.42$, $p < .001$, Friends With Benefits encounters, $\beta = 0.37$, $p < .001$, Fuck Buddies encounters, $\beta = 0.30$, $p < .001$, Booty Call encounters, $\beta = 0.28$, $p = .002$, and committed relationships, $\beta = 0.09$, $p = .089$.

3.6. Additional analyses

We re-ran all our models simultaneously controlling for time elapsed since the encounter, participant's age, and participant's gender. By and large, our pattern of results did not change.

4. Discussion

The present study aimed to reconcile past mixed findings on the positive and negative associations between casual sex on psychological well-being. As expected, we found that whether casual sex was associated with benefits or costs may depend on the individual's level of attachment security, the type of sexual encounter (One-Night Stand, Booty Call, Fuck Buddy, Friends With Benefits, or committed relationship), and the combination of attachment and encounter type. By and large, our findings suggest that for anxious individuals, all types of casual sex encounters operate much like sex in romantic relationships; that is, higher anxiety was associated with experiencing less physical pleasure, having a lower likelihood of orgasm, and experiencing more negative emotions mirroring anxious individuals' sexual experiences in committed romantic relationships. Whereas for anxious individuals physical pleasure and positive/negative emotions largely generalized across all types of casual sexual encounters, avoidant individuals experience different levels of physical pleasure and positive emotions across different casual sexual encounters. For avoidant individuals sex in Friends with Benefits relationships is experienced much like sex in committed relationships and is accompanied by negative outcomes (e.g., less pleasure and positive emotions relative to less avoidant individuals). Conversely, avoidant individuals reported the highest levels of physical pleasure and positive emotions in Fuck Buddy encounters.

More specifically, our findings indicated that a) attachment orientation predicts motivations for sex in casual encounters similar to committed relationships; b) anxious individuals report lower levels of physical pleasure, less positive emotions, and more negative emotions after casual sex encounters relative to more secure individuals; the association between attachment anxiety and physical pleasure is not

contingent on the type of encounter, but the association between anxiety and positive and negative emotions are; and c) the associations between attachment avoidance and physical pleasure, and positive emotions are contingent on the type of encounter and particularly emerge in more intimate encounters (i.e. committed relationships and Friends with Benefits).

4.1. Attachment and motives for sex

With regards to subjective motivations for sex, results indicated that insecure individuals (i.e., both anxious and avoidant) were more likely to say they had both committed sex and casual sex for self-focused reasons aimed at reassurance (e.g. “I engage in sex to feel good about myself”) and for pleasure-focused motives (e.g., “To experience novelty”).

The finding that both anxious and avoidant individuals reported self-focused reasons as a motive for all sexual encounter types is in line with past work that has found that insecure attachment (i.e. both anxious and avoidant) is negatively associated with self-esteem (Foster, Kernis, & Goldman, 2007; Srivastava & Beer, 2005; Wu, 2009) and positively related to self-esteem enhancement as a motive for sex (Davis et al., 2004). These findings suggest that both anxious and avoidant individuals may use sex as a mechanism to assure their self-worth in casual sex encounters.

Moreover, the finding that anxiety is associated with relational motives in all sexual encounter types is analogous to the increased desire for closeness, interdependence, and proximity that anxious individuals experience when they feel insecure regarding the availability of their partner (Davis et al., 2004). The fact that avoidant individuals were less likely to report relational motives is consistent with the notion that avoidant individuals tend to be uncomfortable with emotional closeness, and thus defensively do not seek out emotional reassurance from sex (see also Impett, Gordon, & Strachman, 2008).

Overall, these findings support a body of evidence stipulating sexual behavior serves the needs of the attachment system (e.g., Birnbaum, 2010; Davis et al., 2004), but notably, extend this notion to sexual behavior in the context of casual relationships. Because anxious individuals are extremely sensitive to rejection and relationship threats (Davis et al., 2004; Shaver & Mikulincer, 2002), they engage in sex to feel reassured both about their self-worth and about their relationship, as well as for ulterior and purely sexual reasons. Moreover, these patterns were present in individuals reporting on both casual and committed sexual encounters, suggesting that for anxious individuals, casual sexual behavior is motivated by the same concerns as sexual behavior in committed romantic relationships. In contrast, because avoidant individuals tend to minimize the degree of intimacy in their relationships (Gentzler & Kerns, 2004), for all types of sexual encounters they engage in sex to feel reassured about their self-worth, and for purely sexual reasons.

4.2. Sexual well-being

Anxiety predicted a lower likelihood of orgasm in moderately intimate encounters (Friends With Benefits and Fuck Buddies encounters), but not in committed relationships, One Night Stands, or Booty Call encounters. As expected, both dimensions of insecure attachment were negatively related to physical pleasure. This is consistent with findings in the context of romantic relationships that both anxiety and avoidance predict lower levels of orgasmic frequency (Birnbaum, 2007; Cohen & Belsky, 2008), less arousal during sex (Birnbaum, 2007), and less enjoyment of sex in general (Birnbaum, 2007; Birnbaum, Glaubman, & Mikulincer, 2001; Hazan et al., 1994), but importantly extend these patterns to the casual sex context. Moreover, both dimensions of insecure attachment were negatively related to positive emotions, and positively related to negative emotions. This is consistent with previous findings in the context of romantic

relationships that both anxiety and avoidance are associated with more negative emotions during sex (Birnbaum et al., 2006; Davis et al., 2006), less positive emotions after sex (Brennan, Wu, & Loev, 1998), and more aversive sexual affect and cognitions (Birnbaum, 2007).

4.3. Attachment anxiety

Because the encounters outlined by Wentland and Reissing (2011) are theorized to range according to levels of intimacy, and anxious individuals seek intimacy in their relationships, we predicted that the association between attachment anxiety and physical pleasure would be contingent on the type of encounter. Contrary to our predictions, there was no interaction between anxiety and type of encounter on physical pleasure, suggesting that anxious individuals experience similar levels of physical pleasure across all encounters. Similarly, we predicted that the association between attachment anxiety and positive and negative emotions would be contingent on the type of encounter. There was an interaction between anxiety and the type of encounter on positive emotions, but contrary to our predictions anxious individuals experienced low levels of positive emotions across almost all casual encounters (except for Booty Calls). Likewise, the association between anxiety and negative emotions was contingent on the type of encounter. Specifically, greater anxiety was associated with more negative emotions in all types of encounters, but slightly more negative emotions in uncommitted sexual encounters than in committed relationships.

These findings suggest that anxious individuals experience negative outcomes (i.e., low levels of physical pleasure and less positive emotions) in nearly all types of sexual encounters, perhaps due to anxious individuals' excessive need for relationship reassurance during sex. Because anxious individuals use sex as a means of achieving intimacy and emotional closeness (Davis et al., 2004; Schachner & Shaver, 2004), they may experience frustration and alienation from the event when their relational needs are not satisfied (Birnbaum, 2007). Indeed, previous studies have found that attachment anxiety is associated with excessive worry (Davis et al., 2001), indifference, detachment, and distraction by relational concerns during sex (Birnbaum, 2007), and that these concerns further interfere with the experience of passionate emotions during sex (Tracy et al., 2003). Thus, anxious individuals' preoccupation with relationship reassurance—even in casual encounters—may pose an obstacle to their enjoyment of sex by impairing their ability to experience both physical pleasure and positive emotions.

4.4. Attachment avoidance

Because avoidant individuals do not seek intimacy in their encounters and are comfortable engaging in casual sex, we predicted that avoidant attachment's associations with physical pleasure and positive/negative emotions would not be contingent on the type of encounter. Surprisingly, we found an interaction between avoidance and type of encounter on both physical pleasure and positive emotions, suggesting that avoidant individuals experience different levels of physical pleasure and positive emotions across the different types of encounters. Overall, highly avoidant individuals engaging in uncommitted sexual encounters reported higher levels of physical pleasure than highly avoidant individuals in committed relationships, which is consistent with previous findings that avoidant individuals are more likely to enjoy the non-affective, “instrumental” aspects of sex (Brennan et al., 1998; Brennan & Shaver, 1995; Gentzler & Kerns, 2004; Schachner & Shaver, 2004), are more likely to endorse the view that “sex without love is pleasurable” (Brennan & Shaver, 1995), and are more likely to engage in uncommitted sexual encounters (Feeney, Noller, & Patty, 1993).

Higher avoidance was associated with less physical pleasure, less positive emotions, and more negative emotions in highly intimate encounters (i.e., committed relationships, Friends With Benefits), and in low intimacy encounters, (i.e., One-Night Stand), but not in moderately

intimate encounters (i.e., Fuck Buddies, Booty Call). Interestingly, highly avoidant individuals reported the highest levels of physical pleasure and positive emotions in Fuck Buddies encounters (a moderately intimate encounter), suggesting that avoidant individuals may benefit the most from engaging in casual relationships with moderate levels of intimacy. Unlike other encounters, Fuck Buddies offer an opportunity to develop a friendship as a result of repeated sexual activity; however, this friendship is superficial and ends with the termination of the sexual relationship (Wentland & Reissing, 2011). Thus, Fuck Buddies may allow avoidant individuals to experience intimacy and affection without having to give up the autonomy and independence that they value (Fraley & Davis, 1997). Although the conclusion that avoidant individuals might benefit from intimacy in their sexual encounters might seem counterintuitive (as avoidant individuals are known for minimizing intimacy in their relationships), it is consistent with findings in the attachment literature that avoidant individuals are not indifferent to social feedback (i.e., show a fundamental need to feel connected to others; Carvallo & Gabriel, 2006; Hudson, Fraley, Brumbaugh, & Vicary, 2014; but see Philipp-Muller & MacDonald, 2017) and are able to inhibit their attachment-related defensive strategies under certain circumstances (Edelstein & Gillath, 2008). Fuck Buddy encounters may thus be a “sweet spot” in which avoidant individuals can get their intimacy and sexual needs met without feeling threatened. This is consistent with research suggesting that sex buffers against the effects of attachment insecurity by inhibiting the activation of the attachment system in the first place (Little, McNulty, & Russell, 2010). It is possible that Fuck Buddy encounters may be soothing the attachment-related concerns of avoidant individuals while at the same time meeting their needs for closeness and intimacy.

4.5. Strengths, limitations, and future directions

Our study makes a contribution to both the attachment and casual sex literatures by systematically examining how different attachment orientations affect the experience of casual sex encounters. A key strength of our study is that we improved upon the limitations in past literature by directly examining different forms of casual sex and by recruiting a sample broader than typical college samples (see review by Garcia et al., 2012). Casual sex for young versus older adults happens in different environments, carrying different scripts and possible stigmas (Bogle, 2008; DePaulo & Morris, 2005). Yet, we found that all of our key results held controlling for age, and found similar patterns of results to past studies using college aged samples (e.g., Bradshaw et al., 2010; Owen & Fincham, 2011; Vrangalova & Ong, 2014). Another of the strengths of the present study is that we combined across the two samples to ensure we had high statistical power and enough participants within each encounter type category.

Despite these strengths, the present study has limitations that should be addressed. First, our studies were retrospective (and correlational) in nature, so participants' recall of the sexual encounter may have been inaccurate or subject to biases. In Sample 2, we tried to minimize this possibility by only recruiting participants who had had a sexual encounter within the past month. Future research could use repeated measure diary designs (de Jong et al., 2018), to capture encounters as they happen, and to better inform the causal direction of the observed associations. Second, in order to maximize accuracy, we only asked participants about their most recent uncommitted sexual encounter (Sample 1) or their most recent sexual encounter (Sample 2). Because sexual relationships tend to change over time, a single episode might not reflect the complexities of the relationship. For instance, some uncommitted sexual encounters can evolve into more intimate (but still uncommitted) sexual encounters (e.g., Fuck Buddies might turn into Friends With Benefits) or into a committed relationship if partners become attached or “fall for each other” (Owen & Fincham, 2012; Wentland & Reissing, 2011). Furthermore, sexual satisfaction in committed relationships tends to reach a peak period (i.e., “honeymoon

period”; Aubin & Heiman, 2004) after which it decays significantly (Birnbaum, 2018; Khoury & Findlay, 2014; Schmiedeberg & Schroder, 2016); however, it is unclear whether sexual satisfaction in casual relationships shows a similar pattern. Third, in Sample 2 our design purposely contrasted those in committed relationships from those who were single and had engaged in casual sex, thereby excluding individuals who may simultaneously be in a relationship and engaging in casual sex (such as those in open relationships, who may show different patterns of results).

In the present study, we used the categories identified by Wentland and Reissing (2011) as proxies for the varying degrees of intimacy and closeness that occur in casual sexual relationships. This hierarchy (where One-Night Stand < Booty Call < Fuck Buddy < Friends with Benefits < committed relationship) implies that some sexual encounters involve greater degrees of intimacy and closeness than others. However, research has found that intimacy-motivated behaviors (e.g., cuddling, foreplay, eye gazing) are common in the context of uncommitted sexual encounters, and that this is especially pronounced in individuals with a preference for casual sex encounters over romantic relationships (Garcia et al., 2018). Thus, these categories and their implied levels of intimacy and closeness may not apply to all instances. Future work should directly assess intimacy levels within each type of casual sex encounter. This work may require both individual and dyadic investigation to fully understand the complexities of each encounter.

Future studies should therefore a) examine how casual relationships develop and change over time (which can also inform the directionality of observed associations); b) assess intimacy levels within each type of casual encounter and outline the factors that make the different types of casual encounters evolve into more intimate relationships; and c) examine the course of sexual satisfaction in casual relationships and how each of these differ as a function of one's attachment orientation. Fourth, our studies examined sexual encounters at the individual level. However, individuals' perceptions might differ from their sexual partners' perceptions, especially when the partners have differing attachment styles (Lavy, Mikulincer, & Shaver, 2010). For instance, participants' perceptions of their partner's efforts to please them might not reflect their actual partner's efforts. Further, sexual partners may disagree about how to categorize the relationship (i.e., highly anxious individuals may see more intimacy than is truly there). The associations between casual sex and well-being should therefore be investigated at the dyadic level. Future studies should also examine the role of sexual communication (i.e., the extent to which individuals disclose their sexual needs and desires to their partner) in casual relationships, as it is a critical predictor of sexual satisfaction and physical pleasure (Byers, 2011; Khoury & Findlay, 2014; Timm & Keiley, 2011).

Finally, the predominance of White/Caucasian participants in our samples and our focus on heterosexual participants means generalizations to broader populations should be made with caution. Future studies should explore how other sexual orientations (e.g. gay, lesbian, bisexual) and non-Western cultures conceptualize and experience casual relationships. For instance, non-heterosexual individuals may engage in uncommitted sexual encounters in different contexts (e.g., bathhouses for same-sex attracted men; Richters, 2007), and non-Western individuals may be less accepting of casual sex (Ahrold & Meston, 2010). Lastly, it should be noted that although we had a relatively large sample, fewer participants reported their most recent encounter was a Booty Calls ($N = 93$), and thus future research may benefit from directly targeting those who experienced Booty Calls.

5. Conclusion

In sum, this research sheds important light on the associations between casual sex and well-being, by illustrating the critical role of attachment orientation. Given that our findings indicate insecure individuals are particularly likely to be engaging in casual encounters, it is important to understand how insecure individuals experience these

types of sexual encounters. Taken together, our findings provide evidence that the type of sexual encounter affects how anxious and avoidant individuals experience sex, both physically and psychologically. Our findings are in line with the contention that attachment anxiety may be more detrimental to sexual well-being than attachment avoidance (Birnbaum, 2007). Whereas avoidant individuals may benefit from engaging in moderately intimate uncommitted sexual encounters (i.e., Fuck Buddies), anxious individuals may experience negative outcomes across all encounters. Notably, our findings echoed previous findings in the committed relationships literature, thereby advancing the attachment literature by suggesting that sexual phenomena in committed relationships might extend equally to various forms of casual sex. However, because little is known about the different types of casual relationships, the effects of casual sex on well-being warrant further investigation.

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Appendix A. Supplementary data

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