DO CASUAL SEXUAL RELATIONSHIPS AND EXPERIENCES MAKE YOU FEEL BAD?
AN INVESTIGATION OF CROSS-LAGGED ASSOCIATIONS WITH DEPRESSION, SELF-ESTEEM, AND ALCOHOL USE

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fulfillment of the requirements for the
degree of Doctor of Philosophy

by

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CHAPTER 1
INTRODUCTION

Recent research has established that the majority (more than 50%) of young adults experience intimacy and/or sexuality outside of committed romantic relationships (e.g., Grello, Welsh, & Harper 2006; Owen, Rhoades, Stanley, & Fincham, 2010). These casual sexual relationships and experiences (CSREs) include a range of short-term experiences (e.g., one-night stands) and sexual relationships that are enduring but lack commitment (e.g., booty-calls and friends with benefits relationships). Additionally, research has shown (in primarily cross-sectional studies of college students) that engaging in CSREs has implications for psychological adjustment as well as alcohol use. CSRE engagement has been associated with feeling used and experiencing regret, guilt, shame, and anger (Eshbaugh & Gute, 2008; Glenn & Marquardt, 2001; Paul & Hayes, 2002; Paul, McManus, & Hayes, 2000). Individuals who engage in CSREs have also been shown to be at greater risk for depression (an important indicator of psychological distress) (e.g., Grello et al., 2006) as well as lower levels of psychological wellbeing (e.g. lower self-esteem) (Paul et al., 2000) than those who do not. Alcohol use has also been consistently associated with CSRE engagement (e.g., Claxton, DeLuca, & van Dulmen, 2015). In addition to negative psychological outcomes and alcohol use, engaging in CSREs may have implications for the transmission of sexually transmitted infections (STIs) and unplanned pregnancies (e.g., Manning, Giordano, & Longmore, 2006).
The research on CSRE engagement and negative outcomes is not clear; some studies find associations between CSREs and negative outcomes (e.g. Fielder & Carey, 2010a), some find no or minimal associations (e.g., Eisenberg, Ackard, Resnick, & Neumark-Sztainer, 2009; Vrangalova, 2014b), and others find that CSREs are associated with positive outcomes (including social/academic engagement and sexual confidence) (e.g., Owen, Quirk, & Fincham, 2014). Furthermore, if relationships between CSRE engagement and psychological adjustment/alcohol use exist, it is not clear if CSRE engagement serves as an outcome or a predictor. Although most studies have considered depression and self-esteem to be outcomes of CSRE engagement, it is not actually clear if the association is in this direction. Similarly, most studies consider alcohol use to be a predictor of CSRE engagement; however, it is possible that CSRE engagement may lead to later alcohol use. Thus, the goal of the current study was to investigate the relationship between CSRE engagement and psychological adjustment/alcohol use in a more comprehensive manner using innovative methodology that allowed for an examination of the longitudinal association (and consequently the direction of the association) between CSRE engagement and psychological adjustment/alcohol use.

**Conceptualization and Definitions**

Although casual sex itself is not new, the scientific study of casual sex has emerged as a field primarily in the past 20 years. Therefore, it is important to understand the definitions and conceptualizations of these relationships and experiences used by researchers. CSREs share the common factor of occurring outside of a committed relationship, but they also have distinctive features. In a recent review, Claxton and van Dulmen (2013) proposed the term casual sexual relationships and experiences or CSREs as a comprehensive term to describe these forms of sexual behavior. Specifically, these relationships/experiences are casual in that they occur
outside of ongoing dating and marital relationships (i.e., committed romantic relationships) and generally do not involve the expectation of commitment (although they may involve a desire for commitment). CSREs are sexual because they involve sexual overtones and/or behavior, ranging from kissing to sexual intercourse. Additionally, CSREs include experiences in that they can be short lived (e.g., a one-night stand lasts only one night), but they are not limited to experiences because they involve mutual influence and interdependence (which meets the definition for a relationship) (see Claxton & van Dulmen, 2013; Claxton & van Dulmen, 2014).

Although they share the underlying features of being both casual and sexual, CSREs vary on two dimensions: how often they occur (reoccurring or occurring only once) and the level of intimacy they involve (ranging from sexual encounters between strangers/acquaintances to encounters between friends) (see Claxton & van Dulmen, 2013). Though CSREs may differ on other dimensions as well (e.g., alcohol use, Wentland & Reissing, 2011), these dimensions (i.e., relationship length and degree of intimacy) can be useful for understanding and differentiating the various CSREs.

In order to understand the research on CSREs and psychological adjustment/alcohol use, it is important to be acquainted with the different CSRE forms that have been studied thus far. Even though other CSREs may exist, the major CSREs discussed in the literature are hookups, friends with benefits relationships, booty-calls, and one-night stands. Below is a brief discussion of these various CSREs (see Claxton & van Dulmen, 2013 or Claxton & van Dulmen, 2014 for an expanded discussion). It is important to note that research has also examined “casual sex” more generally; therefore some of the research on CSREs has not evaluated differences between CSRE types.
**Hookups.** Although the term hookup is one of the most commonly used in the literature on CSRE engagement, it is vague and often overlaps with other CSREs (see Claxton & van Dulmen, 2013; Claxton & van Dulmen, 2014). A hookup has been commonly defined as “an event in which two people are physically intimate outside of a committed relationship without the expectation of future encounters” (Owen et al., 2010, p. 656) as well as “a sexual encounter, usually lasting only one night, between two people who are strangers or brief acquaintances” (Paul et al., 2000, p. 76).

Based on these definitions, it is difficult to tell if a hookup is a reoccurring CSRE or one that lasts only a single night. Additionally, it is unclear if a hookup occurs between acquaintances or between friends. Thus, there is considerable overlap between the term hookup and other CSRE terms such as friends with benefits and one night stands (e.g., Glenn & Marquardt, 2001; Owen & Fincham, 2011b). Furthermore, the definition is often vague in terms of the sexual behaviors included in a hookup, with some researchers specifically defining a hookup as involving sexual intercourse (e.g., Gute & Eshbaugh, 2008) and others including any type of sexual behavior (e.g., Owen & Fincham, 2011b). This ambiguity has led some researchers to argue that a hookup is not a type of CSRE but rather an overarching category or a term used to describe casual sex in general (e.g., Claxton & van Dulmen, 2013; Heldman & Wade, 2010).

**Friends with benefits.** Friends with benefits relationships are reoccurring relationships between friends involving relatively high intimacy levels (e.g., Weaver, MacKeigan, & MacDonald, 2011). These relationships tend to be more stable than other CSREs and also pose less risk for sexually transmitted infections due to the greater discussion of monogamy and condom use found within these relationships (e.g., Weaver et al., 2011; Wentland & Reissing,
Although some researchers have suggested that there may be subtypes of friends with benefits relationships, varying regarding the exact relationship between individuals (e.g., ex-romantic partners versus true friends) (Mongeau, Knight, Williams, Eden, & Shaw, 2011), most research on friends with benefits relationships has focused on relationships that stem from preexisting friendships (VanderDrift, Lehmiller, & Kelly, 2012).

**Booty calls.** Booty call relationships are similar to friends with benefits relationships in that they are reoccurring, but booty call relationships generally occur between acquaintances rather than friends (Wentland & Reissing, 2011). These CSREs involve less intimacy and closeness than friends with benefits relationships, and they incorporate “a communication initiated towards a non-long-term relationship partner with the urgent intent, either stated or implied, of having sexual activity and/or intercourse” (Jonason, Li, & Cason, 2009, p. 3). These relationships are on an “as needed” basis, and they often occur when one individual has been consuming alcohol (Wentland & Reissing, 2011).

**One night stands.** One-night stands are a one-time sexual relationship that occurs between strangers or acquaintances (e.g., Cubbins & Tanfer, 2000). These relationships, due to their short-term nature, involve minimal communication and often involve alcohol (thus putting these relationships at higher risk for sexually transmitted infections; Downing-Matibag & Geisinger, 2009).

**Importance of CSRES**

CSREs are widespread, especially during emerging adulthood (i.e., ages 18-29). Rates for hookups/one-night stands are generally over 50% (e.g., Gute & Eshbaugh, 2008; Paul et al., 2000) and can be as high as 84% depending on the definitions used (e.g., Lambert, Kahn, & Apple, 2003). Rates for booty-calls and friends with benefits relationships are similarly high (i.e.,
60%, Bisson & Levine, 2009; Jonason et al., 2009). Given that these relationships are somewhat normative during young adulthood, it is important to understand how CSREs are associated with psychological adjustment.

**CSREs and Psychological Adjustment (Psychological Wellbeing and Distress)**

CSREs have important implications for overall psychological adjustment, including both psychological distress (e.g., factors such as depression, anxiety, and aggression) and psychological wellbeing (e.g., factors such as self-esteem, life satisfaction, and purpose in life) (e.g., Ano & Vasconcelles, 2004; Bersamin et al., 2014; Derogatis & Spencer, 1982). For example, evidence suggests that CSRE engagement may be associated with negative emotional reactions (e.g., Glenn & Marquardt, 2001; Paul & Hayes, 2002; Paul et al., 2000). Further, CSREs have been linked to higher depression levels (e.g., Grello et al., 2006) and lower self-esteem levels (Paul et al., 2000).

However, the nature of the association between CSRE engagement and psychological adjustment is unclear. In particular, research findings are mixed regarding (a) if an association exists and (b) the direction of this association if it is present. Specifically, when an association is found, it is unclear whether CSRE engagement leads to increases in psychological distress and/or decreases in psychological wellbeing or if psychological adjustment predicts later CSRE engagement.

Below, I will explore the associations between CSRE engagement and psychological adjustment focusing on depression as an indicator of psychological distress and self-esteem as an indicator of psychological wellbeing. Depression (i.e., depressive symptomatology including lack of interest in daily activities, feeling sad, loss of appetite, Radloff, 1977) and self-esteem (i.e., an individual’s attitude toward the self/sense of self-worth; Rosengerg, 1965) are the most
common indicators of psychological distress and wellbeing, respectively, studied in relation to CSRE engagement. Depression and self-esteem serve as broad indicators of overall psychological adjustment. Examining indicators of the negative (distress) and positive (wellbeing) aspects of psychological adjustment permits a greater understanding of the association between CSRE engagement and overall psychological adjustment.

**CSREs and Depression**

Although there is evidence for an association between CSRE engagement and depression based on cross-sectional studies, the causal direction of the relationship is less clear. Findings from longitudinal studies are mixed regarding the direction of the association between CSRE engagement and depression, and some studies find no longitudinal associations between the two.

**Cross-sectional associations.** Several cross-sectional studies have found associations between general CSRE engagement and depression. For example, Bersamin and colleagues (Bersamin, et al., 2014) found statistically significant associations between CSRE engagement (defined as engaging in sex with someone known for less than a week) in the past 30 days and higher depression levels in a large study of single, heterosexual college students ($N = 3907, M$ age $= 19.58, 68\%$ female) from across the United States. Similarly, Manthos, Owen, & Fincham (2014) examined typologies of CSRE engagement in college students ($N = 339, M$ age $= 19.0$, 67% female) and found that the group with higher average CSRE engagement reported higher depressive symptoms than groups with lower average CSRE engagement. In addition, research has also found cross-sectional associations between CSRE engagement and depression in adolescent samples (e.g., Mendle, Ferrero, Moore, & Harden, 2013).

The association between CSRE engagement and depression appears to be especially true for penetrative CSREs as compared to non-penetrative CSREs. In a sample of 701 college
students (50.3% female, \( M \) Age = 19), researchers found that penetrative CSREs were associated with higher levels of depressive symptoms than non-penetrative CSREs (e.g., Strokoff, Owen, & Fincham, 2015). Additionally, negative reactions such as regret appear to play a role in the association between CSRE engagement and depression. In a cross-sectional study including 500 college students (66% female), Owen and Fincham (2011b) found that negative reactions to CSREs (e.g., feeling used, awkward, and disappointed) were associated with higher levels of depressive symptoms. In a study of 382 college students (66% female), Grello et al. (2006) found that higher levels of regret were associated with higher levels of depressive symptoms for individuals who engaged in CSREs. These findings suggest that one potential explanation for the link between CSRE engagement and depression is the level of negative reactions (including regret) an individual experiences after engaging in the CSRE.

The association between depression and specific CSREs is less clear. Limited research has focused on the association between friends with benefits relationships and depression, and there is evidence to suggest that friends with benefits relationships are associated with more positive outcomes than other CSREs (e.g., Bay-Cheng, Robinson, & Zucker, 2009). Thus, it is possible the association between friends with benefits relationships and depression is less evident than an association between other CSREs and depression. Research has suggested that when friends with benefits relationships lead to a loss of friendship, individuals report more psychological distress than when the friendship does not dissipate (Owen, Fincham, & Manthos, 2013). Furthermore, Owen and Fincham (2011a) found that psychological distress was not significantly related to having had a friends with benefits relationship over the past year. However, higher psychological distress was associated with negative emotional reactions to friends with benefits relationships. Therefore, negative reactions to a friends with benefits
relationship or loss of the friendship may help explain links between engaging in a friends with benefits relationship and psychological distress.

**Longitudinal associations.** Although cross-sectional studies provide preliminary information about associations between CSREs and depression, cross-sectional studies cannot establish temporal precedence. In fact, longitudinal research has provided mixed evidence regarding the direction of the association between CSRE engagement and depression. For example, in a study of 140 first-semester college students (78% female), Fielder and Carey (2010a) found that depression was not a significant predictor of CSRE engagement for college students over the first semester. However, there were associations between engaging in CSREs and later depression. Specifically, levels of depression for females depended on whether a CSRE involved penetrative as opposed to non-penetrative sex. Females who engaged in penetrative CSREs over the semester reported more depression than those who did not engage in penetrative CSREs. This study also revealed a large change in depressive symptomatology for females who engaged in their first CSRE over the semester (however this change was not statistically significant).

On the other hand, particularly in younger samples, there is evidence that depression may precede CSRE engagement. Using a large, nationally representative sample of 2,344 adolescents from the National Longitudinal Study of Adolescent and Adult Health (Add Health), Grello and colleagues found that psychologically distressed adolescents were more likely to engage in sexual activity within the context of a CSRE in the following year than those exhibiting lower levels of depressive symptomatology (Grello, Welsh, Harper, & Dixon, 2003). Monahan and Lee (2008) also found that depressive symptoms generally preceded CSRE engagement when examining trajectories of adolescent sexual behavior using the Add Health study. Research
outside of the United States has also found that initial depressive symptoms predicted adolescent females’ engagement in short romantic encounters (e.g., encounters low in intimacy) over a three month period (Shulman, Walsh, Weisman, & Schelyer, 2009, N = 219, 63% female, M age = 16.8).

There is some evidence these associations may carry over into emerging adulthood (i.e., the age period from 18-29; Arnett, 2004). Using data from the Add Health study including approximately 12,000 adolescents, Sandberg-Thoma and Kamp Dush (2014) found that depressive symptoms in adolescence (ages 12-18) were associated with CSRE engagement in emerging adulthood (ages 18-26) such that individuals with higher levels of depression in adolescence were more likely to engage in CSREs in emerging adulthood. However, CSRE engagement in emerging adulthood was not associated with changes in depression from adolescence to emerging adulthood (although CSRE engagement was associated with increases in suicidal ideation across time). It is important to note that the large time lapse between these assessments limits the conclusions regarding the causal associations between depressive symptoms and CSRE engagement.

It appears the longitudinal association may be complex. In a short-term longitudinal study of 394 college students (76% female, median age = 19), Owen, Fincham, and Moore (2011) found that engaging in non-penetrative or penetrative CSREs over the course of the semester was not associated with later depressive symptoms, controlling for initial levels of depressive symptoms. However, there was an interaction between initial depression and engaging in penetrative CSREs such that, for individuals who began the semester with higher levels of depressive symptoms, penetrative hookups resulted in fewer depressive symptoms at the end of the semester. This, the authors argued, suggests distressed individuals may use CSRE
engagement as a method of coping with psychological distress. However, when individuals began the semester with fewer depressive symptoms, engaging in penetrative CSREs was associated with greater depressive symptoms at the end of the semester compared to individuals who did not engage in a CSRE. Thus, CSRE engagement may increase distress for individuals who were not previously experiencing depression, but decrease depression (at least in the short-term) for individuals already experiencing high levels of depression. In addition, research suggests non-autonomous/unintentional CSREs are more likely to be associated with later depression. Specifically, in a study of 528 college students (64% female) over one academic year, Vrangalova (2014a) found that individuals who reported engaging in CSREs due to non-autonomous reasons (e.g., “I wanted to please someone else, such as my partner or my friends, or because the situation seemed to compel it;” Vrangalova, 2014a, p. 5) were more likely to report higher depression at the end of the academic year.

Overall, there appears to be an association between CSRE engagement and depression (see Furman & Collibee, 2014; Vrangalova, 2014b for exceptions), but the direction is not entirely clear. There is evidence that CSREs predict later depression, but there is also evidence that depression may predict future CSRE engagement (especially in adolescent samples). It is important to note that most studies have focused on the association between CSRE engagement and later depression, and few have accounted for depression levels prior to the CSRE encounter. Therefore, additional research is needed to understand the true relationship between CSRE engagement and depression.

**CSREs and Self-esteem**

The association between CSRE engagement and self-esteem has not been examined as extensively as the association between CSRE engagement and depression. However, both cross-
sectional and longitudinal studies suggest CSRE engagement may be associated with levels of self-esteem.

**Cross sectional associations.** Research suggests engaging in CSREs is associated with lower levels of self-esteem, especially for women (e.g., Campbell, 2008). Although there exist exceptions (e.g., Barriger & Velez-Blasini, 2013; Eisenberg et al., 2009) cross-sectional studies have generally found negative associations between general CSRE engagement and self-esteem. For example, in their large study of college students across the United States ($N = 3,907, 68\%$ female) Bersamin and colleagues (2014) found that individuals who had engaged in a CSRE in the past 30 days reported lower levels of self-esteem than individuals who had not engaged in a CSRE during the same time period. Similarly, research has found that when comparing individuals who had engaged in a hookup to those who had not (in a sample of 555 college students, $63\%$ female), both men and women who had not engaged in a hookup reported higher self-esteem than those who had engaged in either penetrative or non-penetrative hookups (Paul et al., 2000). In a study of 832 college students ($69\%$ female, $M$ age = 20), Owen and colleagues (Owen et al., 2010) found that reporting more negative emotional reactions to CSRE engagement was associated with lower levels of psychological wellbeing.

One study has examined associations between sexual behavior between friends, acquaintances, friends with benefits, and romantic partners. Using Hierarchical Linear Modeling, Furman and Collibee (2014) examined both longitudinal and cross-sectional associations between sexual behavior and self-esteem in a representative sample of 185 participants ($50\%$ female). This study included three waves of assessment, each occurring 1.5 years apart. At the first assessment, participants were on average 20.42 years old. Even though they did not find longitudinal associations between sexual activity and self-esteem (possibly due to the amount of
time between assessments), they did find within-person effects for self-esteem such that increased sexual activities (relative to one’s own average) with acquaintances and friends with benefits, but not romantic partners, were associated with lower self-esteem. They also found between-subject effects for women (but not men) such that greater sexual activity with a friend was associated with lower self-esteem. Thus, there is some evidence that CSREs high in intimacy (friends with benefits) as well as CSREs low in intimacy (with acquaintances) are associated with lower levels of self-esteem.

**Longitudinal associations.** While there exist exceptions (e.g., Furman & Collibee, 2014; Vrangalova, 2014b), there is evidence of longitudinal associations between CSRE engagement and self-esteem. In particular, although Fielder and Carey (2010a) found no association between prior levels of self-esteem and future CSRE engagement, they did find that females who had engaged in non-penetrative CSREs had higher self-esteem at the end of the semester than those who had engaged in penetrative CSREs. This study included 140 mostly female (78%) first-semester college students. Vrangalova (2014a) also found that college students’ CSRE engagement during the academic year was linked to lower self-esteem at the end of the year, in particular for individuals who did not feel like they had autonomy regarding the encounter ($N = 528$, 64% female).

There is also evidence that self-esteem may be associated with later CSRE engagement. In a short-term longitudinal study of 483 first-year female college students, Fielder and colleagues (Fielder, Walsh, Carey, & Carey, 2013) found that although self-esteem was not associated with receiving oral or vaginal sex during a CSRE, for people who did engage in a CSRE, self-esteem predicted the number of oral sex CSREs an individual engaged in over the academic year. Similar to depression, for adolescents there is also evidence that self-esteem is
associated with later CSRE engagement (Manning, Longmore, & Giordano, 2005). Using data from the National Study of Adolescent Health \((N = 7,470)\), Manning and colleagues (Manning et al., 2005) found male and female adolescents with higher self-esteem were less likely to have sex with a non-romantic partner between assessments (18 months) than adolescents with lower self-esteem.

Overall, there is inconclusive evidence for an association between CSRE engagement and self-esteem. Many studies find no association between CSRE engagement and self-esteem, whereas others find only specific CSRE behaviors (e.g., penetrative CSREs, oral CSREs) are associated with self-esteem. Furthermore, the studies which do find an association are mixed regarding whether CSRE engagement leads to decreases in self-esteem or if low self-esteem precedes CSRE engagement. Research involving innovative longitudinal designs is needed to understand the discrepancies between previous findings.

**Direction of Associations between CSRE Engagement and Psychological Adjustment**

Overall, evidence from the current research is mixed on the direction of the association between CSRE engagement and psychological adjustment. It is possible that engaging in CSREs may have negative effects on depression and self-esteem, but there is also evidence suggesting that initial levels of depression and self-esteem may predict later CSRE engagement.

Researchers have proposed several explanations for predictive links between CSRE engagement and psychological adjustment. For example, there exist potential negative social consequences for engaging in CSREs, especially for women (e.g., Allison & Risman, 2013). Accordingly, individuals who engage in CSREs may experience negative outcomes due to fear of social repercussions or due to actual rebuke. Furthermore, CSREs often involve alcohol use (e.g., Owen & Fincham, 2011a, 2011b). Individuals under the influence of alcohol may not take
proper precautions and may worry about contracting STIs or unwanted pregnancies after engaging in a CSRE (e.g., Kiene, Barta, Tennen, & Armeli, 2009; Townsend & Wasserman, 2011). Additionally, CSREs may be disappointing. CSREs involve less intimacy and physical pleasure than traditional romantic relationships (Armstrong, England, & Fogarty, 2009; Eshbaugh & Gute, 2008; Fielder & Carey, 2010b). Furthermore, individuals who hope to establish a connection with another individual may feel used or let down when a CSRE does not develop into anything more (e.g. Campbell, 2008; Manning et al., 2006; Paul et al., 2000).

On the other hand, there is reason to believe depression and self-esteem may predict CSRE engagement. For example, researchers have argued that CSREs give individuals a way to achieve a connection with another individual and serve as a means of dealing with depression or low self-esteem (Owen et al., 2011). CSRE engagement, in this view, serves as a method for individuals to experience a temporary boost in positive affect. This is especially possible considering most college students report more positive than negative emotional reactions to CSRE engagement (e.g. Owen & Fincham, 2011b). Consequently, CSRE engagement may serve as an indicator for negative psychological adjustment (e.g., Grello et al., 2003) rather than a predictor.

**CSREs and Alcohol Use**

In addition to psychological adjustment, CSRE engagement has been consistently linked with alcohol use. In a recent meta-analysis of 29 studies, Claxton et al. (2015) found that all studies reported a positive association between alcohol use and CSRE engagement and that the weighted mean effect size for the association between alcohol use and CSRE engagement was $r = .34$. A large number of studies have also suggested alcohol is associated with CSRE engagement at both the global level (Owen et al., 2011; Owen & Fincham, 2011a; 2011b) and
event level. When examining a specific sexual encounter, quantitative and qualitative studies suggest alcohol use generally precedes CSRE engagement (e.g., Grello et al., 2006; Wentland & Reissing, 2011). In fact, 65% of individuals reported drinking before engaging in their most recent CSRE (Grello et al., 2006), and college students report consuming an average of three drinks before engaging in a typical hookup (Fielder & Carey, 2010b). Additionally, higher general alcohol use has been associated with higher rates of CSER engagement (Owen et al., 2011; Owen & Fincham, 2011a; 2011b). In fact, alcohol use has been considered “one of the most reliable and robust predictors of casual sex behaviors” (Owen & Fincham, 2011a, p. 312).

**Cross sectional associations.** Research suggests engaging in CSREs is associated with alcohol use in general (see Claxton et al., 2015). For example, studies have found associations between general or lifetime alcohol use and CSRE engagement in the past semester (Barringer & Vélez-Blasini, 2013), past year (Owen & Fincham, 2011a), and over one’s lifetime (Dir, Cyders, & Coskunpinar, 2013; Gute & Eshbaugh, 2008). Similarly, alcohol use over shorter timeframes has been linked with CSRE engagement. For example, alcohol use during the past 30 days has been associated with engaging in a friends with benefits relationship in the past year in a sample of 889 college students (Owen & Fincham, 2011a). Manthos et al. (2013) found that frequency of drinking and binge drinking and quantity of drinking over the past 30 days for college students was associated with CSRE engagement over the course of the semester (ten weeks). Similarly, Justus, Finn, and Steinmetz (2000) found evidence that frequency, quantity, and density of alcohol use over the last six months was associated with CSRE engagement over the past year in college students, and Downing et al. (2011) found associations between frequency of drunkenness in the past week and having sex with a new partner in the past week for a sample of over 1,500 holiday travelers. Lewis, Litt, Cronce, Blayney, and Gilmore (2014) found
associations between frequency of consuming alcohol before or during sexual encounters in the past three months and frequency of casual sex in the past three months for undergraduate students. Additionally, there are several studies finding associations between consuming alcohol during a specific recent sexual encounter and classifying this encounter as a CSRE (e.g., Brown & Vanable, 2007; Clutterbuck, Gorman, McMillan, Lewis, & Macintyre, 2001; Cousins, McGee, & Layte, 2010). Importantly, research suggests problematic or binge drinking in particular is associated with CSRE engagement (e.g., Dir et al., 2013; Garneau, Olmstead, Pasley, & Fincham, 2013).

**Longitudinal associations.** A few studies have examined longitudinal associations between alcohol use and CSRE engagement. For example, Fielder & Carey (2010a) found peak blood alcohol content at baseline (as calculated using self-report number of standard drinks on the heaviest drinking day in the past month, the number of hours the drinking occasion lasted, gender, and weight) predicted engaging in CSRE behavior (oral sex and vaginal sex) over the course of the semester (ten weeks) for first-semester college students. Similarly, Fielder et al. (2013) found binge drinking predicted engaging in a CSRE over the next eight months (the academic year), but not the number of CSRE encounters in a sample of first-year female college students. Additionally, a study using data from the National Longitudinal Study of Adolescent Health revealed associations between alcohol use during adolescence (and the trajectory of alcohol use over time) and CSRE engagement during young adulthood (Johnson, 2013).

**Direction of Associations between CSRE Engagement and Alcohol Use**

Overall there is substantial evidence alcohol use is associated with CSRE engagement. Additionally, there are several theoretical perspectives that help explain the relationship between alcohol use and risky sexual behavior (see Cooper, 2006 for a review). Specifically, alcohol
myopia theory suggests the pharmacological effects of alcohol on brain functioning lead to altered decision making processes and may promote risky sexual decision making (Cooper, 2002; George & Stoner, 2000; Steele & Josephs, 1990). Expectancy theory, on the other hand, suggests the effects of alcohol use are predominately psychological in nature and are driven by preexisting beliefs concerning how alcohol influences behavior (e.g., Hull & Bond, 1986). If individuals believe alcohol leads to risky behavior, alcohol use can provide an excuse for engaging in the desired sexual behavior (Cooper, 2002; 2006; Wilson, 1981). People, then, may drink more when they think an opportunity for sex exists and may consume alcohol with the explicit intention of having a sexual relationship (Cooper, 2002; Cooper, 2006). Thus, there are several reasons to expect immediate or cross-sectional associations between alcohol use and CSRE engagement.

It is less clear if there are long-term associations between CSRE engagement and alcohol use. In particular, alcohol use has been examined as a predictor of later CSRE engagement, but not as an outcome. Given that individuals may use alcohol as a way to deal with negative emotional responses (see Kusher, Abrams, & Borchardt, 2000 for a review), it is feasible that CSRE engagement might be linked with later alcohol use if CSRE engagement in fact produces negative outcomes such as increased depression. To date, research has not fully examined this possibility.

**Cross-Lagged Models**

Given discrepancies in both research findings as well as theoretical predictions, it is important to understand (a) if CSRE engagement is associated with increases in depression and alcohol use and decreases in self-esteem and (b) if psychological adjustment/alcohol use can predict later CSRE engagement. Importantly, it is possible there are reciprocal associations
between CSRE engagement and depression, self-esteem, and alcohol use. Therefore, it may be that CSRE engagement predicts psychological adjustment/alcohol use and that psychological adjustment/alcohol use predicts CSRE engagement. However, the literature to date cannot fully answer these questions. Furthermore, it is important to understand these relationships in the context of autoregressive effects (i.e., controlling for prior levels of psychological adjustment/alcohol use and previous experience with CSREs).

Cross-lagged models (also known as cascade models) allow one to investigate the pattern of interactions and transactions across constructs over time (e.g., Masten & Cicchetti, 2010; McArdle, 2009). They involve an examination of autoregressive associations (e.g., lagged effects) as well as paths from each factor to the other at a later time (e.g., crossed coefficients) (McArdle, 2009). These models allow for an analysis of the continuity/stability of a behavior over time as well as potential unidirectional and bidirectional direct effects (Masten & Cicchetti, 2010). Additionally, these models allow for an examination of indirect effects (e.g., a path from CSRE engagement to later depression to later CSRE engagement). Cross-lagged panel models, therefore, facilitate the simultaneous examination of the influence of CSRE engagement and psychological adjustment/alcohol use and formally test for reciprocal predictive associations.

Cross-lagged models can be tested within a Structural Equation Modeling (SEM) framework, which allows for the examination of a comprehensive model, rather than examination of specific hypotheses alone. That is, SEM involves estimating the relationships between multiple outcomes and predictors while controlling for all other effects present in the model. SEM allows for an investigation of the consistency between the pattern of variances and covariances found in the data and the specified model. Importantly, SEM facilitates comparisons across various potential models, enabling one to determine which model has the best fit out of a
number of alternative models. This type of examination is important because one can compare the adequacy of various models and help disconfirm alternative models (Kline, 2005). Given the advantages of model testing using SEM, as well as the capability to examine reciprocal associations within a cross-lagged panel mode, this type of examination would help clarify the direction of the associations between CSRE engagement and psychological adjustment/alcohol use by enabling comparisons of models in which CSRE engagement predicts psychological adjustment/alcohol use and in which psychological adjustment/alcohol use predicts later CSRE engagement.

Despite these advantages, only one other study to date has examined cross-lagged associations between CSRE engagement and psychological adjustment (specifically focusing on depression) and no studies have examined cross-lagged associations between CSRE engagement and alcohol use. In a sample of 483 female college students, Fielder and colleagues (Fielder, Walsh, Carey, & Carey, 2014) found evidence for autoregressive effects (e.g., past CSRE engagement predicted future CSRE engagement) but not for longitudinal associations. They did find significant associations within each time period (covariation between CSRE engagement and depression). Although these findings begin to shed light on the cross-lagged associations between CSRE engagement and depression, the sample was entirely female college students. Thus, additional information can be gained by examining a more representative sample.

The Role of Gender

Theories of gender differences for depression and self-esteem. Both popular culture and research suggest men and women act differently when making sexual choices, and a number of theories predict gender differences in CSRE involvement as well as reactions to CSREs.
Theories suggest men are more likely to engage in CSREs than women and that men are more likely to benefit from these relationships and experiences than women.

Evolutionary mate selection theories (i.e., Sexual Strategies Theory, Parental Investment Theory) suggest differential parental investment leads to divergent mating strategies for men and women (Buss & Schmitt, 1993; Trivers, 1972). Men, in this view, benefit from short-term relationships whereas women are most benefited by having a single, committed partner because they can only produce one offspring per year (e.g., Buss, 1989; Buss & Schmitt, 1993; Stinson, 2010). Women, therefore, are less apt to desire CSREs than men. Given these differences, women are, in general, more likely to report negative attitudes towards and reactions to short-term relationships such as CSREs than men.

Sociocultural theories, on the other hand, focus on the societal norms and roles that shape human behavior. These theories argue society perpetuates a double standard regarding sexuality. This double standard condemns women for engaging in promiscuous sexual activity outside of marriage while at the same time encouraging these behaviors in men (Crawford & Popp, 2003). Women who engage in CSREs are often disparaged compared to men who engage in the same behaviors (England, Shafer, & Fogarty, 2008). Because of the negative consequences of casual sexual involvement for women, women may feel more negative impacts of CSRE engagement than men. Furthermore, these theories also suggest men have more power in sexual interactions and thus women may feel pressured to engage in unwanted CSREs, leading to regret and negative outcomes (e.g., Fielder & Carey, 2010a; Hatfield, Luckhurst, & Rapson, 2010; Paul & Hayes, 2002).

Most explorations of gender differences in CSREs have assumed CSRE engagement leads to negative outcomes. If psychological adjustment predicts later CSRE engagement, as
some research suggests (e.g., Grello et al., 2003; Monahan & Lee, 2008), the role gender plays in this association is less clear. It is plausible women may be more likely to engage in CSREs in order to feel a temporary boost in positive feelings since women may value connectedness more than men (Jordan, 2004). Women with low levels of self-esteem or high levels of depression may seek CSREs as a way to fill these intimacy needs. However, given evidence that CSREs have more positive effects on the reputations of men than women and that men report more confidence after a CSRE than women (Campbell, 2008), it is possible men with low self-esteem in particular may seek CSREs in order to enhance their self-confidence. Overall, potential gender differences in the association between psychological adjustment and later CSRE engagement have not been fully explored.

**Research on gender differences for depression and self-esteem.** Research on gender differences in CSREs lends some support to the idea that men and women differ in CSRE engagement as well as responses to CSREs. Men report a greater desire for short-term relationships (or relationships involving less commitment) than women (e.g., de Backer, Braeckman, & Farinpour, 2008; Petersen & Hyde, 2010; Schmitt, 2003). Some studies find men are more likely to engage in CSREs than women (e.g., Grello et al., 2006; Owen & Fincham, 2011b) or that men engage in more penetrative CSREs than women (Paul et al., 2000). It is important to note that a number of studies find no gender differences in CSRE engagement (e.g., Fielder & Carey, 2010a; Owen et al., 2010). However, when engaging in a CSRE, women may be more likely than men to hope/believe the CSRE will lead to a romance (e.g., Bogle, 2008; Grello et al., 2006; Impett & Peplau, 2003; Stepp, 2007).

Regarding consequences of CSREs, research does suggest men receive more benefits from CSRE engagement than women in terms of social status and physical gratification.
Research has also suggested gender differences in reactions to CSREs such that women who engage in CSREs report more worry and vulnerability (Townsend & Wasserman, 2011) and fewer positive emotional reactions (Campbell, 2008; Owen et al., 2010; Owen & Fincham, 2011b) than men.

In relation to depression, research suggests the association between CSRE engagement and depression is stronger for women than men (Fisher, Worth, Garcia, & Meredith, 2012; Grello et al., 2006; Strokoff et al., 2015) (although there are studies finding no differences, e.g., Bersamin et al., 2014; Sandberg-Thoma & Kamp Dush, 2014). Furthermore, the link between CSRE engagement and depression may actually be negative for men. For example, Grello and colleagues (Grello et al., 2006) found that men who engaged in CSREs reported lower levels of depressive symptoms than their peers whereas women who engaged in CSREs reported higher levels of depressive symptoms than women who did not engage in CSREs. Further, research has found that men who do not engage in CSREs may experience higher levels of depression than those who do engage in CSREs (Fielder & Carey, 2010a).

Gender differences in the association between CSRE engagement and self-esteem are less consistent. Few studies have examined gender differences in this association. Of the studies that have examined gender differences, many have found no differences in the association between CSRE engagement and self-esteem for men and women (e.g., Bersamin et al., 2014; Vrangalova, 2014a). Qualitative results do suggest CSRE engagement has more negative effects on self-esteem for women than men (e.g., Campbell, 2008). In a recent study, Furman and Collibee (2014) found that sexual activity with a friend was associated with lower self-esteem for women but not men. CSRE engagement has also been positively associated with general psychological
wellbeing for men but not women (Owen et al., 2010, although note this association did not hold when controlling for other predictors of CSRE engagement).

Even though there is some evidence for a gender difference in the association between CSRE engagement and later psychological adjustment, there is limited empirical evidence regarding gender differences in the opposite direction (i.e., an association from depression/self-esteem to later CSRE engagement). There is no empirical evidence of a gender difference for the association between self-esteem and later CSRE engagement as studies examining this link have either found no gender differences (Manning et al., 2005) or included only female participants (Fielder et al., 2013). Evidence regarding an association between depression and later CSRE engagement is mixed. Many studies have not found a gender difference in the association between depression and later CSRE engagement (e.g., Grello et al., 2003; Sandberg-Thomma & Kamp Dush, 2014), but those that have found gender differences suggest the association between depression and later CSRE engagement may be stronger for females than males (e.g., Monahan & Lee, 2008; Shulman et al., 2009).

Theories on gender differences for alcohol use. Additionally, there is reason to suspect associations between alcohol use and CSRE engagement may differ for women and men. When individuals are intoxicated they may attend less to the social repercussions of engaging in CSREs (see Cooper, 2002). Given that women are judged more negatively than men if they have a large number of sexual partners or engage in CSREs (Cooper, 2002), women may be more likely than men to use alcohol in order to justify engaging in CSREs. Additionally, women have higher blood alcohol content levels than men after drinking the same amount of alcohol (Mumenthaler, Taylor, O’Hara, & Yesavage, 1999). Consequently, the same amount of alcohol may have a larger effect on women’s sexual behavior than it has on men’s sexual behavior. Thus, there is
reason to believe the association between CSRE engagement and alcohol use may be stronger for women than for men.

**Research on gender differences for alcohol use.** Research provides some support for idea that alcohol has a larger effect on women’s sexual behavior than men’s. Results from a daily-diary study found that, for women, drinking significantly increased the likelihood of engaging in sexual behavior (both casual and committed partners), but this was not true for men (Kiene et al., 2009). Additionally, research has shown alcohol use influences decisions concerning risky sexual behavior (e.g., condom use during casual sex) for women, but not for men (Scott-Sheldon et al., 2009), and experimental studies have found that alcohol use is associated with a greater intention of engaging in sex for women but less willingness for men (Cho & Span, 2010).

However, when examining CSRE behavior specifically, few studies have examined gender differences in the association between alcohol use and CSRE engagement. Alcohol use (a composite of frequency, quantity, and binge drinking in the past 30 days) was associated with engaging in friends with benefits relationship in the past year (Owen & Fincham, 2011a), and this association was significantly stronger for women compared to men. Similarly, alcohol use over the past 30 days was associated with CSRE engagement in the past 4 months (with those engaging in penetrative CSREs reporting higher alcohol use than those who engaged in non-penetrative CSREs and both groups reporting more alcohol use than those who did not engage in a CSRE), and this association was significantly stronger for women than for men (Owen et al., 2011b).

Alcohol use may also influence the types of sexual behavior an individual engages in during a CSRE as well as responses to a CSRE encounter differently for men and women.
Research suggests women who drink before a CSRE engage in less intense physical behaviors during the CSRE than men (e.g., kissing versus sexual intercourse) (Labrie, Hummer, Ghaidarov, Lac, & Kenney, 2014). Furthermore, among individuals who drank before their most recent CSRE encounter, women were more likely than men to report they would not have gone as far physically had they not been drinking. Additionally, this study found that women who engaged were less likely to report contentment after an experience involving alcohol, but that this association is not found for men (Labrie et al., 2014). When examining the typical number of drinks consumed each week, however, this study found that although men drank more per week than women and higher numbers of drinks per week were related to more recent CSRE engagement, the interaction between gender and alcohol use was not significant (Labrie et al., 2014).

Overall, there is some empirical evidence for gender differences in the association between CSRE engagement and alcohol use. However, there are additional studies finding no gender differences in the association between alcohol use and CSRE engagement (See Cooper, 2002) and others have found that alcohol consumption is related to CSRE engagement for men but not women (e.g., White, Fleming, Catalano, & Bailey, 2009). Additionally, in their meta-analysis, Claxton et al. (2015) did not find that gender moderated the general association between alcohol use and CSRE engagement. Thus, it is unclear if gender differences in this association exist. Additionally, these studies have generally not examined longitudinal associations between alcohol use and later CSRE engagement. Furthermore, I found no studies which have examined the association between CSRE engagement and later alcohol use, and therefore no gender differences in this association have yet been explored.
In summary, both theory and research suggest there may be gender differences in the association between CSRE engagement and self-esteem, depression, and alcohol use, although research has not consistently observed differences between women and men. Cross-sectional evidence suggests associations between CSRE engagement and depression/self-esteem are stronger for women than men. Additionally, there is cross-sectional research to suggest that the association between CSRE engagement and alcohol use may be stronger for women than for men (e.g., Owen et al., 2011). Regarding longitudinal associations, evidence suggests responses to CSRE engagement may differ for men and women. Women may be more likely than men to experience increases in depressive symptomatology after engaging in a CSRE. Furthermore, there is some evidence of a stronger connection between decreases in self-esteem after engaging in a CSRE for women than men, although this link is less well established. Theory and research regarding gender differences in the association between psychological adjustment and later CSRE engagement is less clear. There is limited evidence that women with higher levels of depression are more likely to engage in later CSREs than men and no evidence regarding gender differences in the association from self-esteem to later CSRE engagement. Additionally, gender differences in the longitudinal associations between CSRE engagement and alcohol use have received limited attention in the research.

Importantly, most longitudinal studies on this topic have included primarily female samples, limiting the ability to examine gender differences. Additionally, most studies have not systematically examined gender differences in these associations in both directions (from CSRE engagement to psychological adjustment/alcohol use and from psychological adjustment/ alcohol use to later CSRE engagement). Therefore, it is difficult to make conclusions regarding these potential differences. The current study aimed to resolve the mixed findings regarding gender
differences by examining gender differences in cross-sectional as well as longitudinal associations between CSRE engagement and psychological adjustment/alcohol use and by specifically examining gender differences in the bidirectional associations between CSRE engagement and psychological adjustment/ alcohol use.

**Control Variables**

It is not clear whether an association between CSRE engagement and psychological adjustment/alcohol use exists after controlling for other predictors of CSRE engagement and psychological adjustment/alcohol use. A number of covariates have been linked to CSRE engagement and/or depression/self-esteem/alcohol use, and were considered in order to rule out alternative explanations for the association between CSRE engagement and psychological adjustment/alcohol use.

**Alcohol use.** Alcohol use is an important predictor of CSRE engagement as discussed above. Furthermore, alcohol use has been linked with lower levels of self-esteem (Skager & Kerst, 1989) and higher levels of depression (e.g., Harrell, Slane, & Klump, 2009). Thus, alcohol use was considered as a control variable when examining associations between CSRE engagement and psychological adjustment.

**Personality characteristics.** Personality characteristics have been identified as important predictors of CSRE engagement. In particular, impulsivity and sensation-seeking have been associated with sexual risk taking and CSRE engagement (e.g., Charnigo et al., 2013, Claxton & van Dulmen, 2013; Hoyle, Fejfar, & Miller, 2000). There is also some evidence impulsivity may be associated with depression (Ngo, Street, & Hulse, 2011). Additionally, sensation-seeking has been associated with alcohol use (see Hittner & Swickert, 2006 for a review).
Demographic characteristics. Demographic characteristics such as age, ethnicity, educational status, and sexual orientation may also be associated with CSRE engagement and/or psychological adjustment/alcohol use.

Age. Researchers have argued that CSRE engagement may be normative during the age period of emerging adulthood (18-29) (see Claxton & van Dulmen, 2013). In particular, this period is associated with increased freedom and exploration in terms of sexual partners (e.g., Arnett, 2004; Stinson, 2010). The average age of first marriage has risen to the end of emerging adulthood (U.S. Census Bureau, 2010), and consequently CSRE engagement may be more common in young emerging adults who have not yet committed to a long-term romantic relationship. Further, there are also associations between age and depression (Twenge & Nolen-Hoeksema, 2002), age and self-esteem (Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002; Robins & Trzesniewski, 2005; Tracy; Twenge & Campbell, 2001), and age and alcohol use with increases in alcohol use during young adulthood compared to adolescence and later adulthood (Maggs & Schulenberg, 2004; Moore et al., 2005; Schulenberg & Maggs, 2002).

Ethnicity. There is limited research on the role of ethnicity in CSRE engagement, although there is evidence ethnic differences in rates of CSREs may exist (e.g., Eisenberg et al., 2009; Owen et al., 2010). Research further suggests there may be racial differences in depression (e.g., Plant & Sachs-Ericsson, 2004), self-esteem (see Gray-Little & Hafdahl, 2000 and Twenge & Crocker, 2002 for meta-analyses), and alcohol use (e.g., Galvan & Caetano 2003; NIAAA, 2002).

Educational status. Given that most research on CSREs has been conducted using college students, there is limited evidence regarding whether CSRE engagement is limited to the college setting as some researchers suggest (e.g. Bogle, 2007, 2008). Individuals who do not
attend college tend to marry earlier than those who attend college (e.g., Uecker & Stokes, 2008), but other research suggests that compared to non-college peers, individuals in college may exhibit lower rates of high-risk sexual behavior (see Bailey, Fleming, Henson, Catalano, & Haggerty, 2008; Bailey, Haggerty, White, & Catalano, 2011). Additionally, cross-sectional data has indicated individuals enrolled in a four-year degree program report fewer CSRE partners than those who are not enrolled in college or who do not have a high school diploma (Lyons, Manning, Longmore, & Giordano, 2014). However, there is evidence that the college setting may be a risk factor for problematic drinking (e.g., Slutske et al., 2004; Slutske, 2005). As such, it is important to explore potential differences in reactions to and predictors of CSREs between college and non-college students.

**Sexual orientation.** Similarly, minimal research has focused on CSRE engagement in non-heterosexual individuals. Although research has examined casual sex among gay males, this research has focused primarily on the spread of HIV (e.g., Prestage et al., 2001) and the use of the internet for casual sex solicitation (e.g., Brown, Maycock, & Burns, 2005). Other studies of CSREs fail to include non-heterosexual participants, limiting our understanding of CSREs across various sexual orientations.

**Summary and Limitations of Current Research**

Although prior studies have provided important information regarding the association between CSRE engagement and depression, self-esteem, and alcohol use, they are limited by their methodology. While there exist exceptions (see Owen et al., 2011; Fielder & Carey, 2010a), the majority of studies in this area have used cross-sectional designs. Further, many longitudinal studies of psychological adjustment do not control for prior levels of adjustment in analyses, and most involve only two assessments at least four months apart — making it difficult to examine
changes in CSRE engagement and adjustment over time. Similarly, while there are a number of studies examining the association between alcohol use and immediate and later CSRE engagement, no studies examine changes in alcohol use based on previous CSRE engagement. Consequently, it is difficult to determine whether depression, lowered self-esteem, and alcohol use are precursors or results of engaging in CSREs (or both). In order to implement intervention and prevention efforts, it is important to understand whether CSRE engagement is an indicator of poor psychological adjustment and alcohol use, if CSRE engagement leads to changes in psychological adjustment and alcohol use, or if there are reciprocal associations (e.g., individuals who have lower adjustment and subsequently engage in CSREs suffer from additional decreases in adjustment). Importantly, despite evidence that there may be reciprocal associations, only one study to date (Fielder et al., 2014) has examined cross-lagged associations between CSRE engagement and psychological adjustment. This study, however, was limited to female college students. Furthermore, there are no studies to date examining cross-lagged associations between CSRE engagement and self-esteem or alcohol use.

Additionally, most research on this topic has used convenience samples of primarily female college students, limiting the generalizability of the findings. The current literature is therefore missing clear conclusions regarding the role of gender in the association between CSRE engagement and psychological adjustment and alcohol use as well as information regarding CSRE engagement outside of the college context. Many studies have focused either on adolescents or first-semester or young college students (with average sample ages generally between 18 and 20 years old). Thus, it is difficult to decipher if associations between CSRE engagement and psychological adjustment and alcohol use exist in later emerging adulthood or into adulthood.
Current Study

The current study addresses limitations in the research on CSRE engagement and psychological adjustment and alcohol use. As discussed, past research on this topic has been largely hampered by cross-sectional designs and limited samples. The aims of the current study were (a) to replicate and extend previous findings on the association between CSRE engagement and psychological adjustment/alcohol use using a short-term longitudinal study, (b) examine the direction of the association between CSRE engagement and psychological adjustment/alcohol use by examining reciprocal predictive effects (utilizing cross-lagged models), (c) examine gender differences in the relationship between CSRE engagement and psychological adjustment/alcohol use, and (d) extend current research on CSRE engagement by utilizing a community sample of young adults. Overall, the current study worked to replicate and extend previous findings regarding the relationship between CSRE engagement and depression, self-esteem, and alcohol use in a more representative sample of young adults and, importantly, provide evidence regarding the direction of the association between CSRE engagement and psychological adjustment/alcohol use.
CHAPTER 2
AIMS AND HYPOTHESES

Aim 1. Examine the Associations between CSRE Engagement and Depression

Broadly, Aim 1 sought to extend previous research by examining the longitudinal associations between CSRE engagement and depression.

Aim 1a. Examine the cross-lagged associations between CSRE engagement and depression. The first goal of Aim 1 was to examine the cross-lagged longitudinal associations between CSRE engagement and depression controlling for known predictors of CSRE engagement and depression. Specifically, this aim built upon previous cross-sectional and longitudinal findings by examining the bidirectional effects between CSRE engagement and depression. I expected to confirm and replicate previous findings suggesting there are positive associations between CSRE engagement and depression (e.g., Bersamin et al., 2014). Additionally, I examined whether CSRE engagement and depression mutually affect each other over time or if there is only evidence for directional effects from CSRE engagement to depression or from depression to CSRE engagement.

Hypothesis 1. Based on research suggesting that one of the best predictors of future CSRE engagement is previous CSRE engagement (e.g., Owen, et al., 2011) and that depression is generally stable over time (e.g., Lovibond, 1998), I expected to find relatively strong autoregressive effects. That is to say, earlier CSRE engagement would predict later CSRE engagement and earlier depression would predict later depression (i.e., stability model).

Hypothesis 2. In light of previous cross-sectional research on CSRE engagement
and depression (e.g., Bersamin et al., 2014; Grello et al., 2006; Manthos et al., 2014, Strokoff, et al., 2015), I also expected to find significant positive concurrent associations between CSRE engagement and depression at each time point (covariation).

**Hypothesis 3.** Despite the stability of CSRE engagement and depression, I expected to find that CSRE engagement would predict later depression controlling for previous levels of depression (based on previous findings by Fielder & Carey, 2010a and Owen et al., 2011).

**Hypothesis 4.** While evidence in adult samples is limited, I also expected depression would predict later CSRE engagement based on findings from adolescent samples (e.g., Grello et al., 2003; Manning et al., 2004; Sandberg-Thomma & Kamp Dush, 2014).

**Hypothesis 5.** Overall, I expected a model including bidirectional effects (as well as autoregressive effects) would best fit the data, suggesting reciprocal associations between CSRE engagement and depression (hypothesis 5a). However, given that depression levels are generally stable, I also hypothesized CSRE engagement might better predict depression than depression would predict CSRE engagement (hypothesis 5b).

**Aim 1b. Examine gender differences in the associations between CSRE engagement and depression.** The second research question under this aim was whether the associations between CSRE engagement and depression differed for females and males. Previous research (e.g., Fisher et al., 2012; Grello et al., 2006; Stokoff, et al., 2014) as well as evolutionary and sociocultural theories (e.g., Buss & Schmitt, 1993; Crawford & Popp, 2003) suggest there may be gender differences in the association between CSRE engagement and psychological distress, such that the associations are stronger for females than males, but to date, gender differences in longitudinal associations between CSRE engagement and depression have not yet been adequately explored. Aim 1b addressed this limitation by examining gender differences in
longitudinal associations from CSRE engagement to later depression and from depression to later CSRE engagement.

**Hypothesis 6.** Based on previous cross-sectional findings (e.g., Grello et al., 2006; Strokoff et al., 2015) suggesting the cross-sectional link between CSRE engagement and depression is stronger for females than males, I expected to find gender differences such that the covariance between CSRE engagement and depression at each time point would be stronger for females than for males.

**Hypothesis 7.** Based on previous research regarding negative emotional reactions to CSREs (e.g., Campbell, 2008; Owen et al., 2010; Owen & Fincham, 2011; Townsend & Wasserman, 2011) as well as evidence of gender differences in longitudinal research (e.g., Fielder & Carey, 2010), I expected to find gender differences in the link between CSREs and later depression such that the link would be stronger for females than for males.

**Hypothesis 8.** Though research examining the link between depression and later CSRE engagement has been limited regarding examination of gender differences, I expected to find gender differences in link between depression and CSRE engagement such that the link is stronger for females than for males based on evidence from previous studies utilizing adolescent samples (e.g., Monahan & Lee, 2008; Shulman et al., 2009).

**Hypothesis 9.** Overall, based on previous research and theory suggesting the links between CSRE engagement and depression may be stronger for females than males, I expected a model including reciprocal associations between CSRE engagement and depression would better fit the data for females than for males.
Aim 2. Examine the Associations between CSRE Engagement and Self-esteem

Parallel to Aim 1, Aim 2 sought to replicate and extend previous research on the association between CSRE engagement and self-esteem.

**Aim 2a. Examine the cross-lagged associations between CSRE engagement and self-esteem.** The first goal of this aim was to examine the concurrent and longitudinal associations between CSRE engagement and self-esteem controlling for known predictors of CSRE engagement and self-esteem. Similar to Aim 1, this aim sought to confirm and replicate previous findings regarding CSRE and self-esteem as well as to examine the nature of the longitudinal association between CSRE engagement and self-esteem. I expected to replicate previous research finding negative associations between CSRE engagement and self-esteem. Additionally, I tested for reciprocal effects between CSRE engagement and self-esteem.

**Hypothesis 10.** Based on previous research suggesting self-esteem is relatively consistent over time (e.g., Bergman & Scott, 2001; Trzesniewski, Donnellan, & Robins, 2003) and that previous experience with CSREs predicts later CSRE engagement (e.g., Owen et al., 2011), I hypothesized earlier CSRE engagement would predict later CSRE engagement and earlier self-esteem would predict later self-esteem (stability model).

**Hypothesis 11.** I also expected to find significant concurrent negative associations between CSRE engagement and self-esteem at each time point based on cross-sectional findings regarding CSRE engagement and self-esteem (e.g., Bersamin et al., 2014; Paul et al., 2000).

**Hypothesis 12.** Despite the stability of CSRE engagement and self-esteem, I expected that, in addition to autoregressive effects, CSRE engagement would predict later self-esteem based on previous evidence of this link (Fielder & Carey, 2010a; Vrangalova, 2014a).
**Hypothesis 13.** I expected self-esteem would predict later CSRE engagement based on evidence of a predictive link between self-esteem and CSRE engagement (Fielder et al., 2013; Manning et al., 2005).

**Hypothesis 14.** Overall, I expected a model including bidirectional effects (as well as autoregressive effects) would best fit the data, suggesting reciprocal effects between CSRE engagement and self-esteem (hypothesis 14a). However, given that global self-esteem levels are generally stable (e.g., Trzesniewski et al., 2003), I also hypothesized CSRE engagement might better predict self-esteem than self-esteem would predict CSRE engagement (hypothesis 14b).

**Aim 2b. Examine gender differences in the associations between CSRE engagement and self-esteem.** The second research question under Aim 2 was whether there exist gender differences in the association between CSRE engagement and self-esteem. Given research has not systematically examined gender differences in the association between self-esteem and CSRE engagement, this aim was primarily exploratory. Research does suggest CSREs for females involve fewer positive emotional responses than CSREs for males (Campbell, 2008; Owen et al., 2010; Owen & Fincham, 2011). Furthermore, evolutionary and sociocultural theories (e.g., Buss & Schmitt, 1993; Crawford & Popp, 2003) suggest there may be gender differences in the association between CSRE engagement and self-esteem such that the negative association between CSRE engagement and self-esteem is stronger for females than males (and the association may even be positive for males).

**Hypothesis 15.** Based on previous cross-sectional findings (e.g., Campbell, 2008; Owen et al., 2010) suggesting the cross-sectional link between CSRE engagement and self-esteem may be stronger for females than males, I expected to find gender differences such that the covariance
between CSRE engagement and self-esteem at each time point would be stronger for females than for males.

**Hypothesis 16.** The longitudinal research on the gender differences in the association between CSRE engagement and later self-esteem is limited. Based on previous findings using female samples (e.g., Fielder & Carey, 2010; Furman & Collibee, 2014), and theoretical (e.g., Buss & Schmitt, 1993; Crawford & Popp, 2003) and empirical evidence (e.g., Owen et al., 2010; Owen & Fincham, 2011) that CSRE engagement may be associated with more negative effects for females than males, I expected links between CSRE engagement and later self-esteem would be stronger for females than males.

**Hypothesis 17.** Even less is known about gender differences in the association between self-esteem and later CSREs. Some studies include only female samples (e.g., Fielder et al., 2013) and others have found no gender differences (Manning et al., 2005). Given the limited evidence regarding the association between self-esteem and later CSREs and mixed theoretical predictions (i.e., females with low self-esteem may engage in CSREs to increase connections with others, males with low self-esteem may engage in CSREs to boost their self-confidence; Campbell, 2008; Jordan, 2004), I did not expect to find gender differences in this association. However, gender differences in this association were investigated in order to evaluate the possibility that the relationship differs for men and women.

**Hypothesis 18.** Overall, I expected to find the cross-lagged model for self-esteem and depression would fit better for females than males.

**Aim 3. Examine the Associations between CSRE Engagement and Alcohol Use**

Broadly, Aim 3 seeks to extend previous research by examining the longitudinal associations between CSRE engagement and alcohol use.
Aim 3a. Examine the cross-lagged associations between CSRE engagement and depression. First, I examined cross-lagged longitudinal associations between CSRE engagement and alcohol controlling for known predictors of CSRE engagement and depression (minus alcohol use). Specifically, I aimed to build on previous cross-sectional and longitudinal findings by examining the bidirectional effects between CSRE engagement and alcohol use. I expected to confirm and replicate previous findings suggesting there are positive associations between CSRE engagement and alcohol use (e.g., Claxton et al., 2015). Additionally, I examined whether CSRE engagement and alcohol use mutually affected each other over time or if there was only evidence for directional effects from CSRE engagement to alcohol use or from alcohol use to CSRE engagement.

Hypothesis 19. In this model (as with the previous models) I expected to find autoregressive effects for CSRE engagement such that past CSRE engagement predicts later CSRE engagement (e.g., Owen et al., 2011). Additionally, based on research suggesting alcohol use is generally relatively stable over shorter periods of time (e.g., Kerr, Fillmore, & Bostrom, 2002), I expected to find autoregressive effects for alcohol use as well. That is to say, earlier CSRE engagement would predict later CSRE engagement and earlier alcohol use would predict later alcohol use (i.e., stability model).

Hypothesis 20. In light of previous cross-sectional research on CSRE engagement and alcohol use (e.g., Brown, 2007; Dir et al., 2013; Gute & Eshbaugh, 2008; Owen et al., 2010; Owen & Fincham, 2011a; 2011b), I also expected to find significant positive concurrent associations between CSRE engagement and alcohol use at each time point (covariation).

Hypothesis 21. While empirical evidence for an association from CSRE engagement to later alcohol use is limited, based on theoretical rationale suggesting alcohol use may be used as
a way to deal with negative emotional responses (e.g., Kushner et al., 2000), I expected CSRE engagement to predict later alcohol use.

**Hypothesis 22.** Despite the stability of CSRE engagement and depression, I expected alcohol use would predict later CSRE engagement based on findings from previous research suggesting that past alcohol use is associated with future CSRE engagement (Fielder & Carey, 2010a; Fielder et al., 2013; Johnson, 2013; Manthos et al., 2013).

**Hypothesis 23.** Overall, I expected a model including bidirectional effects (as well as autoregressive effects) would best fit the data, suggesting reciprocal associations between CSRE engagement and alcohol use (hypothesis 23a). However, given evidence that alcohol use may affect decision making and predict later CSRE engagement (e.g., Cooper, 2002; George & Stoner, 2000), I predicted that associations between alcohol use and CSRE engagement might be stronger than associations between CSRE engagement and later alcohol use (hypothesis 23b).

**Aim 3b. Examine gender differences in the associations between CSRE engagement and alcohol use.** The second research question under this aim was whether the associations between CSRE engagement and alcohol use differed for females and males. Previous research (e.g., Owen & Fincham, 2011a; Owen, et al., 2011) as well as theoretical rationale (see Cooper, 2000; Mumenthaler et al., 1999) suggest there may be gender differences in the association between CSRE engagement and alcohol use such that the associations are stronger for females than males, but to date, gender differences in longitudinal associations between CSRE engagement and alcohol use have not yet been adequately explored. Aim 3b addressed this limitation by examining gender differences in longitudinal associations from CSRE engagement to later alcohol use and from alcohol use to later CSRE engagement.
**Hypothesis 24.** Based on previous cross-sectional findings (e.g., Owen & Fincham, 2011a; Owen et al., 2011) suggesting the cross-sectional link between CSRE engagement and alcohol use is stronger for females than males, I expected to find gender differences such that the covariance between CSRE engagement and depression at each time point was stronger for females than for males.

Given minimal theoretical and empirical evidence regarding gender differences in longitudinal associations between CSRE engagement and alcohol use, no specific hypotheses were made regarding gender differences in the link between alcohol use and later CSRE engagement or in the link between CSRE engagement and later alcohol use. These associations were tested to add to the understanding of gender differences in the longitudinal associations between CSRE engagement and alcohol use.
CHAPTER 3

METHOD

Participants

The current investigation used data collected as part of the Online Study of Sexual Relationships (OSSR). Participants included 500 individuals collected through Amazon’s Mechanical Turk (MTurk), an online labor market through which individuals choose to participate in studies for payment (Buhrmester, Kwang, & Gosling, 2011). Amazon’s MTurk offers access to a diverse population, which is in general representative of the U.S. population and significantly more diverse than typical college samples (Buhrmester et al., 2011). On average, MTurk participants are 35% non-white, and about 55% female (Gosling, Vazire, Srivastava, & John, 2004). In general, MTurk’s participants have higher self-reported education than the general population but lower income levels (Paolacci, Chandler & Ipeirotis, 2010). The average age of MTurk samples is 32.3 (Berinsky, Huber, & Lenz, 2012), but participants were limited to ages 18-39 for this study to focus primarily on emerging adults (18-29) while still allowing comparisons across age groups. From the original 500 participants, 146 individuals were removed for not meeting the study requirements (e.g., for not being single at baseline or under the age of 40) or because there were issues with the quality/validity of their data (unreasonably short duration, duplicate IP addresses, incorrect responses to validity check questions) leaving a final sample of 354 individuals.

Procedure

Participants completed four total waves of online assessments spanning six months (baseline, one month, three months, and six months). These online surveys included a battery of
well-validated and empirically supported self-report measures as well as lab created questionnaires gathering information on CSREs (including past and current involvement in CSREs), potential predictors of CSRE involvement (e.g., impulsivity and sensation seeking), and indicators of psychological adjustment (depression, self-esteem) and alcohol use. Participants were paid for their participation. Participants received $1.50 for the first wave (the longest assessment), $1.10 for the second wave, $1.20 for wave 3, and $1.35 for wave 4, and an additional 50 cents for completing all 4 waves. This increasing incentive schedule was developed in order to ensure participants completed all waves of assessment (decrease participant attrition). Furthermore, these compensation rates are in line with amounts paid for surveys on MTurk (Paolacci et al., 2010). While this amount may seem like a low pay rate, research suggests MTurk workers find surveys intrinsically rewarding and enjoyable (Buhrmester, et al., 2011). All procedures were approved in advance by Kent State University’s Institutional Review Board (approval number: 13-015).

**Measures**

**Control variables.** Control variables were chosen based on empirical evidence and results of bivariate analyses. Covariates that were examined include alcohol use (for psychological adjustment analyses), impulsivity/sensation seeking, age, ethnicity, educational status, sexual orientation, and relationship status.

**Impulsivity and Sensation Seeking.** Impulsive-sensation seeking was measured by The Short Impulsivity and Sensation Seeking Questionnaire (Derived from the Zuckerman-Kuhlman Personality Questionnaire; ZKPQ-50-cc, Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). This measure includes 19 true/false questions designed to measure impulsive-sensation seeking (e.g., “I often do things on impulse” and “Before I begin a complicated job, I make careful plans”). Items were summed with higher scores representing higher levels of impulsive sensation
seeking (ImpSS). The scale has been shown to have acceptable psychometric properties (e.g., Zuckerman, 1994) and had adequate internal consistency for the current study ($\alpha = .88$).

**Age.** The Sociodemographic Questionnaire (SDQ) is a lab-created self-report measure of demographic information filled out by participants at the baseline assessment. This questionnaire includes questions regarding age, ethnicity, and education status. Age was calculated based on each participant’s birthdate and the date of assessment.

**Ethnicity.** The SDQ was used to assess each participant’s ethnicity. Participants were asked “What is your ethnicity of origin?” and given the following options: Caucasian/White, African American/Black, Asian American/Pacific Islander, Native American/Alaskan Native, Hispanic/Latino(a), or Biracial. Given low base rates of other ethnicities, a dichotomous variable (Caucasian/white or other) was used in analyses.

**Education Status.** Education status (full-time, part-time, non-student) was also obtained from the SDQ. Participants were asked “What is your current educational status?” Participants who reported they were currently in school were asked to classify themselves as full-time or part-time students. A dichotomous indicator (non-student, student) was utilized in analyses.

**Sexual Orientation.** Self-reported sexual orientation was assessed using two questions. The first asked “What sexual orientation best describes you?” Options were heterosexual, homosexual, bisexual, and other. A more in-depth question (adapted from AddHealth, Harris et al., 2009) asked “Please choose the description that best fits how you think about yourself.” Responses were 100% heterosexual (straight), Mostly heterosexual (straight), but somewhat attracted to people of your own sex, Bisexual—that is, attracted to men and women equally, Mostly homosexual (gay), but somewhat attracted to people of the opposite sex, 100% homosexual (gay), and Not sexually attracted to either males or females. The scale, which allows
for a more nuanced examination of sexual orientation, was used as the control variable in analyses.

**Relationship status.** Given the longitudinal nature of the current study, some individuals entered a committed relationship during the study period. Thus, relationship status (in a relationship vs. single) was controlled for at each wave.

**CSRE engagement.** Both lifetime CSRE engagement as well as CSRE engagement in the past month was assessed at baseline (Wave 1) and CSRE engagement since prior assessment was assessed at each follow-up assessment (Waves 2, 3, and 4).

**Lifetime CSRE engagement.** Lifetime CSRE engagement was measured using a lab-created sexual behavior questionnaire (SB) utilized in previous studies (e.g., Klipfel, Claxton, & van Dulmen, 2014). The SB elicits information concerning lifetime sexual behaviors and the types of sexual relationships in which the behaviors occurred. The full survey was administered to each participant during the baseline assessment and modified versions measuring sexual behavior since the previous assessment were administered at Waves 2, 3, and 4. Item format consisted of multiple choice and fill-in-the-blank items. Information can be determined about most recent sexual encounter, safety practices, and number of partners.

Participants were provided with the following definitions of CSREs:

**Committed relationship:** a dating relationship which you have made official (i.e., you have indicated on Facebook you are “in a relationship”, you have introduced each other as your boyfriend/girlfriend)

**Casual Dating Relationship:** you are going out on dates, but you have not made it official
**Friend with benefits:** friends who engage in sexual activity but do not consider themselves to be in a romantic relationship

**Booty-Call:** a communication initiated toward an individual with the urgent intent either stated or implied, of having sexual activity and/or intercourse (meeting for impromptu sex)

**One-night stand:** a sexual encounter with another individual that only occurred one time

**Oral sex:** partner ever put his/her mouth on your penis/genitals (sex organs)

**Sexual intercourse:** sexual union between two people involving genital contact. This includes when a male inserts his penis into a female’s vagina.

**Anal sex:** sexual union in which the penis is inserted into a partner’s anus.

Participants were asked the number of sexual and anal intercourse partners they had experienced in their lifetime. Further, participants were asked the total number of relationships of each type (committed relationships, casual dating relationships, friends with benefits, booty calls, one-night stands, and other) they had experienced within their lifetime as well as the type of sexual behaviors they had experienced within each relationship type (from kissing to sexual intercourse).

**CSRE engagement, past three months.** In addition to asking about lifetime CSRE engagement, participants were asked to report specifically on the individuals with whom they had engaged in sexual behavior in the past three months. Participants were asked to identify each individual using initials only and then were asked a series of questions concerning the sexual encounters they had experienced with that individual. They were asked to classify each sexual encounter they had as a committed dating relationship, casual dating relationship, friends with
benefits relationship, booty call relationship, one-night stand, or other. They were then asked about the specific behaviors in which they engaged (ranging from kissing to sexual intercourse).

**CSRE engagement Waves 2-4.** A modified version of the sexual behavior questionnaire measuring sexual behavior between assessments was administered at Waves 2, 3, and 4. Participants were asked to report their current relationship status and to provide detailed information regarding any sexual encounters in which they participated since the previous assessment. Participants were asked to identify each individual using initials only and then asked a series of questions regarding the sexual encounters they had experienced with that individual. They classified each sexual encounter experienced since the previous assessment as a committed dating relationship, casual dating relationship, friends with benefits relationship, booty call relationship, one-night stand, or other. Participants were provided with the same definitions as used at baseline. They were then asked about the specific behaviors in which they engaged (ranging from kissing to sexual intercourse).

In order to investigate potential differences based on operationalization of CSRE engagement, three different CSRE variables were created. The first was a simple total of the number of different CSRE partners an individual reported from each wave. The second was a dichotomous indicator of if an individual had engaged in any CSRE since the previous wave, which is consistent with a number of studies that dichotomize CSRE engagement (e.g., Fielder & Carey, 2010; Owen, et al., 2011). Finally, indicators of whether an individual engaged in no CSREs, a non-penetrative CSRE, or a penetrative CSRE (i.e., a CSRE involving oral, anal, or vaginal intercourse) were also created as some studies (e.g., Eshbaugh and Gute, 2008; Owen et al., 2011) have found differences depending on if a CSRE is penetrative vs. non-penetrative.
**Psychological Adjustment.** Psychological distress (depression) and psychological wellbeing (self-esteem) were assessed at each wave.

**Depression.** The Center for Epidemiological Studies- Depression (CES-D, Radloff, 1977) is a 20-item measure of psychological distress/depressive symptomology. Participants respond to a series of statements regarding feelings/behaviors that may have occurred in the past week including poor appetite (e.g. “I did not feel like eating; my appetite was poor”), sadness (e.g., “I felt that I could not shake off the blues even with help from my family or friends”), and poor sleep (e.g., “My sleep was restless”). Specifically, participants rate how often these occurred on a four point scale: rarely or none of the time (less than 1 day), some or a little of the time (1-2 days), moderately or much of the time (3-4 days), most or all of the time (5-7 days). Items are summed with higher scores indicating more symptoms. The CES-D has demonstrated good reliability and validity (e.g., Miller, Anton, & Townson, 2007; Radloff, 1977; Roberts, 1980), the measure and demonstrated good internal consistency in the current study (α ranged from .91-.94 across waves).

**Self-esteem.** The Rosenberg Self-Esteem Scale (Rosenberg, 1965) consists of 10 items assessing global self-esteem (e.g., “On the whole, I am satisfied with myself”). All items are rated on a four point Likert-scale from strongly disagree (1) to strongly agree (4). A sum of the 10 items is used, with higher scores representing higher self-esteem. The scale has demonstrated good reliability and validity (Blasovich & Tomaka, 1991), and the measure demonstrated good internal consistency in the current study with Cronbach’s alpha ranging from .92-.94 across waves.

**Alcohol Use.** Alcohol use was measured using the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985). The DDQ elicits information regarding participant’s drinking
behaviors in a week and in the previous month (Collins, et al., 1985). The survey was administered to each participant during the baseline assessment and during each follow-up assessment. Participants completed a chart concerning the number of drinks, as well as the number of hours spent drinking, in a week. Participants were also given an additional four items concerning drinking behaviors in the past month (e.g., “During the past month, how many times did you have four or more drinks at a sitting?”, “During the past month, how many times did you get drunk (not just a little high) on alcohol?” (See Jackson, Sher, Gotham, & Wood, 2001; Wechsler & Isaac, 1992). Similar to past researchers (e.g., Hatzenbuehler, Corbin, & Fromme, 2008; Olmstead, Pasley, & Fincham, 2013), a composite was created by standardizing and averaging the number of drinking days in an average week (frequency), the number of drinks per drinking day (quantity), frequency of drinking to intoxication (until drunk), and frequency of drinking four or more drinks in a single sitting. This composite variable demonstrated adequate reliability across waves (α = .80-.89).
CHAPTER 4

ANALYSIS PLAN

In order to investigate cross-lagged associations between CSRE engagement and psychological adjustment/alcohol use, I conducted a series of path analysis models using Mplus version 7.11 (Muthén & Muthén, 2012). Path analysis is a type of structural equation modeling (SEM) utilizing manifest variables (rather than latent variables) to model a series of interrelated hypotheses (Masten & Cicchetti, 2010; Masten, Desjardins, McCormick, Kuo, & Long, 2010). Specifically, I examined a stability model which tests the stability of CSRE engagement and psychological adjustment/alcohol use over time (i.e., autoregressive effects) including the covariation between CSRE engagement and adjustment/alcohol use at each time point (see Figure 1, Model 1), not including any predictive associations between CSRE engagement and adjustment/alcohol use. In addition to autoregressive effects, the next models added pathways in which earlier CSRE engagement is associated with later adjustment/alcohol use (Figure 2, Model 2) and where earlier adjustment/alcohol use is associated with later CSRE engagement (Figure 3, Model 3). Finally, a full cross-lagged model (in which Models 1, 2, and 3 are simultaneously valid) including autoregressive effects and reciprocal associations between CSRE engagement and adjustment/alcohol use was examined (Figure 4, Model 4).
Figure 1. Model 1: Stability model
Figure 2. Model 2: CSRE engagement predicting later adjustment/alcohol use
Figure 3. Model 3: Adjustment/alcohol use predicting later CSRE engagement

Controls: alcohol use (depression/self-esteem only), impulsivity/sensation seeking, age, ethnicity, educational status, and sexual orientation.
Figure 4. Model 4: Full cross-lagged model

Model Fit

Model fit was evaluated using several different model fit indices: the Comparative Fit Index (CFI), Root Mean Squared Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Specifically, CFI values closer to 1 indicate better model fit: CFI values between .95 and 1.0 are considered excellent fit, and CFI values less than .90 indicate poor model fit (Hu & Bentler, 1998; Kenny, Kashy, & Cook, 2006). RMSEA values less than .08 suggest reasonable fit whereas values below .06 suggest good fit (Kenney et al., 2006), and SRMR values of .08 or less indicate good model fit (Hu & Bentler, 1999). I also examined the chi-square statistic, which tests if the predicted covariance matrix significantly differs from the observed covariance matrix. A non-significant chi-square test ($p > .05$) indicates the model fits
the data well. Chi-square statistics are heavily influenced by sample size such that in large samples a statistically significant chi-square test may fit the data well, however smaller chi-square statistics in general indicate better model fit (Hancock & Mueller, 2011; Kenny et al., 2006).

**Model Comparison**

Comparisons among nested models can be evaluated using a chi-square difference test (also known as the likelihood-ratio test), in which a statistically significant change in chi-square indicates worsening model fit. Given that the chi-square difference test is sensitive to sample size, I also examined the change in CFI. A change in CFI changes greater than .01 indicates differences between the models (Cheung & Rensvold, 2002).

Specifically, I examined the difference between the stability model (Model 1) and the model including cross-lagged effects from CSRE engagement to adjustment/alcohol use (Model 2). If there is a significant difference, then Model 2 better accounts for the data than Model 1, suggesting CSRE engagement influences later adjustment/alcohol use. Similarly, I compared Model 1 and Model 3 (which includes cross-lagged paths from adjustment/alcohol use to CSRE engagement). Again, if a significant difference is found, this difference indicates Model 3 better accounts for the data than Model 1 and would suggest adjustment/alcohol use affects later CSRE engagement. Model 1 and Model 4 (including all crossed-lagged effects) were also compared to test if the full cascade-model provides better model fit than the stability model. I also compared Model 2 with Model 4 and Model 3 with Model 4 in order to determine which structural paths were associated with a significant improvement in model fit.

In order to investigate gender differences in the cross-lagged associations between CSRE engagement and adjustment/alcohol use I conducted multiple group analyses using constraints to
test for differences in the path coefficients for males and females. Differences were evaluated using change in chi-square and change in CFI as mentioned previously. Significant change in chi-square or CFI changes greater than .01 indicate gender differences in the associations between CSRE engagement and psychological adjustment/alcohol use.
CHAPTER 5

RESULTS

Preliminary Analyses

**Missing Data.** Due to the longitudinal nature of this study, a number of participants did not complete all four waves of data collection. Specifically, missing data can be problematic because it can lead to lower statistical power and potentially invalid conclusions. Fortunately, several strategies for working with missing values exist. In particular, full information maximum likelihood (FIML) estimation utilizes all available variances and covariances in order to compute maximum likelihood estimates. FIML estimation helps minimize bias in estimating model parameters and standard errors and is appropriate for SEM analyses (Acock, 2012; Hoyle, 2011). Thus, all missing data were estimated using FIML procedures in Mplus 7.11 (Muthén & Muthén, 2012).

I also examined attrition effects. Differences between individuals who completed and did not complete all waves for all study variables (i.e., psychological adjustment/alcohol use, CSRE engagement, gender, and all control variables) at baseline were examined. No significant differences were found. However, marginally significant differences were found in age $t(350) = -1.95, p = .052, d = .24$, alcohol use $t(203.01) = 1.68, p = .095, d = .19$, and impulsivity $t(164.77) = 1.76, p = .081, d = .21$. Specifically individuals who completed all assessments were older ($M = 28.03, SD = 5.28$) than individuals who did not ($M = 26.76, SD = 5.47$). Individuals who completed all assessments reported lower levels of alcohol use ($M = -.11, SD = .71$) than
individuals who did not (M = .04, SD = .87). Similarly, individuals who completed all assessments reported marginally statistically significantly lower levels of impulsive sensation seeking (M = 8.26, SD = 5.10) than individuals who did not (M = 9.33, SD = 5.00).

Additional variables that might explain missingness were also considered [i.e., the region of the United States a participant lives (i.e., Northeast, Midwest, South, or West), religiosity, participant’s marital status (never married/divorced or separated), marital status of biological parents, highest level of education obtained by the participant, highest level of education obtained by the participant’s mother, highest level of education by the participant’s father, yearly gross income, living situation, and if an individual has had children]. The only significant difference was related to highest level of education obtained, t(352) = -2.53, p = .012, d = .29. Specifically, individuals who completed all assessments had higher levels of education (M = 4.06, SD = 1.58) than those who did not (M = 3.63, SD = 1.43). Additionally, a marginally significant difference was found in regards to region of the country in which a participant lived, χ2(1) = 3.63, p = .06. A lower proportion of individuals living in the Northeast completed all waves than individuals living in other regions of the country.

These analyses were repeated examining missingness for each wave specifically. In addition to level of education obtained, missingness at Wave 2 was related to living in the West χ2(1) = 3.86, p = .05 such that a lower proportion of individuals living in the West completed Wave 2 than individuals living in other regions of the country. Additionally, the highest level of education obtained by one’s mother was significantly different for those who completed Wave 2 and those who did not, t(352) = 2.54, p = .01, d = .29. Specifically, individuals who did not complete Wave 2 reported that their mothers completed a higher level of education (M = 3.83, SD = 2.12) than those who did (M = 3.23, SD = 2.09).
Thus, highest level of education obtained, highest level of education obtained by mother, and indicators for the region of the country an individual lives were included as auxiliary variables (using a saturated correlates approach) to help explain missingness in all analyses. Additionally, all unincorporated study variables (e.g., self-esteem in the depression model) were utilized as auxiliary variables in all multivariate analyses. The incorporation of auxiliary variables to explain missingness helps reduce bias (i.e., the missingness at random assumption is more likely to be met) and can also improve power (Acock, 2012; Enders, 2013). Additionally, these variables do not alter the interpretation of other parameters. The parameters involving auxiliary variables correlations are not reported given that they are not of substantive interest for the current study.

**Descriptive statistics.** Table 1 provides descriptive statistics (i.e., means, standard deviations) for each of the investigated main variables (CSRE engagement, depression, self-esteem, and alcohol use). In general the sample was primarily Caucasian/White (71.8%). There was a roughly even gender split (49% female) and the average age was 27.10 (SD=5.44). Participants were primarily heterosexual (84.5%) and the average score on the sexual orientation scale variable was 1.53 (SD = .92) (scale ranged from 1 = 100% heterosexual, 5 = 100% homosexual). Roughly 40.4% of the participants were currently in school as either part-time or full-time students, with 79 individuals currently enrolled in a 4-year college.
### Table 1

**Bivariate Correlations, Means, and Standard Deviations for Main study Variables (CSRE Total) (N = 354)**

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**Note.** * p < .05.  ** p < .01.  *** p < .001.

CS = CSRE engagement, Dep = Depression, SE = Self-esteem, Alc = Alcohol use

Bivariate analyses (e.g., correlations, point-biserial correlations) were used to determine whether alcohol use, impulsivity/sensation seeking, age, ethnicity, educational status, or sexual orientation were related to CSRE engagement, psychological adjustment (depression, and self-esteem), or alcohol use. Only those variables significantly *(p<.05)* associated with outcomes were included as covariates (See Tables 1-7). Note that prior to analyses, depression, impulsivity, and self-esteem were standardized due to the large metrics for these variables.
Table 2

**Bivariate Correlations, Means, and Standard Deviations for CSRE Engagement (Total) with Controls (N = 354)**

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<th>10</th>
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Note.  * p < .05.  ** p < .01 *** p < .001.

Table 3

**Bivariate Correlations for Depression with Control Variables (N = 354)**

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Note.  * p < .05.  ** p < .01 *** p < .001.  
Dep = Depression
### Table 4

**Bivariate Correlations for Self-esteem with Control Variables (N = 354)**

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Note.  * p < .05.  ** p < .01 *** p<.001.  
SE = Self-esteem

### Table 5

**Bivariate Correlations for Alcohol Use with Controls (N = 354)**

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Note.  * p < .05.  ** p < .01 *** p<.001.  
Alc = Alcohol use
Table 6

*Bivariate Correlations between Study Variables and Dichotomous CSRE Indicators (N = 354)*

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Note. * p < .05. ** p < .01 *** p < .001.
CS = CSRE engagement, Dep = Depression, SE = Self-esteem, Alc = Alcohol use
Additionally, in all analyses I used past 3-month CSRE engagement for the baseline measure of CSREs. There were several reasons for this. First, lifetime CSRE engagement had minimal variability when examining dichotomous CSRE engagement or penetrative CSRE engagement (due to the fact that the large majority, 83.4%, of individuals reported some sort of CSRE engagement within their lifetime). Additionally, using this variable helped keep the
associations on a similar metric (e.g., alcohol use in the past month was associated with CSRE engagement in the past three months, rather than lifetime CSRE engagement), which makes more sense conceptually. However, it is important to note that results using lifetime CSRE engagement followed a similar pattern.

**Assumptions.** Given the non-normal nature of the data (skewness ranged from 1.99-2.66, Kurtosis ranged from 4.31-9.46 for number of CSRE partners), for the continuous CSRE outcomes maximum likelihood estimation with robust standard errors (MLR) was utilized. This estimator provides standard errors and a chi-square test statistic which are robust to non-normality. Specifically, this estimator is asymptotically equal to the Yuan-Bentler $T_2$ test statistic (Yuan & Bentler, 2000) and provides an extension of the Satorra-Bentler mean-adjusted chi-square that can include missing data (Finney & Distefano, 2013). For categorical outcomes (dichotomous CSRE engagement, penetrative vs non-penetrative CSRE engagement), I used the weighted least squares means and variance adjusted (WLSMV) estimator to adjust parameter estimates, standard errors, and fit indices for categorical data. Note that when using these estimators, it is necessary to alter the calculation of the chi-square difference test. Specifically, for MLR, chi-square difference testing was conducted using a scaled chi-square value (see Satorra & Bentler, 2001). Similarly, for WLSMV robust chi-square difference testing with a mean and variance adjusted test statistics was conducted (Asparouhov & Muthen, 2006).

**Statistical power.** Power analyses were conducted to ensure I had adequate power to test study hypotheses. Cohen (1992) has suggested a power criteria of .80 is necessary in order for a study to have adequate power to detect a statistically significant finding. Power in SEM models is affected by the number of variables and parameters in the models (and the degrees of freedom) as well as the sample size. In the literature, there are several existing guidelines for
what constitutes adequate power for a SEM analysis. For example, rules of thumb include
need a sample of at least 200 and a ratio of parameter estimates to sample size of 10:1 (Kline,
2005). My sample of 354 is consistent with other SEM studies (which generally have 200-400
participants) and is adequate based on these guidelines.

It is also possible to evaluate statistical power for overall model fit based on the degrees
of freedom in a given model. MacCallum, Browne, and Sugawara (1996) have provided
guidelines regarding the minimum sample sizes necessary to achieve power (of .80) for a path
analysis analyses based on the degrees of freedom in a model and level of model fit (close or not-
close based on RMSEA). While the degrees of freedom for my models vary, all were greater
than 50. With just 30 degrees of freedom, a sample of 314 is sufficient to achieve a power level
of .80 with a close fitting model. Thus, I had sufficient power to evaluate model fit.

Aim 1 Results

Aim 1a. Cross-lagged models were conducted to explore the association between CSRE
engagement and depression. First, analyses were run using a continuous measure of CSRE
engagement (CSRE Total). Results indicated that the full cross-lagged model (Model 4) provided
adequate fit. While the chi-square was significant [$\chi^2 (127) = 201.184$, $p < .001$] and the CFI
indicated poor model fit (.84), the RMSEA (.04) indicated excellent model fit as did the SRMR
(.07). Given the null model RMSEA was smaller than .158 (null RMSEA = .102), incremental fit
indices (such as the CFI) may be less meaningful (Kenny, 2014). Significant individual paths are
represented in Figure 5. All autoregressive effects of CSRE engagement on later CSRE
engagement and depression on later depression were significant, lending support for hypothesis 1
(all $p$s<.05). There were also some significant within time associations between CSRE
engagement and depression (Wave 1 $B = -.13$, $p = .04$ and Wave 4 $B = -.10$, $p = .005$), but they
were in the opposite direction than predicted. Specifically, greater CSRE engagement was associated with lower levels of depression within time. Thus, hypothesis 2 was not supported.

Over time, there were few associations between CSRE engagement and depression. None of the paths from depression to later CSRE engagement were significant (thus hypothesis 3 was not supported). There was a marginally significant association between CSRE engagement at Wave 1 and depression at Wave 2 ($B = .06, p = .097$), indicating that higher levels of CSRE engagement at Wave 1 were associated with higher levels of depression at Wave 2. Therefore hypothesis 4 was partially supported.

![Figure 5. CSRE engagement (total) and depression, basic model](image)

Additionally, there were no significant differences between Model 1 and Model 2 ($\Delta \chi^2 = 2.91, p = .41, \Delta CFI = .001$), Model 3 ($\Delta \chi^2 = 4.54, p = .21, \Delta CFI = .003$), or Model 4 ($\Delta \chi^2 = 7.33, p = .29, \Delta CFI = .002$), indicating that the addition of the cross-lagged associations did not significantly improve model fit (i.e., hypotheses 5a and 5b were not supported).
In terms of control variables, alcohol use was marginally significantly associated with CSRE engagement at Wave 1 ($B = .17, p = .02$) such that individuals who reported consuming more alcohol reported more CSRE partners (See Table 8). Alcohol use was also significantly associated with depression at Wave 3 ($B = .15, p = .04$). Impulsive sensation seeking was marginally associated with CSRE engagement at Wave 1 ($B = .12, p = .099$), but not significantly associated with CSRE engagement or depression at any other wave. Age was not significantly associated with CSRE engagement or depression at any wave. Race was marginally associated with CSRE engagement at baseline ($B = .26, p = .09$) and Wave 2 ($B = .21, p = .06$) such that individuals not identifying as white/Caucasian reported greater CSRE engagement at these waves. Race was also significantly associated with depression at Wave 4 ($B = .34, p = .02$) such that individuals not identifying as white/Caucasian reported greater depression. Education status was significantly associated with CSRE engagement at Wave 3 ($B = -.20, p = .01$) indicating that individuals not currently in school reported greater numbers of CSREs at this wave. Sexual orientation was significantly associated with CSRE engagement at Wave 1 ($B = .26, p = .001$) such that individuals who reported feeling less than 100% heterosexual engaged in a greater number of CSREs. Finally, relationship status at each wave predicted CSRE engagement (as expected) ($Bs$ ranged from $-.21$ to $-.37$, all $ps < .05$). Relationship status was also negatively associated with depression at Wave 2 ($B = -.21, p = .05$).
Aim 1b. Gender differences were tested using multigroup analyses (Note, one individual was excluded from these analyses due to not specifying a gender). Results suggested the overall model was similar for males and females and the majority of the paths could be constrained to be equal (See Figure 6). Thus, there was no support for hypothesis 6, 7, 8, or 9. However, the association between CSRE engagement at Wave 2 and CSRE engagement at Wave 3 was stronger for males ($B = .67, p < .001$) than females ($B = .28, p < .001$) ($\Delta \chi^2 = 15.95, p < .001$, $\Delta$ CFI = .021). There was also an additional significant association between Wave 2 depression and Wave 3 CSRE engagement for males ($B = -.19, p < .001$) that was not present for females ($B = .06, p = .15$) ($\Delta \chi^2 = 15.57, p < .001$, $\Delta$ CFI = .016).
Aim 1 supplementary analyses. Supplementary analyses were run to examine if the age of the sample may have influenced results. Specifically, analyses were re-run excluding any individual over the age of 30 (N = 109). Overall, results were similar (See Figure 7). However, the association between CSRE engagement at Wave 1 and Wave 2 was no longer present nor was the significant association between CSRE engagement at Wave 1 and depression at Wave 1. Additionally, a statistically significant association between CSRE engagement at baseline and depression at Wave 2 was present ($B = .08, p = .04$) and there was an additional marginally significant positive association between CSRE engagement at Wave 3 and depression at Wave 3 ($B = .06, p = .07$).

Analyses were also run excluding all individuals who entered a relationship during the study period (N = 118). The pattern of results was identical to the original model (See Figure 8).
Figure 7. CSRE engagement (total) and depression including only individuals under 30 (N = 245)

Figure 8. CSRE engagement (total) and depression including only those who did not enter a relationship (N= 236)
**Aim 1 analyses, alternative CSRE operationalizations.**

*Dichotomous CSRE.* Analyses were re-run using a dichotomous indicator of CSRE engagement. For these analyses, the Weighted Least Squares Means and Variances estimator (WLSMV) with theta parametrization was utilized.

Results indicated that the full cross-lagged model (Model 4) provided excellent fit. While the chi-square was significant ($\chi^2(128) = 169.397, p = .008$), the CFI (.97) and the RMSEA (.03) indicated excellent model fit. Significant individual paths are represented in Figure 9. In this model all stability paths were statistically significant. In addition to the stability paths, only the association between CSRE engagement at Wave 2 and Depression at Wave 3 was statistically significant ($B = -.15, p = .046$). A marginally significant association between CSRE engagement at Wave 3 and depression at Wave 4 was also found ($B = -.14, p = .08$). These indicated that greater CSRE engagement was associated with lower levels of depression.

![Diagram](image.png)

*Figure 9. CSRE engagement (dichotomous) and depression*
In terms of control variables, there were similar patterns to the results when using CSRE total (see Table 9).

Table 9

CSRE Engagement (Dichotomous) and Depression: Summary of Associations with Control Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B(SE B)</td>
<td>B(SE B)</td>
<td>B(SE B)</td>
<td>B(SE B)</td>
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<td>Alcohol Use</td>
<td>-</td>
<td>-</td>
<td>.13(.13)</td>
<td>.15(.08)*</td>
</tr>
<tr>
<td>Impulsive Sensation</td>
<td>-</td>
<td>-</td>
<td>.26(.14)*</td>
<td>.14(.08)*</td>
</tr>
<tr>
<td>Age</td>
<td>-.01(.01)</td>
<td>-</td>
<td>-.01(.01)</td>
<td>-</td>
</tr>
<tr>
<td>Race</td>
<td>.18(.12)</td>
<td>-</td>
<td>-</td>
<td>.58(.28)*</td>
</tr>
<tr>
<td>Education</td>
<td>.18(.12)</td>
<td>-</td>
<td>-.06(.12)</td>
<td>-</td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td>-</td>
<td>.23(.07)**</td>
<td>-</td>
<td>.09(.12)</td>
</tr>
<tr>
<td>Relationship Status</td>
<td>-</td>
<td>-</td>
<td>-.33(.15)*</td>
<td>-1.00(.35)**</td>
</tr>
</tbody>
</table>

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

Blank spaces indicate associations not included in model due to non-significant bivariate correlations

* For corresponding wave

There was little evidence of gender differences using the dichotomous indicator of CSRE engagement. Only the path from Wave 2 depression to Wave 3 CSRE engagement could not be constrained to be equal (Δ χ² = 11.02, p < .001, Δ CFI = .004). Specifically, this association was negative and marginally statistically significant for males (B = -.81, p = .091) but positive and non-significant for females (B = .58, p = .14).

Penetrative vs. non-penetrative CSRE. Analyses were re-run to examine differences between penetrative and non-penetrative CSRE engagement. For these analyses, the Weighted
Least Squares Means and Variances estimator (WLSMV) with theta parameterization was utilized. Results indicated that results were largely driven by penetrative CSREs. Specifically, for penetrative CSREs all autoregressive paths for CSRE engagement were statistically significant ($ps < .05$). Additionally, the model for penetrative CSREs included a significant path from CSRE engagement at Wave 3 and depression at Wave 4 ($B = -.16, p = .04$) and a marginally significant association between CSRE engagement and depression at Wave 4 ($B = -.30, p = .094$).

For non-penetrative CSREs the autoregressive paths between non-penetrative CSRE engagement and later non-penetrative CSRE engagement were not statistically significant (all $ps > .20$). The autoregressive paths from depression to later depression were, however, all significant. There was also a significant within time association between non-penetrative CSRE and depression engagement at Wave 2 ($B = .50, p = .02$). In terms of crossed associations, only the path between engaging in a non-penetrative CSRE at baseline and depression at Wave 2 was statistically significant ($B = .31, p = .03$).

Aim 2 Results

Cross-lagged models were conducted to explore the association between CSRE engagement and self-esteem. First, analyses were run using a continuous measure of CSRE engagement (CSRE Total). Results indicated that the full cross-lagged model (Model 4) provided adequate fit. While the chi-square was significant ($\chi^2 (127) = 249.494, p < .001$) and the CFI indicated poor model fit (.82), the RMSEA (.05) indicated excellent model fit as did the SRMR (.08). Again, the RMSEA for the null model was less than .158 (RMSEA for null model = .118), and the low CFI may be less meaningful (Kenny, 2014). Significant individual paths are represented in Figure 10. The autoregressive effects of CSRE engagement on later CSRE
engagement and self-esteem on later self-esteem were all statistically significant, lending support for hypothesis 10. There was also one statistically significant within time association between CSRE engagement and self-esteem (Wave 1 $B = .15, p = .006$), but this association was in the opposite direction from what was predicted. Specifically, greater CSRE engagement was associated with higher levels of self-esteem within time. There was no support for hypothesis 11.

Over time, there were few associations between CSRE engagement and self-esteem. Specifically, there was a marginally significant association between CSRE engagement at Wave 3 and self-esteem at Wave 4 ($B = .25, p = .057$), indicating that higher levels of CSRE engagement at Wave 3 were associated with higher levels of self-esteem at Wave 4. Thus, hypothesis 12 was not supported. There was additionally a marginally significant association between self-esteem at Wave 3 and CSRE engagement at Wave 4 ($B = .10, p = .08$) such that individuals with higher levels of self-esteem at Wave 3 reported more CSRE engagement at Wave four. Thus, there was no support for hypothesis 13.

Figure 10. CSRE engagement (total) and self-esteem, basic model
There were significant differences were found between Model 1 and Model 2 ($\Delta \chi^2 = 8.43, p = .04, \Delta \text{CFI} = .007$), Model 1 and Model 4 ($\Delta \chi^2 = 15.13, p = .02, \Delta \text{CFI} = .012$), and Model 3 and Model 4 ($\Delta \chi^2 = 8.62, p = .04, \Delta \text{CFI} = .007$). Additionally, there were marginally significant differences between Model 1 and Model 3 ($\Delta \chi^2 = 6.48, p = .09, \Delta \text{CFI} = .005$) and between Model 2 and Model 4 ($\Delta \chi^2 = 6.65, p = .08, \Delta \text{CFI} = .005$). The addition of paths from CSRE engagement to later self-esteem significantly improved the model fit, and the addition of paths from self-esteem to later CSRE engagement marginally improved model fit. Thus hypothesis 14a and 14b were partially supported.

In terms of control variables (see Table 10), alcohol use was marginally significantly associated with CSRE engagement at Wave 1 ($B = .17, p = .02$) such that individuals who reported consuming more alcohol reported greater CSRE partners. Impulsive sensation seeking was not significantly associated with CSRE engagement or self-esteem at any wave. Age was marginally significantly associated with CSRE engagement at Wave 4 ($B = .02, p = .08$) and significantly associated with self-esteem at Wave 4 ($B = .04, p = .004$) and marginally significantly associated with self-esteem at Wave 1 ($B = .02, p = .10$). Race was marginally associated with CSRE engagement at baseline ($B = .25, p = .097$) and Wave 2 ($B = .21, p = .059$) such that individuals not identifying as white/Caucasian reported greater CSRE engagement at these waves. Race was not associated with self-esteem at any wave. Education status was significantly associated with CSRE engagement at Wave 3 ($B = -.21, p = .005$) indicating that individuals not currently in school reported greater numbers of CSREs at this wave. Sexual orientation was significantly associated with CSRE engagement at Wave 1 ($B = .25, p = .002$) such that individual who reported feeling less than 100% heterosexual engaged in a greater number of CSREs. Sexual orientation was significantly associated with self-esteem at Wave 1 ($B
and at Wave 4 ($B = -12, p = .045$) such that individuals who more fully identified as heterosexual reported higher levels of self-esteem. Finally, relationship status at each wave predicted CSRE engagement (as expected) ($Bs$ ranged from -.25 to -.37, all $ps < .05$). Relationship status was also marginally positively associated with self-esteem at Wave 4 ($B = .29, p = .095$).

Table 10

| CSRE Engagement (Total) and Self-esteem: Summary of Associations with Control Variables |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Wave 1                              | Wave 2                              | Wave 3                              | Wave 4                              |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Variable                             | $B$ ($SE$)                           | $B$ ($SE$)                           | $B$ ($SE$)                           | $B$ ($SE$)                           | $B$ ($SE$)                           | $B$ ($SE$)                           | $B$ ($SE$)                           | $B$ ($SE$)                           |
| Alcohol Use                         | -                                   | .17 (.07)*                          | -                                   | .05 (.04)                           | .11 (.07)                           | -                                   | -                                   | .15 (.11)                           |
| Impulsive Sensation Seeking         | -                                   | .11 (.07)                           | -                                   | .04 (.04)                           | -                                   | -                                   | -                                   | .08 (.06)                           |
| Age                                 | .02 (.01)*                          | -                                   | .01 (.01)                           | -                                   | -                                   | -                                   | -                                   | .04 (.01)**                         |
| Race                                | -                                   | .25 (.15)*                          | -                                   | .21 (.11)*                          | -                                   | -                                   | -                                   | .09 (.15)                           |
| Education                           | -.16 (.12)                          | -                                   | .12 (.09)                           | -                                   | -.17 (.14)                          | -.21 (.08)**                        | -.03 (.05)                          | .03 (.14)                           |
| Sexual Orientation                  | -.12 (.05)*                         | .25 (.08)**                         | -                                   | -                                   | .03 (.05)                           | -.12 (.06)*                         | -                                   | .05 (.14)                           |
| Relationship Status                 | -                                   | -                                   | .05 (.09)                           | -.25 (.09)**                        | .17 (.11)                           | -.30 (.07)**                        | .29 (.17)*                          | -.37 (.15)*                         |

*p < .10 **p < .05 ***p < .01
Blank spaces indicate associations not included in model due to non-significant bivariate correlations

*A For corresponding wave

**Aim 2b.** Gender differences were tested using multi-group analyses (Note, 1 individual was excluded from these analyses due to not specifying gender). Results suggested that the overall model was similar for males and females, and that the majority of the paths could be constrained to be equal (See Figure 11). Thus, there was minimal support for hypothesis 15, 16, or 18. However, several of the autoregressive paths for self-esteem indicated greater stability for
females. Specifically, the association between self-esteem at Wave 2 and Wave 3 was stronger for females ($B = .91, p < .001$) than males ($B = .62, p < .001$) ($\Delta \chi^2 = 5.22, p = .02, \Delta CFI = .005$) as was the association between self-esteem at Wave 3 and Wave 4 [females ($B = .91, p < .001$), males ($B = .46, p = .015$) ($\Delta \chi^2 = 5.60, p = .02, \Delta CFI = .009$)].

The association between CSRE engagement at Wave 2 and CSRE engagement at Wave 3 was stronger for males ($B = .64, p < .001$) than females ($B = .29, p < .001$) ($\Delta \chi^2 = 16.58, p < .001, \Delta CFI = .012$). There was also a significant association between Wave 2 self-esteem and Wave 3 CSRE engagement for males ($B = .17, p = .007$) that was not present for females ($B = -.04, p = .26$) ($\Delta \chi^2 = 7.85, p = .005, \Delta CFI = .006$). Importantly, in this model, the association between self-esteem at Wave 3 and CSRE engagement at Wave 4 was not statistically significant ($B = .12, p = .14$), but there was an additional negative within time association between CSRE engagement and self-esteem at Wave 3 ($B = -.04, p = .028$).

![Figure 11](image_url)

*Figure 11. Gender differences in associations between CSRE engagement (total) and self-esteem, Male (Female)*
**Aim 2 supplementary analyses.** Supplementary analyses were run to examine if the age of the sample may have influenced results. Specifically, analyses were re-run excluding any individual over the age of 30 (N = 109). Results are shown in Figure 12. Overall, results were similar. However, the association between CSRE engagement at Wave 1 and Wave 2 was no longer present nor was the significant association between CSRE engagement at Wave 1 and self-esteem at Wave 1. There was an additional significant negative association between CSRE engagement at Wave 2 and self-esteem at Wave 3 ($B = -.18, p = .002$). Additionally, the marginally significant association between CSRE engagement at Wave 3 and self-esteem at Wave 2 was statistically significant in this model ($B = .38, p = .001$).

![Figure 12. CSRE engagement (total) and self-esteem including only individuals under 30 (N = 245)](image)

Analyses were also run excluding all individuals who entered a relationship during the study period (N = 118). While all autoregressive effects were significant, the only significant
association between CSRE engagement and self-esteem was temporal covariation at baseline \((B = .14, p = .019)\) (See Figure 13). Thus, the results including only those participants who did not enter a relationship during the study period suggested minimal associations between CSRE engagement and self-esteem.

*Figure 13. CSRE engagement (total) and self-esteem including only those who did not enter a relationship (N= 236)*

**Aim 2 analyses, alternative CSRE operationalizations.**

**Dichotomous CSRE.** Analyses were re-run using a dichotomous indicator of CSRE engagement. For these analyses, the Weighted Least Squares Means and Variances estimator (WLSMV) with theta parameterization was utilized.

Results indicated that the full cross-lagged model (Model 4) provided excellent fit. While the chi-square was significant \((\chi^2 (137) = 191.50, p < .001)\), the CFI (.95) and the RMSEA (.04) indicated good model fit. Significant individual paths are represented in Figure 14. In this model all stability paths were statistically significant \((ps < .01)\). In addition to the stability paths, only
the association between CSRE engagement at Wave 3 and self-esteem at Wave 4 was statistically significant ($B = .15, p = .017$). There was an additional marginally significant association between CSRE engagement at Wave 2 and self-esteem at Wave 3 ($B = .12, p = .09$). A significant within time association was also found for CSRE engagement and self-esteem at Wave 1 ($B = .17, p = .02$) and for Wave 3 ($B = -.42, p = .006$), though in opposite directions.

![Figure 14. CSRE engagement (dichotomous) and self-esteem](image)

In terms of control variables, there were similar patterns to what was seen when using CSRE total (See Table 11). Gender differences were also similar to those found using total CSRE engagement. Specifically, the path from self-esteem at Wave 2 to CSRE engagement at Wave 3 ($\Delta \chi^2 = 6.78, p = .009, \Delta CFI = .001$) was significant and positive for males ($B = .73, p = .025$) but not statistically significant for females ($B = -.32, p = .31$). There were also marginally significant differences for the autoregressive paths from self-esteem from Wave 2 to Wave 3 ($\Delta \chi^2 = 3.20, p = .070, \Delta CFI = .001$) indicating this path was stronger for females ($B = .55, p <$.
.001) than males ($B = .41, p < .001$) and for Wave 3 to Wave 4 ($\Delta \chi^2 = 3.24, p = .072, \Delta CFI = .001$) such that this path was also stronger for females ($B = .52, p < .001$) than males ($B = .35, p < .001$). There was also a significant difference for the covariation between self-esteem and CSRE engagement at Wave 2 ($\Delta \chi^2 = 3.92, p = .048, \Delta CFI = .001$). This path was stronger for males ($B = -.17, p = .27$) than for females ($B = .03, p = .86$), although neither was statistically significant.

Table 11

**CSRE Engagement (Dichotomous) and Self-esteem: Summary of Associations with Control Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
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<tr>
<td>Wave 1</td>
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<tr>
<td>Alcohol Use†</td>
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<tr>
<td>Impulsive Sensation</td>
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<tr>
<td>Seeking</td>
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<tr>
<td>Age</td>
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<td>.01(.01)</td>
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<td>.01(.02)</td>
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<td></td>
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<tr>
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<td>.04(.12)</td>
<td>-.04(.14)</td>
<td>.00(.21)</td>
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<td>Sexual Orientation</td>
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<td>.23(.08)**</td>
<td>.09(.13)</td>
<td>-.18(.09)**</td>
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<tr>
<td>Relationship Status†</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p < .10$ ** $p < .05$ *** $p < .01$ \( **p < .001 \)
Blank spaces indicate associations not included in model due to non-significant bivariate correlations
* For corresponding wave

Penetrative vs. non-penetrative CSRE. Analyses were re-run to examine differences between penetrative and non-penetrative CSRE engagement. For these analyses, the Weighted
Least Squares Means and Variances estimator (WLSMV) with theta parameterization was utilized.

For penetrative CSREs all autoregressive paths for CSRE engagement were statistically significant ($p < .05$). Additionally, the model for penetrative CSREs included a significant association between CSRE engagement at Wave 3 and self-esteem at Wave 4 ($B = .22, p = .002$) and a marginally significant path from self-esteem at Wave 2 and CSRE engagement at Wave 3 ($B = .44, p = .094$). There were also significant within time correlations at Wave 1 ($B = .20, p = .003$) and Wave 3 ($B = -.73, p < .001$).

The model for non-penetrative CSREs would not converge, which is not surprising given the small number of individuals reporting non-penetrative CSREs across the waves (< 5%). By setting the temporal covariation between CSRE engagement and self-esteem to zero at Wave 3 and Wave 4, I was able to run the model. Similar to the non-penetrative CSRE model for depression, there were no significant autoregressive associations between CSRE engagement across waves, but there were autoregressive associations for self-esteem. There were no significant cross-sectional or longitudinal associations between CSRE engagement and self-esteem except for a significant association between CSRE engagement and self-esteem at Wave 2 ($B = .45, p = .03$).

**Aim 3 Results**

Cross-lagged models were conducted to explore the association between CSRE engagement and alcohol use. First, analyses were run using a continuous measure of CSRE engagement (CSRE Total). Results indicated that the full cross-lagged model (Model 4) provided adequate fit, $\chi^2(75) = 158.90, p < .001$, CFI = .85, RMSEA = .06, SRMR = .07. Again, the
RMSEA for the null model was less than .158 (RMSEA for null model = .129), and thus the low CFI value is misleading (Kenny, 2014).

Significant individual paths are represented in Figure 15. The autoregressive effects of CSRE engagement on later CSRE engagement and alcohol use on later alcohol use were significant, lending support for hypothesis 19. All of the within time associations between CSRE engagement and alcohol use were either significant or marginally significant with the exception of Wave 4 (Wave 1 $B = .16$, $p = .01$, Wave 2 $B = .08$, $p = .09$, Wave 3 $B = .06$, $p = .095$), lending support for hypothesis 20. Over time, there was only one significant crossed association between CSRE engagement and alcohol use. Specifically, there was a statistically significant association between alcohol use at Wave 2 and CSRE engagement at Wave 3 ($B = -.07$, $p = .03$), indicating higher levels of alcohol use at Wave 2 were associated with lower levels of CSRE engagement at Wave 3. Thus, hypothesis 22 was not supported. There were no associations from CSRE engagement to later alcohol use (i.e., hypothesis 21 was not supported).

*Figure 15. CSRE engagement (total) and alcohol use, basic model*
There were no significant differences between Model 1 and Model 3 \((\Delta \chi^2 = 5.76, p = .12, \Delta \text{CFI} = .005)\), between Model 1 and Model 4 \((\Delta \chi^2 = 9.53, p = .15, \Delta \text{CFI} = .007)\), between Model 1 and Model 2 \((\Delta \chi^2 = 9.53, p = .15, \Delta \text{CFI} = .007)\), between Model 2 and Model 4 \((\Delta \chi^2 = 5.31, p = .15, \Delta \text{CFI} = .005)\), or between Model 3 and Model 4 \((\Delta \chi^2 = 3.93, p = .27, \Delta \text{CFI} = .002)\). Thus, the addition of paths from CSRE engagement to later alcohol use did not improve model fit, nor did the paths from alcohol use to CSRE engagement. There was no support for hypothesis 23a or 23b.

In terms of control variables (see Table 12), impulsive sensation seeking was significantly and positively associated with CSRE engagement \((B = .14, p = .045)\) and alcohol use \((B = .20, p < .001)\) at Wave 1. Age was marginally significantly associated with alcohol use at Wave 1 \((B = -.02, p = .08)\). Race was marginally associated with CSRE engagement at baseline \((B = .26, p = .080)\) and significantly associated with CSRE engagement Wave 2 \((B = .21, p = .05)\) such that individuals not identifying as white/Caucasian reported greater CSRE engagement at these waves. Education status was significantly associated with CSRE engagement at Wave 3 \((B = -.18, p = .019)\) indicating that individuals not currently in school reported greater numbers of CSREs at this wave. Sexual orientation was significantly associated with CSRE engagement at Wave 1 \((B = .25, p = .002)\) such that individuals who reported feeling less than 100% heterosexual engaged in a greater number of CSREs. Finally, relationship status at each wave predicted CSRE engagement (as expected) \((Bs \text{ ranged from } -.26 \text{ to } -.36, \text{ all } ps < .05)\). Relationship status was not significantly associated with alcohol use at any wave.
Aim 3b. Gender differences were tested using multigroup analyses (Note, 1 individual was excluded from these analyses due to not specifying gender). Results suggested that the overall model was similar for males and females and the majority of the paths could be constrained to be equal (See Figure 16). However, one of the cross-lagged paths could not be constrained to be equal. Specifically the association between CSRE engagement at Wave 3 and alcohol use at Wave 4 was stronger for females ($B = .25, p = .055$) than males ($B = .03, p = .80$) ($\Delta \chi^2 = 7.90, p = .005, \Delta CFI = .005$). The association between CSRE engagement and alcohol use at Wave 3 was stronger for males ($B = .17, p = .006$) than females ($B = .02, p = .57$) ($\Delta \chi^2 = 2.96, p = .086, \Delta CFI = .003$). Additionally, the association between CSRE engagement at Wave 2 and CSRE engagement at Wave 3 was stronger for males ($B = .66, p < .001$) than females ($B = .33, p < .001$) ($\Delta \chi^2 = 11.44, p < .001, \Delta CFI = .014$). Thus hypothesis 24 was not supported.
Aim 3 supplementary analyses. Supplementary analyses were run to examine if the age of the sample may have influenced results. Specifically, analyses were re-run excluding any individual over the age of 30 (N = 109). Results are shown in Figure 17. Overall, results were similar. There was an additional significant within time association between CSRE engagement and alcohol use at Wave 4 ($B = .09, p = .006$) However, the association between alcohol use at Wave 2 and CSRE engagement at Wave 3 was no longer present nor were the marginally significant within time associations between CSRE engagement and alcohol use at Waves 2 and 3.
Figure 17. CSRE engagement (total) and alcohol use including only individuals under 30 (N = 245)

Analyses were also run excluding all individuals who entered a relationship during the study period (N = 118). This model was very similar to the original overall model, although some of the associations were larger (See Figure 18). However, the within time association between CSRE engagement and alcohol use at Wave 2 was no longer statistically significant in this model.
Aim 3 analyses, alternative CSRE operationalizations.

_Dichotomous CSRE._ Analyses were re-run using a dichotomous indicator of CSRE engagement. For these analyses, the Weighted Least Squares Means and Variances estimator (WLSMV) with theta parameterization was utilized.

Results indicated the full cross-lagged model (Model 4) provided excellent fit, the chi-square was non-significant ($\chi^2 (74) = 91.65, p = .08$), and the CFI (.99) and the RMSEA (.03) indicated excellent model fit. Significant individual paths are represented in Figure 19. In this model all stability paths were statistically significant. However, there was no evidence of within time associations between CSRE engagement and alcohol use. In regards to crossed associations only the associations between CSRE engagement at Wave 2 and alcohol use at Wave 3 ($B = -.09$, $p = .094$) was marginally statistically significant.
In terms of control variables, there were similar patterns as seen when using CSRE total. See Table 13. There was no evidence of gender differences using the dichotomous indicator of CSRE engagement. All of the paths could be constrained to be equal.

*Figure 19. CSRE engagement (dichotomous) and alcohol use*
Penetrative vs. non-penetrative CSRE. Analyses were re-run to examine differences between penetrative and non-penetrative CSRE engagement. For these analyses, the Weighted Least Squares Means and Variances estimator (WLSMV) with theta parameterization was utilized. Results indicated that results were similar for penetrative and non-penetrative CSREs.

For penetrative CSREs all autoregressive paths for CSRE engagement and for alcohol use were statistically significant ($p$s $< .01$). There were no significant associations between CSRE engagement and alcohol use.

For non-penetrative CSREs there were no significant autoregressive associations between CSRE engagement (all $p$s $>.05$), nor were there significant associations between CSRE engagement and alcohol use. There were significant autoregressive associations for alcohol use ($p$s $< .01$).
CHAPTER 6
DISCUSSION

The current study attempted to provide a better understanding of the longitudinal associations between CSRE engagement and (a) depression, (b) self-esteem, and (c) alcohol use. Specifically, by examining these variables on multiple occasions, this study was able to examine the cross-lagged associations between CSRE engagement and psychological adjustment/alcohol use. The findings of this study generally suggest that the cross-sectional and longitudinal association between CSRE engagement and depression, self-esteem, and alcohol use may not be as robust as implied by previous research. Below I discuss specific findings for each aim of the study.

Aim 1: CSRE Engagement and Depression

The first aim investigated the cross-lagged association between CSRE engagement and depression. Overall, the analyses examining CSRE engagement and depression suggested minimal associations. Specifically, there was evidence of autoregressive effects, but there was only a marginally significant association between CSRE engagement at Wave 1 and depression at Wave 2. Interestingly, CSRE engagement was cross-sectionally associated with lower levels of depression within time at Wave 1 and Wave 4. This finding is contrary to previous findings of positive cross-sectional associations between CSRE engagement and depression (e.g., Bersamin et al., 2014). Additionally, these associations were present for both males and females, ruling out the possibility that there may be negative associations for males but positive associations for
females (e.g., Fisher et al., 2012; Owen & Fincham, 2014). The only pronounced gender difference was a significant negative association between depression at Wave 2 and CSRE engagement at Wave 3 for males that was not present for females, which is in line with the idea that CSRE engagement may have less negative implications for men’s depression than for women’s depression.

Although the generally non-significant associations between CSRE engagement and depression were not hypothesized, they are similar to the associations found by Fielder et al. (2014) in their study of female college students. Specifically, in Fielder and colleagues’ cross-lagged study, there were significant autoregressive associations for CSRE engagement and depression, but no significant associations between CSRE engagement and depression over time. The Fielder et al. (2014) study did, however, find significant positive within time associations between CSRE engagement and depression while the current study did not. This could in part be explained by age differences in the samples: the Fielder et al. (2014) sample was limited to individuals ages 18-25 and the mean age was 18.1 (SD = .03). When the analyses in the current study were re-run using only individuals under the age of 30, there was a marginally statistically significant positive association between CSRE engagement and depression at Wave 3 (note: this association was statistically significant using only participants under the age of 25, $p = .03$). One explanation for the discrepancy in the findings from the current study with the study by Fielder and colleagues is that the positive within time associations are primarily found in younger samples.

Taken together, the results of the current study and Fielder et al. (2014) indicate there is minimal evidence for longitudinal links between CSRE engagement and depression after controlling for within time-correlations and autoregressive effects. This is an important finding.
as it suggests that if there are associations between CSRE engagement and depression, they are not long-lasting. Thus, CSRE engagement may not have as strong of a link with psychological distress as previous studies have suggested (e.g., Bersamin et al., 2014; Grello et al., 2006; Paul et al., 2000). Importantly, while there are exceptions (e.g., Owen et al., 2011; Vranglova, 2014a), the previous research that has suggested longitudinal associations between CSRE engagement and depression has not controlled for autoregressive effects, and therefore the current study provides a more stringent test of these longitudinal associations.

**Aim 2: CSRE Engagement and Self-esteem**

The second aim of the current study examined cross-lagged associations between CSRE engagement and self-esteem. In general, the results do not suggest that self-esteem and CSRE engagement are negatively associated. Although there were significant lagged effects, there were only minimal cross-sectional or longitudinal associations between CSRE engagement and self-esteem. Those that did exist (e.g., a within time association at Wave 1, an association from self-esteem at Wave 3 to CSRE engagement at Wave 4, and a significant path from CSRE engagement at Wave 3 and self-esteem at Wave 4) were actually positive associations, which was the opposite of what was predicted.

While the overall lack of associations between CSRE engagement and self-esteem was not expected, it corresponds with other studies finding no cross-sectional associations between CSRE engagement and self-esteem (e.g., Eisenberg et al., 2009, Furman & Collibee, 2014; Vrangalova, 2014b). Specifically, several of the studies that have not found associations between CSRE engagement and self-esteem have utilized diverse or non-college samples (e.g., Furman & Collibee, 2014; Eisenberg et al., 2009). One potential explanation for this finding is that CSRE engagement has less of an association with self-esteem in older or non-college samples.
Interestingly, when a dichotomous indicator was utilized, there was a significant and negative within time correlation between CSRE engagement and self-esteem at Wave 3. Therefore, it is possible that engagement in CSREs may be associated with lower self-esteem, but the number of partners is not. However, given the lack of associations at other waves, it is likely CSRE engagement and self-esteem do not have a strong association, particularly over time.

Additionally, results were similar for males and females with one exception: there was a significant positive association between self-esteem at Wave 2 and CSRE engagement at Wave 3 for males that was not present for females. While there is qualitative evidence to suggest that there might be differences in the association between CSRE engagement and self-esteem for males and females (e.g., Campbell, 2008), the findings in the current study are consistent with other previous quantitative research finding minimal differences in the association between CSRE engagement and self-esteem for females and males (e.g., Bersamin et al., 2014; Vrangalova, 2014a). While there is theoretical reason to believe CSRE engagement may be associated with more negative outcomes for females than for males (e.g., Crawford & Popp, 2003), there is minimal quantitative support for this assumption when examining self-esteem. However, it is important to note that relatively few studies to date have examined gender differences in this association, and thus future research may be warranted.

Aim 3: CSRE Engagement and Alcohol Use

The final aim of this study was to examine the cross-lagged associations between CSRE engagement and alcohol use. This was the only model to show both consistent lagged effects and consistent (positive) within time-associations, replicating previous research suggesting CSRE engagement and alcohol use are associated (e.g., Claxton et al., 2015). However, there was minimal evidence of crossed coefficients, suggesting there are few longitudinal associations
between CSRE engagement and alcohol use. This is not entirely surprising given most of the theories linking alcohol use to CSRE engagement discuss the immediate effects of alcohol use (e.g., pharmacological effects, expectancy effects) rather than longer term effects (Cooper, 2002; George & Stoner, 2000; Steele & Josephs, 1990). It may be that alcohol use and CSRE engagement are associated on a more proximal level, but that the two are not generally associated over time. This is in line with research showing alcohol use and CSRE engagement are associated on a daily level (e.g., Brown & Vanable, 2007; Kiene et al., 2009). Given that the current study was one of the first studies to examine the longitudinal associations between CSRE engagement and alcohol use, further research is needed to rule out the possibility of long term associations in different samples.

Interestingly, there were minimal differences in the association between CSRE engagement and alcohol use for men and women, and the one difference suggested a stronger cross-sectional association between alcohol use for men than for women (at Wave 3). This is contrary to research suggesting the association between alcohol use and CSRE engagement may be stronger for women than for men (Owen & Fincham, 2011a; Owen et al., 2011). However, there are also several other studies that do not demonstrate interactions between gender and alcohol use when predicting CSRE engagement (Claxton et al., 2015; Cooper, 2002). One potential explanation for these differences is the sample (several studies in the Claxton et al., 2015 meta-analysis used non-college samples). In order to examine this possibility, I ran additional post-hoc analyses to examine alcohol associations focusing only on 4-year college students. In this case, the bivariate association between CSRE engagement and alcohol use was marginally significant for women (N = 34, $r = .31$, $p = .07$) but not statistically significant for men (N = 45, $r = .17$, $p = .25$), following a similar pattern to previous cross-sectional research.
finding gender differences. These samples are too small to draw strong conclusions, but these results provide some evidence that the lack of gender differences in the current study may be in part due to the nature of the sample (non-college/older).

**General Discussion**

The findings of this study generally suggest any association between CSRE engagement and depression, self-esteem, and alcohol use may not persist over time. Specifically, the only consistent associations found were cross-sectional associations between CSRE engagement and alcohol use. There was limited evidence of longitudinal associations either from CSRE engagement to later psychological adjustment/alcohol use or from psychological adjustment/alcohol use to later CSRE engagement. Additionally, there were limited gender differences in these associations.

While in general significant associations within and across time were not found, one cannot assume these associations do not exist (i.e., no study can prove the null hypothesis). Consequently, the generally null findings should be interpreted with caution. It is possible these associations are truly not present, but it is also possible a methodological issue may have led to the lack of findings. Interestingly, the measures used in this study to examine depression (i.e., the CES-D), self-esteem (i.e., the Rosenberg Self-esteem Scale), and alcohol use (i.e., a composite examining frequency, quantity, etc.) are the same measures utilized in the majority of the other studies on these topics. While measures of CSRE engagement do vary somewhat from study to study, the current study examined any type of sexual behavior outside of a committed romantic relationship, which is similar to studies of “hookups” and similar to the majority of the studies examined in the current paper (e.g., Fielder & Carey, 2010; Fielder et al., 2014; Owen &
Thus, it is unlikely a difference in measurement led to the lack of associations in the current study.

However, the current study was conducted in a different population from the majority of previous studies, and one explanation for the lack of findings is that there are sample differences. Given previous studies on depression/self-esteem and CSREs have generally used samples of 4-year college students between the ages of 18-25, with mean ages generally around 18 or 19 years old (e.g., Bersamin et al., 2014; Fielder et al., 2014; Garneau et al., 2013; Manthos et al., 2014; Owen et al., 2013), I examined the results excluding anyone over the age of 29. For this reduced sample there was evidence of cross-sectional associations in the predicted direction for depression and an additional longitudinal association from CSRE engagement to later self-esteem in the predicted direction.

I conducted additional follow-up post-hoc analyses to examine a sample even more similar to that of previous studies by limiting the sample to 4-year college students under the age of 25. Because of the small sample, I could not test the full models, but I did examine bivariate associations at baseline. In this sample there was a marginally significant, positive association between CSRE engagement and depression at baseline for females (N = 22, r = .37, p = .09) but not for males (N = 33, r = -.21, p = .24). Similarly, when examining this group there was a negative (though not statistically significant) association between CSRE engagement and self-esteem at baseline for females (r = -.21, p = .35) but not males (r = .09, p = .62).

Together, these post-hoc follow-up analyses indicate that, when examining samples similar to previous studies (young, female, 4-year college students), the cross-sectional associations were in the predicted direction. While the sample of 4-year college students in the current study is too small to draw any strong conclusions, these results do provide evidence that
the lack of associations between CSRE engagement and psychological adjustment in this study may be due in part to the older sample age and non-college sample compared to previous studies. This suggests any negative effects of CSRE engagement on psychological adjustment may be limited to younger individuals (i.e., 18-25).

Additional analyses were conducted examining whether the results were the same when the sample was limited to individuals who did not enter a romantic relationship during the study period. Overall, there were very minimal differences between the main analyses and analyses conducted using only individuals who did not enter a relationship. Additionally, analyses were run to examine the associations using a dichotomous indicator of CSRE engagement (which has often been used in the literature). For depression these models were similar, although there were two additional negative longitudinal associations from CSRE engagement to depression (Wave 2 to Wave 3 and Wave 3 to Wave 4). For self-esteem the dichotomous CSRE indicator model included an additional negative cross-sectional association between CSRE engagement and self-esteem, which may indicate that previous findings have been in part due to dichotomizing (MacCallum, Zhang, Preacher, & Rucker, 2002), or alternatively that self-esteem is associated with whether or not an individual will engage in a CSRE but not with the number of CSRE partners an individual has. Finally, when using a dichotomous indicator of CSRE engagement in the model with alcohol use, the cross-sectional associations were no longer significant. This may be due to a loss of power when utilizing dichotomous variables (MacCallum et al., 2002).

Furthermore, analyses were conducted to examine differences between penetrative and non-penetrative CSREs. Non-penetrative CSREs were not common in this sample (of those who engaged in a CSRE less than 15% reported it was non-penetrative only). Therefore, it is not surprising the results for non-penetrative CSRE engagement revealed minimal associations.
between CSRE engagement over time (autoregressive effects) or between CSRE engagement and psychological adjustment/alcohol use. Thus, the dichotomous CSRE results were driven primarily by penetrative CSRE engagement.

**Contributions**

The current study provides important contributions to the literature on CSRE engagement and its association with depression, self-esteem, and alcohol use. Specifically, this study is one of the few studies on this topic to examine longitudinal associations between CSRE engagement and psychological adjustment/alcohol use (crossed coefficients) and to control for autoregressive associations (lagged effects). This design provided a more stringent test of the association between CSRE engagement and depression, self-esteem, and alcohol use and allowed for an examination of the longitudinal associations from CSRE engagement to later adjustment/alcohol use and from adjustment/alcohol use to later CSRE engagement. Importantly, by controlling for autoregressive associations, this study was able to examine if CSRE engagement predicted psychological adjustment/alcohol use above and beyond previous levels of psychological adjustment/alcohol use (and alternatively if psychological adjustment/alcohol use predicted CSRE engagement above and beyond previous levels of CSRE engagement). The lack of associations found in this study suggests that some of the negative effects of CSRE engagement in the literature may be overstated.

Additionally, this study utilized a gender-balanced participant pool. This is important given the large majority of previous research on this topic has consisted of entirely or primarily female samples. The current study was better able to evaluate gender differences in the associations between CSRE engagement and depression/self-esteem/alcohol use than most previous studies. Importantly, this study found minimal evidence of gender differences in these
associations. While this may be due in part to the older sample, this finding does suggest both
women and men may engage in CSREs without substantial increases in depression, alcohol use
or decreases in self-esteem.

Finally, the current study utilized a primarily non-college sample, which allowed for the
examinations of associations between CSRE engagement and psychological adjustment/alcohol
use outside of the college context. This is important given most of the previous research has
focused on first-year college students, limiting the understanding of the links between CSRE
engagement and psychological adjustment/self-esteem outside of the four-year college context.
Because most studies have utilized young college students, we know little about CSRE
engagement outside of the late teens and early twenties. By examining CSRE engagement in a
sample of individuals ages 18-39 the current study was able to examine associations between
CSRE engagement and psychological adjustment/alcohol use in later emerging adulthood and
into adulthood.

Limitations

While the current study has a number of strengths, the results of this study must be
interpreted while keeping the limitations in mind. In particular, there was high participant
attrition in this study. This study was the first to use Amazon’s Mechanical Turk (Mturk) for
longitudinal data collection regarding CSRE engagement over a long period of time. It is not yet
known how long individuals tend to use Mturk. One explanation for the attrition rate is that
individuals using Mturk tend to do so for a shorter period of time, making data collection over a
long time-period more difficult. Additionally, it is possible the increasing incentives were not
large enough to keep participants active in the surveys.
I worked to control for the effects of missing data by using auxiliary variables to explain missingness and by using FIML to calculate the best fitting parameters (those that maximized the probability of observing the data that were collected). However, it is impossible to know for sure that all variables that explain missingness were included in the model. Consequently, the missing data could have biased the results. However, when examining associations at baseline (when all individuals were present), there were still no associations between CSRE engagement and depression, a positive association with self-esteem, and a positive association with alcohol use, which follows the general pattern of results found in the full analyses. Thus, participant attrition is not a complete explanation for the lack of significant longitudinal findings and unexpected findings (a few associations in the opposite direction than predicted).

Additionally this study collected data from both college and non-college individuals. Although this is a strength overall, it would be ideal to have a larger comparison sample collected directly from a college campus in order to determine if the results were due to sample differences compared to previous research. Specifically, in this study there were a number of individuals enrolled in school (40.4%), but only 22% of the sample was enrolled in a 4-year college (which is the typical setting for previous research). Future research is needed to examine the differences between data collected on a traditional college campus and data collected from a more general population.

It is also important to note that in the current study the examination of CSRE engagement among non-heterosexual women and men was restricted. For example, the assessment of penetrative sexual behavior (both in this study and previous research) may be problematic when studying non-heterosexual women. It is important to recognize the behaviors associated with CSREs may differ depending on an individual’s sexual orientation. Importantly, in the current
study there was some evidence individuals who identified as less than 100% heterosexual were more likely to report CSRE engagement. Currently there has been limited research on CSRE engagement in non-heterosexual populations. The research that does exist has generally not investigated the consequences/predictors of CSRE engagement in these populations in the same way they have been examined in heterosexual samples. Therefore, future research is needed to fully understand CSRE engagement in non-heterosexual populations and how the specific behavior as well as predictors/consequences may differ.

Finally, an important issue with all research on sexual behavior is a possibility of reporting bias. For example, studies of sexual behaviors are likely to encounter participation biases as well as underreporting and recall biases (see Fenton, Johnson, McManus, & Erens, 2001 for a review). While reporting of CSRE engagement was kept as anonymous as possible in order to reduce biases in self-reported sexual behavior (Alexander & Fisher, 2003), it is possible some individuals may have participated in behaviors they did not report.

**Conclusions and Future Directions**

Overall, the current study suggests there are relatively consistent associations between CSRE engagement and alcohol use, but the results call into question the idea that CSRE engagement always has negative consequences for psychological adjustment, particularly across time. The results of this study may also imply the existence of moderators that explain the associations found in some of the previous literature. Age and college setting in particular may help explain differences between the current study and past research.

The results of this study suggest there may be specific age periods during which CSRE engagement has stronger links to depression and self-esteem. That is, the outcomes of CSRE engagement may be developmentally distinctive. There is already evidence in the literature that
CSRE engagement during adolescence has a different meaning and potential outcomes than CSRE engagement during the late teens and early twenties (see Claxton & van Dulmen, 2015 for a review). The current study suggests that for individuals in their late 20’s and early 30’s CSRE engagement may have little impact on depression/self-esteem. Future research should examine how the predictors and outcomes of CSRE engagement differ over time (e.g., comparing adolescence, emerging adulthood, and later adulthood).

Additionally, it may be that CSRE engagement itself differs during these age periods. To date, no studies have examined the characteristics of CSREs over time. For example, it may be that CSRE engagement during adolescence occurs primarily with strangers and acquaintances but that this changes over time to incorporate friends and other known individuals. Similarly, the context of CSRE engagement may change over time. For example, there is evidence that for college students during the late teens and early twenties CSRE engagement with a stranger is most likely to happen in a party setting (it is most likely to occur after a Greek party, followed by residence-hall and off-campus parties), but less likely to occur after being in a bar/restaurant or campus event (Bersamin, Paschall, Saltz, & Zamboanga, 2012). It may be that the setting for CSRE engagement is different in the late 20s, especially for individuals who are no longer in a college setting.

In addition to age and college setting, there are specific aspects of CSRE engagement that may moderate the association between CSRE engagement and psychological adjustment. For example, it is possible specific types of CSREs may lead to negative outcomes, or the effects of CSRE engagement depend in part on the intentions individuals have for engaging in these encounters. Therefore, employing a more person-centered approach may help us better understand the individual aspects of CSRE engagement that lead to positive or negative
outcomes. In particular, future research should consider aspects of the relationship (e.g., how long individuals know each other, type of CSRE), and the goals of the encounter (e.g., desire for committed relationship), and other individual aspects of the CSRE encounter when evaluating the predictors and outcomes of CSRE engagement.

One of the few statistically significant findings of the current study is evidence of cross-sectional associations between CSRE engagement and general alcohol use. This finding is in line with previous research (e.g., Claxton et al., 2015) finding a moderate association between CSRE engagement and alcohol use. However, the current study does not examine CSRE engagement and alcohol use during the same occasion. While there is reason to believe alcohol use precedes CSRE engagement (see Cooper, 2006), additional studies employing designs allowing for a more nuanced understanding of the temporal relationship between CSRE engagement and alcohol use (e.g., daily-diary designs, event sampling) would allow us to understand if individuals: (a) drink alcohol which leads to CSRE engagement, (b) if individuals decide to engage in a CSRE and consume alcohol to aid in this goal, or (c) if some third variable (e.g., propensity for risk taking, impulsivity, setting of drinking) explains the association between drinking and CSRE engagement.

Similarly, this study examined the associations of CSRE engagement and depression/self-esteem over a six-month period. It is possible emotional distress occurs soon after a CSRE. Future research should continue to examine the association between CSRE engagement and these variables using daily-diary or experience sampling methods, which may provide a more nuanced view of immediate responses to CSRE engagement.

In conclusion, the current study adds to the literature on CSRE engagement by exploring cross-lagged associations between CSRE engagement and depression, self-esteem, and alcohol
use in a large, gender balanced, primarily non 4-year college sample. This design, including multiple assessments, resulted in a more specific examination of the direction of association between CSRE engagement and psychological adjustment/alcohol use than allowed by previous research. In general, the results suggest minimal longitudinal associations between CSRE engagement and psychological adjustment/alcohol use. Additionally, the associations that were found suggest CSRE engagement is associated with lower levels of depression and higher levels of self-esteem. These results are important because they suggest that some of the harmful effects of CSRE engagement discussed in the literature may be due to study design (e.g., cross-sectional designs), lack of stringency in the test (e.g., not controlling for previous levels of psychological adjustment), or may be limited to a specific population (i.e., young, 4-year college students). Therefore, it is unwarranted to assume CSRE engagement as a whole always has negative implications for psychological adjustment and alcohol use (especially over time).
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APPENDIX A

Daily Drinking Questionnaire – Baseline and Follow-up

Instructions: For a typical week during the past month, please indicate the number of alcohol drinks you consumed each day. Then, indicate the number of hours that you spend drinking each day. For each day, please indicate only a single number instead of a range; if you are unsure how many drinks you typically have, do your best to determine the most likely value.

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Please consider your drinking over the past month when answering the following questions:

During the past month, how many times did you have some kind of beverage containing alcohol? (e.g., if you drank at a sporting event in the morning and drank at a party that evening, you drank two times). ____

During the past month, how many times did you get drunk (not just a little high) on alcohol? ____

During the past month, how many times did you have four or more drinks at a sitting? ____

During the past month, what is the most that you had to drink on a single occasion? ____
# APPENDIX B

**Impulsivity (from ZKPQ)**

DIRECTIONS: If you agree with a statement or decide that it describes you answer TRUE. If you disagree with a statement or feel that it is not descriptive of you answer FALSE. Answer every statement either True or False even if you are not entirely sure of your answer.

<table>
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<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>I tend to begin a new job without much advance planning on how I will do it.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I usually think about what I am going to do before doing it.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I often do things on impulse.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I very seldom spend much time on the details of planning ahead.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I like to have new and exciting experiences and sensations even if they are a little frightening.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Before I begin a complicated job, I make careful plans.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I would like to take off on a trip with no preplanned or defining routes or timetable.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I enjoy getting into new situations where you can’t predict how things will turn out.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I like doing things just for the</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>--------------------------------</td>
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<td>----------</td>
</tr>
<tr>
<td>thrill of it.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I tend to change interests</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>frequently.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I sometimes like to do things</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>that are a little frightening.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I’ll try anything once.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I would like the kind of life</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>where one is on the move and</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>traveling a lot with lots of</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>change and excitement.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I sometimes do “crazy” things</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>just for fun.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I like to explore a strange</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>city or section of town by</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>myself, even if it means</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>getting lost.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I prefer friends who are</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>excitingly unpredictable.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I often get so carried away</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>by new and exciting things</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>and ideas that I never think</td>
<td>![Image]</td>
<td>![Image]</td>
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<tr>
<td>of possible complications.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I am an impulsive person.</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>I like “wild” uninhibited</td>
<td>![Image]</td>
<td>![Image]</td>
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<tr>
<td>parties.</td>
<td>![Image]</td>
<td>![Image]</td>
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</tbody>
</table>
APPENDIX C

Social Demographics Questionnaire

For each item below, please select or fill in the answer that best applies to you.

What is today’s date? (mm/dd/yyyy)

What is your birth date? (mm/dd/yyyy)

What is your gender?
   ○ Male
   ○ Female

What is your ethnicity of origin?
   ○ Caucasian/White
   ○ African American/Black
   ○ Asian American/Pacific Islander
   ○ Native American/Alaskan Native
   ○ Hispanic/Latino(a)
   ○ Biracial

In which region of the country do you live?
   ○ Northeast
   ○ Midwest
   ○ South
   ○ West
What is the marital status of your biological parents?

- Never married
- Engaged
- Married
- Separated
- Divorced
- Widowed

What is your marital status?

- Never married
- Engaged
- Married
- Separated
- Divorced
- Widowed

What is the highest level of education you have obtained?

- Doctoral/Professional degree (Phd, MD, JD)
- Master’s degree
- 4-year college degree (BA/BS)
- 2-year college degree (Associates)
- Some college
- Trade school
- High School
- Did not graduate high school
What is the highest level of education obtained by your mother?

- Doctoral/Professional degree (Phd, MD, JD)
- Master’s degree
- 4-year college degree (BA/BS)
- 2-year college degree (Associates)
- Some college
- Trade school
- High School
- Did not graduate high school

What is the highest level of education obtained by your father?

- Doctoral/Professional degree (Phd, MD, JD)
- Master’s degree
- 4-year college degree (BA/BS)
- 2-year college degree (Associates)
- Some college
- Trade school
- High School
- Did not graduate high school
What is your current educational status?

- Part time
- Full time
- Not in school

Answer If What is your current educational status? Part time Is Selected Or What is your current educational status? Full time Is Selected

What type of school are you attending?

- Graduate (e.g., MA, PhD, MD, JD)
- 4-year college (BA/BS)
- 2-year college (Associates)
- Trade or vocational school
- High School

What is the name of the school you are attending? ___________________________

What is your current paid work-status?

- Part time
- Full time
- I currently do not work

Answer If What is your current paid work-status? Part time Is Selected Or What is your current paid work-status? Full time Is Selected

What is your yearly gross income before taxes?

What is your current living situation?

- Live by myself
- Live with friends/roommates
- Live with parents/family
- Live with romantic partner
- Other
Do you have any children?

- Yes
- No

Answer If Do you have any children? Yes Is Selected

How many children do you have?
APPENDIX D

Sexual Orientation

What sexual orientation best describes you:

- Heterosexual
- Homosexual
- Bisexual
- Other

Please choose the description that best fits how you think about yourself.

- 100% heterosexual (straight)
- Mostly heterosexual (straight), but somewhat attracted to people of your own sex
- Bisexual—that is, attracted to men and women equally
- Mostly homosexual (gay), but somewhat attracted to people of the opposite sex
- 100% homosexual (gay)
- Not sexually attracted to either males or females
APPENDIX E

Sexual Behavior Questionnaire (Baseline)

Some adults have sexual experiences/intercourse before they are married and some do not. The next questions are about the experiences you may have had. The questions are very personal. Just remember that all of your answers are kept private.

Please use the following definitions to help you answer these questions:

**Committed relationship:** a dating relationship which you have made official (i.e., you have indicated on Facebook you are “in a relationship”, you have introduced each other as your boyfriend/girlfriend)

**Casual Dating Relationship:** you are going out on dates, but you have not made it official

Friend with benefits: friends who engage in sexual activity but do not consider themselves to be in a romantic relationship

**Booty-Call:** a communication initiated toward an individual with the urgent intent either stated or implied, of having sexual activity and/or intercourse (meeting for impromptu sex)

**One-night stand:** a sexual encounter with another individual that only occurred one time

**Oral sex:** partner ever put his/her mouth on your penis/genitals (sex organs)

**Sexual intercourse:** sexual union between two people involving genital contact. This includes when a male inserts his penis into a female’s vagina.

**Anal sex:** sexual union in which the penis is inserted into a partner’s anus.

**Threesome:** sexual activities (i.e., touching under/without clothing, touching genitals, oral sex, sexual intercourse) with 3 or more people (including yourself) at the same time

Are you currently in a committed romantic relationship?

- Yes
- No

If Yes Is Selected, Then End Survey (does not meet inclusion criteria!)
What are your feelings towards dating?

- I strongly feel that I do not want to be in a romantic relationship.
- I somewhat feel that I do not want to be in a romantic relationship.
- Neutral-I do not have a strong opinion about either wanting or not wanting to be in a romantic relationship.
- I somewhat feel that I want to be in a romantic relationship.
- I strongly feel that I want to be in a romantic relationship.

The following questions ask you about the different types of relationships you have had (i.e., committed relationships, casual dating relationships, friends with benefits relationships, booty calls, one-night stands, or other). Please classify each relationship in the category that best describes that relationship. **PLEASE BE SURE NOT TO INCLUDE A SINGLE INDIVIDUAL IN MORE THAN ONE CATEGORY.** If you had a relationship which changed categories over time (for example a one-night stand that became a committed relationship), classify the relationship as the last category that applied to that relationship (as a committed relationship in this example).

Have you ever been in a committed relationship?

- Yes
- No

If No Is Selected, Then Skip To Have you ever been in a casual relati...
How many different people have you been in a committed relationship with in your lifetime?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
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- 15
- 16
- 17
- 18
- 19
- 20
- 20+
How long was your longest committed relationship?

Years ______

Months _______

Days _________

How long was your shortest committed relationship?

Years ______

Months _______

Days _________

How many of these committed relationships were with

|     | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 20+
| Males |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Females |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
How old were you at the time of your first committed relationship?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
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- 11
- 12
- 13
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- 15
- 16
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- 20
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- 22
- 23
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- 25
- 26
- 27
- 28
- 29
- 30
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
In how many committed relationships have you engaged in the following

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissed</td>
<td>______</td>
</tr>
<tr>
<td>You touched partner’s genitals/private parts or your partner touched your genitals/private parts touched above clothing</td>
<td>______</td>
</tr>
<tr>
<td>You touched you partner’s genitals/private parts or you partner touched your genitals/private parts underneath clothing or with no clothing on</td>
<td>______</td>
</tr>
<tr>
<td>You performed oral sex on your partner</td>
<td>______</td>
</tr>
<tr>
<td>Your partner performed oral sex on you</td>
<td>______</td>
</tr>
<tr>
<td>Engaged in sexual intercourse</td>
<td>______</td>
</tr>
<tr>
<td>Engaged in anal sex</td>
<td>______</td>
</tr>
<tr>
<td>Engaged in a threesome</td>
<td>______</td>
</tr>
</tbody>
</table>
How many different people that you were in a committed relationship with have insulted you, yelled at you, sworn at you, or threatened you?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+
How many different people that you were in a committed relationship with have hit you, punched you, kicked you, threw something at you, or slapped you?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+
How many people that you considered a committed relationship pressured you into sexual acts?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+

In general, how would you rate your satisfaction with your experiences in committed relationships?

- Extremely Unsatisfied
- Somewhat Unsatisfied
- Neutral
- Somewhat Satisfied
- Extremely Satisfied
How frequently do you wish you hadn’t gotten into committed relationships?

- Never
- Seldom
- Sometimes
- Often Always

Have you ever been in a casual relationship? (you are going out on dates, but you have not made it official)

- Yes
- No

If No Is Selected, Then Skip To Have you ever been in a friends with ...

How many different people have you been in a casual dating relationship with in your lifetime?

- 1
- 2
- 3
- 4
- 5
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- 7
- 8
- 9
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- 12
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- 17
- 18
- 19
- 20
- 20+

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How long was your longest casual relationship?

Years ______
Months ______
Days ________

How long was your shortest casual relationship?

Years ______
Months ______
Days ________

How many of these casual dating relationship were with

|       | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 20 |
| Males |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Femal es | |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

145
How old were you at the time of your first casual dating relationship?

- 1
- 2
- 3
- 4
- 5
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- 34
- 35
- 36
- 37
- 38
- 39
In how many casual dating relationship have you engaged in the following

<table>
<thead>
<tr>
<th>Activity</th>
<th>Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissed</td>
<td></td>
</tr>
<tr>
<td>You touched partner’s genitals/private parts or your partner touched</td>
<td></td>
</tr>
<tr>
<td>your genitals/private parts touched above clothing</td>
<td></td>
</tr>
<tr>
<td>You touched partner’s genitals/private parts or you partner touched</td>
<td></td>
</tr>
<tr>
<td>your genitals/private parts underneath clothing or with no clothing on</td>
<td></td>
</tr>
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<td>You performed oral sex on your partner</td>
<td></td>
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<tr>
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<td></td>
</tr>
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<td>Engaged in sexual intercourse</td>
<td></td>
</tr>
<tr>
<td>Engaged in anal sex</td>
<td></td>
</tr>
<tr>
<td>Engaged in a threesome</td>
<td></td>
</tr>
</tbody>
</table>

What are the main reasons that you have had casual dating relationships? (check all that apply)

- Physical/Sexual Gratification
- Emotional Gratification
- Others are doing it
- My friends and peers pressured me to do it
- To initiate a romantic relationship
- Unintentional (i.e., due to drugs and/or alcohol)
- Other
For what other reasons have you had casual dating relationships?

How many different people that you were in a casual dating relationship with have insulted you, yelled at you, sworn at you, or threatened you?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
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- 17
- 18
- 19
- 20+
How many different people that you were in a casual dating relationship with have hit you, punched you, kicked you, threw something at you, or slapped you?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+
How many people that you considered a casual dating relationship pressured you into sexual acts?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+

In general, how would you rate your satisfaction with your experiences in casual dating relationship?

- Extremely Unsatisfied
- Somewhat Unsatisfied
- Neutral
- Somewhat Satisfied
- Extremely Satisfied
How frequently do you wish you hadn’t gotten into casual dating relationship?

- Never
- Seldom
- Sometimes
- Often Always

Have you ever been in a friends with benefits relationship? (friends who engage in sexual activity but do not consider themselves to be in a romantic relationship)

- Yes
- No

If No Is Selected, Then Skip To Have you ever had a booty-call? (a ...

How many different people have you been in a casual dating relationship with in your lifetime?

- 1
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- 20
- 20+
How long was your longest friends with benefits relationship?

Years ______
Months ______
Days ______

How long was your shortest friends with benefits relationship?

Years ______
Months ______
Days ______

How many of these casual dating relationship were with

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>6</th>
<th>7</th>
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<th>11</th>
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<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td><img src="image" alt="Male Distribution" /></td>
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<tr>
<td>Females</td>
<td><img src="image" alt="Female Distribution" /></td>
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</tr>
</tbody>
</table>
How old were you at the time of your first casual dating relationship?

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- 25
- 26
- 27
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- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39

153
In how many friends with benefits relationships have you engaged in the following

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissed</td>
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<td>Engaged in a threesome</td>
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</tbody>
</table>

What are the main reasons that you have had friends with benefits relationships? (check all that apply)

- Physical/Sexual Gratification
- Emotional Gratification
- Others are doing it
- My friends and peers pressured me to do it
- To initiate a romantic relationship
- Unintentional (i.e., due to drugs and/or alcohol)
- Other
For what other reasons have you had friends with benefits relationships?

How many different people that you were in a friends with benefits relationship with have insulted you, yelled at you, sworn at you, or threatened you?

○ 0
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10
○ 11
○ 12
○ 13
○ 14
○ 15
○ 16
○ 17
○ 18
○ 19
○ 20+
How many different people that you were in a friends with benefits relationship with have hit you, punched you, kicked you, threw something at you, or slapped you?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+
How many people that you considered a friends with benefits relationship pressured you into sexual acts?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+

In general, how would you rate your satisfaction with your experiences in friends with benefits relationships?

- Extremely Unsatisfied
- Somewhat Unsatisfied
- Neutral
- Somewhat Satisfied
- Extremely Satisfied
How frequently do you wish you hadn’t gotten into friends with benefits relationships?

- Never
- Seldom
- Sometimes
- Often Always

Have you ever had a booty-call? (a communication initiated toward an individual with the urgent intent either stated or implied, of having sexual activity and/or intercourse (meeting for impromptu sex))

- Yes
- No

If No Is Selected, Then Skip To  Have you ever had a one-night sta...
How many different booty-call relationships have you had in your lifetime?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 20+
How long was your longest booty-call relationship?

Years ______
Months ______
Days ________

How long was your shortest booty-call relationship?

Years ______
Months ______
Days ________

How many of these booty-call relationships were with

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
</tr>
<tr>
<td>Females</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
How old were you at the time of your first booty-call relationship?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
In how many booty-call relationships have you engaged in the following:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kissed</td>
<td>______</td>
</tr>
<tr>
<td>You touched partner’s genitals/private parts or your partner touched your genitals/private parts</td>
<td>______</td>
</tr>
<tr>
<td>touched above clothing</td>
<td></td>
</tr>
<tr>
<td>You touched you partner’s genitals/private parts or you partner touched your genitals/private parts underneath clothing or with no clothing on</td>
<td>______</td>
</tr>
<tr>
<td>touched underneath clothing or with no clothing on</td>
<td></td>
</tr>
<tr>
<td>You performed oral sex on your partner</td>
<td>______</td>
</tr>
<tr>
<td>Your partner performed oral sex on you</td>
<td>______</td>
</tr>
<tr>
<td>Engaged in sexual intercourse</td>
<td>______</td>
</tr>
<tr>
<td>Engaged in anal sex</td>
<td>______</td>
</tr>
<tr>
<td>Engaged in a threesome</td>
<td>______</td>
</tr>
</tbody>
</table>

What are the main reasons that you have had booty calls? (check all that apply)

- Physical/Sexual Gratification
- Emotional Gratification
- Others are doing it
- My friends and peers pressured me to do it
- To initiate a romantic relationship
- Unintentional (i.e., due to drugs and/or alcohol)
- Other

For what other reasons have you had booty calls?
How many people that you consider to be a booty-call have insulted you, yelled at you, sworn at you, or threatened you?

○ 0
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10
○ 11
○ 12
○ 13
○ 14
○ 15
○ 16
○ 17
○ 18
○ 19
○ 20+
How many people that you consider to be a booty-call have hit you, punched you, kicked you, threw something at you, or slapped you?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+
How many people that you considered a booty-call pressured you into sexual acts?

0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20+

In general, how would you rate your satisfaction with your experiences in booty-call relationships?

Extremely Unsatisfied
Somewhat Unsatisfied
Neutral
Somewhat Satisfied
Extremely Satisfied
How frequently do you wish you hadn’t gotten into booty-call relationships?

- Never
- Seldom
- Sometimes
- Often Always

Have you ever had a one-night stand? (a sexual encounter with another individual that only occurred one time)

- Yes
- No

If No Is Selected, Then Skip To Have you had any other type of

How many different one-night stands have you had in your lifetime?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 20+

166
Have you ever had a one-night stand that lasted more than one night?

◯ Yes
◯ No

If Yes Is Selected,

How long was your longest one-night stand relationship?

Years ______

Months ______

Days ______

How many of these one-night stands were with

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How old were you at the time of your first one-night stand?

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10
☐ 11
☐ 12
☐ 13
☐ 14
☐ 15
☐ 16
☐ 17
☐ 18
☐ 19
☐ 20
☐ 21
☐ 22
☐ 23
☐ 24
☐ 25
☐ 26
☐ 27
☐ 28
☐ 29
☐ 30
☐ 31
☐ 32
☐ 33
☐ 34
☐ 35
☐ 36
☐ 37
☐ 38
☐ 39
In how many one-night stands have you engaged in the following

Kissed ______

You touched partner’s genitals/private parts or your partner touched your genitals/private parts touched above clothing ______

You touched you partner’s genitals/private parts or you partner touched your genitals/private parts underneath clothing or with no clothing on ______

You performed oral sex on your partner ______

Your partner performed oral sex on you ______

Engaged in sexual intercourse ______

Engaged in anal sex ______

Engaged in a threesome ______

For what other reasons have you had one-night stands?

- Physical/Sexual Gratification
- Emotional Gratification
- Others are doing it
- My friends and peers pressured me to do it
- To initiate a romantic relationship
- Unintentional (i.e., due to drugs and/or alcohol)
- Other

For what other reasons have you had one-night stand relationships?
How many people that you consider a one-night stand have insulted you, yelled at you, sworn at you, or threatened you?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+
How many people that you consider to be a one-night stand have hit you, punched you, kicked you, threw something at you, or slapped you?

○ 0
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10
○ 11
○ 12
○ 13
○ 14
○ 15
○ 16
○ 17
○ 18
○ 19
○ 20+
How many people that you considered to be a one-night stand pressured you into sexual acts?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20+

In general, how would you rate your satisfaction with your experiences with one-night stands?

- Extremely Unsatisfied
- Somewhat Unsatisfied
- Neutral
- Somewhat Satisfied
- Extremely Satisfied
How frequently do you wish you hadn’t gotten into one-night stand relationships?

- Never
- Seldom
- Sometimes
- Often Always

Have you had any other type of sexual relationship/experience not mentioned above (i.e., other than a committed relationship, casual dating relationship, friends with benefits relationship, booty-call, or one-night stand)?

- Yes
- No

**Answer If Have you had any other type of sexual relationship/experience not mentioned above (i.e., other than a committed relationship, casual dating relationship, friends with benefits relationship, booty-call, or one-night stand)? Yes Is Selected**

Please describe the relationship/experience you had and how you would categorize it (what you would call it). Please include the types of sexual behaviors you engaged in with this(these) individual(s).

The remaining questions are about your experiences in the last 3 MONTHS

Did you engage in any sexual behaviors (for example, kissing, touching, oral sex, sexual intercourse, anal sex, other) with anyone over the past 3 months?

- Yes
- No

**If No Is Selected, Then Skip To Next Questionnaire**
With how many people have you engaged in sexual behaviors (e.g., kissed, kissing, touching, oral sex, sexual intercourse, anal sex, other) in the past 3 months?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- More than 20

Please list the initials of each individual with whom you engaged in sexual behaviors over the last 3 months? DO NOT write full names!

1
2
3
4
5
6
7
8
9
10
11
12
13
14
Answer the rest of the questions for Sexual Behaviors Questionnaire for each different INITIALS provided

How would you classify your relationship with {INITIALS}?

- Committed dating relationship
- Casual dating relationship
- Friends with benefits relationship
- Booty call relationship
- One-night stand
- Other relationship

Answer If How would you classify your relationship with... Other relationship Is Selected

You selected "other." Please describe the relationship/experience you had and how you would categorize it (what you would call it). Please include the types of sexual behaviors you engaged in with {INITIALS}.

Is {INITIALS}?

- Male
- Female
Please select all behaviors that you engaged in with this individual in the past 3 months (check all that apply)

☐ Kissed
☐ You touched partner’s genitals/private parts or your partner touched your genitals/private parts touched above clothing
☐ You touched you partner’s genitals/private parts or you partner touched your genitals/private parts underneath clothing or with no clothing on
☐ You performed oral sex on your partner
☐ Your partner performed oral sex on you
☐ Engaged in sexual intercourse
☐ Engaged in anal sex
☐ Engaged in a threesome
☐ Other

Answer If Please select all behaviors that you engaged in with this... Other Is Selected

You selected "other." Please describe the sexual behavior in which you engaged with {INITIALS}.

How would you rate your satisfaction with this relationship in the last 3 months?

☐ Extremely Unsatisfied
☐ Somewhat Unsatisfied
☐ Neutral
☐ Somewhat Satisfied
☐ Extremely Satisfied

How frequently do you wish you had not engaged in sexual activity with {INITIALS}

☐ Never
☐ Seldom
☐ Sometimes
☐ Often
☐ Always
Did {INITIALS} insult you, yelled at you, swear at you, or threaten you in the past 3 months?

- Yes
- No

Answer If Did this individual insult you, yelled at you, swear at you, or threaten you in the past 3 months? Yes is selected.

How often did this occur?

- Almost Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Did {INITIALS} hit you, punch you, kick you, throw something at you, or slap you in the past 3 months?

- Yes
- No

Answer If Did this individual hit you, punch you, kick you, throw something at you, or slap you in the past 3 months? Yes is selected.

How often did this occur?

- Almost Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily
Did {INITIALS} pressure you into sexual acts in the past 3 months?

- Yes
- No

Answer If Did this individual pressure you into sexual acts in the... Yes Is Selected

How often did this happen?

- Almost Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

What are the reasons you became involved with this individual? (select all that apply)

- Physical/Sexual Gratification
- Emotional Gratification
- Others are doing it
- My friends and peers pressured me to do it
- To initiate a romantic relationship
- Unintentional (i.e., due to drugs and/or alcohol)

For what other reasons did you have a {type of relationship} with {INITIALS}

Are you still engaging in sexual activity with {INITIALS}

- Yes
- No
Answer If Are you still engaging in sexual activity with this indiv... Yes Is Selected

How long have you been in this {type of relationship}?  
Years
Months
Days
APPENDIX F

Sexual Behaviors Questionnaire (Follow-Up)

Some adults have sexual experiences/intercourse before they are married and some do not. The next questions are about the experiences you may have had. The questions are very personal. Just remember that all of your answers are kept private.

Please use the following definitions to help you answer these questions:

**Committed relationship:** a dating relationship which you have made official (i.e., you have indicated on Facebook you are “in a relationship”, you have introduced each other as your boyfriend/girlfriend)

**Casual Dating Relationship:** you are going out on dates, but you have not made it official

Friend with benefits: friends who engage in sexual activity but do not consider themselves to be in a romantic relationship

**Booty-Call:** a communication initiated toward an individual with the urgent intent either stated or implied, of having sexual activity and/or intercourse (meeting for impromptu sex)

**One-night stand:** a sexual encounter with another individual that only occurred one time

**Oral sex:** partner ever put his/her mouth on your penis/genitals (sex organs)

**Sexual intercourse:** sexual union between two people involving genital contact. This includes when a male inserts his penis into a female’s vagina.

**Anal sex:** sexual union in which the penis is inserted into a partner’s anus.

**Threesome:** sexual activities (i.e., touching under/without clothing, touching genitals, oral sex, sexual intercourse) with 3 or more people (including yourself) at the same time
What are your feelings towards dating?

- I strongly feel that I do not want to be in a romantic relationship.
- I somewhat feel that I do not want to be in a romantic relationship.
- Neutral-I do not have a strong opinion about either wanting or not wanting to be in a romantic relationship.
- I somewhat feel that I want to be in a romantic relationship.
- I strongly feel that I want to be in a romantic relationship.

What is your current relationship status?

- Single
- In a committed relationship
- Other
If  What is your current relationship status?  Other Is Selected

You selected "other." Please describe your current relationship status.

Please rate how strongly you agree or disagree with each of the following statements.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the past {Month; 2 months; 3 months; 6 months} I went out with the hope/intention of having a sexual encounter</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Most of my friends engaged in casual sex encounters during the past {Month; 2 months; 3 months; 6 months}</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Did you engage in any sexual behaviors (for example, kissing, touching, oral sex, sexual intercourse, anal sex, other) with anyone over the past {Month; 2 months; 3 months; 6 months}?

○ Yes
○ No

If No Is Selected, Then Skip To Next Questionnaire
In general, how would you rate your satisfaction with your sexual encounter(s) in the past (Month; 2 months; 3 months; 6 months)?

- Extremely Unsatisfied
- Somewhat Unsatisfied
- Neutral
- Somewhat Satisfied
- Extremely Satisfied

How frequently do you wish you hadn’t had this(these) encounter(s)?

- Never
- Seldom
- Sometimes
- Often
- Always

The following questions ask you about the different types of relationships you have had over the past (Month; 2 months; 3 months; 6 months) (i.e., committed relationships, casual dating relationships, friends with benefits relationships, booty calls, one night stands, or other). Please classify each relationship in the category that best describes that relationship. **PLEASE BE SURE NOT TO INCLUDE A SINGLE INDIVIDUAL IN MORE THAN ONE CATEGORY.** If you had a relationship which changed categories over time (for example a one-night stand that became a committed relationship), classify the relationship as the last category that applied to that relationship (as a committed relationship in this example).
With how many people have you engaged in sexual behaviors in the past \{Month; 2 months; 3 months; 6 months}\?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- More than 20

Please list the initials of each individual with whom you engaged in sexual behaviors over the last \{Month; 2 months; 3 months; 6 months\}. DO NOT write full names!

1
2
3
4
5
6
7
8
9
10
11
12
Answer the rest of the questions for Sexual Behaviors Questionnaire for each different INITIALS provided

How would you classify your relationship with {INITIALS}?

- Committed dating relationship
- Casual dating relationship
- Friends with benefits relationship
- Booty call relationship
- One-night stand
- Other relationship

Answer If How would you classify your relationship with... Other relationship Is Selected

You selected "other." Please describe the relationship/experience you had and how you would categorize it (what you would call it). Please include the types of sexual behaviors you engaged in with {INITIALS}.

Is {INITIALS}

- Male
- Female

Please select all behaviors that you engaged in with this individual in the past {Month; 2 months; 3 months; 6 months} (check all that apply)

- Kissed
- You touched partner’s genitals/private parts or your partner touched your genitals/private parts touched above clothing
- You touched you partner’s genitals/private parts or you partner touched your genitals/private parts underneath clothing or with no clothing on
- You performed oral sex on your partner
- Your partner performed oral sex on you
- Engaged in sexual intercourse
- Engaged in anal sex
- Engaged in a threesome
- Other
Answer If Please select all behaviors that you engaged in with this... Other Is Selected

You selected "other." Please describe the sexual behavior in which you engaged with {INITIALS}.

How would you rate your satisfaction with this relationship in the last {Month; 2 months; 3 months; 6 months}?

- Extremely Unsatisfied
- Somewhat Unsatisfied
- Neutral
- Somewhat Satisfied
- Extremely Satisfied

How frequently do you wish you had not engaged in sexual activity with {INITIALS}?

- Never
- Seldom
- Sometimes
- Often
- Always

Did {INITIALS} insult you, yelled at you, swear at you, or threaten you in the past {Month; 2 months; 3 months; 6 months}?

- Yes
- No
Did this individual insult you, yelled at you, swear at you... Yes Is Selected

How often did this occur?

- Almost Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

Did {INITIALS} hit you, punch you, kick you, throw something at you, or slap you in the past {Month; 2 months; 3 months; 6 months}? Yes No

Did {INITIALS} pressure you into sexual acts in the past {Month; 2 months; 3 months; 6 months}? Yes No
Answer If Did this individual pressure you into sexual acts in the... Yes Is Selected

How often did this happen?

- Almost Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

What are the reasons you became involved with this individual? (select all that apply)

- Physical/Sexual Gratification
- Emotional Gratification
- Others are doing it
- My friends and peers pressured me to do it
- To initiate a romantic relationship
- Unintentional (i.e., due to drugs and/or alcohol)

For what other reasons did you have a {type of relationship} with {{INITIALS}}

Are you still engaging in sexual activity with {{INITIALS}}

- Yes
- No

Answer If Are you still engaging in sexual activity with this indiv... Yes Is Selected

How long have you been in this {type of relationship}?

- Years
- Months
- Days
Answer If Are you still engaging in sexual activity with this indiv... No Is Selected

How long did this {type of relationship} last?

- Years
- Months
- Days

Were you in this {type of relationship} with {INITIALS} at the last assessment? (1, 2, 3, 6) month(s) ago)

- Yes
- No
APPENDIX G

CES-D Baseline and Follow-Up

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

<table>
<thead>
<tr>
<th></th>
<th>Rarely or none of the time (less than 1 day)</th>
<th>Some or a little of the time (1-2 days)</th>
<th>Occasionally or a moderate amount of time (3-4 days)</th>
<th>Most or all of the time (5-7 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was bothered by things that usually don’t bother me.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I did not feel like eating; my appetite was poor.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt that I could not shake off the blues even with help from my family or friends.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt I was just as good as other people.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I had trouble keeping my mind on what I was doing.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt depressed.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt that everything I did was an effort.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Feeling</td>
<td>Scale 1</td>
<td>Scale 2</td>
<td>Scale 3</td>
<td>Scale 4</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>I felt hopeful about the future.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I thought my life had been a failure.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt fearful.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My sleep was restless.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I was happy.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I talked less than usual.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt lonely.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>People were unfriendly.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I enjoyed life.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I had crying spells.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt sad.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt that people dislike me.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I could not get “going.”</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
APPENDIX H

Rosenberg Self-Esteem Scale – Baseline and Follow-Up

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, select strongly agree. If you agree with the statement, select agree. If you disagree, select disagree. If you strongly disagree, select strongly disagree.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the whole, I am satisfied with myself.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>At times, I think I am no good at all.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I feel that I have a number of good qualities.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I am able to do things as well as most other people.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I feel I do not have much to be proud of.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I certainly feel useless at times.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I feel that I’m a person of worth, at least on an equal plane with others.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I wish I could have more</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>respect for myself.</td>
<td>All in all, I am inclined to feel that I am a failure.</td>
<td>I take a positive attitude toward myself.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------</td>
<td>------------------------------------------</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I

IRB Approval

RE: IRB #13-015 - entitled “Online Study of Sexual Relationships (OSSR)”

I am pleased to inform you that the Kent State University Institutional Review Board reviewed and approved your Application for Approval to Use Human Research Participants. This protocol was reviewed at a fully convened board meeting on February 13, 2013. Approval is effective for a twelve-month period:

February 6, 2013 through February 5, 2014

*A copy of the IRB approved consent form is attached to this email. This “stamped” copy is the consent form that you must use for your research participants. It is important for you to also keep an unstamped text copy (i.e., Microsoft Word version) of your consent form for subsequent submissions.

Federal regulations and Kent State University IRB policy require that research be reviewed at intervals appropriate to the degree of risk, but not less than once per year. The IRB has determined that this protocol requires an annual review and progress report. The IRB tries to send you annual review reminder notice to by email as a courtesy. However, please note that it is the responsibility of the principal investigator to be aware of the study expiration date and submit the required materials. Please submit review materials (annual review form and copy of current consent form) one month prior to the expiration date.

HHS regulations and Kent State University Institutional Review Board guidelines require that any changes in research methodology, protocol design, or principal investigator have the prior approval of the IRB before implementation and continuation of the protocol. The IRB must also be informed of any adverse events associated with the study. The IRB further requests a final report at the conclusion of the study.

Kent State University has a Federal Wide Assurance on file with the Office for Human Research Protections (OHRP); FWA Number 00001853.

If you have any questions or concerns, please contact me at 330-672-2704 or pwashko@kent.edu.
APPENDIX J

Consent Forms

Consent Form (Wave 1)

You are being invited to participate in a study of casual relationships and experiences. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is entirely voluntary: you may stop the study at any time and you have the right to refuse to answer any question without penalty.

Before taking part in this study, please read the consent information below and click on the "I Agree" button at the bottom of the page. By selecting “I Agree,” you indicate that you understand, and agree with, the following:

This study involves a web-based survey designed to examine the reasons people engage in different relationships and how these relationships impact other aspects of their lives. The study is being conducted by Dr. Manfred van Dulmen of Kent State University, and it has been approved by the Kent State University Institutional Review Board. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life).

Participation in the study typically takes 60 minutes and is strictly anonymous. You will be asked to complete a series of questionnaires about yourself and your experiences in romantic relationships. You will be paid $1.50 for your participation in this section of the study. We are also asking you to participate in four additional phases of this study, each lasting approximately one hour. Part two of the study will be one month from today. You will be paid $1.10 for part two. Part three will be three months from today and you will be paid $1.20. Part four will be six months from today, and for completion you will be paid $1.35. Finally part five of the study will be one year from today and you will be paid $1.60 if you complete this assessment. If you complete ALL of the assessments, you will receive a $0.50 bonus.

All responses are treated as confidential, and in no case will responses from individual participants be identified. Rather, all data will be pooled and published in aggregate form only. Participants should be aware, however, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

Risks and Discomforts: We do not anticipate any serious risks, but some of our research involves material of a personal nature, including some questions about your sexual behavior. Some of the questions we ask may be upsetting or you may feel uncomfortable answering them. If you do not wish to answer a question, you may respond with “I prefer not to answer” and go on to the next question. Should you feel upset after completing this study, please be aware that talking to someone can help you. You may find a counselor near you by going to the American Counseling Association website.
http://www.counseling.org/Resources/CounselorDirectory/TP/Home/CT2.aspx. Other resources include the National Mental Health Association (1-800-969-6642).

If you have further questions about this study or your rights, or if you wish to lodge a complaint or concern, you may contact Dr. Manfred van Dulmen, at (330) 672-2504; or the Kent State University Institutional Review Board, at (330) 672-2704.

If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the "I Agree" button to begin the experiment.
Consent Form (Wave 2)

You are being invited to participate in the second wave of a study of casual relationships and experiences. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is entirely voluntary: you may stop the study at any time and you have the right to refuse to answer any question without penalty.

Before taking part in this study, please read the consent information below and click on the "I Agree" button at the bottom of the page. By selecting “I Agree,” you indicate that you understand, and agree with, the following:

This study involves a web-based survey designed to examine the reasons people engage in different relationships and how these relationships impact other aspects of their lives. The study is being conducted by Dr. Manfred van Dulmen of Kent State University, and it has been approved by the Kent State University Institutional Review Board. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life).

Participation in the study typically takes 60 minutes and is strictly anonymous. You will be asked to complete a series of questionnaires about yourself and your experiences in romantic relationships. You will be paid $1.10 for your participation in this section of the study. We are also asking you to participate in three additional phases of this study, each lasting approximately one hour. Part three will be two months from today and you will be paid $1.20. Part four will be five months from today, and for completion you will be paid $1.35. Finally part five of the study will be 11 months from today and you will be paid $1.60 if you complete this assessment. If you complete ALL of the assessments, you will receive a $0.50 bonus.

All responses are treated as confidential, and in no case will responses from individual participants be identified. Rather, all data will be pooled and published in aggregate form only. Participants should be aware, however, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

Risks and Discomforts: We do not anticipate any serious risks, but some of our research involves material of a personal nature, including some questions about your sexual behavior. Some of the questions we ask may be upsetting or you may feel uncomfortable answering them. If you do not wish to answer a question, you may respond with “I prefer not to answer” and go on to the next question. Should you feel upset after completing this study, please be aware that talking to someone can help you. You may find a counselor near you by going to the American Counseling Association website http://www.counseling.org/Resources/CounselorDirectory/TP/Home/CT2.aspx. Other resources include the National Mental Health Association (1-800-969-6642).
If you have further questions about this study or your rights, or if you wish to lodge a complaint or concern, you may contact Dr. Manfred van Dulmen, at (330) 672-2504; or the Kent State University Institutional Review Board, at (330) 672-2704.

If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the "I Agree" button to begin the experiment.
Consent Form (Wave 3)

You are being invited to participate in the third wave of a study of casual relationships and experiences. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is entirely voluntary: you may stop the study at any time and you have the right to refuse to answer any question without penalty.

Before taking part in this study, please read the consent information below and click on the "I Agree" button at the bottom of the page. By selecting “I Agree,” you indicate that you understand, and agree with, the following:

This study involves a web-based survey designed to examine the reasons people engage in different relationships and how these relationships impact other aspects of their lives. The study is being conducted by Dr. Manfred van Dulmen of Kent State University, and it has been approved by the Kent State University Institutional Review Board. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life).

Participation in the study typically takes 60 minutes and is strictly anonymous. You will be asked to complete a series of questionnaires about yourself and your experiences in romantic relationships. You will be paid $1.20 for your participation in this section of the study. We are also asking you to participate in two additional phases of this study, each lasting approximately one hour. Part four will be three months from today, and for completion you will be paid $1.35. Finally part five of the study will be nine months from today and you will be paid $1.60 if you complete this assessment. If you complete ALL of the assessments, you will receive a $0.50 bonus.

All responses are treated as confidential, and in no case will responses from individual participants be identified. Rather, all data will be pooled and published in aggregate form only. Participants should be aware, however, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

**Risks and Discomforts:** We do not anticipate any serious risks, but some of our research involves material of a personal nature, including some questions about your sexual behavior. Some of the questions we ask may be upsetting or you may feel uncomfortable answering them. If you do not wish to answer a question, you may respond with “I prefer not to answer” and go on to the next question. Should you feel upset after completing this study, please be aware that talking to someone can help you. You may find a counselor near you by going to the American Counseling Association website http://www.counseling.org/Resources/CounselorDirectory/TP/Home/CT2.aspx. Other resources include the National Mental Health Association (1-800-969-6642).
If you have further questions about this study or your rights, or if you wish to lodge a complaint or concern, you may contact Dr. Manfred van Dulmen, at (330) 672-2504; or the Kent State University Institutional Review Board, at (330) 672-2704.

If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the "I Agree" button to begin the experiment.
Consent Form (Wave 4)

You are being invited to participate in the fourth wave of a study of casual relationships and experiences. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is entirely voluntary: you may stop the study at any time and you have the right to refuse to answer any question without penalty.

Before taking part in this study, please read the consent information below and click on the "I Agree" button at the bottom of the page. By selecting “I Agree,” you indicate that you understand, and agree with, the following:

This study involves a web-based survey designed to examine the reasons people engage in different relationships and how these relationships impact other aspects of their lives. The study is being conducted by Dr. Manfred van Dulmen of Kent State University, and it has been approved by the Kent State University Institutional Review Board. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life).

Participation in the study typically takes 60 minutes and is strictly anonymous. You will be asked to complete a series of questionnaires about yourself and your experiences in romantic relationships. You will be paid $1.35 for your participation in this section of the study. We are also asking you to participate in one final phases of this study, lasting approximately one hour. This final part of the study will be six months from today and you will be paid $1.60 if you complete this assessment. If you complete ALL of the assessments, you will receive a $0.50 bonus.

All responses are treated as confidential, and in no case will responses from individual participants be identified. Rather, all data will be pooled and published in aggregate form only. Participants should be aware, however, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

Risks and Discomforts: We do not anticipate any serious risks, but some of our research involves material of a personal nature, including some questions about your sexual behavior. Some of the questions we ask may be upsetting or you may feel uncomfortable answering them. If you do not wish to answer a question, you may respond with “I prefer not to answer” and go on to the next question. Should you feel upset after completing this study, please be aware that talking to someone can help you. You may find a counselor near you by going to the American Counseling Association website http://www.counseling.org/Resources/CounselorDirectory/TP/Home/CT2.aspx. Other resources include the National Mental Health Association (1-800-969-6642).
If you have further questions about this study or your rights, or if you wish to lodge a complaint or concern, you may contact Dr. Manfred van Dulmen, at (330) 672-2504; or the Kent State University Institutional Review Board, at (330) 672-2704.

If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the "I Agree" button to begin the experiment.