

CASUAL SEX AND WELLBEING AMONG COLLEGE STUDENTS:  
EXAMINING POTENTIAL MODERATORS

A Dissertation

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

by

Snezana Vrangalova

January 2014

© 2014 Snezana Vrangalova

## CASUAL SEX AND WELLBEING AMONG COLLEGE STUDENTS: EXAMINING POTENTIAL MODERATORS

Snezana Vrangalova, Ph. D.

Cornell University 2014

Casual sex, sex occurring outside committed romantic relationships, has become normative among U.S. college students, and is often feared to lead to negative wellbeing outcomes. Yet, longitudinal empirical evidence is scarce, and the available evidence is mixed, pointing toward potential moderators. Furthermore, definitions of casual sex vary across studies, sex differences are predicted but rarely examined, and wellbeing indicators other than self-esteem and depression are rarely studied. This dissertation reports on three studies, based on one longitudinal and weekly diary dataset, that address several of these gaps. A university-wide sample of 855 freshmen and juniors (from a pool of 6,500 students contacted through the university registrar) completed online surveys at the beginning of the semester (T1); 666 of those completed T2 (end of first semester), and 528 completed T3 (end of second semester). A subsample of 230 single T1 students also completed a 12-week long, weekly-diary study during the first semester. All models tested for sex differences and controlled for demographics. Anxiety, life satisfaction, and psychosomatic symptoms were examined in addition to self-esteem and depression. Study 1 explored effects of casual sex on wellbeing across different types of casual relationships (one-time, longer casual, or any) and intimacy level (kissing, genital touching, oral sex, and vaginal/anal intercourse). Links ranged from positive to negative to nonsignificant across wellbeing indicators, casual sex definitions, and gender, suggesting a complex relationship. Using self-determination theory (SDT), Study 2 showed that genital casual sex between T1 and

T3 for nonautonomous reasons (i.e., due to self-imposed pressures, external contingencies, or lack of intentionality) was linked to lower wellbeing both within those who had casual sex, and compared to those without casual sex. Study 3 found that sociosexuality, a personality orientation toward casual sex, moderated the effect of casual sex on wellbeing over one academic year (Study 3a) and on a weekly basis (Study 3b). Sociosexually restricted students reported lower wellbeing following casual sex than after no casual sex; unrestricted students reported similar or higher wellbeing following casual sex. The research on casual sex effects on wellbeing needs to move beyond main effects, and into exploring moderators and mediators.

## BIOGRAPHICAL SKETCH

Zhana Vrangalova received her BA in 2004 from the Department of Psychology, Faculty of Philosophy, University of Ss. Cyril and Methodius in Skopje, Macedonia. During her doctoral studies at the Human Development Department at Cornell University she was primarily involved in the Sex and Gender Lab where she studied the relationship between non-traditional expressions of sexuality and health. Her primary interests are focused on casual sex and nonheterosexual orientations. Her research has been supported by Grants-in-Aid awards from the Foundation for the Scientific Study of Sexuality and the Society for Psychological Study of Social Issues.

To Arta, who let me go.

To Adam, who let me be.

To Margarita, who didn't get a chance to be where I am now.

## ACKNOWLEDGMENTS

I am truly grateful for having the delightful dissertation committee that I did. I would like to thank my advisor, Ritch Savin-Williams, for allowing me abundant intellectual freedom combined with unwavering support for all my projects – successful and unsuccessful, necessary and unnecessary – over all these years. I would like to thank Anthony Ong for the invaluable words of wisdom imparted over countless lunches, dinners, and coffee breaks; his brilliance and passion for his work has inspired me to take my own passions seriously and persevere in the face of numerous obstacles. I would like to thank Cindy Hazan for the occasional but consistently kind encouragement and insightful suggestions. And I would like to thank all three of them for believing in me, seemingly unconditionally, and for their immense patience with my easily distractible self.

I would like to thank Jane Mendle for enabling me to stay at Cornell for an additional – and absolutely essential – year. I would like to thank the Foundation for Scientific Study of Sexuality, the Society for the Psychological Study of Social Issues, and the Human Ecology Alumni Association at Cornell University for funding my research. I would like to thank Melany Bradshaw, Jegath Athilingam, Vickie Liang, Rachel Bukberg, Mansha Sethi, Rachel Mack, and all my other undergraduate research assistants for helping with all those boring, menial tasks that research often entails and for bearing with me through all the research trials and errors. I would like to thank Matthew Stief, Sarah Merrill, Steven Estrada, Stacey Doan, Nadya Ditch, Thomas Fuller-Rowell, Seth Pardo, Paul George, and all of my other fellow graduate students – past and present – for their support, feedback, and friendship. And I would like to thank all the study participants for taking my many long, detailed, and sometimes badly designed, surveys.

I would like to thank my mother, Ljubica Vrangalova, who has supported me in my choices even though they are so different from hers. I would like to thank my soul mate, Arta Kuli, for her undying love, despite the distance. I would like to thank my partner, Adam Rosenthal, for putting up with me over the last four years, effectively balancing a combination of encouragement, threats, and resignation in his effort to assist with the completion of my dissertation. I would like to thank my boy, Soren Jahan, for taking amazing care of me during a crucial time in my graduate career. I would like to thank Christine McMeekin, Nini Muñoz, Fernando Migone, Jessica Rutkoski, Dede Tete-Rosenthal, and Mike Carpentier for not only being great friends and roommates, but also frequently providing a home-cooked meal to my culinarily-challenged self. I would like to thank my Burning Man community all over the country for providing a much-needed break from academia, and all my other friends who were there for me at some point, enriching my life one way or another.

And last, but not least, I am forever grateful to my friend and fellow grad-student-in-doubt, Margarita Krochik, for our endless conversations about science, academia, and work-life balance, and for the glimpse into the other side of perception that is not readily available to my dry, analytical, rational mind. Going through our professional identity crisis together helped me crystalize my goals; her untimely death fortified my dedication to achieve them.

## TABLE OF CONTENTS

Biographical sketch	iii
Dedication	iv
Acknowledgment	v
List of Figures	viii
List of Tables	ix
General Introduction	2
Study 1	6
Title Page	7
Abstract	8
Introduction	9
Method	15
Results	18
Discussion	28
Study 2	33
Title Page	34
Abstract	35
Introduction	36
Method	45
Results	51
Discussion	59
Study 3	68
Title Page	69
Abstract	70
Introduction	71
Study 3a	74
Method	74
Results	77
Study 3b	79
Method	79
Results	81
Discussion	85
General Conclusion	89
References	97

## LIST OF FIGURES

- Figure 1.1. Participants who had engaged in one-time (OT), longer casual (LC), both, or neither types of hookups across four levels of physical intimacy at the beginning of the study (T1) and over the course of one semester (T2). 19
- Figure 2. 1. Wellbeing means for women and men without genital hookups between T1 and T3 (No-HU), with genital hookups and low nonautonomous motivation (HU Low Nonautonomy), and with genital hookups and high nonautonomous motivation (HU High Nonautonomy). 58
- Figure 3.1. End-of-the-year wellbeing among unrestricted (high-SOI) and restricted (low-SOI) participants who had or did not have casual sex (CS) over the course of the academic year. 78
- Figure 3.2. Weekly wellbeing among unrestricted (high-SOI) and restricted (low-SOI) participants on weeks with and without casual sex (CS). correlates 84

## LIST OF TABLES

Table 1.1.	Demographic Characteristics for Students Completing Both T1 and T2	16
Table 1.2.	Descriptive Information and Sex Differences for Hookup (HU) Behavior across Different Hookup Definitions	20
Table 1.3.	Zero-Order Correlations between Different Hookup Definitions and Psychological Wellbeing at Beginning of Semester (T1) and End of Semester (T2)	22
Table 1.4.	Linear Regression Predicting Wellbeing at Time 2 by Hooking Up (HU) During the Semester and Interactions with Gender	24
Table 1.5.	Logistic Regression Predicting Hooking Up During the Semester by Wellbeing at Time 1 and Interactions with Gender	27
Table 2.1.	Demographic and Sexual Behavior Characteristics of Students Who Completed T1 and T3	47
Table 2.2.	Descriptive Data and Correlations for All Variables, for Men (Under the Diagonal) and Women (Above the Diagonal)	52
Table 2.3.	Hierarchical Linear Regression for Impact of Autonomous and Nonautonomous Hookup Motivation between T1 and T3 on T3 Wellbeing	55
Table 3.1.	Linear Regression Results for Effects of Sociosexuality at Baseline (SOI) and Casual Sex Over the Academic Year (CS) on End-of-the-Year Wellbeing (Study 3a)	76
Table 3.2.	Hierarchical Linear Modeling Results for Effects of Trait-Sociosexuality (SOI) and Weekly Casual Sex (CS) on Weekly Wellbeing (Study 3b)	82

Casual Sex and Wellbeing among College Students:  
Examining Potential Moderators

*Does Hooking Up Hurt You? You Bet!*

(Title of a *Marie Claire* article; Oakley, 2007)

*“Sex without love is an empty experience, but, as empty experiences go, it's one of the best.”*

(Woody Allen)

## General Introduction

Casual sex (often also called hooking up, uncommitted sex or short-term mating) refers to sexual behaviors that occur outside long-term committed dating or romantic relationships (Garcia, Reiber, & Massey, 2012). Casual sex can involve a variety of sexual acts, ranging from kissing to intercourse, and can take place in a variety of casual relationship types, including one-night stands, short flings, booty calls, fuck buddies, or friends-with-benefits. Despite phenomenological and functional differences among these different relationships, they share a relative lack of emotional attachment and romantic commitment between partners.

Although casual sex is not a new behavior (Walker, Somerfeld, & Robinson, 1978), it has gained substantial cultural salience and visibility among young people over the last two decades (Garcia et al., 2012), permeating popular culture and media representations of sexuality (Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005), and reflected in college students' beliefs that it is even more widespread than it actually is (Chia & Gunther, 2006; Lambert, Kahn, & Apple, 2003; Reiber & Garcia, 2010). Although the majority of youth's sexual experiences occur with romantic/dating partners (Fielder, Carey, & Carey, 2013), casual partners can account for a significant proportion of one's total number of sex partners (Gentzler & Kerns, 2004). Furthermore, on some campuses, as many as 80% of college students report at least one hookup and average over 10 hookups per academic year (Paul, McManus, & Hayes, 2000). Casual sex has become so ubiquitous among college students that some have argued that the hookup culture is largely replacing the old, more regulated system of dating as a way of establishing and maintaining intimate relationships on campuses (Bogle, 2008).

This widespread presence of casual sex in the lives of young people has raised concerns regarding its potentially negative impact on psychological as well as physical health. Although the possible mechanisms of action have not been explicated, scholars (Paul, Wenzel, & Harvey,

2009; Townsend, 1995), health care providers (McIlhaney & Bush, 2008), and the media (e.g. Oakley, 2007; Stepp, 2007) have warned that sex without love may lead to issues such as depression, anxiety, dissatisfaction with life, or low self-esteem. However, over a decade of research on the main effects of casual sex on wellbeing has produced mixed and inconclusive findings. Results range from positive to nonsignificant to negative in cross-sectional studies (Bersamin et al., 2013; Bancroft, Janssen, Carnes, Goodrich, & Strong, 2004; Gentzler & Kerns, 2004; Grello et al., 2006; Mendle, Ferrero, Moore, & Harden, 2013; Owen, Rhoades, Stanley, & Fincham, 2010; Paul et al., 2000; Sakaguchi, Sakai, Ueda, & Hasegawa, 2007; Schmitt, Shackelford, Duntley, Tooke, & Buss, 2001; Schmitt, 2005), and are predominantly nonsignificant in longitudinal studies (Eisenberg, Ackard, & Neumark-Sztainer, 2009; Fielder & Carey, 2010a; Grello et al., 2003; Meier, 2007; Monahan & Lee, 2008; Owen et al., 2011; Shulman, Walsh, Weisman, & Schelyer, 2009).

Such nonsignificant or contradictory results often point to the presence of moderators (Baron & Kenny, 1986) – it is likely that not all casual sex encounters have the same potential to harm or benefit wellbeing, and not all of those engaging in them are equally susceptible to that potential. Yet, with the exception of biological sex, inquiry into potential individual, social, and situational moderators of the link between casual sex and wellbeing has been limited.

Furthermore, definitions of casual sex used across different studies vary widely. In terms of the types of sexual behaviors included, definitions range from being limited to intercourse (e.g., Grello et al., 2003) to including any kind of genital and non-genital contact, such as kissing (e.g., Owen et al., 2011). In terms of the casual relationship or partner type, definitions have ranged from being limited to a one-night stand with a little known partner (Paul et al., 2000) to any type of non-romantic/non-dating partner (e.g., Fielder & Carey, 2010a). These individual, situational,

or definitional factors may all play a role in the diverging results found across past research, yet have not been systematically addressed in previous studies.

The opposite direction of the link between casual sex and wellbeing also remains unclear. Attachment theorists argue that long-term mating is the most optimal reproductive strategy, and that desire for short-term mating results from insecure attachments and their related maladaptive traits, such as low self-worth or emotional instability (Miller & Fishkin, 1997; Zeifman & Hazan, 1997). Sexual strategies theorists, on the other hand, argue that both long-term and short-term reproductive strategies can be adaptive, each under different environmental (e.g., unpredictability or harshness) and individual (e.g., attractiveness or material resources) conditions; therefore short-term mating desire need not stem from compromised wellbeing (Gangestad & Simpson, 2000; Schmitt, 2005b). Longitudinal evidence among pre-college adolescents suggests lower wellbeing at baseline results in more subsequent hooking up (Grello et al., 2003; Manning et al., 2005; Shulman, Walsh, Weisman, & Schelyer, 2009). Such links among college students have been examined in only two studies, finding either no prospective effects of initial wellbeing on subsequent hooking up or *higher* initial wellbeing predicting subsequent hooking up (Fielder & Carey, 2010b; Owen et al., 2011).

Social commentators and scholars have shown particular concern for the wellbeing of women in relation to casual sex (Paul, 2006; Townsend & Wasserman, 2011). Sexual strategies theorists argue that short-term mating is less evolutionarily advantageous and costlier for women than men (Buss & Schmitt, 1993; Schmitt, Shackelford, & Buss, 2001), and women's lower desire for casual sex is one of the largest sex differences in sexuality (Oliver & Hyde, 1993; Petersen & Hyde, 2010). In support of sex differences in the casual sex-wellbeing link, several cross-sectional studies have found negative links between casual sex and wellbeing in women

(Grello, Welsh, & Harper, 2006), and positive links in men (Clark, 2006; Grello et al., 2006; Owen et al., 2010). No sex differences have been found in longitudinal studies of pre-college adolescents (Grello et al., 2003; Meier, 2007; Mohanan & Lee, 2008; Shulman et al., 2009); however, the few longitudinal studies of college student have failed to address sex differences (Eisenberg et al., 2009; Fielder & Carey, 2010b; Owen et al., 2011).

The current three papers address several of these gaps in the literature in a population-based sample of Cornell University freshmen and juniors across both a longitudinal and a weekly diary design. Paper 1 examines links between casual sex and wellbeing (in both temporal directions) over one academic semester (3-month period) across different definitions of casual sex, including three relationship types (one-night stands, longer casual relationships, and any casual sex) and four levels of physical intimacy (prolonged kissing, genital touching, oral sex, and vaginal/anal intercourse). Paper 2 uses self-determination theory (Deci & Ryan, 2000) to examine how intentionality and locus of causality in one's motivation for engaging in casual sex over one academic year (9-month period) affects the impact of casual sex on wellbeing. Paper 3 examines whether the links between casual sex and wellbeing are moderated by sociosexual orientation, a stable personality tendency toward or away from casual sex, over one academic semester (Study 3a) and on a weekly basis over 12 consecutive weeks (Study 3b). All papers test for sex differences.

STUDY #1

Under review

Hooking Up and Psychological Wellbeing in College Students:  
Short-Term Prospective Links Across Different Hookup Definitions

Zhana Vrangalova<sup>1</sup>

Cornell University

Author note

<sup>1</sup>Department of Human Development, Cornell University, Ithaca, New York.

This research was partially supported by a grant-in-aid from the Foundation for Scientific Study of Sexuality, a grant-in-aid from the Society for the Psychological Study of Social Issues, and a grant from the Human Ecology Alumni Association, Cornell University, all awarded to the author for conducting her doctoral dissertation research. I would like to thank Rachel Mack, Melany Bradshaw, and Vickie Liang for their help with data collection and preparation.

Corresponding author: Zhana Vrangalova, B40 Martha Van Rensselaer Hall, Human Development, Cornell University, Ithaca, NY 14850. Phone: 607-280-6433. E-mail: sv99@cornell.edu.

Word count: 6,855.

Hooking Up and Psychological Wellbeing in College Students:  
Short-Term Prospective Links Across Different Hookup Definitions

Abstract

Hooking up (sex occurring outside committed, romantic relationships) is feared to result from or lead to compromised psychological wellbeing among college students. Yet, longitudinal evidence is scarce and inconclusive, and different hookup definitions complicate cross-study comparisons. This study examined short-term longitudinal links between four wellbeing indicators (depression, anxiety, life satisfaction, and self-esteem) across several definitions of hooking up based on the casual relationship length (one-time, longer casual, and any) and physical intimacy level achieved (prolonged kissing, genital touching, oral sex, and vaginal/anal intercourse). A population-based sample of 666 freshmen and juniors (63% female, 68% White) at a Northeastern U.S. university completed online surveys in the beginning and end of one academic semester (3-month period). Linear and logistic regressions explored whether hooking up over the semester was linked to later wellbeing, and whether initial wellbeing was linked to later hookups. All models controlled for initial differences in relevant outcomes and demographics, and tested for gender interactions. Across analyses, wellbeing indicators, hookup definitions, and gender, links between hookups and wellbeing ranged from positive to negative to nonsignificant, suggesting a complex relationship among college students.

*Keywords:* Casual sex; Hooking up; Sexual behavior; Mental health; Depression; Self-esteem

## **Introduction**

Hooking up—casual sexual behavior occurring outside of dating or romantic relationships—has become culturally normative among U.S. college students. Up to 80% report at least one hookup (Garcia, Reiber, & Massey, 2012), leading some to argue that hooking up is replacing dating as the primary context for development of intimate relationships on campuses (Bogle, 2008). Given this prevalence, scholars raise concerns about potential links to inferior psychological wellbeing, with several suggesting negative consequences of hookups on wellbeing (Paul, Wenzel, & Harvey, 2009) and others suggesting that hookups result from already compromised wellbeing (Miller & Fishkin, 1997). Thus far, longitudinal evidence of these links among college students has been scarce and inconclusive (Fielder & Carey, 2010b; Owen, Fincham, & Moore, 2011), important wellbeing indicators have been overlooked, and casual sex has been defined in different ways in terms of relationship characteristics (e.g., one-night stands, friends-with-benefits) and level of physical intimacy (ranging from kissing to vaginal/anal intercourse), complicating cross-study comparisons. This study systematically examines cross-sectional and short-term longitudinal links between several definitions of hookups and four wellbeing indicators in a population-based sample of college students.

### **Hooking Up and Psychological Wellbeing**

Sexual intimacy is considered psychologically healthy when occurring in committed, romantic relationships (Diamond & Huebner, 2012). Interest or involvement in casual sex, on the other hand, is often regarded as either a result or a cause of compromised wellbeing. Attachment theorists argue that long-term mating is the most optimal reproductive strategy, and that casual sex results from insecure attachments and their related maladaptive traits, such as low self-worth or emotional instability (Miller & Fishkin, 1997; Zeifman & Hazan, 1997). Casual sex is often

studied from a problem/risk behavior perspective (Grello, Welsh, Harper, & Dickson, 2003; Manning, Longmore, & Giordano, 2005), and scholars, health professionals, and the media warn against its detrimental effects on mental health (McIlhaney & Bush, 2008; Paul et al., 2009; Stepp, 2007; Townsend & Wasserman, 2011). The mechanisms by which casual sex affects wellbeing are not clearly formulated, but several casual sex characteristics offer potential explanations, including social stigma (Allison & Risman, 2013), less enjoyment and more regret than romantic sex (Armstrong, England, & Fogarty, 2012; Campbell, 2011; Fielder & Carey, 2010a), substance use (Cooper, 2002), sexual health problems (Bailey, Kirk, Zhu, Dunne, & Martin, 2000; Coleman, Rue, Spence, & Coyle, 2008), failure to satisfy essential needs for deep and lasting interpersonal connection (Baumeister & Leary, 1995), and dissolution of neurochemical and experiential emotional bonds that even brief sexual contact can create (Haselton & Buss, 2001; Young & Wang, 2004).

Some argue that young women may be at particularly high risk for inferior wellbeing in relation to hookups (Paul et al., 2009; Townsend, 1995), as short-term mating is evolutionarily and socially costlier and less advantageous for women (Baumeister & Twenge, 2002; Crawford & Popp, 2003; Schmitt, Shackelford, & Buss, 2001). In addition, women may be disproportionately more affected by negative reproductive outcomes of casual sex (e.g., unwanted pregnancy), and more susceptible to forming attachment bonds following casual sex (de Graaf & Sandfort, 2004; Townsend & Wasserman, 2011), perhaps due to differential effects of oxytocin (Young & Wang, 2004).

Several cross-sectional studies find negative links between casual sex and wellbeing in women (Grello, Welsh, & Harper, 2006; Schmitt, 2005) or both sexes (Bersamin et al., 2013; Mendle, Ferrero, Moore, & Harden, 2013; Paul, McManus, & Hayes, 2000). Other studies have

found positive links in men (Clark, 2006; Grello et al., 2006; Owen et al., 2010; Schmitt, 2005), or no links in either sex (Clark, 2006; Gentzler & Kerns, 2004; Mikach & Bailey, 1999; Owen, Rhoades, Stanley, & Fincham, 2010; Sakaguchi, Sakai, Ueda, & Hasegawa, 2007; Schmitt, Shackelford, Duntley, Tooke, & Buss, 2001; Schmitt, 2005). Longitudinal evidence among pre-college adolescents suggests lower self-esteem and higher depression at baseline result in more hooking up over 3-month to 1-year periods (Grello et al., 2003; Manning et al., 2005; Shulman, Walsh, Weisman, & Schelyer, 2009). In contrast, hooking up is generally not predictive of subsequent wellbeing over 3-month to 5-year periods after initial wellbeing differences are controlled (Grello et al., 2003; Meier, 2007; Mohanan & Lee, 2008; Shulman et al., 2009).

Longitudinal research on undergraduate students is limited to two studies that surveyed students at the beginning (T1) and end (T2) of one semester. In a small freshmen sample, self-esteem and depression at T1 were not linked to hooking up between T1 and T2 (Fielder & Carey, 2010b). Among women, transitioning from no hookups at T1 to hookups by T2 was linked to marginally significant increases in depression, but not self-esteem; small sample size precluded analyses on men. In a larger sample (sexes combined), T1 loneliness, but not T1 depression, was linked to *lower* likelihood of hooking up between T1 and T2; hooking up during the semester was not linked to either T2 wellbeing outcome after controlling for T1 levels (Owen et al., 2011).

These limited and somewhat inconsistent results require further research. Both studies relied on convenience samples of college students in social science courses, and sex differences remain mostly unexamined. Furthermore, prior research – in college students or otherwise – has focused almost exclusively on self-esteem and depression; cross-sectional and longitudinal links with other aspects of psychological wellbeing remain unclear. For example, anxiety is the most prevalent type of psychological distress (Kessler, Ruscio, Shear, & Wittchen, 2010), and life

satisfaction is a key component of psychological thriving (Keyes, 2005). Feelings of both worry and satisfaction are often reported in relation to hookups (Campbell, 2008; Fielder & Carey, 2010a; Owen & Fincham, 2011; Paul & Hayes, 2002; Townsend & Wasserman, 2011), yet virtually no research on youth examines either wellbeing indicator.

### **Hookup Definitions and Wellbeing**

Casual sex interactions take many forms, and operationalizations across studies have ranged from very specific (e.g., a one-night stand with a stranger or brief acquaintance without relationship expectations; Paul & Hayes, 2002) to very broad (e.g., sex with someone not considered a romantic partner; Grello et al., 2006). One dimension along which definitions vary is *relationship length*. Sex with someone on only once occasion (i.e., a one-night stand) is likely the most iconic form of casual sex (Gangestad & Simpson, 1990); however, casual sex has also been defined as a sexual relationship that lasts only a few days (Regan & Dreyer, 1999) or a few weeks (Shulman et al., 2009), or as an ongoing sexual relationship with a non-romantic friend (e.g., friends-with-benefits; Bisson & Levine, 2009) or with someone one primarily sees for sex (e.g., booty calls, Jonason, Li, & Richardson, 2011) that can last for years.

Casual relationships length may have important wellbeing implications. More frequent interactions with the same partner lead to greater emotional attachment, particularly among women (Townsend, 1995; Townsend & Wasserman, 2011); the dissolution of such a relationship may thus cause more distress than a one-night stand. Repeated interactions entail more sexual health risks if no protection is used from the beginning; they can also lead to greater sense of trust and therefore discontinuation of protection at subsequent interactions (Romero-Daza & Freidus, 2008). On the other hand, sexual interactions in longer casual relationships are likely more intentional than are one-night stands (Paul & Hayes, 2002), and greater intentionality is

linked to higher wellbeing (Deci & Ryan, 2000). Repeated interactions may also be more sexually and emotionally satisfying due to greater closeness and mutual partner knowledge, and regular sex with a few casual partners may be more socially acceptable than one-time sex with many partners. To date, no study has examined wellbeing links to one-time and longer casual hookup separately.

A second definitional issue with possible implications for wellbeing is the physical intimacy level achieved during a hookup, which can range from the ubiquitous kissing to the much rarer vaginal or anal intercourse (Fielder & Carey, 2010a; Reiber & Garcia, 2010). Due to neurochemical processes (Young & Wang, 2004) and socially constructed meaning (Peterson & Muehlenhard, 2007), more intimate sexual acts have greater potential to stimulate bonding, increasing risk for emotional distress upon dissolution. They entail more sexual health risks if proper protection is not used, and may also carry more social costs. On the other hand, more intimate sex acts have greater potential for providing physical pleasure, including orgasm (Fugl-Meyer et al., 2006).

Studies vary in the sex acts included in hookup definitions, rendering cross-study comparisons difficult. Many focus exclusively on intercourse (e.g., Meyer, 2007), some include oral sex (Grello et al., 2006) or less intimate behaviors (Fielder & Carey, 2010b; Owen et al., 2011; Paul et al., 2000; Shulman et al., 2009) in addition to intercourse, and some use vague terms (e.g., 'had sex'), leaving these open to interpretation (Bersamin et al., 2013). Sometimes, hookups involving varying degrees of intimate behaviors have been analyzed separately, with mixed results: For some wellbeing indicators and analyses (but not others), more intimate hookups were linked to lower wellbeing and less intimate hookups to higher wellbeing (Fielder & Carey, 2010b; Owen et al., 2011; Paul et al., 2000). However, the cutoff point between

intimate behaviors has not always been consistent, with oral sex sometimes grouped with intercourse (Fielder & Carey, 2010b; Owen et al., 2011) and sometimes with kissing and petting (Paul et al., 2000). More information is needed on the links between different levels of intimacy in hookups and wellbeing.

### **Current Study**

The present study investigates cross-sectional and short-term longitudinal links between psychological wellbeing and hooking up in a population-based sample of college students. It addresses several gaps in the existing literature. First, the vast majority of research in this area has focused mostly on depression and self-esteem; this study extends findings to two additional wellbeing aspects: anxiety and life satisfaction. Second, past studies vary substantially in their definitions of hookups. This is the first study to systematically examine casual relationships of different lengths (one-time, longer-casual, and any non-romantic) across four progressively more restrictive levels of physical intimacy (kissing, genital touching, oral sex, and intercourse). Finally, this is the first longitudinal study of college students to include a population-based sample—allowing for broader generalizability, and to comprehensively examine sex differences.

Given limited or inconclusive past findings on college students, no specific predictions were made for each wellbeing variable, hookup type, and physical intimacy level. In general, given prior theory and research, few longitudinal links in either direction were expected between hooking up and depression or self-esteem. Furthermore, any negative links between hooking up and wellbeing were expected to be more likely for women and any positive links more likely for men; stronger links of any kind were expected for hookups defined at more intimate levels of sexual behaviors. Given little prior data and opposing potential mechanisms of action, no predictions were made regarding wellbeing in one-time versus longer casual hookups.

## Method

### Participants and Procedures

Participants were undergraduates at a prestigious northeastern university ages 18 to 24 years. The university registrar sent an email to all registered freshmen and juniors (approximately 6,500 students) at the beginning of the 2009 fall semester, inviting them to participate in a study about sexuality that required them to complete two similar 35-minute long, online questionnaires at the start (T1) and end (T2) of the semester. A total of 872 students (59% women; 45% freshmen) completed T1 (13.4% response rate); 671 students completed T2 (77% retention rate). As an incentive, students were offered either two research credits (if eligible) or a chance to win one of 25 \$30 lottery prizes. After excluding students over age 24 and those with incomplete responses, 666 students comprised the final sample. Table 1.1 presents demographic data. Those who dropped out were more likely to be men,  $\chi^2(1) = 18.83, p < .001$ ; nonwhite,  $\chi^2(1) = 9.10, p < .01$ ; and freshmen,  $\chi^2(1) = 5.44, p < .05$ , compared to T2 participants. The groups were similar in sexual orientation, socioeconomic status, religiosity, wellbeing, and sexual behaviors (all  $ps > .05$ ). Sample distribution across colleges and racial/ethnic background closely mirrors University enrollment.

*Table 1.1. Demographic Characteristics for Students Completing Both T1 and T2 (N between 659 and 666)*

Variable	n	%	Variable	n	%
Sex			College		
Women	416	62.5	Agricultural & Life Sciences	164	24.8
Men	250	37.5	Architecture, Art, & Planning	20	3.0
Sexual orientation			Arts & Sciences	207	31.1
Heterosexual	529	79.5	Engineering	147	22.2
Mostly heterosexual	70	10.5	Hotel Administration	26	3.9
Bisexual	24	3.6	Human Ecology	72	10.7
Mostly gay/lesbian	17	2.6	Industrial & Labor Relations	28	4.2
Gay/lesbian	23	3.5	School year		
Other	2	0.4	Freshman	286	43.1
Race			Junior	377	56.9
White	448	67.5	Relationship status		
Asian	97	14.6	Not dating or seeing anyone	322	48.4
Latino	34	5.1	Casually dating or seeing 1 or more people	85	12.8
Black	29	4.4	In a romantic relationship, engaged, or married	258	38.8
Other/Multiracial	53	8.7	Perceived socioeconomic class		
Religion			Lower-middle or lower	118	17.7
Agnostic/Atheist	291	44.2	Middle	209	31.4
Catholic	143	21.7	Upper-middle or higher	339	50.9
Protestant	95	14.4	Parents' education (highest)		
Jewish	63	9.6	Less than BA	86	12.9
Other	66	10.3	Bachelor's degree	155	23.3
Romantic sex by T2			Graduate/professional	424	63.8
Prolonged kissing	538	81.0	Political ideology		
Genital	494	74.4	Conservative	103	17.0
Oral sex	436	65.7	In-between	99	16.3
Intercourse	378	56.9	Liberal	405	66.7

*Note.* All variables assessed at T1 unless noted otherwise.

## Measures

### **Sex partners.**

At T1, participants provided lifetime numbers of three types of sex partners: romantic (partners they considered boyfriend/girlfriend), longer casual (partners they were never in a romantic relationship with, but interacted sexually more than once, such as friends-with-benefits, fuck buddies, etc.), and one-time (partners they interacted sexually with only once). For each type, they specified the number of partners they had engaged in five sex acts: prolonged kissing, genital touching, oral sex, vaginal intercourse, and anal intercourse. At T2, they provided the same information about partners they had since T1. Based on these data, three variables were constructed: had a hookup between T1 and T2 (yes vs. no), T1 lifetime number of hookup partners (log-transformed to reduce non-normality), and had any romantic sex by T2 (yes vs. no). These variables were constructed for three types of hookups (one-time, longer casual, and any non-romantic) and four physical intimacy levels (kissing, genital, oral, and intercourse). The four intimacy levels were independent and not mutually exclusive. For example, genital hookups included any hookups genital touching occurred, regardless of what other sexual acts may also have taken place.

### **Psychological wellbeing.**

All wellbeing indicators were assessed at both time points. Variables were constructed as means of all items, with higher scores indicating greater presence of the variable.

***Depression and anxiety.*** On the corresponding subscales of the Brief Symptom Inventory (Derogatis, 1993), participants rated how distressed in the past week they were by five indicators of depression (e.g., “feeling blue”) and six indicators of anxiety (e.g., “spells of terror or panic”) on a 5-point scale of 1 (*not at all*) to 5 (*extremely*). Cronbach’s  $\alpha$  were .86 and .87 for depression,

and .87 and .88 for anxiety at T1 and T2 respectively.

**Life satisfaction.** Participants completed the Satisfaction with Life Scale (Pavot & Diener, 1993), expressing their agreement with five statements (e.g., “The conditions of my life are excellent”) on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach’s  $\alpha$  was .87 at T1 and .89 at T2.

**Self-esteem.** The 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to assess general self-esteem. Participants rated their agreement with each statement (e.g., “I take a positive attitudes toward myself”) on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*); Cronbach’s  $\alpha$  was .91 at both time points.

#### **Socioeconomic status (SES).**

T1 SES was assessed by mothers’ and fathers’ education on a 7-point scale from 1 (*did not finish high school*) to 7 (*doctoral or professional degree*), and participants’ perceived family economic class on a 7-point scale from 1 (*poor*) to 7 (*wealthy*). The three items were positively correlated ( $r$ s from .43 to .54), and were averaged into one composite score (Cronbach’s  $\alpha = .72$ ).

## **Results**

### **Descriptive information**

Table 1.2 presents hookup prevalence and number of hookup partners at two time points. By the beginning of the semester, 64%, 47%, 36%, and 29% of students reported at least one non-romantic hookup involving prolonged kissing, genital touching, oral sex, and intercourse, respectively. Over the course of the semester, the respective percentages were 37%, 25%, 18%, and 16%. Somewhat more participants reported longer casual than one-time hookups across intimacy levels. At baseline, having both types of hookups was more common than having only one type; during the semester, having only longer casual partners was typically more common

than having only one-time or both types of hookup partners (Figure 1.1). Most new hookups (between 63% and 91%) occurred among those who already had a comparable experience by T1. Between 2% and 13% of those previously inexperienced—but 24% to 52% of those previously experienced—with a given type of hookup had a comparable experience during the semester. At baseline, women were somewhat more likely than men to hook up, and they had more partners across almost all hookup definitions; over the semester, the hooking up behavior of both sexes was similar (Table 1.2).

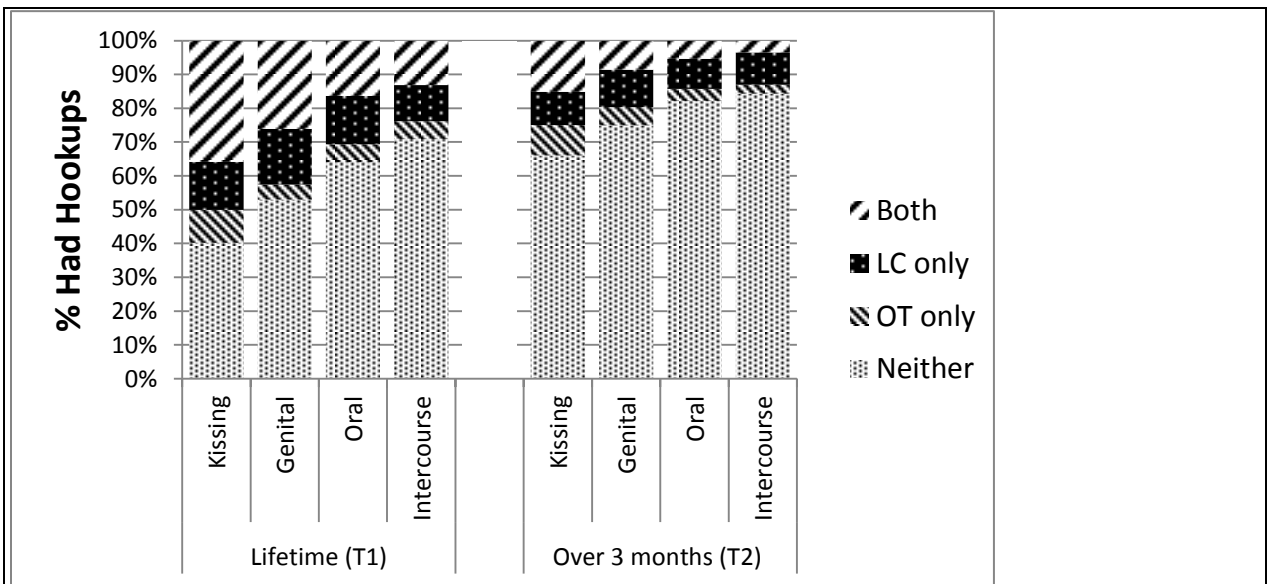


Figure 1.1. Percentage of participants ( $N = 660$ ) who had engaged in one-time (OT), longer casual (LC), both, or neither types of hookups across four levels of physical intimacy at the beginning of the study (T1) and over the course of one academic semester (T2).

Table 1.2. Descriptive Information and Sex Differences for Hookup (HU) Behavior across Different Hookup Definitions

	At beginning of academic semester								Over the course of one semester (three months)							
	Had at least one HU				Total № HU partners				Had at least one HU				Total № HU partners			
	All	M	W	$\chi^2$	All	M	W	$t$ -test <sup>1</sup>	All	M	W	$\chi^2$	All	M	W	$t$ -test <sup>1</sup>
	%	%	%		<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		%	%	%		<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	
OT kissing	45.6	39.2	49.5	6.69*	2.57 (5.72)	2.03 (5.36)	2.89 (5.92)	3.14**	24.1	22.8	24.9	< 1	0.59 (1.52)	0.54 (1.49)	0.61 (1.54)	< 1
OT genital	30.6	26.0	33.3	3.95*	1.03 (2.65)	0.90 (2.73)	1.11 (2.60)	1.93†	14.0	16.4	12.6	1.91	0.27 (0.92)	0.31 (0.99)	0.25 (0.88)	-1.11
OT oral	21.5	17.6	23.9	3.68†	0.64 (2.16)	0.58 (2.26)	0.67 (2.10)	1.31	8.9	12.0	7.0	4.80*	0.14 (0.53)	0.18 (0.66)	0.11 (0.43)	-1.84†
OT intercourse	18.4	15.2	20.3	2.69†	0.47 (1.45)	0.35 (1.17)	0.54 (1.59)	1.89†	6.2	6.8	5.8	< 1	0.10 (0.45)	0.10 (0.46)	0.09 (0.45)	< 1
LC kissing	50.0	43.6	53.9	6.57*	1.90 (3.55)	1.37 (2.90)	2.21 (3.86)	3.59***	24.8	24.4	25.1	< 1	0.48 (1.12)	0.46 (1.16)	0.49 (1.09)	< 1
LC genital	42.5	37.6	45.4	3.89*	1.27 (2.46)	0.94 (2.04)	1.47 (2.67)	3.09**	19.6	19.2	19.8	< 1	0.34 (0.91)	0.34 (0.99)	0.35 (0.87)	< 1
LC oral	30.6	26.4	33.1	3.23†	0.80 (1.82)	0.61 (1.45)	0.92 (1.99)	2.28*	14.2	14.4	14.0	< 1	0.24 (0.80)	0.27 (1.01)	0.22 (0.65)	< 1
LC intercourse	23.8	19.2	26.6	4.67*	0.57 (1.46)	0.39 (1.14)	0.68 (1.62)	2.77**	13.0	12.0	13.5	< 1	0.20 (0.73)	0.22 (0.95)	0.20 (0.56)	< 1
NR kissing	64.2	58.4	67.6	5.78*	4.51 (8.13)	3.45 (7.13)	5.15 (8.62)	3.60***	36.9	34.8	38.2	< 1	1.09 (2.17)	1.02 (2.14)	1.14 (2.18)	< 1
NR genital	47.0	41.6	50.2	4.67*	2.30 (4.42)	1.84 (4.17)	2.58 (4.55)	2.90**	25.0	25.2	24.9	< 1	0.61 (1.49)	0.65 (1.60)	0.59 (1.41)	< 1
NR oral	35.8	30.4	39.1	5.17*	1.44 (3.48)	1.19 (3.32)	1.59 (3.57)	2.13*	17.8	19.6	16.7	< 1	0.38 (1.12)	0.45 (1.36)	0.33 (0.95)	-1.09
NR intercourse	29.1	24.8	31.6	3.54†	1.04 (2.63)	0.74 (2.07)	1.22 (2.91)	2.63**	15.7	15.2	15.9	< 1	0.30 (0.96)	0.32 (1.17)	0.29 (0.81)	< 1

Note. LC = longer casual hookup; OT = one-time hookup; NR = any non-romantic hookup; M = men ( $N = 250$ ); W = women ( $N = 414$ ).

<sup>1</sup> $t$ -test analyses performed after log transformations to reduce non-normality. When Levene's test for equality of variances was significant at  $p < .05$ ,  $t$ -test for equal variances not assumed is used.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Prior to running statistical tests, data were checked for outliers and normality. The relatively few outliers were replaced with the unstandardized score for which  $z = 3$ . Table 1.3 provides zero-order correlations between lifetime hookups and T1 wellbeing (top panel), and new hookups during the semester and T2 wellbeing (bottom panel). Overall, few correlations were significant at either time point; all were small in size (none exceeded  $r = .14$ ). At T1, there were virtually no links between one-time hookups and wellbeing. Longer casual hookups were linked to higher depression and anxiety at all intimacy levels except intercourse, and intercourse hookups were linked to higher self-esteem and life satisfaction; effects were consistent for both sexes. At T2, there were no significant correlations across the entire sample; all but one of the nine significant correlations were among men and in the direction of lower wellbeing.

Table 1.3. Zero-Order Correlations between Different Hookup Definitions and Psychological Wellbeing at Beginning of Semester (T1) and End of Semester (T2)

Hookup definition	Depression			Anxiety			Life satisfaction			Self-esteem		
	All	M	W	All	M	W	All	M	W	All	M	W
T1 Wellbeing/ Hooking up experience by T1												
OT kissing	.01	-.00	.01	.05	.04	.04	.01	-.08	.07	.08	.09	.07
OT genital	.03	.06	.01	.04	.08	.00	-.01	-.08	.04	.05	.02	.07
OT oral	.02	.04	-.00	.04	.06	.02	-.01	-.06	.01	.02	.10	.02
OT intercourse	-.04	-.07	-.03	-.02	-.02	-.02	.04	-.04	.08	.08*	.07	.09
LC kissing	.10*	.11	.08	.09*	.12	.06	-.05	-.05	-.06	-.01	-.01	-.01
LC genital	.08*	.10	.06	.10*	.11	.08	-.00	-.03	.01	-.00	-.04	.02
LC oral	.08*	.07	.08	.08*	.12	.05	.03	.01	.03	.03	.04	.02
LC intercourse	-.03	-.04	-.03	-.01	.01	-.03	.09*	.08	.09	.09*	.08	.10*
NR kissing	.06	.05	.06	.04	.08	.01	-.02	-.02	-.03	.04	.06	.04
NR genital	.07	.08	.05	.09*	.12	.06	-.01	-.02	-.00	.02	-.03	.04
NR oral	.07	.05	.08	.08*	.10	.06	.01	.00	.02	.03	.06	.02
NR intercourse	-.05	-.06	-.04	-.03	.00	-.06	.07	.03	.09	.10**	.10	.11*
T2 Wellbeing/ Hooking up experience between T1 and T2												
OT kissing	-.01	.04	-.04	-.00	.12	-.07	-.02	-.05	-.01	-.03	-.06	-.01
OT genital	-.02	.06	-.06	.03	.14*	-.03	-.00	-.10	.08	-.01	-.09	.04
OT oral	.03	.12	-.03	.06	.13*	.02	-.01	-.11	.08	-.01	-.07	.02
OT intercourse	-.00	.04	-.02	.02	.05	.01	-.01	-.09	.04	-.01	-.07	.03
LC kissing	-.02	.01	-.03	-.01	.06	-.05	.01	-.01	.03	.02	-.01	.03
LC genital	.01	.05	-.02	.00	.08	-.04	-.01	-.04	.01	.02	-.02	.04
LC oral	.03	.07	.01	.02	.05	-.00	.01	-.04	.04	.00	-.03	.02
LC intercourse	.01	.12	-.05	-.00	.14*	-.08	-.04	-.14*	.01	-.04	-.13*	.01
NR kissing	-.03	.00	-.05	-.05	.05	-.12*	-.01	-.01	-.02	.01	-.03	.03
NR genital	-.01	.05	-.05	.01	.12	-.05	-.01	-.04	.02	.01	-.04	.03
NR oral	.01	.10	-.04	.04	.14*	-.02	.00	-.09	.07	.01	-.03	.02
NR intercourse	-.01	.10	-.08	.01	.13*	-.06	-.03	-.13*	.04	-.03	-.11	.02

Note. LC = longer casual hookup; OT = one-time hookup; NR = any non-romantic hookup; M = men ( $N = 250$ ); W = women ( $N = 414$ ). All well-being variables scored on a scale of 1 to 5; higher scores indicate higher presence of variable. All hookup variables coded 1 (Yes) or 0 (No).

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## Hooking Up as Predictor of Wellbeing

Linear regressions predicting each T2 wellbeing measure from each new hookup type at each intimacy level tested whether hookups during the semester were linked to later wellbeing. All models controlled for gender, school year (freshman vs. junior), SES, romantic sex by T2, T1 number of hookup partners, and T1 wellbeing,<sup>1</sup> and tested for interactions between T2 hookups and gender. Results are presented in Table 1.4. Interactions that were at least marginally significant ( $p < .10$ ) were probed by running separate models for women and men.

---

<sup>1</sup> Initial analyses also controlled for sexual orientation (heterosexual vs. nonheterosexual) and race (White vs. Nonwhite). Neither was significant and both were excluded from final models.

Table 1.4. Linear Regression Predicting Wellbeing at Time 2 by Hooking Up (HU) During the Semester and Interactions with Gender (N = 660)

	Depression				Anxiety				Life Satisfaction				Self-Esteem			
	Had HU		HU * Gender		Had HU		HU * Gender		Had HU		HU * Gender		Had HU		HU * Gender	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
	One-time hookups															
Kissing	-.058	.063	-.070	.061	-.017	.060	-.126*	.058	.033	.066	.080	.063	.011	.049	.060	.047
Genital	.022	.077	-.086	.073	.107	.074	-.116†	.070	.006	.080	.171*	.076	-.036	.060	.081	.056
Oral	.157†	.094	-.152†	.088	.203*	.090	-.009	.084	.030	.099	.253**	.091	-.031	.073	.083	.068
Intercourse	.007	.113	-.100	.105	.123	.108	.058	.101	.002	.118	.221*	.110	-.056	.088	.164*	.081
	Longer casual hookups															
Kissing	-.062	.064	-.038	.060	.007	.062	-.089	.057	.092	.066	.084	.062	.068	.049	.027	.046
Genital	-.007	.069	-.045	.065	.070	.066	-.065	.062	.031	.072	.100	.068	.036	.053	.048	.050
Oral	.022	.078	-.046	.074	.066	.075	-.006	.076	.124	.081	.146†	.076	.011	.060	.093	.057
Intercourse	-.031	.081	-.135†	.087	.053	.077	-.132†	.075	.004	.084	.142†	.081	-.041	.062	.102†	.060
	Any non-romantic hookups															
Kissing	-.139*	.059	-.029	.053	-.083	.057	-.104*	.051	.064	.062	.027	.056	.061	.046	.043	.041
Genital	-.017	.065	-.060	.060	.079	.062	-.107†	.057	.030	.067	.095	.062	.011	.050	.044	.046
Oral	.043	.073	-.115†	.066	.137*	.070	-.080	.063	.112	.076	.180**	.069	.013	.057	.067	.051
Intercourse	-.032	.076	-.146*	.071	.103	.073	-.101	.068	.005	.079	.172*	.074	-.043	.058	.133*	.055

Note. All analyses control for gender, school year (freshman vs. junior), socioeconomic status, number of lifetime hookup partners at T1 (log transformed), any non-hookup sex partners by T2 (yes vs. no), and T1 wellbeing; data for these variables not shown.

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Regarding one-time hookups (Table 1.4 top panel), there were main or interactive effects in eight of the 16 regressions. Oral hookups were linked to higher anxiety in both sexes, as well as to higher depression in men,  $B = 0.313$ ,  $SE = 0.143$ ,  $p = .029$ , but not women,  $B = 0.007$ ,  $SE = 0.128$ ,  $p > .10$ , and higher life satisfaction in women,  $B = 0.285$ ,  $SE = 0.136$ ,  $p = .037$ , but not men,  $B = -0.196$ ,  $SE = 0.143$ ,  $p > .10$ . Genital hookups were linked to higher anxiety in men,  $B = 0.269$ ,  $SE = 0.104$ ,  $p = .010$ , but not women,  $B = -0.006$ ,  $SE = 0.103$ ,  $p > .10$ , and intercourse hookups were linked to marginally lower self-esteem in men,  $B = -0.235$ ,  $SE = 0.139$ ,  $p = .092$ , but not women,  $B = 0.092$ ,  $SE = 0.115$ ,  $p > .10$ . The other three interactions (kissing hookups for anxiety, and genital and intercourse hookups for life satisfaction) were due to opposite directions in effects for men (lower wellbeing) and women (higher wellbeing), but none reached significance (all  $ps > .10$ ).

Regarding longer casual hookups (Table 1.4 middle panel), only five marginally significant interactions emerged. Separate models indicated intercourse hookups linked to higher anxiety in men,  $B = 0.257$ ,  $SE = 0.126$ ,  $p = .042$ , but not women,  $B = -0.052$ ,  $SE = 0.099$ ,  $p > .10$ , and oral hookups linked to higher life satisfaction in women,  $B = 0.238$ ,  $SE = 0.103$ ,  $p = .021$ , but not men,  $B = -0.030$ ,  $SE = 0.132$ ,  $p > .10$ . The other interactions were due to opposite directions in effects of intercourse hookups on depression, life satisfaction, and self-esteem for women (higher wellbeing) and men (lower wellbeing), but none reached significance (all  $ps > .10$ ).

Regarding any non-romantic hookups (Table 1.4 bottom panel), two main and seven interactive effects emerged. Kissing hookups were linked to lower depression, and to lower anxiety in women,  $B = -0.162$ ,  $SE = 0.074$ ,  $p = .029$ , but not men,  $B = 0.047$ ,  $SE = 0.089$ ,  $p > .10$ . Genital hookups were linked to higher anxiety in men,  $B = 0.242$ ,  $SE = 0.096$ ,  $p = .010$ , but not

women,  $B = -0.009$ ,  $SE = 0.081$ ,  $p > .10$ . Oral hookups were linked to higher anxiety, and higher life satisfaction in women,  $B = 0.267$ ,  $SE = 0.098$ ,  $p = .007$ , but not men,  $B = -0.085$ ,  $SE = 0.120$ ,  $p > .10$ . Other interactions (oral and intercourse hookups for depression, and intercourse hookups for life satisfaction and self-esteem) were due to opposite directions in effects for women (higher wellbeing) and men (lower wellbeing), but none reached significance (all  $ps > .10$ ).

### **Wellbeing as Predictor of Hooking Up**

A final set of binary logistic regressions examined whether initial wellbeing predicted hooking up during the semester, with three types of hooking up across four levels of intimacy as outcomes. The four T1 wellbeing variables were entered together; interactions with gender were entered in a subsequent step<sup>2</sup>. Models controlled for gender, school year, lifetime number of hookup partners, and romantic partners by T2<sup>3</sup>.

As Table 1.5 demonstrates, there were few significant findings. Across almost all intimacy levels, higher anxiety at the beginning of the semester predicted (marginally) lower likelihood of engagement in longer casual and any non-romantic hookups during the semester. Lower life satisfaction predicted engaging in any non-romantic oral hookups, as well as in longer casual genital and any non-romantic kissing hookups in women,  $B = -.488$ ,  $SE = .206$ ,  $p = .018$ , and  $B = -.410$ ,  $SE = .175$ ,  $p = .019$ , but not men,  $B = .088$ ,  $SE = .256$ , and  $B = .134$ ,  $SE = .228$ , both  $ps > .10$ . T1 depression and self-esteem did not predict hookups between T1 and T2, and there were no wellbeing effects on one-time hookups.

---

<sup>2</sup> Separate regressions for each wellbeing variable yielded similar, albeit somewhat weaker results. Tables available on request.

<sup>3</sup> Initial models also controlled for SES, sexual orientation, and race. None was significant and all were excluded from final analyses.

Table 1.5. Logistic Regression Predicting Hooking Up During the Semester by Wellbeing at Time 1 and Interactions with Gender (N = 660)

	Depression				Anxiety				Life Satisfaction				Self-Esteem			
	Main effect		Interaction		Main effect		Interaction		Main effect		Interaction		Main effect		Interaction	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
	One-time hookups															
Kissing	.117	.194	.110	.207	-.189	.172	-.167	.184	-.164	.145	-.207	.152	-.131	.191	.135	.203
Genital	-.136	.252	-.009	.255	-.085	.220	.065	.224	-.043	.183	.041	.182	-.113	.245	.153	.245
Oral	-.357	.330	.226	.340	-.106	.283	-.356	.290	-.206	.220	.228	.221	-.153	.305	-.120	.307
Intercourse	-.087	.377	.213	.418	-.257	.333	-.404	.358	-.052	.281	.185	.280	-.136	.374	-.356	.383
	Longer casual hookups															
Kissing	-.075	.203	.109	.215	-.345†	.185	.005	.192	-.171	.147	-.230	.152	-.058	.195	.312	.207
Genital	.233	.222	-.077	.229	-.587**	.207	-.028	.209	-.262†	.157	-.267†	.162	.151	.211	.107	.221
Oral	.227	.250	-.334	.260	-.413†	.231	.145	.238	-.277	.179	-.110	.183	.161	.241	-.224	.253
Intercourse	.258	.251	.052	.268	-.530*	.240	-.299	.247	-.287	.188	.123	.192	-.032	.248	-.102	.261
	Any non-romantic hookups															
Kissing	.179	.184	.044	.192	-.454**	.169	-.037	.176	-.214	.136	-.252†	.140	-.062	.180	.222	.189
Genital	.128	.208	-.081	.213	-.506**	.191	.097	.194	-.200	.148	-.181	.151	.014	.200	.132	.205
Oral	-.063	.239	-.126	.246	-.338	.215	-.040	.218	-.352*	.168	.057	.169	.075	.225	-.201	.231
Intercourse	.086	.243	-.092	.252	-.490*	.225	-.268	.232	-.228	.175	.116	.178	-.107	.235	-.284	.243

Note. All analyses control for gender, school year (freshman vs. junior), number of lifetime hookup partners at T1 (log transformed), and any non-hookup partners by T2 (yes vs. no); data for these variables are not shown. All T1 wellbeing variables entered together in the same step; interactions with gender added in a separate step.

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## Discussion

This study examined cross-sectional and short-term longitudinal links between four aspects of psychological wellbeing (depression, anxiety, life satisfaction, and self-esteem) and several definitions of hookups in terms of relationship length (one-time, longer casual, and any non-romantic) and physical intimacy levels (prolonged kissing, genital touching, oral sex, intercourse). Depending on the hookup definition, wellbeing outcome, type of analysis, and participants' gender, there were positive, negative, and nonsignificant links. General links between hooking up and wellbeing are discussed first, followed by findings regarding different hookup operationalizations and sex differences.

### Hooking Up and Wellbeing

Consistent with some prior cross-sectional research (Bersamin et al., 2013; Mendle et al., 2013), at least some hookup definitions were linked to higher concurrent depression at baseline. In contrast to some earlier studies (Paul et al., 2000), self-esteem was not negatively related to hookups: the few significant correlations suggested *higher* self-esteem in those with intercourse hookups. Consistent with prior short-term longitudinal research on college students (Fielder & Carey, 2010b; Owen et al., 2011), new hookups were generally not linked to later depression or self-esteem, nor were initial depression or self-esteem linked to later hooking up. An exception were new non-romantic kissing hookups, which were linked to *lower* later depression. Together with past adolescent studies (Grello et al., 2003; Manning et al., 2005; Meier, 2007; Monahan & Lee, 2008; Shulman et al., 2009), these findings suggest that higher depression or lower self-esteem may lead to more casual sex engagement in adolescence, but such effects are not present by emerging adulthood, and casual sex does not lead to subsequent depression or lower self-esteem in adolescence or young adulthood.

Overlooked in past research on youth and hookups, in this study anxiety was the wellbeing outcome with most links to hookups. Anxiety and hookups were positively correlated cross-sectionally, and new hookups were often linked to higher subsequent anxiety. At the same time, those with *lower* initial anxiety were more likely to engage in later hookups. Hookups may lead to anxiety because they are frequently followed by worries and fears regarding relationship outcomes, sexual health consequences, or reputation loss (Campbell, 2008; Paul & Hayes, 2002; Townsend & Wasserman, 2011). Simultaneously, these same fears may be preventing those with higher initial anxiety from hooking up in the first place.

Life satisfaction is another wellbeing aspect overlooked in prior hookup research. In this study, life satisfaction had few cross-sectional links to hookups; longitudinally, however, new hookups were predicted by lower initial satisfaction, yet predicted higher later satisfaction (among women). Considering that sexual satisfaction is part of life satisfaction, those less satisfied with their sex lives may have sought (casual) sex as a way to improve their sexual and general life satisfaction. The finding of higher life satisfaction following hookups suggests this may have been an effective strategy. Indeed, positive reactions to hookups are stronger and more common than negative ones, and include sexual satisfaction, confidence, self-knowledge, and social/academic engagement (Campbell, 2008; Fielder & Carey, 2010b; Owen & Fincham, 2011; Owen, Quirk, & Fincham, 2013), all of which could contribute to higher life satisfaction.

### **Hookup Operationalizations and Wellbeing**

Across all analyses, nonsignificant links to wellbeing were the most common finding for both one-time and longer casual hookups. However, when findings were significant, they often diverged. For example, only longer casual hookups were predicted by lower initial anxiety. It is possible that anxiety does not prevent people from engaging in unplanned and unexpected one-

night stands (Paul & Hayes, 2002), but prevents them from engaging in repeated, and often more deliberate, interactions with casual partners. Furthermore, only longer casual hookups were concurrently linked to higher depression and anxiety, but only new one-time hookups predicted higher later anxiety, depression (in men), and life satisfaction (in women). This suggests that one-time hookups might have some immediate, but short-lived, impact on wellbeing; longer casual hookups, in contrast, might take longer to exert their effect, which may then endure longer. Longer longitudinal studies are necessary to assess this possibility.

The level of sexual intimacy at which hooking up was defined was often consequential. For example, defined most broadly, as involving at least kissing, one-time hookups were linked to increased anxiety in men but not women; defined as involving at least oral sex, there was such effect for both sexes; defined most narrowly, as necessarily involving intercourse, there was no such effect for either sex. Consistent with expectations, definitions restricted to more intimate sexual behaviors (oral sex or intercourse) yielded more effects on later wellbeing (seven and nine effects, respectively) compared to less restrictive definitions including genital touching and kissing (three effects each; Table 1.4); no such pattern emerged when predicting new hookups from initial wellbeing (Table 1.5). More intimate behaviors may have greater power to affect wellbeing through neurochemical bonding, physical pleasure, sexual health consequences, or social costs (Fugl-Meyer et al., 2006; Peterson & Muehlenhard, 2007; Young & Wang, 2004), and these effects may be “diluted” when less impactful behaviors are included in definitions.

### **Sex Differences**

The most common finding for both sexes was one of nonsignificance, and all but two effects of initial wellbeing on new hookups were unmoderated by gender. When interactions were significant—as in 19 of the 48 potential effects of hookups on later wellbeing—separate

models revealed higher wellbeing among women and/or lower wellbeing among men following hookups. Although these effects did not always reach significance, not one was in the opposite direction. Across all hookup definitions and wellbeing outcomes, links of new hookups to higher later wellbeing were more common among women than men (five vs. one), whereas links to lower wellbeing were more common in men than women (seven vs. two).

This pattern of findings is novel and unexpected given prior theory and research suggesting women may be more strongly affected by negative social, neurochemical, or physical health consequences of casual sex (Crawford & Popp, 2003; Paul et al., 2009; Schmitt et al., 2001; Townsend, 1995). Perhaps such consequences are less relevant for recent generations of young women, particularly those from privileged backgrounds, living in liberal environments, with progressive values and easy access to contraception. For them, hooking up may be empowering (Moran & Lee, 2012). This is consistent with strategic pluralism, the evolutionary theory that mating strategies vary according to environmental conditions and that women with certain personal and social characteristics benefit from casual sex (Gangestad & Simpson, 2000). The reason for hookups' negative wellbeing effects in men (mostly on anxiety) is perhaps less clear. One possibility is that as hookups are—or are believed to be—becoming normative, traditional masculinity ideology dictates that college men engage in them, creating pressure to perform (well) as well as gender role strain (reviewed in Levant, 2011).

### **Limitations and Future Research**

A number of study limitations warrant caution in considering the findings. Despite a university-wide sample unbiased by recruitment procedures, the response rate was low (13%), raising the possibility of self-selection bias. Despite a relatively large sample, only a minority of students engaged in various types of hookups (as few as 6% for one-time intercourse hookups),

resulting in many analyses—particularly those including one-time, intercourse hookups, and interactions with gender—to be underpowered, failing to detect effects. On the other hand, many significant effects were small in size and, given the large number of analyses, some could have been due to chance. Moreover, most significant findings were in the area of life satisfaction and anxiety, two wellbeing indicators not studied in this context, thus requiring replication.

This study distinguished between one-time and longer casual hookups. Future research should examine wellbeing links across other casual sex operationalizations. The four levels of physical intimacy used were not mutually exclusive, and therefore the level of intimacy required to trigger any positive or negative effects could not be determined. Participants were only followed during a short, 3-month period, and it remains unclear whether, and to what extent, effects persist or emerge over longer periods. In addition, frequent nonsignificant findings point to the possible existence of moderators (Baron & Kenny, 1986); future research should address the individual, interpersonal, and social factors on which these links may depend.

## **Conclusions**

The relationship between hooking up and wellbeing is likely complex, including both positive and negative links that vary depending on age, gender, wellbeing aspect, and hookup definition. This has empirical implications for using more refined definitions and tests of these relationships across studies, but also practical implications for crafting more nuanced messages that parents, peers, or counselors communicate to young people regarding their sexual behavior and its wellbeing implications.

STUDY #2

In press in the *Archives of Sexual Behavior*

Does Casual Sex Harm College Students' Wellbeing?  
A Longitudinal Investigation of the Role of Motivation

Zhana Vrangalova<sup>1</sup>

Cornell University

Author note

<sup>1</sup>Department of Human Development, Cornell University, Ithaca, New York.

This research was partially supported by a grant-in-aid from the Foundation for Scientific Study of Sexuality, a grant-in-aid from the Society for the Psychological Study of Social Issues, and a grant from the Human Ecology Alumni Association, Cornell University, all awarded to the author for conducting her doctoral dissertation research. I would like to thank Rachel Mack, Melany Bradshaw, and Vickie Liang for their help with data collection and preparation.

Corresponding author: Zhana Vrangalova, B40 Martha Van Rensselaer Hall, Human Development, Cornell University, Ithaca, NY 14850. Phone: 607-280-6433. E-mail: sv99@cornell.edu.

Does Casual Sex Harm College Students' Wellbeing?  
A Longitudinal Investigation of the Role of Motivation

Abstract

Engagement in casual sex (or hooking up) is generally feared to have negative wellbeing consequences. However, empirical evidence is inconclusive, pointing toward potential moderators. Using self-determination theory (SDT), I hypothesized that wellbeing following hookups would depend on the type and level of motivation for hooking up. A university-wide sample of 528 undergraduates completed online surveys at the beginning (T1) and end (T3) of one academic year. After controlling for demographics, personality traits (i.e., neuroticism and extraversion), prior casual and romantic sex, and T1 wellbeing, having genital hookups between T1 and T3 v. Autonomous hookup motivation (i.e., emanating from one's self) was not linked to any outcomes. Compared to peers without hookups, those with high nonautonomy in their hookups typically had inferior wellbeing; this was not true of those with low nonautonomy hookups. Sex differences, implications for SDT and casual sex research, and implications for educational programs and clinical work are discussed.

*Keywords:* autonomous motivation; casual sex; hooking up; psychological wellbeing; self-determination theory

## **Introduction**

Casual sex, sexual behavior occurring outside of long-term romantic relationships, has gained substantial cultural salience among young people over the last two decades (Garcia, Reiber, & Massey, 2012). Although the majority of youth's sexual experiences occurs with romantic partners (Fielder, Carey, & Carey, 2013), up to 80% of all college students report some casual sex experience (Garcia & Reiber, 2008; Gute & Eshbaugh, 2008; Paul, McManus, & Hayes, 2000), and some have argued that hooking up is replacing dating as the primary context for establishing and maintaining intimate relationships on campuses (Bogle, 2008). In light of such data, many have raised concerns that, unlike sex with romantic partners, sex with casual partners could have detrimental consequences on youth's mental health (Paul, 2006; Townsend & Wasserman, 2011). Thus far, longitudinal evidence of such negative outcomes has been mixed (Fielder & Carey, 2010a; Grello, Welsh, & Harper, 2003; Monahan & Lee, 2008; Owen, Fincham, & Moore, 2011), suggesting there may be important individual, social, or situational factors moderating that link. Grounded in self-determination theory (SDT, Deci & Ryan, 2000), the current study explores one such potential factor – one's motivation for hooking up.

### **Casual Sex and Wellbeing**

Partnered sexual activity has many health benefits, including increased cardiovascular, respiratory, immune, and reproductive functioning, longevity, and life satisfaction, and lower depression and anxiety (reviewed in Levin, 2007; Whipple, 2002). These benefits, however, are traditionally ascribed exclusively to romantic sex; casual sex is instead portrayed as leading to a host of negative physical and psychological outcomes by scholars (Paul, Wenzel, & Harvey, 2009; Townsend & Wasserman, 2011), health professionals (McIlhaney & Bush, 2008), and the media (Stepp, 2007) alike. The mechanisms by which casual sex might affect health have not been clearly formulated, but there are several potential explanations. For example, casual sex is

often socially stigmatized (reviewed in Crawford & Popp, 2003; for more recent evidence, see Allison & Risman, 2013), and compared to romantic sex, more likely to be enjoyed less, accompanied by heavy alcohol/drugs use, and followed by regret or negative sexual health outcomes (Armstrong, England, & Fogarty, 2012; Bailey, Kirk, Zhu, Dunne, & Martin, 2000; Coleman, Rue, Spence, & Coyle, 2008; Campbell, 2011; Cooper, 2002; Fielder & Carey, 2010b). Casual sex, by definition, lacks commitment and thus fails to satisfy the innate human need for deep and lasting interpersonal connection (Baumeister & Leary, 1995). At the same time, even brief sexual contact creates neurochemical (Young & Wang, 2004) and experiential (Haselton & Buss, 2001) emotional bonds; the frequent dissolution of these bonds following casual sex (Manning, Giordano, & Longmore, 2006; Paul et al., 2000) may result in sense of hurt and rejection (de Graaf & Sandfort, 2004).

Social commentators and scholars have shown particular concern for the wellbeing of women following casual sex. Sexual strategies theorists have argued that short-term mating (i.e., casual sex) is comparatively less evolutionarily advantageous and costlier for women (Buss & Schmitt, 1993; Schmitt, Shackelford, & Buss, 2001), and women's lower desire for casual sex is one of the largest sex differences in sexuality (Oliver & Hyde, 1993; Petersen & Hyde, 2010). Some scholars have suggested that short-term mating is never advantageous for women, and thus they never *truly* desire it, even when they might think they do (Paul, 2006; Townsend & Wasserman, 2011). Furthermore, the social costs that women incur for engaging in casual sex and other forms of unrestricted sexuality are higher than those of men, a phenomenon known as the "sexual double standard" (reviewed in Baumeister & Twenge, 2002; Crawford & Popp, 2003; for more recent evidence see Kraeger & Staff, 2009; Marks, 2008; Vrangalova, Bukberg, & Rieger, 2013). Women are also likely disproportionately more affected by negative

reproductive outcomes (e.g., unwanted pregnancy), and may be more susceptible to forming attachment bonds following casual sex (de Graaf & Sandfort, 2004; Townsend & Wasserman, 2011), perhaps due to differential effects of oxytocin (Young & Wang, 2004).

Despite seemingly harm-producing characteristics of casual sex, in both sexes positive reactions following hookups are stronger and more common than negative reactions, including sexual satisfaction, confidence and self-esteem, self-knowledge, and better social and academic engagement (Campbell, 2008; Fielder & Carey, 2010b; Owen & Fincham, 2011; Owen, Quirk, & Fincham, 2013). Furthermore, a decade of research into mental health consequences of casual sex has produced inconclusive results. Although some cross-sectional studies have found links between casual sex and decreased wellbeing, particularly among women (Bersamin et al., 2013; Grello et al., 2006; Mendle, Ferrero, Moore, & Harden, 2013; Paul et al., 2000), the most frequent finding for both sexes is one of no relationship (Bancroft, Janssen, Carnes, Goodrich, & Strong, 2004; Gentzler & Kerns, 2004; Owen, Rhoades, Stanley, & Fincham, 2010; Sakaguchi, Sakai, Ueda, & Hasegawa, 2007; Schmitt, Shackelford, Duntley, Tooke, & Buss, 2001; Schmitt, 2005). Similarly, longitudinal studies typically find no effects of casual sex on depression, loneliness, body image, and self-esteem after controlling for pre-existing wellbeing differences among adolescents (Grello et al., 2003; Meier, 2007; Monahan & Lee, 2008; Shulman, Walsh, Weisman, & Schelyer, 2009) or college students and young adults (Eisenberg, Ackard, & Neumark-Sztainer, 2009; Fielder & Carey, 2010a; Owen et al., 2011).

Such nonsignificant or contradictory results often point to the presence of moderators (Baron & Kenny, 1986) – it is likely that not all casual sex encounters have the same potential to harm or benefit wellbeing, and not all those engaging in them are equally susceptible to that potential. Yet, with the exception of biological sex, inquiry into potential individual, social, and

situational moderators of the link between casual sex and wellbeing has been limited. Some previously examined factors include level of physical intimacy (intercourse vs. no intercourse) in a hookup (Fielder & Carey, 2010a; Paul et al., 2000), casual sex onset (early, on-time, and late) relative to demographically similar others (Meier, 2007), and initial levels of wellbeing (Owen et al., 2011). Cross-sectional studies also found that, among those with at least one hookup, lower psychological wellbeing was linked to negative or mixed reactions to or regret after their hookups (Grello et al., 2006; Owen & Fincham, 2011; Owen et al., 2010). However, these studies did not compare the wellbeing of those with different reactions following their hookups to the wellbeing of those without hookups. It is, therefore, not clear whether “good” hookups increase and “bad” ones decrease wellbeing *relative to no hookups*, or all hookups decrease wellbeing compared to no hookups, only some do so less than others. Furthermore, no study to date has examined an individual-level factor that is both specific to *and* precedes, rather than follows, the hookup experience.

Identifying moderating factors is an important next step toward a conceptual understanding of the boundary conditions under which casual sex leads to poor mental health outcomes and the psychological processes that account for this effect. Beyond its theoretical significance, such nuanced knowledge could have important practical implications for sex education, public policy, and clinical work. Identifying individual-level factors that are specific to and precede the hookup experience may be particularly relevant in this regard, as such factors may be under conscious control of the individual, and thus manipulated toward a healthier outcome. Guided by SDT, an established macro-theory of human motivation and personality (Deci & Ryan, 1985; 2000), the present study examines motivation for casual sex as one such potential factor.

## Self-Determination Theory and Wellbeing

SDT proposes that behaviors vary with respect to how self-determined (i.e., intentional) they are, and that different levels of self-determination lead to different psychological outcomes (Deci & Ryan, 1985; 2000). According to SDT, three broad types of motivation represent this continuum of self-determination. *Autonomous motivation* is experienced as emanating from one's self and reflecting one's values and interests, or, in attributional terms, has an internal perceived locus of causality (Ryan & Connell, 1989). Examples of autonomous motives include doing something because it is pleasurable or because one believes it is an important experience to have. *Controlled motivation* is experienced as emanating either from self-imposed pressures (e.g., managing feelings of shame or pride), or from external contingencies and controls (e.g., receiving rewards or avoiding punishments); in attributional terms, controlled behaviors have an externally perceived locus of causality. In contrast to autonomous and controlled motives, both of which represent intentional behaviors, SDT also theorizes a state of *amotivation*, or a complete lack of intentionality for a specific behavior (e.g., being forced into a behavior one did not wish to engage in).

Extensive cross-sectional, longitudinal, and experimental research has demonstrated that engaging in behaviors for autonomous reasons leads to greater psychological health and more sustained and effective performance, while the opposite is true of controlled and amotivated engagement. The benefits of self-determination extend across a variety of domains of human activity, including close relationships, education, work, health behaviors, and therapy (for reviews, see Gagné, & Deci, 2005; Guay, Ratelle, & Chanal, 2008; La Guardia & Patrick, 2008; Ryan & Deci, 2008; Teixeira, Carraça, Markland, Silva, & Ryan, 2012). Wellbeing benefits were also found in the only two studies that have applied SDT to the area of sexual motivation: Higher

self-determination in students' partnered sexual experiences was positively associated with better sexual wellbeing (higher sexual pleasure, satisfaction, and orgasm frequency, and fewer feelings of sexual guilt and regret), general wellbeing (higher self-esteem, vitality, life satisfaction, and fewer depression and physical health symptoms); and relationship functioning (Brunell & Webster, 2013; Jenkins, 2004). However, these studies either did not distinguish between relational contexts of participants' sexual experiences (Jenkins, 2004) or focused exclusively on sex in dating relationships (Brunell & Webster, 2013). No study to date has examined self-determination specifically in the context of casual sex.

### **Self-Determination in Casual Sex**

Although casual sex motivation has not been studied from an SDT perspective, research on motives for casual sex reveals the full spectrum of self-determination postulated by SDT. Some of the most frequently cited reasons for casual sex by both sexes can be considered autonomous, including sexual desire, pleasure, physical attraction, experimenting and exploring, and novelty and excitement (Fielder & Carey, 2010b, Garcia & Reiber, 2008; Greiling & Buss, 2000; Kenney, Thadani, Ghaidarov, & LaBrie, 2013; Regan & Dreyer, 1999). Controlled motives, such as low self-esteem, need for self-affirmation, peer pressure, social status, or material rewards are cited regularly by a significant minority of participants (Fielder & Carey, 2010b; Garcia & Reiber, 2008; Greiling & Buss, 2000; Kenney et al., 2013; Regan & Dreyer, 1999). Unintentional engagement or amotivation such as being coerced or tricked into it is relatively rare but experienced by a non-trivial number of individuals, particularly women (Lewis, Granato, Blayney, Lostutter, & Kilmer, 2012; Regan & Dreyer, 1999). Unintentional or otherwise non-autonomous engagement due to intoxication with alcohol or drugs, on the other hand, is one of the most frequently cited reasons for engaging in casual sex by both men and

women (Fielder & Carey, 2010b; Garcia & Reiber, 2008; Regan & Dreyer, 1999), and this factor is sometimes a stronger predictor of casual sex behaviors than youth's own intentions (Apostolopoulos, Sonmez, & Yu, 2002).

Up to half of all participants in research on casual sex motivation note intimacy and relationship motives (e.g., increasing probability of long-term relationship and commitment) as reasons for engaging in casual sex, and these motives may be more prevalent among women than men (Garcia & Reiber, 2012; Regan & Dreyer, 1999). Although such motives can be considered autonomous in the context of romantic sex (Brunnell & Webster, 2013; Jenkins, 2004), this is likely not the case with most instances of casual sex. Casual sex is by definition devoid of deep emotional involvement and commitment, and casual sex encounters rarely progress to romantic relationships (Manning et al., 2006; Paul et al., 2000). Engaging in this behavior for relationship motives would often create false hopes and unrealistic expectations leaving the person vulnerable to disappointment and emotional hurt. Thus we expected relationship motivation to be predominantly nonautonomous in the context of casual sex.

Given this motivational milieu of casual sex engagement, self-determination processes can be expected to operate similarly with casual sex behaviors as with other behaviors in the way they affect wellbeing – increasing wellbeing with increasing self-determination among those who engage in this behavior. Moreover, self-determination in hookups may be relevant to wellbeing comparisons between individuals with and without hookups. If hooking up is a generally stressful event that compromises wellbeing (i.e., significant main effect), self-determination in hookups may buffer against this negative effect, bringing the wellbeing of those with highly determined hookups to a similar level as those without any hookups. On the other hand, if the effects of hookups depend on the specific qualities of the hookup or the individual

(i.e., no significant main effect), those with highly self-determined hookups will report higher wellbeing than those without any hookups. Such individuals are uniquely positioned to capitalize on the positive qualities of their hookups unlike those in the no-hookup group who genuinely desired a hookup yet failed to engage in one.

### **Current Study**

The current study employs a longitudinal design to examine the impact of hooking up and self-determination in hookups on four aspects of wellbeing (self-esteem, depression, anxiety, and physical health symptoms) in a large, university-wide sample of undergraduate students followed over a period of one academic year (nine months). Based on mixed prior evidence, the main effect of hooking up on wellbeing over the year was expected to be largely nonsignificant, after controlling for prior levels of wellbeing (H1). The two main hypotheses were based on SDT. The second hypothesis was that, among those who engaged in at least one hook up over the course of the year, self-determination in hookups would be associated with higher wellbeing after controlling for prior levels of wellbeing (H2); specifically, autonomous motivation would be linked to higher wellbeing (H2a) and nonautonomous (controlled motivation and amotivation) motivation would be linked to lower wellbeing (H2b). The third hypothesis was that high self-determination for hooking up would be consequential in comparisons with those who do not engage in hookups over the course of the year (H3). Specifically, I hypothesized that individuals with high hookup self-determination (high autonomy and/or low nonautonomy) would not differ from or may surpass in wellbeing those without hookups (H3a). Those with low hookup self-determination (low autonomy and/or high nonautonomy), on the other hand, would exhibit lower wellbeing than their hookup-inexperienced peers (H3b).

Given prior theory and research on sex differences in motivations for casual sex, I expected women to have lower absolute levels of autonomous (H4a) and higher levels of nonautonomous hookup motivation compared to men (H4b). However, given mixed evidence of sex differences in wellbeing outcomes of casual sex, and general lack of evidence for sex differences in SDT processes, no predictions were made regarding sex differences in the first three hypotheses. In order to explore this possibility, however, analyses tested for moderation by sex in all analyses.

In addition to basic demographics and initial levels of wellbeing, the current study controlled for several covariates that may confound the link between casual sex and wellbeing. Hooking up experience prior to the study was included because some evidence indicates that people become more skilled at dealing with the emotional and social challenges that may arise from casual sex (Gilmartin, 2006; Townsend, 1995). Romantic sex engagement was controlled for because any links between casual sex and wellbeing may in fact be due to having sex in general, rather than casual sex in particular (Grello et al., 2003; Monahan & Lee, 2008). Finally, two personality characteristics were included – extraversion and neuroticism – that previous studies of casual sex and wellbeing have not considered. Higher neuroticism and lower extraversion are known to correlate with poorer wellbeing (Costa & McCrae, 1980), lower self-determination (Deci & Ryan, 1985), and lower engagement in casual sex (Gute & Eschbaugh, 2008; Olmstead, Pasley, & Fincham, 2013; Schmitt, 2005). Accounting for these traits is thus critical for excluding any links between casual sex, motivation, and wellbeing as spurious relationships.

To our knowledge, this is the first study to apply SDT to the casual sex context and the first to examine motivation for casual sex as a potential determinant of wellbeing. Although

typologies of and approaches to motivation and sexual motivation other than the one provided by SDT have been developed (e.g., Cooper, Shapiro & Powers, 1998; Hill and Preston, 1996; Meston & Buss, 2007), none has been used to determine its links to general wellbeing in the context of casual sex. This is also one of the first studies to examine any moderators of the relationship between casual sex and wellbeing, particularly in a longitudinal design. In this way, the study contributes to shifting research and applied work towards a more nuanced understanding of casual sex and its health consequences. To our knowledge, this is also the first attempt to apply SDT to a behavior that many deem socially unacceptable (Allison & Risman, 2013; Marks & Fraley, 2005) and harmful (Paul, 2006; Stepp, 2007). This provides an opportunity to evaluate the boundaries of SDT, which is typically applied to pursuits considered useful and healthy (e.g., academic, health, work, prosocial, or romantic behaviors). If self-determined motivation has the power to foster wellbeing or buffer against its deterioration in the face of social disapproval or other harm-potential, this would be evidence for a broader application of SDT than the current literature allows for.

## **Method**

### **Participants and Procedures**

Using the Cornell University registrar, an email was sent to all registered freshmen and juniors (approximately 6,500 students) at the beginning of the 2009 Fall semester (September 2009), inviting them to participate in a longitudinal study about sexuality on campus that requires completing two similar 35-minute long, online questionnaires at the beginning (T1) and the end (T2) of the academic semester. A total of 872 students (59% female) completed T1 (13.4% response rate), and 669 students (63% female) completed T2 (77% retention rate). At the end of the academic year in May 2010, all initial participants were contacted again for a Time 3

(T3) follow-up; 560 students (64% female) completed T3 (64% retention rate). As an incentive for participation in T1 and T2, students were offered either two research credits (if eligible) or a chance to win one of 25 \$30 lottery prizes; all participants in T3 received compensation of \$5. Only T1 and T3 data were used in the present study.

After excluding students with incomplete responses and those over 24 years old (as atypical college students), the final T3 sample consists of 528 students. Demographic information is presented in Table 2.1. The sample distribution across colleges and racial/ethnic background closely mirrors Cornell University's enrollment rates. Compared to those who completed T3, those who dropped out were more likely to be male,  $\chi^2(1) = 17.63, p < .001$ , and nonwhite,  $\chi^2(1) = 20.25, p < .001$ . The groups did not differ in terms of school year, SES, self-esteem, depression, anxiety, somatic symptoms, or romantic and casual partners, all  $ps > .10$ .

*Table 2.1. Demographic and Sexual Behavior Characteristics of Students Who Completed T1 and T3*

Variable	n	%	Variable	n	%
Sex			College		
Women	338	64.0	Agricultural & Life Sciences	131	25.0
Men	190	36.0	Architecture, Art, & Planning	15	2.8
Sex Orient			Arts & Sciences	175	33.1
Heterosexual	418	79.2	Engineering	112	21.2
Mostly heterosexual	55	10.4	Hotel Administration	18	3.4
Bisexual	21	4.0	Human Ecology	53	10.0
Mostly gay/lesbian	14	2.7	Industrial & Labor Relations	21	4.0
Gay/lesbian	18	3.4	School year		
Other	2	0.4	Freshman	231	43.8
Race			Junior	296	56.1
White	370	70.1	Relationship status		
Asian	73	13.8	Not dating or seeing anyone	250	47.3
Latino	22	4.2	Casually dating or seeing 1 or more people	71	13.4
Black	20	3.8	In a romantic relationship, engaged, or married	207	39.2
Other	6	1.1	Perceived socioeconomic class		
Multiracial	37	7.0	Lower-middle or lower	83	15.7
Religion			Middle	176	33.3
Agnostic/Atheist	227	43.5	Upper-middle or higher	269	50.9
Catholic	108	20.7	Parents education (highest)		
Protestant	80	15.3	Less than BA	64	12.1
Jewish	50	9.5	Bachelor's degree	119	22.6
Other	57	10.3	Graduate/professional	344	65.3
Genital romantic sex by T3	401	76.1	Genital hook up	246	46.7
Variable			Mean	SD	Range
No. of hookup partners – Genital			2.21	4.48	0-35

*Note.* Due to missing data, N ranges between 522 and 528. All variables are assessed at T1 unless noted otherwise.

## Measures

**Sex partners.** At T1, participants provided their total lifetime number of three types of sex partners: romantic partners (i.e., partners they considered boyfriend/girlfriend); longer casual partners such as friends-with-benefits or fuck-buddies (i.e., partners they interacted with sexually more than once, but were never in a romantic relationship with); and one-time partners (i.e., partners they interacted sexually with only once). For each partner type, they specified the number of different partners with whom they had engaged in any kind of genital stimulation (i.e., genital touching, oral, vaginal, or anal sex). At T3, participants provided the same information about all sex partners they had since T1. For this study, one-time and longer casual partners were combined into one variable - hookup partners. Based on this information, we constructed several relevant variables. One's total lifetime number of genital hookup partners at T1 (log-transformed to reduce non-normality), and whether a participant had any romantic genital sex by T3 served as control variables. Whether a participant had a genital hookup between T1 and T3 was the main behavior of interest. Both romantic sex by T3 and hookups between T1 and T3 were dichotomized due to low variability in the number of partners (in both cases, 82% of all participants had between 0 and 2 partners).

**Hookup motivation.** Participants who reported at least one genital hookup between T1 and T3 ( $n = 196$ ) were asked to report on their motivations for hooking up during this period. Based on SDT (Ryan & Deci, 2000), previous SDT-based studies (e.g., helping motivation, Weinstein & Ryan, 2010), and past research on motivation for casual sex (Garcia & Reiber, 2008; Reagan & Dryer, 1999; Weaver & Herold, 2000), an 8-item motivation scale was constructed specifically for this study. Three items assessed autonomous motives ("I wanted the fun and enjoyment," "I wanted to explore and learn about my sexuality and myself in general,"

and “I believe it is an important experience to have”); three assessed controlled motives (“I wanted to feel better about myself, for example, more desirable or more confident, or to avoid other unpleasant feelings,” “I wanted to please someone else, such as my partner or my friends, or because the situation seemed to compel it,” and “I wanted to get a favor or some kind of material reward from someone, or get revenge against someone”); and one assessed amotivation (“I was somehow tricked or coerced into it, or otherwise unable to make a responsible decision, for example, due to alcohol or drugs; I did not actually want to hook up”). An additional item asked about relationship reasons (“I was hoping it would lead to a long-term relationship”). Participants identified how frequently each reason led them to hook up between T1 and T3 on a scale of 1 (*none of my hookups*) to 7 (*all of my hookups*).

As expected, principal component analysis identified three factors with eigenvalues greater than 1.0. The first factor (eigenvalue = 2.32) explained 29%, the second factor (eigenvalue = 1.33) explained 17%, and the third factor (eigenvalue = 1.03) explained 13% of the variance in the items. Following varimax rotation, the three items constructed to assess autonomous motivation loaded on the first factor with an average loading of .75, the four items designed to assess controlled motivation (including relationship motivation) loaded on the second factor with an average loading of .65, and the sole amotivation item loaded on the third factor with a loading of .87. No items cross-loaded above .36. Two mean scores per participant were computed based on these ratings. The three items loading on the 1<sup>st</sup> factor were averaged into an autonomous motivation score. Controlled motivation and amotivation are both theorized to be negatively linked to wellbeing outcomes (Deci & Ryan, 2000) and that was the case in the current study with all four wellbeing outcomes in preliminary zero-order correlations (data

available on request). Therefore, the items loading on the 2<sup>nd</sup> and the 3<sup>rd</sup> factor were averaged into one nonautonomous motivation score<sup>4</sup>.

### **Outcome variables.**

All wellbeing outcomes were assessed at T1 and T3. The variables were constructed as means of all the items, with higher scores indicating greater presence of the variable.

**Depression and anxiety.** Depression and anxiety were assessed using the corresponding subscales of the Brief Symptom Inventory (Derogatis, 1993). Participants rated the extent to which they were distressed in the past week by five indicators of depression (e.g., “feeling blue”) and six indicators of anxiety (e.g., “spells of terror or panic”) on a 5-point Likert scale from 1 (*not at all*) to 5 (*extremely*). Cronbach’s  $\alpha$  at T1 and T3 were .85 and .84 for depression, and .86 and .89 for anxiety, respectively.

**Self-Esteem.** The 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to measure general self-esteem. Participants rated their agreement with each statement (e.g., “I take a positive attitudes toward myself”) on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach’s  $\alpha$  was .91 at both T1 and T3.

**Physical symptoms.** Physical health-related issues were assessed using an adapted version of the Emmons’ (1991) checklist. Using a scale from 0 (*not once*) to 7 (*every day*), participants noted on how many days in the previous week they experienced five different physical symptoms, including cold and flu symptoms, aches and pains, digestive problems, allergies, and sleeping difficulties. Items were standardized before constructing mean scores. Cronbach’s  $\alpha$  was .50 at T1 and .64 at T3.

### **Control variables.**

---

<sup>4</sup> The results were virtually identical, albeit somewhat weaker, when the amotivation item was excluded from the nonautonomous motivation score, or when controlled motivation and amotivation were treated as separate variables

**Extraversion and neuroticism.** At T1, participants completed the Neuroticism and Extraversion subscales of the Mini IPIP Scale (Donelan et al., 2006) with four items for extraversion (e.g., “I am the life of the party”), and four items for neuroticism (e.g., I get upset easily). Participants rated the extent to which each item described their usual behavior on a scale of 1 (*very inaccurate*) to 5 (*very accurate*). Cronbach’s  $\alpha$  was 0.77 for neuroticism, and 0.85 for extraversion.

**Socioeconomic status (SES).** SES was assessed by mother’s and father’s education level on a 7-point scale from 1 (*did not finish high school*) to 7 (*doctoral or professional degree*), and participants’ perceived economic class their family belonged to on a 7-point scale from 1 (*poverty class*) to 7 (*wealthy class*). The three items were positively correlated,  $r$ s ranging from .40 to .51, and were standardized and averaged into one composite SES score (Cronbach’s  $\alpha = .70$ ).

## Results

### Descriptive Information

Descriptive data and zero-order correlations between wellbeing outcomes at T3, genital hookups between T1 and T3, and autonomous and controlled hookup motivation are presented in Table 2.2. Over the course of the academic year, 37% of all participants had at least one genital hookup, and these percentages were similar in both sexes. Among those with at least one genital hookup ( $n = 196$ ), autonomous hookup motivation was significantly higher than nonautonomous hookup motivation, paired  $t$ -test ( $195$ ) = 20.09,  $p < .001$ . Our fourth hypothesis was not confirmed: Both sexes had similar levels of autonomous and nonautonomous hookup motivation.

---

(data available on request).

Table 2.2. Descriptive Data and Correlations for All Variables, for Men (Under the Diagonal) and Women (Above the Diagonal)

Measure	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>	<i>n</i>
1. T3 Depression <sup>1</sup>	-	.67***	.39***	-.68***	-.07	-.02	.25**	2.21	0.87	331
2. T3 Anxiety <sup>1</sup>	.65***	-	.45***	-.49***	-.10†	.13	.28**	1.92	0.81	330
3. T3 Physical symptoms <sup>1</sup>	.47***	.51***	-	-.27***	.05	.10	.20*	0.09	1.01	331
4. T3 Self-esteem <sup>1</sup>	-.67***	-.54***	-.35***	-	.10†	.08	-.31**	3.93	0.77	338
5. Any genital HU T1-T3 <sup>1</sup>	.16*	.23**	.20**	-.10	-	NA	NA	0.37	NA	338
6. Autonomous motivation T1-T3 <sup>2</sup>	.13	.05	.05	-.04	NA	-	.12	4.19	1.46	124
7. Nonautonomous motivation T1-T3 <sup>2</sup>	.34**	.29*	.20	-.39**	NA	.53***	-	2.04	0.79	124
<i>M</i>	2.02	1.67	-0.16	4.01	0.38	4.50	2.23			
<i>SD</i>	0.84	0.71	0.96	0.74	NA	1.72	0.96			
<i>n</i>	188	187	188	190	190	72	72			
Range	1 - 5	1 - 5	-3 - 3	1 - 5	0 - 1	1 - 7	1 - 7			
Sex differences <sup>3</sup>	2.44*	2.06*	2.74**	1.17	< 1	-1.35	-1.46			

<sup>1</sup>Includes all participants. <sup>2</sup>Includes only participants with at least one genital hookup between T1 and T3. <sup>3</sup>Represents  $\chi^2$  for variable 5; *t*-test for all other variables.

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

## Hooking Up and Wellbeing

To examine the main effects of hooking up on wellbeing (H1), we ran a MANCOVA with the four wellbeing variables at T3 (depression, anxiety, physical symptoms, and self-esteem) as outcomes, genital hookups between T1 and T3 (yes vs. no), biologic sex (male vs. female), and their interaction as predictors. School year (freshman vs. junior), SES, neuroticism, extraversion, any genital romantic sex by T3, number of lifetime genital hookup partners at T1 (log-transformed), and the three wellbeing scores at T1 served as controls<sup>5</sup>. The MANCOVA revealed no multivariate main effect for hookups between T1 and T3, Wilks'  $\lambda = 0.990$ ,  $F(4,496) = 1.302$ ,  $p > .10$ , but a significant multivariate interaction between biologic sex and T1-T3 hookups, Wilks'  $\lambda = 0.980$ ,  $F(4,496) = 2.487$ ,  $p = .043$ , partial  $\eta^2 = .020$ . To examine this interaction further, we conducted separate ANCOVAs for each of the four T3 outcome variables, controlling for the respective T1 wellbeing and all other controls<sup>6</sup>.

As hypothesized, hooking up was not related to depression,  $F(1,506) < 1$ , physical symptoms,  $F(1,507) < 1$ , or self-esteem,  $F(1,514) < 1$ . Nonsignificant interactions with sex for all three outcomes,  $F(1,506) = 1.58$ ,  $F(1,507) = 1.28$ , and,  $F(1,514) = 1.02$ , respectively, all  $ps > .05$ , indicated this was true of both women and men. For anxiety, a nonsignificant main effect of hooking up,  $F(1,504) = 2.20$ ,  $p > .10$ , was moderated by a significant interaction with sex,  $F(1,504) = 11.00$ ,  $p < .001$ . Follow-up tests indicated no difference in anxiety between women who had hooked up (HU) or not hooked up (No-HU),  $d = -0.14$ . HU men, on the other hand, had significantly higher anxiety than No-HU men,  $p < .01$ ,  $d = 0.44$ .

## Hookup Motivation and Wellbeing among the Hookup Experienced

---

<sup>5</sup> Initial analyses also controlled for sexual orientation (heterosexual vs. nonheterosexual) and race (White vs. Nonwhite). Neither was significant and both were excluded from final models.

The second set of analyses examined the role of self-determination in hookup motivation on wellbeing among those who hooked up between T1 and T3. Hierarchical linear regressions were conducted for each T3 wellbeing outcome among those who had at least one genital hookup between T1 and T3 ( $n = 196$ ). Control variables (same as in the first set of analyses) were entered at Step 1, autonomous and nonautonomous hookup motivation (both centered) were entered at Step 2, and their interaction terms with biological sex were entered at Step 3. Results are presented in Table 2.3.

The second hypothesis that self-determined hookup motivation will be associated with higher wellbeing was confirmed regarding nonautonomy (H2b), but not autonomy (H21). As Table 2.3 demonstrates, the effects of autonomous hookup motivation were not significant for any of the four wellbeing outcomes in either sex. Nonautonomous hookup motivation, on the other hand, showed significant main effects for all four outcomes in the expected direction: Higher nonautonomy was linked to lower self-esteem, higher depression and anxiety, and more physical symptoms. None of the interactions with sex were significant, indicating this was equally true of both women and men. Autonomous and nonautonomous hookup motivation together explained between 3% and 6% of the variance in wellbeing.

---

<sup>6</sup> Initial analyses also controlled for interactions between T1-T3 hookups and all control variables (as recommended by Yzerbyt, Muller, & Judd, 2004); most of these interactions were nonsignificant, and in all cases had no impact on the main results, so we exclude them from the final analyses.

Table 2.3. Hierarchical Linear Regression for Impact of Autonomous and Nonautonomous Hookup Motivation between T1 and T3 on T3 Wellbeing

Predictor	Depression			Anxiety			Physical symptoms			Self-Esteem		
	$R^2 \Delta$	<i>B</i>	<i>SE</i>	$R^2 \Delta$	<i>B</i>	<i>SE</i>	$R^2 \Delta$	<i>B</i>	<i>SE</i>	$R^2 \Delta$	<i>B</i>	<i>SE</i>
Step 1	.36***			.36***			.30***			.49***		
Controls												
Step 2	.04**			.03*			.03*			.06***		
Autonomous motivation		-0.01	0.04		0.04	0.03		0.01	0.04		0.03	0.03
Nonautonomous motivation		0.22**	0.07		0.13*	0.06		0.19*	0.08		-0.25***	0.05
Step 3	.00			.00			.00			.00		
Autonomous motivation x Sex		-0.03	0.04		0.03	0.03		0.02	0.04		-0.02	0.03
Nonautonomous motivation x Sex		-0.02	0.07		-0.01	0.06		-0.06	0.08		0.04	0.05
Total $R^2$	.41			.38			.33			.56		
<i>N</i>	192			191			192			195		

Note. Includes only participants with at least one genital hookup between T1 and T3. All models control for sex, race (white vs. nonwhite), school year (freshman vs. junior), SES, sexual orientation (heterosexual vs. nonheterosexual), neuroticism, extraversion, any genital romantic sex experience by T3, number of genital hookup partners by T1 (log-transformed to reduce non-normality), and wellbeing at T1; data not shown. Sex: 1 = female; -1 = male; all other categorical variables are coded 0/1.

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

### **Hookup Motivation and Wellbeing: Comparisons with the Hookup Inexperienced**

The third set of analyses tested whether hookup motivation moderated the link between hooking up and wellbeing (H3). Because autonomous motivation did not play a role (positive or negative) in wellbeing, we focused solely on the negative effects of nonautonomous motivation. We divided participants into three groups based on their genital hookup experience between T1 and T3 and, among the experienced, their level of nonautonomous hookup motivation: No-HU (those without any hookups,  $n = 331$ ), HU-Low Nonautonomy (those with at least one hookup and a below-median score on nonautonomous motivation,  $n = 101$ ), and HU-High Nonautonomy (those with at least one hookup and an above-median score on nonautonomous motivation,  $n = 95$ ). We hypothesized that HU-High Nonautonomy would have lower wellbeing than No-HU peers (H3a), but that HU-Low Nonautonomy students would not differ from or would surpass in wellbeing No-HU peers (H3b).

To test these hypotheses, we first ran a MANCOVA with the four wellbeing variables at T3 (depression, anxiety, physical symptoms, and self-esteem) as outcomes, including the 3-group *hookup motivation status* variable, biological sex and their interaction as predictors, and all control variables as in the previous analyses. The MANCOVA revealed a significant multivariate main effect for hookup motivation status, Wilks'  $\lambda = 0.943$ ,  $F(8,986) = 3.665$ ,  $p < .001$ , partial  $\eta^2 = .029$ , and a nonsignificant multivariate interaction between sex and motivation hookup status, Wilks'  $\lambda = 0.979$ ,  $F(8,986) = 1.783$ ,  $p > .10$ . We examined these effects with separate ANCOVAs for each of the four T3 outcome variables; the interactions with sex were maintained in the models due to the theoretical importance of testing sex differences in the context of casual sex. Significant main and interactive effects were followed with planned comparisons between the No-HU and HU-Low Nonautonomy groups, and between the No-HU

and HU-High Nonautonomy groups. Adjusted means for the three groups separately by sex, and for the sample as a whole, are illustrated in Figure 2.1.

For depression, there was a main effect of hookup motivation status,  $F(2,503) = 6.67, p < .01$ , and a nonsignificant interaction with sex,  $F(2,503) = 2.68, p > .05$ . Planned pairwise comparisons showed that HU-High Nonautonomy participants had significantly higher depression than No-HU peers,  $p < .01, d = 0.33$ , supporting H3a. On the other hand, there was no difference between the HU-Low Nonautonomy and No-HU groups ( $d = -0.11$ ), supporting H3b.

For self-esteem, there was also a significant main effect of hookup motivation status,  $F(2,501) = 9.33, p < .001$ , and a nonsignificant interaction with sex,  $F(2,502) < 1, p > .05$ . Planned pairwise comparisons showed that the difference in self-esteem between the HU-High Nonautonomy and No-HU groups was in the direction hypothesized by H3a (lower in HU-High Nonautonomy participants,  $d = -0.19$ ), but was only marginally significant ( $p < .09$ ). In support of H3b, HU-Low Nonautonomy students had higher self-esteem than their No-HU peers,  $p < .01, d = 0.34$ .

For physical symptoms there was no main effect of hookup motivation status,  $F(2,504) = 2.30$ , or moderation with sex,  $F(2,504) < 1$ , both  $ps > .10$ . Planned comparisons indicated that hooking up, regardless of nonautonomous motivation, was not linked to different levels of physical symptoms compared to not hooking up. Specifically, there were no differences in physical symptoms between HU-High Nonautonomy and No-HU participants,  $d = 0.13$  (not supporting H3a), or between HU- Low Nonautonomy and No-HU participants,  $d = -0.14$  (supporting H3b).

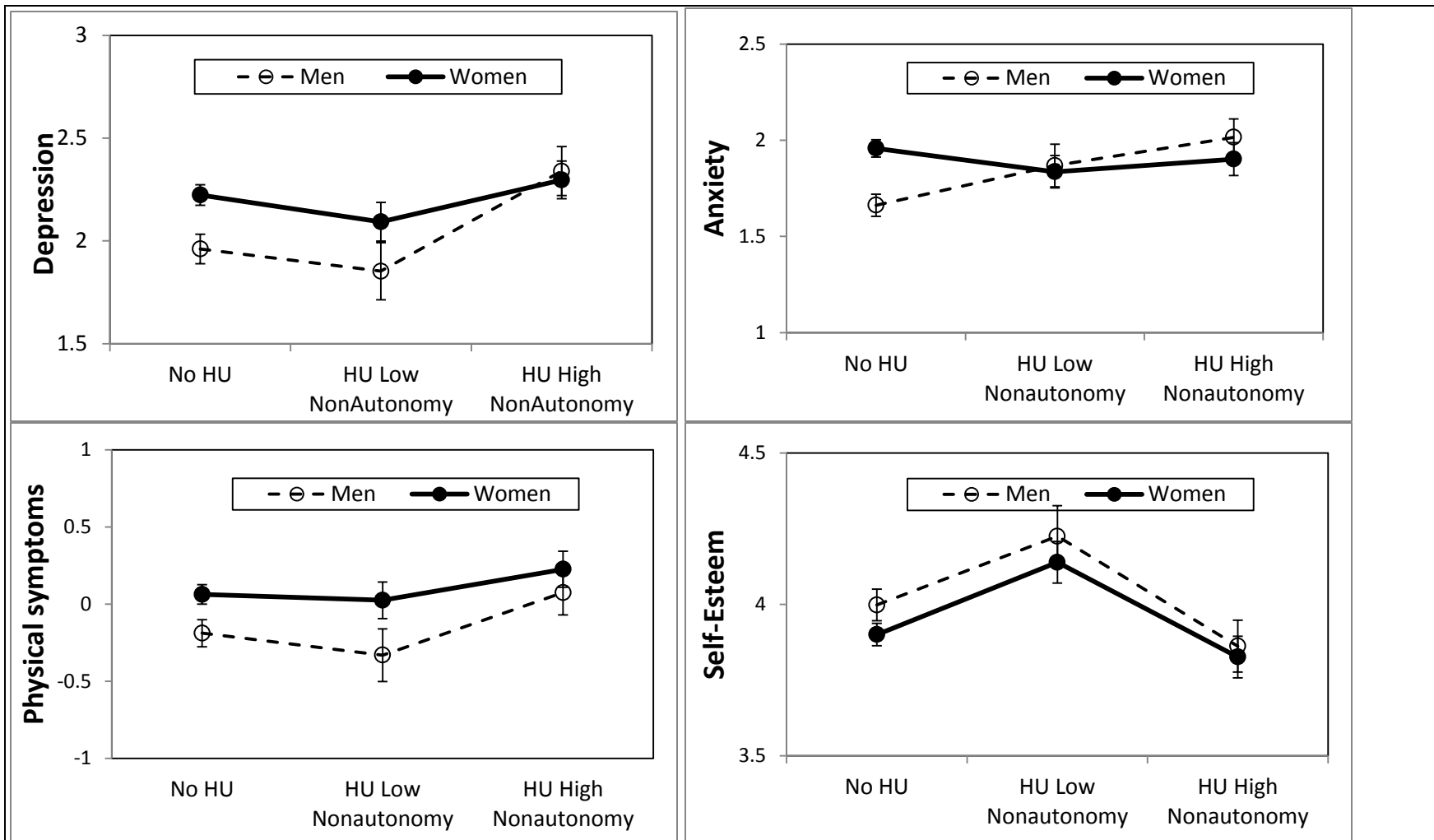


Figure 2.1. Adjusted wellbeing means for women and men without genital hookups between T1 and T3 (No-HU), with genital hookups and low nonautonomous motivation (HU Low Nonautonomy), and with genital hookups and high nonautonomous motivation (HU High Nonautonomy). Means are adjusted for school year, race, sexual orientation, socioeconomic status, neuroticism, extraversion, number of lifetime genital hookup partners at T1, any romantic genital sex by T3, and T1 wellbeing. Error bars represent standard errors.

Anxiety was the only outcome where a nonsignificant effect of hookup motivation status,  $F(2,501) = 1.75$ , was moderated by sex,  $F(2,501) = 5.02$ ,  $p < .01$ . Planned comparisons within each sex indicated that HU-High Nonautonomy men had higher anxiety than No-HU men,  $p < .01$ ,  $d = 0.53$ , supporting H3a; HU-Low Nonautonomy men did not differ from their No-HU peers ( $d = 0.33$ ,  $p > .08$ ), supporting H3b. Genital hookups had no effects on anxiety among women regardless of their level of nonautonomous motivation, as there were no differences in anxiety between HU-High Nonautonomy and No-HU women,  $d = -0.07$  (not supporting H3a), or between HU- Low Nonautonomy and No-HU women,  $d = -0.19$  (supporting H3b).

### **Discussion**

This study examined the longitudinal links between genital hookups, hookup motivation, and four aspects of wellbeing (depression, anxiety, physical symptoms, and self-esteem) among college students. We found at least partial support for the prediction that hooking up over the course of one academic year would have no significant effect on wellbeing (H1), that self-determination in hookup motivation would be associated with higher wellbeing among the hookup experienced (H2), and that, when compared to peers without hookups, lower wellbeing would be present only among those with low hookup self-determination, but not those with high hookup self-determination (H3). Examining sex differences, the study found no support for higher hookup self-determination among men compared to women (H4), and only a few sex differences emerged regarding the other three hypotheses. We discuss each of these findings in turn.

The general lack of main effects of hooking up on wellbeing is consistent with most prior longitudinal research on adolescents and young adults (Eisenberg et al., 2009; Fielder & Carey, 2010a; Monahan & Lee, 2008; Owen et al., 2011; Shulman et al., 2009). This is the first

longitudinal college study that employs a university-wide sample and follows students for longer than one semester; it is also the first longitudinal study reporting data on wellbeing outcomes other than depression and self-esteem. As such, the study significantly contributes to the generalizability of the conclusion that there are no negative short-term effects of hooking up on wellbeing among college students in general. Although casual sex may have certain features that many fear renders it potentially more harmful than romantic sex (e.g., emotional rejection, substance abuse, less enjoyment), engagement in this behavior per se does not appear to uniformly affect wellbeing. This further suggests that any links between casual sex and inferior wellbeing identified in cross-sectional research (Bersamin et al., 2013; Grello et al., 2006; Paul et al., 2000), are more likely to be due to a causal link in the opposite direction – from inferior wellbeing to casual sex. Several longitudinal studies have identified such links among adolescents (Grello et al., 2003; Manning, Longmore, & Giordano, 2005; Shulman et al., 2009), although not college students (Fielder & Carey, 2010a; Owen et al., 2011).

As predicted, nonautonomy in one's hookups resulted in lower wellbeing across all four outcomes and both sexes. This is a typical finding in SDT across a variety of areas of human action (Ryan, Deci, Grolnick, & LaGuardia, 2006) and shows that SDT processes apply, at least to some extent, in the casual sex context. Although hookup motivation explained only a small percent of the variance in wellbeing (3-6%), our results suggest it is a significant determinant of wellbeing following hookups. Furthermore, level of nonautonomy in one's hookups was consequential in comparisons with peers without hookups. Those high on nonautonomy in their hookups reported poorer self-esteem, higher depression, and higher anxiety (among men only) than their no-hookup peers, suggesting that hooking up for the "wrong" reasons may be a stressful life event compared to no hooking up. Those low on nonautonomy in their hookups, on

the other hand, did not differ from and, in the case of self-esteem, surpassed in wellbeing their peers without hookups. This suggests that hooking up in the absence of nonautonomous reasons may have the power to buffer against any negative consequences of hookups and, may in fact, represent an uplifting life event with potential for fostering positive growth.

The effects of nonautonomous hookup motivation on wellbeing among the hookup experienced and in comparison with the hookup inexperienced were quite robust. They emerged above and beyond the effects of several potential confounds tested in our analyses, specifically romantic sex and prior casual sex experience, as well as two major personality traits that are known to be linked to casual sex (Schmitt, 2005), motivation (Deci & Ryan, 1985), and wellbeing (Costa & McCrae, 1980) – extraversion and neuroticism. Furthermore, the results of both sets of analyses and for all four wellbeing outcomes at T3 remain virtually identical when the models controlled for the level of all four wellbeing variables at T1, or when the comparison group included only those with romantic sex experiences (tables available on request).

In this study, autonomous motivation was not related (positively or negatively) to any wellbeing outcomes. Given extensive support for the positive role of autonomy in wellbeing in other areas of human action (Ryan et al., 2006), this was an unexpected finding. One possible explanation is that the specific assessment of autonomy in hooking up used here failed to capture the essence of autonomy in a way that would make a difference to wellbeing. Another possibility is that demand characteristics introduced a substantial amount of error in our measure, because the autonomous reasons appear more "respectable" reasons to engage in a behavior with relatively low overall social respectability. This may have led even those with little autonomous motivation to report it to a greater extent, whether due to conscious efforts to "save face" or unconscious processes such as cognitive dissonance. The effects of such demand characteristics

could be further compounded by retroactive memory biases making it easier for participants to report autonomous motivation when there was none. Yet another possibility is that this finding is due to our selection of wellbeing outcomes. In SDT research, most common outcomes are not negative ones, such as depression or anxiety, but positive ones, such as life satisfaction, happiness, and vitality. It is also possible that casual sex is in some way different from other areas to which SDT has been applied such that autonomy does not have the power to positively affect wellbeing in this context. These possibilities should be addressed in future research.

### **Sex Differences**

Theory and prior research suggest that women are less interested in casual sex (Buss & Schmitt, 1993; Petersen & Hyde, 2010), and more likely to engage in it for nonautonomous reasons (Regan & Dreyer, 1999). Furthermore, concerns have been raised that women might be disproportionately affected by negative consequences of casual sex (Paul, 2006; Townsend, 1995). These sex differences were not borne out by the data in this study. Women and men reported virtually identical rates of casual sex, and indistinguishable levels of both autonomous and nonautonomous motivation for engagement in it. These suggest that although distal evolutionary concerns regarding short-term mating may be more relevant for women than men, on a proximal level, casual sex may have equal appeal to both sexes among current generations of young people. This process would likely be helped by increasingly more permissive sexual attitudes in the West (Kraaykamp, 2002; Thornton & Young-DeMarco, 2001), and the waning influence of the sexual double standard (Marks & Fraley, 2005), even though unrestricted female sexuality is still judged more harshly than men's, especially in subtle ways (Marks, 2008; Marks & Fraley, 2006; Vrangalova et al., 2013). This is not inconsistent with evolutionary theories which predict that, due to strategic pluralism (i.e., mating strategies vary according to

environmental conditions), at least some women with certain personal and social characteristics would be highly interested in casual sex (Gangestad & Simpson, 2000).

Perhaps more surprisingly, the single negative link between hooking up and wellbeing that emerged was seen among men, not women. Specifically, men who had a genital hookup over the course of the academic year had higher anxiety than their hookup-inexperienced peers, and hookup nonautonomy only partially buffered against this effect. Anxiety has been infrequently studied in relation to casual sex: We could identify only one such study, which found no cross-sectional relationship between trait anxiety and one-night stands in a community-based sample of adult men (Bancroft, Janssen, Carnes, Goodrich, & Strong, 2004). A link to higher anxiety may be due to the uncertainty inherent in casual sexual interactions in terms of their future outcome, or due to fear of potential negative consequences, such as unwanted pregnancy, sexually transmitted infections, or reputation loss, all of which are relatively common reactions following casual sex (Campbell, 2008; Glenn & Marquardt, 2001; Paul & Hayes, 2002). Why this effect was only seen in men is less clear. It is possible that post-hookup fears and uncertainty were higher among this particular sample of men. Another possibility is that as hookups become more normative among college students – further compounded by pluralistic ignorance, that is, generally false beliefs regarding their high prevalence among others in this group (Lambert, Kahn, & Apple, 2003; Reiber & Garcia, 2010), college men may feel increased pressure to perform well in their hookups leading to greater anxiety. This issue deserves future examination.

The sex difference in anxiety notwithstanding, the results of this study more strongly favor a conclusion of few to no sex differences in the strength and type of hookup motivation or

in the link between hookup motivation and wellbeing. This is consistent with prior SDT research, which typically finds no sex differences in the operation of SDT processes (Deci & Ryan, 2000).

### **Limitations and Future Research**

The university-wide sample representative in terms of race and college enrollment was a strength of this study. Nonetheless, the sample represents a relatively homogeneous group of well-educated and privileged students at an elite school. Future research should examine these effects in other, more diverse groups of young adults. Another limitation was the relatively low response rate (13%), which is somewhat lower than the average response rate of online surveys in general (Cook, Heath, & Thompson, 2002). The low response rate raises the possibility that, although the sample was unbiased by recruitment procedures, some self-selection bias may have occurred, including a 1.7:1 ratio of women to men (university-wide, this ratio is 1:1). Moreover, despite the relatively large sample, only a minority (37%) engaged in at least one genital hookup over the academic year, resulting in some tests to be underpowered. The prevalence of hookups in our sample was lower than other studies, many of which report prevalence of 50% or higher over one or two semesters (Fielder & Carey, 2010a; Holman & Sillars, 2012; Olmstead et al., 2013; Owen et al., 2011). This difference may be attributed to the greater focus on academics at this Ivy League university compared to other institutions sampled, most of which are large public universities and some rank particularly high on lists of the best “party schools” (Fiesta Frog, 2013; Randolph, 2013). The difference could also be due to our university-wide sample as opposed to mostly social science samples in prior studies. For example, only 23% of engineering students in the current study had a genital hookup during the year, compared to 62% of students in the colleges of International and Labor Relations or Hotel Administration.

The definition of hookup used in the study was broad: It included any kind of genital contact. We chose this level of sexual intimacy because many hookups do not involve intercourse (Fielder & Carey, 2010b), and for statistical power purposes (only 27% of participants had an intercourse hookup over the academic year). More restrictive definitions should be examined in future work, as there are socio-cultural (Peterson & Muelhenhard, 2007), evolutionary (Townsend & Wasserman, 2011), neurochemical (Young & Wang, 2004), and empirical (Fielder & Carey, 2010a, Paul et al., 2000) reasons to believe that hookups involving intercourse may have greater impact on wellbeing than hookups involving less physically intimate sexual acts. Furthermore, the hookup variables used in this study combined shorter (e.g., one-night stands) and longer (e.g., friends-with-benefits) casual interactions. Future research should examine these separately, as they may impact wellbeing differently, perhaps due to differences in the frequency or level of sexual and non-sexual contact, personal disclosure, intentionality, emotional attachment, or substance and condom use present in each (Jonason, Li, & Richardson, 2011; Romero-Daza & Freidus, 2008; Wentland & Reissing, 2011). In addition, our assessment did not distinguish (casual) dating partners as a separate category; it is possible that participants varied in how they classified such partners, introducing some level of error in the data, particularly as it pertains to measurement and meaning of relationship motivation.

Several limitations stem from our measure of hooking up motives. Reporting of motivation was retrospective, extending across all hookups that occurred over the course of the academic year. This likely affected the reliability of the measure both directly and indirectly by aiding the conscious (e.g., lying to “save face”) or unconscious (e.g., cognitive dissonance) effects of demand characteristics on reporting autonomous versus nonautonomous reasons. Another limitation is the relatively short measure of self-determination used in this study in

which several items combined multiple ideas and may have been confusing. Furthermore, the endpoints of the scale were anchored by “none of my hookups” and ‘all of my hookups,’ and this may have different meanings for those with a single versus many hookups. Finally, there was an unusually high overlap between autonomous and nonautonomous motivation among men ( $r = .53$ ), indicating that hookup motivation among men is less differentiated along the self-determination continuum, or that our measure was less successful at capturing the relevant gradations in motivation among men. Future research should focus on developing a more standardized Self-Regulation Questionnaire for the casual sex context (Ryan & Connell, 1989), and one that is equally appropriate for men and women.

Finally, this study addressed only one of many potential factors that influence the link between casual sex and wellbeing. Other factors, such as expectations, personality, attachment styles, substance and condom use, partner communication, or social norms should be examined. Furthermore, although there are a number of possibilities for the mechanisms by which casual sex affect wellbeing (e.g., substance use, societal disapproval, sexual/reproductive health consequences, etc.), these have yet to be empirically tested using mediational analyses.

### **Implications**

These results, together with prior findings (Fielder & Carey, 2010a; Grello et al., 2006; Meier, 2007; Paul et al., 2000; Owen & Fincham, 2011; Owen et al., 2010, 2011), indicate that not all hookups have the same potential to benefit or harm wellbeing, and not all individuals are equally susceptible to this potential; instead, susceptibility depends on many individual, social, and situational factors. By examining motivation as one such potential factor, this study contributes to shifting research away from main effects and toward a more informative exploration of moderators and mediators. Such refined understanding could also help shift

education, public policy, and clinical work away from uniform, one-size-fits-all strategies and messages regarding casual sex and its health consequences, and toward more individually tailored, and, thus, more useful, approaches. Given that (proximal) motivation is a factor that precedes hooking up behavior and is largely cognitively accessible to and under conscious control of the individual, motivation may be a particularly useful tool in helping young adults to make responsible and informed decisions regarding their sexual behavior. Specifically, young people need to be informed that whether their psychological and physical wellbeing benefits or suffers following casual sex may be crucially dependent on their reasons for engaging in it. They should be encouraged to examine their motives prior to hooking up, and provided with the practical, emotional, and social skills to choose to refrain from hooking up when their motives are primarily of the ‘wrong’ (i.e., nonautonomous) type.

STUDY #3

Under review

# Does Casual Sex Harm or Benefit Psychological Wellbeing?

## The Moderating Role of Sociosexuality

Zhana Vrangalova<sup>1</sup>, and Anthony D. Ong<sup>1</sup>

Cornell University

### Author note

<sup>1</sup>Department of Human Development, Cornell University.

This research was partially supported by a grant-in-aid from the Foundation for Scientific Study of Sexuality, a grant-in-aid from the Society for the Psychological Study of Social Issues, and a grant from the Human Ecology Alumni Association, Cornell University, all awarded to Zhana Vrangalova for conducting her doctoral dissertation research. We would like to thank Rachel Mack, Melany Bradshaw, and Vickie Liang for their help with data collection and preparation.

Correspondence concerning this article should be addressed to Zhana Vrangalova, B40 Martha Van Rensselaer Hall, Human Development, Cornell University, Ithaca, NY 14850. Phone: 607-280-6433. E-mail: sv99@cornell.edu.

Word count: 4,854

## The Moderating Role of Sociosexuality

### Abstract

Casual, uncommitted sex has become a normative experience among young people, raising concerns regarding its wellbeing consequences. Past research on main effects has produced mixed and frequently nonsignificant findings, suggesting a possible presence of moderators. In this paper, two studies examined the moderating role of sociosexuality, a stable personality orientation toward casual sex, on psychological wellbeing (self-esteem, life satisfaction, depression, and anxiety) following penetrative (oral, vaginal, or anal) casual sex. As predicted, in a population-based sample of undergraduates, sociosexuality moderated the effect of casual sex over one academic year (Study 3a) and on a weekly basis across 12 consecutive weeks (Study 3b). Sociosexually restricted students typically reported lower wellbeing after having casual sex compared to not having casual sex; unrestricted individuals, on the other hand, reported similar or higher wellbeing following casual sex. Gender moderated several weekly findings. Findings are discussed in terms of authenticity in one's sexual behaviors.

*Keywords:* sociosexual orientation, casual sex, mental health, wellbeing, authenticity

## Introduction

Casual sex, sexual behavior occurring outside of committed romantic relationships, is a common experience among contemporary youth, reported by up to 80% of college students (Garcia, Reiber, Massey, & Merriwether, 2012). Although sexual activity is linked to many psychological and physical health benefits (Diamond & Huebner, 2012; Levin, 2007), these are rarely attributed to casual sex. Instead, scholars and non-scholars alike have warned against negative wellbeing consequences of uncommitted sex, particularly for women (Paul, Wenzel, & Harvey, 2009; Stepp, 2007; Townsend & Wasserman, 2011), and research has identified a number of potentially harm-inducing properties of casual sex, including less enjoyment and nurturance than romantic sex, and frequent regret, unwanted emotional attachment, substance use, or social stigma accompanying it (Allison & Risman, 2013; Cooper, 2002; Fielder & Carey, 2010b). Yet, positive reactions to casual sex—satisfaction, confidence, self-knowledge, or social and academic engagement—are stronger and more common than negative reactions (Campbell, 2008; Fielder & Carey, 2010b; Owen & Fincham, 2011; Owen, Quirk, & Fincham, 2013). Furthermore, past findings on the main effects of casual sex on wellbeing range from negative to positive with a preponderance of nonsignificant results, particularly in longitudinal studies (Bersamin et al., 2013; Fielder & Carey, 2010a; Grello, Welsh, & Harper, 2006; Grello, Welsh, Harper, & Dickson, 2003; Monahan & Lee, 2008; Paul, McManus, & Hayes, 2000; Owen, Fincham, & Moore, 2011; Owen, Rhoades, Stanley, & Fincham, 2010; Schmitt, 2005a).

Mixed and nonsignificant findings often suggest possible presence of individual, social, or situational moderators (Baron & Kenny, 1986). It is likely that not all casual sex encounters have the same potential to harm or benefit wellbeing, and not all those engaging in them are equally susceptible to that potential. Inquiry into potential moderators thus far has been limited

(Fielder & Carey, 2010a; Owen et al., 2011), and no study has examined stable personality traits in this context. The current studies examine the moderating role of sociosexuality, a personality trait reflecting one's willingness and motivation to engage in uncommitted sexual relationships (Penke & Asendorpf, 2008; Simpson & Gangestad, 1991).

Sociosexual orientation is a relatively stable personality tendency toward or away from casual sex, determined by a combination of heritable factors, sociocultural learning, and past experiences, and reflected in three key components: motivation for, attitudes toward, and past experience with casual sex (Bailey, Kirk, Zhu, Dunne, & Martin, 2000; Penke & Asendorpf, 2008; Simpson & Gangestad, 1991). There is substantial individual variability across these three components, anchored by *unrestricted* orientation on the high end, and *restricted* orientation on the low end of sociosexuality (Penke & Asendorpf, 2008; Simpson & Gangestad, 1991).

Evolutionary and life history theorists have argued that both of these reproductive strategies are adaptive, each under different environmental (e.g., unpredictability or harshness) and individual (e.g., attractiveness or material resources) conditions (Del Giudice, 2009; Ellis, Figueredo, Brumbach, & Schlomer, 2009; Gangestad & Simpson, 2000; Schmitt, 2005b). Thus, neither casual sex behaviors specifically, nor unrestricted sociosexual orientation overall, should be linked to positive or negative health outcomes across all individuals. However, whether casual sex behaviors are consistent with one's general reproductive strategy might prove critical.

Acting authentically, in congruence with one's desires and values, has been emphasized by several theoretical perspectives and documented through extensive research as promoting health and thriving. Acting inauthentically, on the other hand, is detrimental to wellbeing (Deci & Ryan, 2000; Higgins, 1987; Kernis, 2003). Data suggest that such authenticity is relevant to casual sex as well. Those more accepting of or interested in casual sex had more positive and less

negative reactions to imagined or real casual sex encounters (de Graaf & Sandfort, 2001; Owen et al., 2010), and having casual sex for nonautonomous reasons (i.e., lacking intentionality or with externally perceived locus of causality), but not for autonomous reasons (i.e., highly intentional), was linked to inferior psychological wellbeing (Vrangalova, in press). Although unrestricted individuals are more likely than restricted ones to engage in casual sex (Simpson & Gangestad, 1991), some people engage in this behavior despite their disapproval or lack of desire (Feldman, Turner, & Araujo, 1999; Regan & Dreyer, 1999; Weaver & Herold, 2000). To the extent that casual sex represents an authentic and self-congruent pursuit for unrestricted individuals, but an inauthentic, self-discrepant pursuit for restricted individuals, casual sex would be a beneficial experience for the former, but a harmful experience for the latter.

The prior experience component of sociosexuality might also play a role. Some research suggests that as people accumulate sexual experience they become better able to resist or cope with the unwanted and potentially distressing emotional attachment as well as the social stigma following casual sex (Blumberg, 2003; Gilmartin, 2006; Townsend, 1995). Unrestricted individuals, who are more likely to have at least some prior experience with casual sex, should therefore be less affected by any distress caused by new casual encounters.

### **Overview of present studies**

Given prior theory and research, we hypothesize that sociosexuality moderates the link between new casual sex engagement and psychological wellbeing, such that restricted individuals experience lower wellbeing and unrestricted individuals experience higher wellbeing following casual sex compared to not having casual sex. We tested this hypothesis in two partially overlapping subsamples of a large, population-based sample of college students at a single Northeastern university using two methodologies: a 9-month longitudinal study and a 3-

month weekly-diary study. Both studies defined casual sex as any non-romantic sexual activity involving penetrative behaviors (oral, vaginal, or anal sex), tested for sex differences, and examined both psychological distress (depression and anxiety) and psychological thriving (self-esteem and life satisfaction; the latter only assessed in Study 3b).

### **Study 3a: Longitudinal Study**

Study 3a tested whether baseline levels of sociosexuality moderate the link between casual sex engagement over the course of one academic year and between-person differences in wellbeing at the end of that year.

## **Method**

### **Participants and Procedures**

At the beginning of the 2009-2010 academic year, the university registrar sent an email to all freshmen and juniors (approximately 6,500 students), inviting them to participate in a longitudinal study of sexuality. A total of 872 students completed the 35-minute long, online questionnaire at baseline (13.4% response rate); 560 students were reassessed at the end of the academic year (64% retention rate). Compared to those who completed the follow-up, those who dropped out were more often male ( $p < .001$ ), nonwhite ( $p < .001$ ), and single ( $p < .05$ ); the groups did not differ in school year, socioeconomic status, wellbeing, or casual sex experience (all  $ps > .10$ ). A combination of monetary compensation, lottery prizes, and research credits was used as incentives for participation. After excluding those with incomplete responses and those over 24 years (as atypical undergraduates), the final sample consisted of 528 students (64% female; 44% freshmen; 30% nonwhite; 40% in an exclusive dating/romantic relationship). Sample distribution across colleges and racial/ethnic background closely mirrors university enrollment; the sample has been described in greater detail elsewhere (Vrangalova, in press).

## Measures

**Sociosexuality.** At baseline, participants completed the Sociosexual Orientation Inventory-Revised (SOI-R; Penke & Asendorpf, 2008), a 9-item measure of one's propensity toward casual sex across three facets: behavior (e.g., "With how many different partners have you had sexual intercourse on *one and only one* occasion?"), desire (e.g., "In everyday life, how often do you have spontaneous fantasies about having sex with someone you have just met?"), and attitudes (e.g., "Sex without love is OK."). Items are answered on 9-point scales from 0 to 20 or more for behavior; from *strongly disagree* to *strongly agree* for attitudes; and from *never* to *at least once a day* for desire. Higher scores indicate greater unrestrictiveness (Cronbach's  $\alpha = .87$ ).

**Casual sex.** In the follow-up survey, participants provided the number of one-time partners (i.e., one-night stands) and longer casual partners (e.g., friends-with-benefits, fuck buddies, etc.) with whom they engaged in oral, vaginal, or anal sex since the beginning of the study. Due to limited variability, a binary ("casual sex" vs. "no casual sex") variable was used.

**Psychological wellbeing.** Wellbeing was assessed at the end of the academic year. *Depression* and *anxiety* were assessed using the corresponding subscales of the Brief Symptom Inventory (Derogatis, 1993). Participants rated the extent to which they were distressed in the past week by five indicators of depression (e.g., "feeling blue") and six indicators of anxiety (e.g., "spells of terror or panic") on a 5-point Likert scale from 1 (*not at all*) to 5 (*extremely*). *Self-esteem* was measured using the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965). Participants rated their agreement with each statement (e.g., "I take a positive attitude toward myself") on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate greater presence of the variable. Cronbach's  $\alpha$  were .84 for depression, .89 for anxiety, and .91 for self-esteem.

## Analytic Plan

A series of linear regressions for each wellbeing outcome was conducted using sociosexuality, casual sex, gender, and their interactions as predictors. All analyses controlled for school year (freshman vs. junior), socioeconomic status (a composite score of parents' education level and perceived economic class), relationship status (single/hooking up vs. exclusively partnered), and race (white vs. nonwhite). Results are presented in Table 3.1. Significant interaction effects between casual sex and sociosexuality were further examined using simple slopes for those at  $\pm 1$  SD on SOI-R, hereafter referred to as high-SOI and low-SOI participants.

*Table 3.1. Linear Regression Results for Effects of Sociosexuality at Baseline (SOI) and Casual Sex Over the Academic Year (CS) on End-of-the-Year Wellbeing (Study 3a)*

	Self-Esteem	Depression	Anxiety
	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>
Female	-0.01 (0.04)	0.05 (0.04)	0.02 (0.04)
SOI	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Had CS	-0.02 (0.04)	0.06 (0.05)	0.05 (0.04)
Female * SOI	0.01 (0.03)	0.01 (0.03)	0.04 (0.03)
Female * Had CS	0.06 (0.04)	-0.10 (0.05)*	-0.12 (0.04)**
SOI * Had CS	0.05 (0.03)*	-0.06 (0.03)*	-0.06 (0.03)*
3-way interaction	0.03 (0.03)	-0.02 (0.03)	-0.00 (0.03)
<i>N</i>	524	517	515
<i>R</i> <sup>2</sup>	.05	.10	.08

*Note.* Female and Had casual sex are coded using simple effects coding (1/-1). Higher scores in SOI and all wellbeing outcomes indicate greater presence of variable. Models control for school year, race, socioeconomic status, and relationship status; data not shown.

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

## Results

### Descriptive Information

One third (33%) of all participants reported at least one penetrative casual sex encounter over the academic year. These percentages were similar for both sexes,  $\chi^2(1) < 1$ . Men ( $M = 3.82$ ;  $SD = 1.47$ ) reported significantly higher sociosexuality than women ( $M = 3.07$ ;  $SD = 1.49$ ),  $t(228) = 5.77$ ,  $p < .001$ ; therefore, scores were centered within sex prior to analyses.

Sociosexuality significantly predicted engagement in casual sex after controlling for demographics,  $OR = 2.37 [1.98, 2.84]$ ,  $p < .001$ ; the interaction with gender was not significant,  $OR = 1.12 [0.94, 1.34]$ . Only 13% of those scoring below the median on sociosexuality engaged in casual sex over the academic year compared to 48% of those scoring above the median.

### Moderating Effects of Sociosexuality

The interaction term between sociosexuality and casual sex was significant in predicting all three outcomes (all  $ps < .05$ ) (Table 3.1). Simple slope analyses indicated that casual sex was not linked to depression,  $B = -0.05$ ,  $SE = 0.11$ , or anxiety,  $B = -0.07$ ,  $SE = 0.10$ , among high-SOI participants (both  $ps > .50$ ), but was linked to higher depression,  $B = 0.31$ ,  $SE = 0.15$ ,  $p = .039$ , and higher anxiety,  $B = 0.26$ ,  $SE = 0.13$ ,  $p = .048$ , among low-SOI participants. The significant interaction regarding self-esteem was due to casual sex being linked to somewhat higher self-esteem among high-SOI participants,  $B = 0.12$ ,  $SE = 0.10$ ,  $p = .227$ , and somewhat lower self-esteem among low-SOI participants,  $B = -0.19$ ,  $SE = 0.14$ ,  $p = .150$ , but neither of these effects reached significance. These relationships are presented in Figure 3.1. There were no significant three-way interactions with gender or main effects of sociosexuality or casual sex.

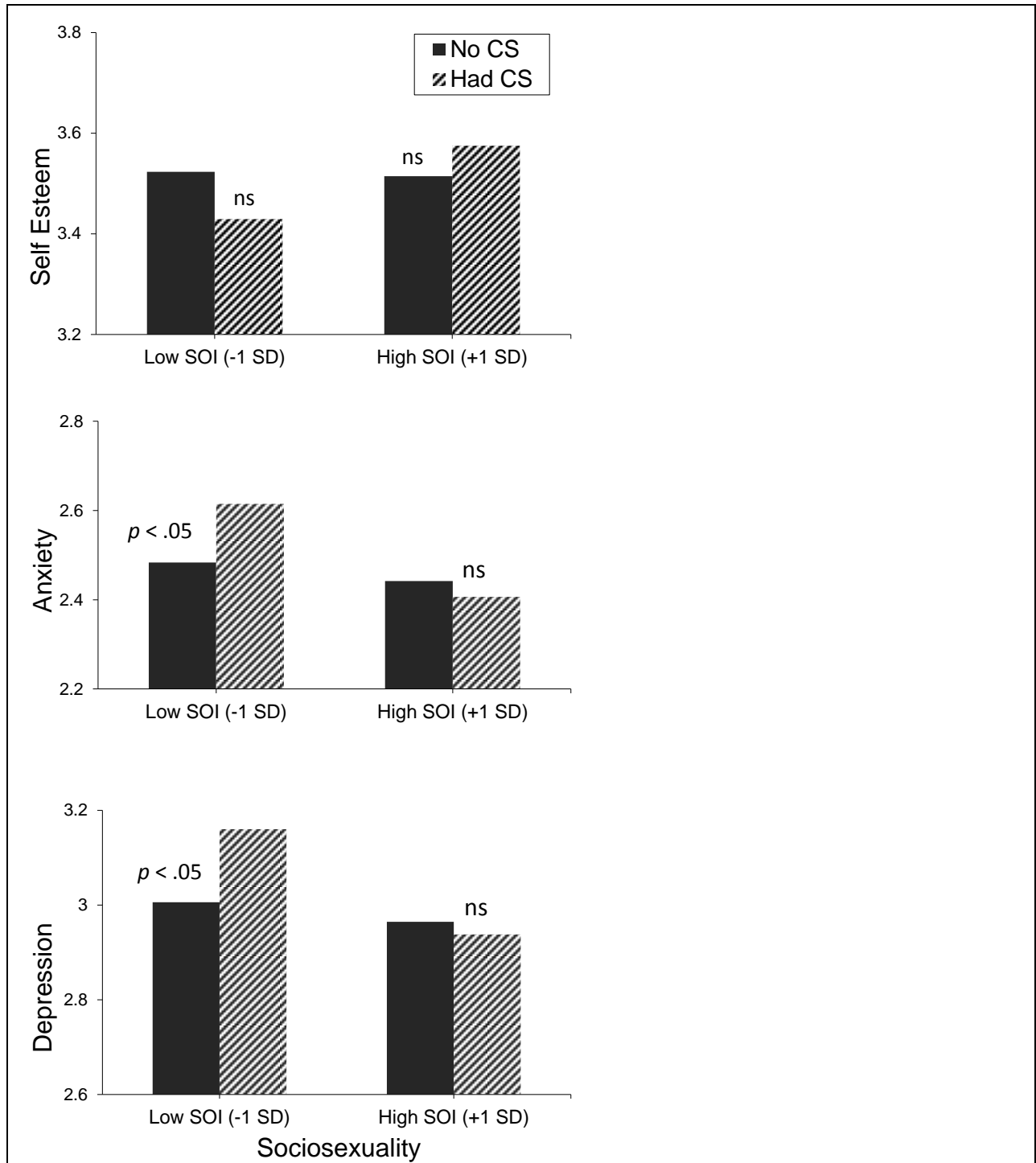


Figure 3.1. End-of-the-year wellbeing among unrestricted (high-SOI) and restricted (low-SOI) participants who had or did not have casual sex (CS) over the course of the academic year. Higher scores (on a scale of 1 to 5) indicate higher presence of variable. Means adjusted for gender, school year, socioeconomic status, relationship status, and race.

**Study 3b: Weekly Diary**

Study 3b was a 3-month long, weekly diary study that tested how trait-level sociosexuality impacts the relationship between casual sex and wellbeing on a weekly basis, capturing more immediate effects than did Study 3a and allowing for within-person analyses on weeks with and weeks without casual sex. A weekly diary design also overcomes retrospective cognitive recall biases, which can be substantial even when recalling past sexual behaviors over three months (McAuliffe, DiFranceisco, & Reed, 2007). Study 3b also extended the findings to life satisfaction – a wellbeing outcome rarely examined in the casual sex context yet a critical component of psychological thriving (Keyes, 2005).

## **Method**

### **Participants and Procedures**

Participants were a subsample of the 872 students who completed the baseline survey in Study 3a. A week later, all students who indicated interest in a follow-up study and reported they were not in a long-term committed relationship, engaged, or married (so as to maximize the likelihood they will engage in casual, as opposed to romantic, sex) were invited to participate in a semester-long (12 weeks), online, weekly-diary study of sexual experiences. Of 323 invited students, 78% consented to participate; of those, 240 students provided at least two weekly surveys. Additionally, 10 participants were excluded for reporting they were in a romantic relationship across the entire study, bringing the active sample to 230 participants (65% female; 36% nonwhite; 48% freshmen). Of these, 71% also participated in Study 3a. Participants received up to \$36 or up to 6 research credits (\$3 or ½ credit point for each completed diary).

### **Measures**

**Trait-level sociosexuality.** Sociosexuality was assessed as in Study 3a.

**Weekly casual sex.** Each week, participants reported their number of sex partners over the previous week, and their current relationship status and whether they engaged in five sexual acts (kissing, genital touching, oral sex, vaginal, or anal intercourse) with up to four partners. Participants were considered to have had penetrative casual sex on a given week if any of their partners were reported as one-night stands, friends-with-benefits, fuck-buddies, casually hanging out, just friends, or ex-partners, and at least one of their sexual encounters with these partners included oral, vaginal, or anal intercourse.

**Weekly psychological wellbeing.** Each week participants reported on four wellbeing aspects over the previous week. *Self-esteem* and *life satisfaction* were measured with four items from the Rosenberg Self-Esteem Scale (1965) and four items from the Satisfaction with Life Scale (Pavot & Diener, 1993), rated on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). *Depression and anxiety* were assessed as in Study 3a. Cronbach's  $\alpha$  were .93 for self-esteem, .89 for life satisfaction, .84 for depression, and .85 for anxiety.

### **Analytic Plan**

Weekly data (Level 1) were nested within participants (Level 2), and were analyzed with multilevel random coefficient models using HLM 7.0 (Raudenbush, Bryk, & Congdon, 2010). Four separate models were conducted for each outcome variable. At Level 1, models included weekly casual sex (yes vs. no) and controls for previous week's wellbeing (group-centered). At Level 2, models included sociosexuality, gender, and their interaction term entered on the intercept and the slope for casual sex, and controls for race (white vs. nonwhite), and school year (freshman vs. junior)<sup>7</sup>. Significant 3-way interactions were probed by running separate models for women and men; significant cross-level interactions between sociosexuality and weekly

---

<sup>7</sup> Initial analyses also controlled for socioeconomic status and average proportion of weeks with casual sex; neither approached significance in any of the models (all  $ps > .15$ ) and both were dropped from final analyses.

casual sex—the critical test of our moderation hypothesis—were probed using simple slopes for  $\pm 1$  *SD* of SOI-R. Because men ( $M = 4.16$ ;  $SD = 1.51$ ) reported significantly higher sociosexuality than women ( $M = 3.54$ ;  $SD = 1.51$ ),  $t(228) = 2.98$ ,  $p = .003$ , scores were grand-centered within sex.

## Results

### Descriptive Information

A total of 2,413 weekly reports were completed, for an average of 10.5 out of 12 weeks ( $SD = 2.53$ ) per participant with 94% of participants completing six or more reports. At least one penetrative casual encounter was reported on 204 (8.5%) weekly reports; 90% of these weeks involved only one casual partner (range 1 to 3 partners). At least one week with casual sex was reported by 80 (35%) participants; these percentages were similar in both sexes,  $\chi^2(1) < 1$ . Average proportion of weeks with casual sex was .09 ( $SD = .18$ ) per participant; 44% of those with at least one casual sex week reported only one such week (range 1 to 9 weeks). HLM models indicated that after controlling for demographics, higher sociosexuality was linked to a significantly higher likelihood of engaging in weekly casual sex,  $OR=2.31$  [1.84, 2.89],  $p < .001$ ; the interaction with gender was not significant,  $OR=0.91$  [0.74, 1.13]. Only 16% of those scoring below the median on sociosexuality engaged in casual sex over the 12 weeks compared to 55% of those scoring above the median.

### Moderating Effects of Sociosexuality

There were no main effects of trait sociosexuality or weekly casual sex on any wellbeing outcomes (Table 3.2). Our hypothesis that sociosexuality would interact with weekly casual sex in determining wellbeing was confirmed for self-esteem and life satisfaction (both  $ps < .05$ ). The 3-way interactions with gender were not significant suggesting results were similar for women

and men. Simple slopes analyses indicated that high-SOI individuals had significantly higher self-esteem,  $\gamma = .13$ ,  $SE = .05$ ,  $p = .015$ , and life satisfaction,  $\gamma = .16$ ,  $SE = .06$ ,  $p = .009$ , on weeks with casual sex compared to weeks without casual sex. Low-SOI individuals reported somewhat lower self-esteem,  $\gamma = -.17$ ,  $SE = .13$ , and life satisfaction,  $\gamma = -.13$ ,  $SE = .15$ , on weeks with compared to weeks without casual sex; although these coefficients were similar in absolute size to those of high-SOI individuals, due to higher standard errors, neither reached statistical significance (both  $ps > .10$ ). Results are illustrated in top panel of Figure 3.2.

*Table 3.2. Hierarchical Linear Modeling Results for Effects of Trait-Sociosexuality (SOI) and Weekly Casual Sex (CS) on Weekly Wellbeing (Study 3b)*

	Self-Esteem	Life Satisfaction	Depression	Anxiety
	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)	$\gamma$ (SE)
Between-person effects (Level 2)				
Female	-.17 (.12)	-.08 (.12)	.24 (.09)**	.13 (.08)†
SOI	.07 (.04)†	.04 (.04)	-.02 (.03)	-.02 (.03)
Female * SOI	.03 (.04)	.05 (.04)	.01 (.03)	-.00 (.03)
Within-person effects (Level 1)				
Had CS	-.02 (.07)	.01 (.08)	.03 (.06)	.04 (.06)
Cross-level interactions				
Female * Had CS	.15 (.17)	.15 (.18)	-.21 (.14)	-.38 (.13)**
SOI * CS	.11 (.05)*	.12 (.06)*	-.05 (.05)	-.11 (.04)**
3-way interaction	-.04 (.05)	-.08 (.06)	.07 (.05)	.10 (.04)*

*Note.* Coefficients are unstandardized maximum likelihood estimates. Higher scores in SOI and all wellbeing outcomes indicate greater presence of variable. Models controls for race and school year at Level 2, and for lagged effect of relevant well-being variable at Level 1; data not shown.  $N = 230$ .

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Regarding anxiety, the significant 2-way interaction between sociosexuality and casual sex ( $p < .01$ ) was further moderated by a 3-way interaction with gender ( $p < .05$ ). Separate models among men revealed a significant main effect of weekly casual sex,  $\gamma = .30$ ,  $SE = .12$ ,  $p =$

.012, moderated by sociosexuality,  $\gamma = -.19$ ,  $SE = .08$ ,  $p = .016$ . Simple slopes analyses indicated that for high-SOI men, weekly casual sex had no effect on anxiety,  $\gamma = .01$ ,  $SE = .08$ ,  $p > .50$ . Low-SOI men, on the other hand, experienced higher anxiety on weeks with casual sex compared to weeks without casual sex,  $\gamma = .59$ ,  $SE = .22$ ,  $p = .009$ . There was no moderating effect of sociosexuality among women,  $\gamma = -.01$ ,  $SE = .03$ ,  $p > .50$ ; excluding the cross-level interaction term with sociosexuality, women reported lower anxiety on weeks with compared to weeks without casual sex,  $\gamma = -.11$ ,  $SE = .05$ ,  $p = .033$ . Results are illustrated in middle panel of Figure 3.2.

Regarding depression, the 3-way interaction approached marginal significance,  $p < .14$ . Given relatively low power of higher-order interactions compounded by the smaller number of men than women in our sample, we examined this interaction further. Among women, there was no main effect of casual sex,  $\gamma = -.04$ ,  $SE = .08$ , or moderation by sociosexuality,  $\gamma = .01$ ,  $SE = .04$  (both  $ps > .50$ ). Among men, on the other hand, sociosexuality marginally moderated,  $\gamma = -.12$ ,  $SE = .06$ ,  $p = .073$ , the effect of weekly casual sex,  $\gamma = .16$ ,  $SE = .10$ ,  $p = .106$ . Simple slopes indicated that for high-SOI men, weekly casual sex was not linked to depression,  $\gamma = -.02$ ,  $SE = .06$ ,  $p > .50$ . Low-SOI men, on the other hand, experienced marginally higher depression on weeks with compared to weeks without casual sex,  $\gamma = .33$ ,  $SE = .18$ ,  $p = .073$ . Results are illustrated in bottom panel of Figure 3.2.

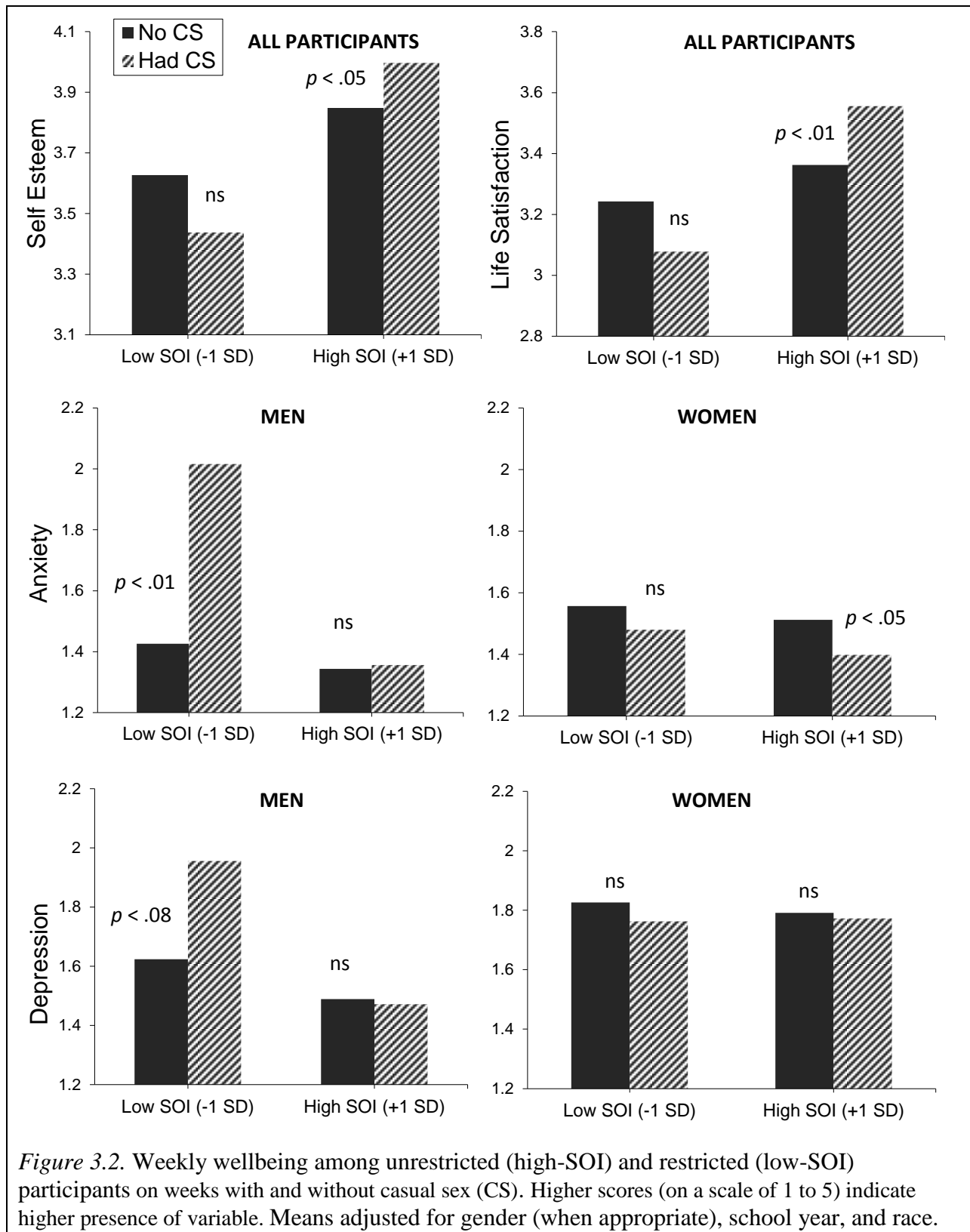


Figure 3.2. Weekly wellbeing among unrestricted (high-SOI) and restricted (low-SOI) participants on weeks with and without casual sex (CS). Higher scores (on a scale of 1 to 5) indicate higher presence of variable. Means adjusted for gender (when appropriate), school year, and race.

**Discussion**

This study tested whether sociosexuality, one's personality propensity toward uncommitted sexual relations, moderated the link between new casual sex experiences and psychological wellbeing over a 9-month period (Study 3a) and on a weekly basis over 12 consecutive weeks (Study 3b). We generally found support for the hypothesized interaction effect across two indicators of psychological distress (depression and anxiety) and two indicators of psychological thriving (self-esteem and life satisfaction). Although not all effects reached significance, in both between- and within-person comparisons, sociosexually restricted individuals (i.e., those strongly oriented against casual sex) typically reported higher distress and lower thriving after having casual sex than after not having casual sex. In contrast, unrestricted individuals (i.e., those highly oriented toward casual sex) reported similar distress and higher thriving following casual sex. There were no main effects of casual sex on wellbeing.

The general lack of main effects is consistent with most prior longitudinal research (Fielder & Carey, 2010a; Grello et al., 2003; Monahan & Lee, 2008; Owen et al., 2011). This is the first study to examine these relationships in a weekly diary design, allowing examination of immediate effects in within-person analyses. It is also one of the first to extend them to two rarely surveyed wellbeing indicators, life satisfaction and anxiety providing a more complete representation of the links between casual sex and wellbeing. Our results thus contribute to the conclusion that there are few uniformly negative or positive short-term or long-term effects of casual sex on wellbeing among college students – at least among those who choose to participate in studies on sexual behavior.

Instead, whether casual sex is a psychologically harmful or beneficial activity may depend on the extent to which it is congruent with one's general personality tendencies. Past research has documented a number of potential benefits of casual sex (e.g., pleasure, confidence,

self-knowledge, connectedness), as well as potential harmful consequences (e.g., social stigma, substance use, sexual/reproductive health problems, regret, unwanted emotional attachment) (Allison & Risman, 2013; Bailey et al., 2000; Fielder & Carey, 2010b; Campbell, 2008; Owen, Quirk, & Fincham, 2013; Townsend, 1995). High sociosexuality may both buffer one from the potential harmful consequences of casual sex and allow access to its potential benefits; low sociosexuality, on the other hand, may leave one vulnerable to the harmful effects while limiting its benefits. In our sample, about a quarter of those who experienced a casual encounter over the course of the studies scored below the median on sociosexuality, suggesting that a nontrivial minority of casual sex participants may be at risk for negative wellbeing consequences.

These results consolidate within a personality framework prior findings of more positive reactions to real or imagined casual sex among those who approve of or show interest in casual sex (de Graaf & Sandfort, 2001; Owen et al., 2010) and lower wellbeing among those who engage in casual sex for nonautonomous (i.e., inauthentic) reasons (Vrangalova, in press). They are consistent with evolutionary accounts of casual sex as an adaptive reproductive strategy for certain individuals, but not others (Ellis et al., 2009; Gangestad & Simpson, 2000; Schmitt, 2005b), and with theoretical perspectives and prior research emphasizing authenticity and self-congruency as critical for wellbeing across various life domains (Deci & Ryan, 2000; Higgins, 1987; Kernis, 2003). Authenticity is typically studied in regard to behaviors generally considered universally healthy, adaptive, and socially desirable, such as academic and work pursuits, exercise, or romantic relationships. If authenticity fosters wellbeing in the context of an evolutionarily and socially more ambivalent behavior such as casual sex, this would further broaden the scope of influence of authenticity.

The results of the weekly study replicated the findings of the longitudinal study for self-esteem, and among men, also for depression and anxiety, suggesting that short-term and long-term links between casual sex and wellbeing are generally similar. The hypothesized interactive effect was not found only in weekly psychological distress among women: Regardless of their sociosexuality, women reported lower anxiety and similar depression on casual sex weeks compared to weeks without casual sex. Yet, restricted women who had engaged in casual sex over the academic year reported significantly higher anxiety and depression than their restricted peers who abstained from casual sex. It is unclear why this discrepancy between the weekly and longitudinal findings. It is possible that it takes longer for the negative effects of casual sex to appear in restricted women, and for the buffering by sociosexuality to take place. Future studies should examine this issue in greater detail.

### **Limitations and Future Research**

Our study has several strengths. Our population-based, university-wide sample was representative in terms of college enrollment and racial composition. Converging evidence from longitudinal and weekly diary methodologies allowed us to examine effects at both between- and within-person levels of analysis. The weekly diary design also substantially overcomes recall biases regarding sexual behavior over longer periods of time. However, the initial response rate was low (13%), raising the possibility of self-selection bias, including a 1.7:1 ratio of women to men. Furthermore, base rates of casual sex were low, particularly among restricted individuals (in both studies, only about 15% of those below the median sociosexuality score engaged in casual sex), causing some of our analyses to have low statistical power. For example, the effects of weekly casual sex on weekly self-esteem was larger in absolute size for restricted individuals (-.17) than for unrestricted individuals (.13); yet due to substantially different standard errors (.13

and .05, respectively), the latter was statistically significant whereas the former was not. Replication of these findings, particularly of the weekly diary results, in a larger sample is needed.

The definition of casual sex used in the study focused on penetrative behaviors (oral, vaginal, and anal sex) and combined shorter (e.g., one-night stands) and longer (e.g., friends-with-benefits) casual interactions. Nonpenetrative behaviors may exert stronger effects (Fielder & Carey, 2010b), and most prior research with college students has defined hookups in a broader way that includes both shorter and longer casual relationships. Future research should examine alternative definitions of casual sex, as different levels of sexual intimacy and relationship characteristics likely impact wellbeing differently (Vrangalova, under review). Finally, as the first study to examine sociosexuality as a potential moderator, and in line with most prior research using the SOI-R, we treated sociosexuality as a global personality tendency. Yet sociosexuality is a multifaceted construct including desires, behaviors, and attitudes (Penke & Asendorpf, 2008). Although the different facets are correlated and all are theoretically expected to be relevant in moderating the link between casual sex and wellbeing, future research should examine whether some facets play a greater role than others in this process.

Despite limitations, our results are the first to indicate that individual differences in a relatively stable personality trait determine whether individuals psychologically benefit from or are harmed by casual sex engagement. This study thus contributes to shifting research away from main effects and toward a theoretically more informative and practically more useful understanding of the boundary conditions (individual, social, and situational) under which casual sex may lead to different mental health outcomes and the psychological processes that account for these effects.

## General Conclusion

Over a decade of research on the links between casual sex and wellbeing has resulted in contradictory and often nonsignificant findings. The vast majority of prior research has examined main effects, treating casual sex as a uniform experience, and all those engaging in it as a homogeneous group. Based on prior descriptive research documenting the wide variety of characteristics of, reactions to, and experiences with casual sex (Allison & Risman, 2013; Campbell, 2008; Cooper, 2002; Fielder & Carey, 2010b; Owen & Fincham, 2011; Owen, Quirk, & Fincham, 2013), as well as prior established theories and bodies of research regarding determinants of wellbeing (e.g., Deci & Ryan, 2000; Higgins, 1987; Kernis, 2003), the current studies were motivated by the assumption that not all casual sex encounters or relationships have the same potential to harm or benefit wellbeing, and that not all those engaging in them are equally susceptible to that potential. The three papers presented here examined several encounter- and individual-level factors that could potentially influence the links between casual sex and wellbeing: length of casual relationship, level of sexual intimacy, motivation for engaging in casual sex, and sociosexual orientation.

The results largely confirmed prior findings of no main effects among college students of casual sex on depression and self-esteem over 3-month to 9-month periods. The studies also extended findings to important indicators of psychological wellbeing rarely studied in this context, suggesting few main effects on physical symptoms, life satisfaction, and anxiety. When main effects were significant for the latter two outcomes, they indicated higher anxiety (particularly among men) as well as higher life satisfaction (particularly among women) following casual sex.

Most importantly, results suggested that who engages in casual sex, why, and what kind of casual sex they engage in is consequential to one's wellbeing. Paper 1 suggested that one-

night stands and longer casual relationships have different short-term outcomes, with only the former affecting wellbeing at the 3-month follow-up. Paper 1 also suggested that more intimate sexual behaviors, such as oral sex or vaginal/anal intercourse, affect later wellbeing more than less intimate behaviors such as genital touching or kissing. Paper 2 indicated that engaging in casual sex for nonautonomous reasons (i.e., unintentionally or with an external sense of causality) was linked to lower wellbeing both among those who engaged in casual sex and in comparison to those who did not engage in casual sex during a 9-month follow-up period. Paper 3 indicated that only sociosexually restricted individuals (i.e., those strongly oriented against casual sex) experienced lower wellbeing following casual sex; unrestricted individuals (i.e., those highly oriented toward casual sex) experienced higher thriving and no increases in distress following casual sex. There were few sex differences detected in this sample; when significant, they pointed toward more negative links between casual sex and wellbeing among men rather than women.

Some moderators of the casual sex–wellbeing relationship have been examined previously, including gender (tested in most studies), level of physical intimacy (intercourse vs. no intercourse) in a hookup (Fielder & Carey, 2010a; Paul et al., 2000), casual sex onset (early, on-time, late) relative to demographically similar others (Meier, 2007), and initial levels of wellbeing (Owen et al., 2011). However, the current results are the first to find a significant moderating role of a relatively stable, partially heritable personality trait (sociosexual orientation) and a factor that both precedes hooking up behavior and is substantially cognitively accessible to and controllable by the individual (proximal hookup motivation).

### **Implications for Research and Practice**

These results have important implication for the study of casual sex and its links to wellbeing. Particular attention should be devoted to how casual sex is measured in studies. Ideally, questionnaires should assess different types of casual sex relationships separately and their individual links to wellbeing before making choices to combine them in analyses. Degrees of intimacy in hookup experiences should also be distinguished in assessment and analyzed separately, as several prior studies have done (Fielder & Carey, 2010a; Owen et al., 2011). Results reported here strongly suggest *against* combining less and more intimate casual behaviors in the same analyses. Psychological distress and thriving outcomes other than depression and self-esteem are relevant in this context and should be studied more extensively. Sex differences should continue to be explicitly tested before potentially combining them in analyses. More generally, this set of studies underscores the need to shift research away from main effects of casual sex on wellbeing, and supports the viability of a moderational approach to study these links.

The present results also have important implication for policy, education, and clinical practice in helping young adults make responsible and informed decisions regarding their sexual behavior. Instead of blanket statements about casual sex as uniformly “good” or “bad” for mental health, our findings allow educators and clinicians to craft nuanced, individually tailored, and, ultimately, more useful messages about when and for whom casual sex has positive and negative consequences. For example, young people should be informed that hooking up is likely a stressful life event when engaged for “wrong” (i.e., nonautonomous) reasons or by “wrong” (i.e., sociosexually restricted) people, but that it is not likely to be a stressful event—and may even be an uplifting experience with potential for fostering growth—when engaged in for “right” (i.e., autonomous) reasons or by “right” (i.e., sociosexually unrestricted) people. Furthermore, youth

should be made aware that a good penetrative (e.g., oral sex or intercourse) hookup may be “better” than a good nonpenetrative hookup, whereas a bad penetrative hookup may be “worse” than a bad nonpenetrative hookup. People should be encouraged to examine their personalities and motives prior to hooking up; then, depending on whether these are compatible or incompatible with healthy outcomes, they should be provided with the practical, emotional, and social skills to either refrain from hooking up or engage in it safely (e.g., using adequate STI/pregnancy protection, respecting consent, etc.).

### **Limitations and Future Research**

The research reported here had strengths that distinguish it from prior studies of college students in this content area. The studies incorporated a longitudinal design, which is rare among college studies, and included both a 3-month (one semester) and a 9-month (one academic year) follow-up; prior studies have only included semester-long follow-ups. This is the first study to examine casual sex and wellbeing in a weekly diary design. Unlike most previous college studies, the sample was large and not drawn from social science classes, but was university-wide, population-based, and representative of the university in terms of race/ethnicity and college enrollment. The operationalization of casual sex allowed for examination of various definitions of casual sex at both relationship types and levels of sexual intimacy. Other than these studies, few others examine potential moderators of the relationship between casual sex and wellbeing, and they are the first to examine a stable personality tendency as well as casual sex-specific motivation as such factors. Finally, in addition to addressing two wellbeing outcomes most frequently studied in the context of casual sex, depression and self-esteem, these studies extended the findings to three other relevant outcomes rarely or never examined in this context: life satisfaction, anxiety, and physical (psychosomatic) symptoms.

Despite their strengths, these studies are limited in the sample, design, and key variables operationalizations that restrict the generalizability of the findings.

**Sample.** Despite a sample unbiased by recruitment procedures, the initial response rate was relatively low (13%), raising the possibility of self-selection bias, including a 1.7:1 ratio of women to men (university-wise, this ratio is 1:1). Despite the relatively large sample, only a minority of students engaged in various types of casual sex over the follow-up periods, resulting in some tests to be underpowered and thus failing to detect significant effects, particularly those involving 2-way or 3-way interactions with gender and other moderators. Finally, despite possible representativeness within Cornell University, the sample represents a fairly homogeneous group of well-educated and privileged students at an elite school. Future research should examine these effects in other, more diverse, gender-balanced, and better-powered groups of young adults.

**Design.** In these studies, participants were only followed during relatively short, 3-month and 9-month periods, and future research should examine whether, and to what extent, effects persist or emerge over longer time periods. The post-college period in particular remains almost entirely unexamined (see Bogle, 2007 for a rare exception), as does the impact of casual sex on the wellbeing of non-college young adults, or ethnic/racial minority youth. More qualitative work is needed on the way the different forms of casual sex impact the lives of both men and women from these various demographic backgrounds.

**Wellbeing variables.** Findings regarding life satisfaction, anxiety, and psychosomatic symptoms are almost entirely novel, requiring replication in other samples. None of the wellbeing outcomes were assessed with clinically diagnostic tools, and it would be relevant to explore whether and how casual sex is linked to clinical levels of disorders such as depression or

anxiety. Furthermore, many wellbeing outcomes of casual sex remain virtually entirely unexamined despite indications that they may be negatively affected by casual sex. For example, some scholars have argued that frequent engagement in casual sex may negatively impact one's ability to eventually form and successfully maintain long-term relationships (Paul et al., 2009) and research on sexual attitudes and person perception suggest that those who frequently engage in casual sex are judged negatively and may thus be at higher risk for objective social isolation or subjective sense of loneliness (Allison & Risman, 2013; Vrangalova et al., 2013). Yet, relational and social wellbeing have rarely been studied as a function of casual sex (see Kreager & Staff, 2009; Prinstein, Meade, & Cohen, 2003 for exceptions among adolescents). Finally, aside from sexual/reproductive health outcomes (Bailey et al., 2000; Coleman et al., 2008), physical health outcomes remain unexplored.

**Casual sex operationalization.** This research distinguished between one-time and longer casual hookups (in Paper 1 only); the other two papers combined these two types of casual encounters. Future research should examine wellbeing links across other dimensions of casual sex definitional. For example, instead of casual relationship length, future studies could distinguish types of casual sex based on how well or how long one has known one's casual partner before sex occurred, or the extent to which one had any relationship expectations prior to the hookup. Another limitation is that the assessment of sex partners in the longitudinal portions of the study did not address casual dating partners, and it is possible that participants varied in how they classified such partners (as romantic or longer casual), introducing some degree of error in the data. Furthermore, the assessment of casual partners across physical intimacy levels was not mutually exclusive, and therefore the level of intimacy required to trigger any positive or negative effects could not be determined. Future research should overcome these shortcomings.

In the longitudinal portion of the study, casual sex engagement was assessed by the number of casual partners. Then, due to limited variability in the number of casual partners over the 3-month and 9-month follow-ups, casual sex engagement was analyzed as a binary (yes vs. no) variable. To the extent that casual sex has effects on wellbeing, higher frequency of engagement would be expected to have greater impact than a single casual encounter. To allow for such analyses, future research should assess the number/frequency of casual sex *encounters* rather than, or in addition to, number of casual sex *partners*.

**Moderators.** This set of studies addressed only a few potential factors that influence the link between casual sex and wellbeing. Many other individual, interpersonal, situational, and social moderators remain to be examined in future research. Some of these include behavioral expectations, other sexuality-specific (e.g., sexual assertiveness, sexual sensation seeking) and more general (e.g., neuroticism, shame/guilt proneness) personality traits and tendencies, attachment styles, substance use prior to casual sex, condom use during penetrative casual sex, partner communication before/during/after casual encounter, and social norms or approval of one's immediate social circle (e.g., friends, siblings, parents), relevant peer group, or the broader social environment.

**Mediators.** Although many have suggested that casual sex might affect wellbeing, scholars have rarely explicitly stated the specific mechanisms by which this might occur, and virtually no studies have examined this issue empirically. Some possible mediators include pleasure/basic needs satisfaction, intentionality/authenticity, neurochemical attachment bonds and their dissolution, societal disapproval, or negative sexual/reproductive health consequences. Future research should test these possibilities using mediational analyses.

## **Conclusion**

Casual sex is not a new phenomenon. It may be, however, becoming a more important part of people's lives today than it has been in previous decades. Aided by geographical mobility, technological advances, relatively sexually permissive contemporary standards, increasing media representation of non-traditional sexualities, and demographic changes that leave more people single for longer time periods than ever before in human history (e.g., delaying marriage, high divorce rate), engaging in casual sex is more accessible than ever before. It thus becomes critical, from both theoretical and practical standpoints, to understand this practice, the people who engage in it, and the ways it impacts their lives and health. In this endeavor, personal and cultural prejudices should not guide scientific inquiries; instead, objective, balanced, and comprehensive approaches are needed.

A group of researchers in the late 1970s who conducted a study on attitudes toward one-night stands among psychotherapists-in-training ended their paper with a question that still resonates within professional communities today: "If our clients can have love with or without sex, can we as therapists accept their having sex with or without love - legitimately and without condemnation? Such is the challenge for family therapists!" (Walker et al., 1978; p. 264). Accepting—and understanding—sex without love remains a challenge for family therapists, researchers, and the general public alike.

## References

- Allison, R., & Risman, B. J. (2013). A double standard for “Hooking Up”: How far have we come toward gender equality? *Social Science Research, 42*, 1191-1206.  
doi:10.1016/j.ssresearch.2013.04.006
- Apostolopoulos, Y., Sönmez, S., & Yu, C. H. (2002). HIV-risk behaviours of American spring break vacationers: A case of situational disinhibition? *International Journal of STD & AIDS, 13*, 733-743. doi:10.1258/095646202320753673
- Armstrong, E. A., England, P., & Fogarty, A. C. K. (2012). Accounting for women’s orgasm and sexual enjoyment in college hookups and relationships. *American Sociological Review, 77*, 435-462. doi:10.1177/0003122412445802
- Bailey, J. M., Kirk, K. M., Zhu, G., Dunne, M. P., & Martin, N. G. (2000). Do individual differences in sociosexuality represent genetic or environmentally contingent strategies? Evidence from the Australian twin registry. *Journal of Personality and Social Psychology, 78*, 537-545. doi:10.1037//0022-3514.78.3.537
- Bancroft, J., Janssen, E., Carnes, L., Goodrich, D., & Strong, D. (2004). Sexual activity and risk taking in young heterosexual men: The relevance of sexual arousability, mood and sensation seeking. *Journal of Sex Research, 41*, 181-192.  
doi:10.1080/00224490409552226
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182. doi:10.1037/0022-3514.51.6.1173
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.  
doi:10.1037/0033-2909.117.3.497

- Baumeister, R. F., & Twenge, J. M. (2002). Cultural suppression of female sexuality. *Review of General Psychology*, 6, 166-203. doi:10.1037//1089-2680.6.2.166
- Bersamin, M. M., Zamboanga, B. L., Schwartz, S. J., Donnellan, M. B., Hudson, M., Weisskirch, R. S., ..., Caraway, S. J. (2013). Risky business: Is there an association between casual sex and mental health among emerging adults? *Journal of Sex Research*. Advance publication ahead of print. doi:10.1080/00224499.2013.772088
- Bisson, M. A., & Levine, T. R. (2009). Negotiating a friends with benefits relationship. *Archives of Sexual Behavior*, 38, 66-73. doi:10.1007/s10508-007-9211-2
- Blumberg, E. S. (2003). The lives and voices of highly sexual women. *Journal of Sex Research*, 40, 146-157. doi:10.1080/00224490309552176
- Bogle, K. A. (2008). *Hooking up: Sex, dating, and relationships on campus*. New York and London: New York University Press.
- Brunell, A. B., & Webster, G. D. (2013). Self-determination and sexual experience in dating relationships. *Personality and Social Psychology Bulletin*. Advance publication ahead of print. doi:10.1177/0146167213485442
- Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review*, 100, 204-232. doi:10.1037//0033-295X.100.2.204
- Campbell, A. (2008). The morning after and the night before. *Human Nature*, 19, 157-173. doi:10.1007/s12110-008-9036-2
- Chia, S. C., & Gunther, A. C. (2006). How media contribute to misperceptions of social norms about sex. *Mass Communication & Society*, 9, 301-320. doi:10.1207/s15327825mcs0903\_3

- Coleman, P. K., Rue, V. M., Spence, M., & Coyle, C. T. (2008). Abortion and the sexual lives of men and women: Is casual sexual behavior more appealing and more common after abortion? *International Journal of Clinical and Health Psychology, 8*, 77-91.
- Cook, C., Heath, F., & Thompson, R. L. (2002). A meta-analysis of response rates in web- or internet-based surveys. *Educational and Psychological Measurement, 60*, 821-836.  
doi:10.1177/00131640021970934
- Cooper, M. L. (2002). Alcohol use and risky sexual behavior among college students and youth: Evaluating the evidence. *Journal of Studies on Alcohol, SUPPL14*, 101-117.
- Cooper, M. L., Shapiro, C. M., & Powers, A. M. (1998). Motivations for sex and risky sexual behavior among adolescents and young adults: A functional perspective. *Journal of Personality and Social Psychology, 75*, 1528-1558. doi:10.1037/0022-3514.75.6.1528
- Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology, 38*, 668–678. doi:10.1037/0022-3514.38.4.668
- Crawford, M., & Popp, D. (2003). Sexual double standards: A review and methodological critique of two decades of research. *Journal of Sex Research, 40*, 13-26.  
doi:10.1080/00224490309552163
- Deci, E. L., & Ryan, R. M. (1985). The General Causality Orientations Scale: Self-determination in personality. *Journal of Research in Personality, 19*, 109–134. doi:10.1016/0092-6566(85)90023-6
- Deci, E. L., & Ryan, R. M. (2000). The “What” and “Why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.  
doi:10.1207/S15327965PLI1104\_01

- de Graaf, H. & Sandfort, T. G. M. (2004). Gender differences in affective responses to sexual rejection. *Archives of Sexual Behavior*, *33*, 395–403.  
doi:10.1023/B:ASEB.0000028892.63150.be
- Del Giudice, M. (2009). Sex, attachment, and the development of reproductive strategies. *Behavioral and Brain Sciences*, *32*, 1-21. doi:10.1017/S0140525X09000016
- Derogatis, L. R. (1993). *BSI: Administration, scoring and procedures manual—3rd Ed.* Minneapolis, MN: National Computer Systems.
- Diamond, L. M., & Huebner, D. M. (2012). Is good sex good for you? Rethinking sexuality and health. *Social and Personality Psychology Compass*, *6*, 54-69. doi:10.1111/j.1751-9004.2011.00408.x
- Donelan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The Mini-IPIP Scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment*, *18*, 192-203. doi:10.1037/1040-3590.18.2.192
- Eisenberg, M. E., Ackard, D. M., Resnick, M. D., & Neumark-Sztainer, D. (2009). Casual sex and psychological health among young adults: Is having 'friends with benefits' emotionally damaging? *Perspectives on Sexual and Reproductive Health*, *41*, 231-237.  
doi:10.1363/4123109
- Ellis, B. J., Figueredo, A. J., Brumbach, B. H., & Schlomer, G. L. (2009). *Human Nature*, *20*, 204-268. doi 10.1007/s12110-009-9063-7
- Emmons, R. A. (1991). Personal strivings, daily life events, and psychological and physical well-being. *Journal of Personality*, *59*, 453-472. doi:10.1111/j.1467-6494.1991.tb00256.x
- Eshbaugh, E. M., & Gute, G. (2008). Hookups and sexual regret among college women. *Journal of Social Psychology*, *148*, 77-89. doi:10.3200/SOCP.148.1.77-90

- Feldman, S. S., Turner, R. A., & Araujo, K. (1999). Interpersonal context as an influence on sexual timetables of youths: Gender and ethnic effects. *Journal of Research on Adolescence, 9*, 25-52. doi:10.1207/s15327795jra0901\_2
- Fielder, R. L., & Carey, M. P. (2010a). Predictors and consequences of sexual “hookups” among college students: A short-term prospective study. *Archives of Sexual Behavior, 39*, 1105-1119. doi:10.1007/s10508-008-9448-4
- Fielder, R. L., & Carey, M. P. (2010b). Prevalence and characteristics of sexual hookups among first-semester female college students. *Journal of Sex and Marital Therapy, 36*, 346-359. doi:10.1080/0092623X.2010.488118
- Fielder, R. L., Carey, K. B., & Carey, M. P. (in press). Are hookups replacing romantic relationships? A longitudinal study of first-year female college students. *Journal of Adolescent Health. doi:10.1016/j.jadohealth.2012.09.001*
- Fiesta Frog (2013). Top party schools and universities 2012-2013 school year. Retrieved from <http://www.fiestafrog.com/blog/top-party-schools-universities-2012-party-schools-nightlife/>
- Fugl-Meyer, K., Öberg, K., Lundberg, P. O., Lewin, B., & Fugl-Meyer, A. (2006). On orgasm, sexual techniques, and erotic perceptions in 18- to 74-year-old Swedish women. *Journal of Sexual Medicine, 3*, 56-68. doi:10.1111/j.1743-6109.2005.00170.x
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior, 26*, 331-362. doi:10.1002/job.322
- Gangestad, S. W. & Simpson, J. A. (2000). The evolution of human mating: Trade-offs and strategic pluralism. *Behavioral and Brain Sciences, 23*, 573-644. doi:10.1017/S0140525X0000337X

- Garcia, J. R., & Reiber, C. (2008). Hook-up behavior: A biopsychosocial perspective. *The Journal of Social, Evolutionary, and Cultural Psychology, 2*, 192–208.
- Garcia, J. R., Reiber, C., Massey, S. G., & Merriwether, A. M. (2012). Sexual hookup culture: A review. *Review of General Psychology, 16*, 161-176. doi:10.1037/a0027911
- Gentzler, A. L., & Kerns, K. A. (2004). Associations between insecure attachment and sexual experiences. *Personal Relationships, 11*, 249-265. doi:10.1111/j.1475-6811.2004.00081.x
- Gilmartin, S. K. (2006). Changes in college women's attitudes toward sexual intimacy. *Journal of Research on Adolescence, 16*, 429-454. doi:10.1111/j.1532-7795.2006.00501.x
- Greiling, H. & Buss, D. (2000). Women's sexual strategies: The hidden dimension of extra-pair mating. *Personality and Individual Differences, 28*, 929-963. doi:10.1016/S0191-8869(99)00151-8
- Grello, C. M., Welsh, D. P., & Harper, M. S. (2006). No strings attached: The nature of casual sex in college students. *Journal of Sex Research, 43*, 255-267. doi:10.1080/00224490609552324
- Grello, C. M., Welsh, D. P., Harper, M. S., & Dickson, J. W. (2003). Dating and sexual relationship trajectories and adolescent functioning. *Adolescent and Family Health, 3*, 103-111.
- Guay, F., Ratelle, C. F., & Chanal, J. (2008). Optimal learning in optimal contexts: The role of self-determination in education. *Canadian Psychology, 49*, 233-240. doi:10.1037/a0012758

- Gute, G., & Eshbaugh, E. M. (2008). Personality as a predictor of hooking up among college students. *Journal of Community Health Nursing, 25*, 26-43.  
doi:10.1080/07370010701836385
- Haselton, M. G., & Buss, D. M. (2001). The affective shift hypothesis: The functions of emotional changes following sexual intercourse. *Personal Relationships, 8*, 357-369.  
doi:doi.org/10.1111/j.1475-6811.2001.tb00045.x
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94*, 319-340. doi:10.1037/0033-295X.94.3.319
- Hill, C. A. & Preston, L. K. (1996). Individual differences in the experience of sexual motivation: Theory and measurement of dispositional sexual motives. *Journal of Sex Research, 33*, 27-45. doi:10.1080/00224499609551812
- Holman, A., & Sillars, A. (2012). Talk about “hooking up”: The influence of college student social networks on nonrelationship sex. *Health Communication, 27*, 205-216.  
doi:10.1080/10410236.2011.575540
- Jenkins, S. S. (2004). Gender and self-determination in sexual motivation. *Dissertation Abstracts International: Section B: The Sciences and Engineering, Vol 64 (12-B)*, 6330.
- Jonason, P. K., Li, N. P., & Richardson, J. (2011). Positioning the booty-call relationship on the spectrum of relationships: Sexual but more emotional than one-night stands. *Journal of Sex Research, 46*, 460-470. doi:10.1080/00224499.2010.497984
- Kenney, S. R., Thadani, V., Ghaidarov, T., & LaBrie, J. W. (2013). First-year college women’s motivations for hooking up: A mixed methods examination of normative peer perceptions and personal hookup participation. *International Journal of Sexual Health*. Advance publication ahead of print. doi:10.1080/19317611.2013.786010

- Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry*, 14, 1-26. doi:10.1207/S15327965PLI1401\_01
- Kessler, R. C., Ruscio, A. M., Shear, K., & Wittchen, H.-U. (2010). Epidemiology of anxiety disorders. In M. B. Stein & T. Steckler (Eds.), *Behavioral neurobiology of anxiety and its treatment, Current Topics in Behavioral Neurosciences*, 2, 21-35. doi:10.1007/7854\_2009\_9
- Keyes, C. L. M. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology*, 73, 539-548. doi:10.1037/0022-006X.73.3.539
- Kraaykamp, G. (2002). Trends and countertrends in sexual permissiveness: Three decades of attitude change in the Netherlands 1965-1995. *Journal of Marriage and the Family*, 64, 225-239. doi:10.1111/j.1741-3737.2002.00225.x
- Kreager, D. A., & Staff, J. (2009). The sexual double standard and adolescent peer acceptance. *Social Psychology Quarterly*, 72, 143-164. doi:10.1177/019027250907200205
- Kunkel, D., Eyal, K., Finnerty, K., Biely, E., & Donnerstein, E. (2005). *Sex on TV 4*. Menlo Park, CA: Henry J. Kaiser Family Foundation.
- La Guardia, J. G., & Patrick, H. (2008). Self-determination theory as a fundamental theory of close relationships. *Canadian Psychology*, 49, 201-209. doi:10.1037/a0012760
- Lambert, T. A., Kahn, A. S. & Apple, K. J. (2003). Pluralistic ignorance and hooking up. *Journal of Sex Research*, 40, 129-133. doi:10.1080/00224490309552174
- Levant, R. F. (2011). Research in the psychology of men and masculinity using the gender role strain paradigm as a framework. *American Psychologist*, 66, 765-776. doi:10.1037/a0025034

- Levin, R. J. (2007). Sexual activity, health and well-being: The beneficial roles of coitus and masturbation. *Sexual and Relationship Therapy, 22*, 135-148.  
doi:10.1080/14681990601149197
- Lewis, M. A., Granato, H., Blayney, J. A., Lostutter, T. W., & Kilmer, J. R. (2012). Predictors of hooking up sexual behavior and emotional reactions among U.S. college students. *Archives of Sexual Behavior, 41*, 1219-1229. doi:10.1007/s10508-011-9817-2
- Manning, W. D., Giordano, P. C., & Longmore, M. A. (2006). Hooking up: The relationship contexts of 'nonrelationship' sex. *Journal of Adolescent Research, 21*, 459-483.  
doi:10.1177/0743558406291692
- Manning, W. D., Longmore, M. A., & Giordano, P. C. (2005). Adolescents' involvement in non-romantic sexual activity. *Social Science Research, 34*, 384-407.  
doi:10.1016/j.ssresearch.2004.03.001
- Marks, M. J. (2008). Evaluations of sexually active men and women under divided attention: A social cognitive approach to the sexual double standard. *Basic and Applied Social Psychology, 30*, 84-91. doi:10.1080/01973530701866664
- Marks, M. J., & Fraley, R. C. (2005). The sexual double standard: Fact or fiction? *Sex Roles, 52*, 175-186. doi:10.1007/s11199-005-1293-5
- Marks, M. J., & Fraley, R. C. (2006). Confirmation bias and the sexual double standard. *Sex Roles, 54*, 19-26. doi:10.1007/s11199-006-8866-9
- McAuliffe, T. L., DiFranceisco, W., & Reed, B. R. (2007). Effects of question format and collection mode on the accuracy of retrospective surveys of health risk behavior: A comparison with daily sexual activity diaries. *Health Psychology, 26*, 60-67.  
doi:10.1037/0278-6133.26.1.60

- McIlhaney, J. S., & Bush, F. M. (2008). *Hooked: New Science on How Casual Sex is Affecting Our Children*. Chicago, IL: Northfield Publishing.
- Meier, A. M. (2007). Adolescent first sex and subsequent mental health. *American Journal of Sociology, 112*, 1811-1847. doi:10.1086/512708
- Mendle, J., Ferrero, J., Moore, S. R., & Harden, K. P. (2013). Depression and adolescent sexual activity in romantic and nonromantic relational contexts: A genetically-informative sibling comparison. *Journal of Abnormal Psychology, 122*, 51-63. doi:10.1037/a0029816
- Meston, C. M., & Buss, M. P. (2007). Why humans have sex? *Archives of Sexual Behavior, 36*, 477-507. doi:10.1007/s10508-007-9175-2
- Mikach, S. M. & Bailey, M. J. (1999). What distinguishes women with unusually high number of sex partners? *Evolution and Human Behavior, 20*, 141-150. doi:10.1016/S1090-5138(98)00045-2
- Miller, L. C., & Fishkin, S. A. (1997). On the dynamics of human bonding and reproductive success: Seeking windows on the adapted-for human-environment interface. In J. A. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp. 197-235). Mahwah, NJ: Erlbaum.
- Monahan, K. C., & Lee, J. M. (2008). Adolescent sexual activity: Links between relational context and depressive symptoms. *Journal of Youth and Adolescence, 37*, 917-927. doi:10.1007/s10964-007-9256-5
- Moran, C., & Lee, C. (2012). Women's construction of heterosexual non-romantic sex and the implications for sexual health. *Psychology & Sexuality*. Advance publication ahead of print. doi:10.1080/19419899.2012.715588

- Oakley, C. (2007, April). Does hooking up hurt you? You bet! *Marie Claire Magazine*.  
<http://lifestyle.msn.com/relationships/loveandromance/articlemc.aspx?cp-documentid=4615497&wa=wsignin1.0>.
- Oliver, M. B., & Hyde, J. S. (1993). Gender differences in sexuality: A meta-analysis. *Psychological Bulletin*, *114*, 29-51. doi:10.1037/0033-2909.114.1.29
- Olmstead, S. B., Pasley, K., & Fincham, F. D. (2013). Hooking up and penetrative hookups: Correlates that Differentiate college men. *Archives of Sexual Behavior*, *42*, 573-583. doi:10.1007/s10508-012-9907-9
- Owen, J.J., & Fincham, F. (2011). Young adults' emotional reactions after hooking up encounters. *Archives of Sexual Behavior*, *40*, 321-330. doi:10.1007/s10508-010-9652-x
- Owen, J.J., Fincham, F., & Moore, J. (2011). Short-term prospective study of hooking up among college students. *Archives of Sexual Behavior*, *40*, 331-341. doi:10.1007/s10508-010-9697-x
- Owen, J. J., Rhoades, G. K., Stanley, S. M., & Fincham, F. (2010). "Hooking up" among college students: Demographic and psychosocial correlates. *Archives of Sexual Behavior*, *3*, 103-111. doi:10.1007/s10508-008-9414-1
- Owen, J. J., Quirk, K., & Fincham, F. (2013). Toward a more complete understanding of reactions to hooking up among college women. *Journal of Sex & Marital Therapy*, Advance publication ahead of print. doi:10.1080/0092623X.2012.751074
- Paul, E. L. (2006). Beer goggles, catching feelings, and the walk of shame: The myths and realities of the hookup experience. In D. C. Kirkpatrick, S. Duck, & M. K. Foley (Eds), *Relating Difficulty: The Process of Constructing and Managing Difficult Relationships* (pp.141-160). Mahwah, NJ: Lawrence Erlbaum Associates.

- Paul, E. L., & Hayes, K. A. (2002). The casualties of 'casual' sex: A qualitative exploration of the phenomenology of college students' hookups. *Journal of Social and Personal Relationships, 19*, 639-661. doi:10.1177/0265407502195006
- Paul, E. L., McManus, B., & Hayes, A. (2000). "Hookups": Characteristics and correlates of college students' spontaneous and anonymous sexual experience. *Journal of Sex Research, 37*, 76-88. doi:10.1080/00224490009552023
- Paul, E. L., Wenzel, A., Harvey, J. (2009). Hookups: A facilitator or a barrier to relationship initiation and intimacy development? In S. Sprecher, A. Wenzel, J. Harvey, (Eds.) *Handbook of relationship initiation* (pp. 375-390). New York: Psychology Press.
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction with Life Scale. *Psychological Assessment, 5*, 164-172. doi:10.1007/978-90-481-2354-4
- Penke, L., & Asendorpf, J. (2008). Beyond global sociosexual orientation: A more differentiated look at sociosexuality and its effects on courtship and romantic relationships. *Journal of Personality and Social Psychology, 95*, 1113-1135. doi:10.1037/0022-3514.95.5.1113
- Petersen, J. L., & Hyde, J. S. (2010). A meta-analytic review of research on gender differences in sexuality, 1993-2007. *Psychological Bulletin, 136*, 21-38. doi:10.1037/a0017504
- Peterson, Z. D., & Muehlenhard, C. L. (2007). What is sex and why does it matter? A motivational approach to exploring individuals; definitions of sex. *Journal of Sex Research, 44*, 256-268. doi:10.1080/00224490701443932
- Randolph, K. K. (2013). The list is out: Top 10 party schools of 2013. Retrieved from <http://college.monster.com/news/articles/2174-the-list-is-out-top-10-party-schools-of-2013?page=10>

- Raudenbush, S. W., Bryk, A. S., & Congdon, R. (2010). HLM 7: Hierarchical linear and nonlinear modeling. Lincolnwood, IL: Scientific Software International.
- Regan, P. C., & Dreyer, C. S. (1999). Lust? Love? Status? Young adults' motives for engaging in casual sex. *Journal of Psychology and Human Sexuality, 11*, 1-24.  
doi:10.1300/J056v11n01\_01
- Reiber, C., & Garcia, J. R. (2010). Hooking up: Gender differences, evolution, and pluralistic ignorance. *Evolutionary Psychology, 8*, 390-404.
- Romero-Daza, N., & Freidus, A. (2008). Female tourists, casual sex, and HIV risk in Costa Rica. *Qualitative Sociology, 31*, 169-187. doi:10.1007/s11133-008-9096-y
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, New Jersey: Princeton University Press.
- Ryan, R.M., & Connell, J.P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749-761. doi:10.1037/0022-3514.57.5.749
- Ryan, R. M. & Deci, E. L. (2008). A self-determination theory approach to psychotherapy: The motivational basis for effective change. *Canadian Psychology, 49*, 186-193.  
doi:10.1037/a0012753
- Ryan, R. M., Deci, E. L., Grolnick, W. S., & LaGuardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychopathology: Vol. 1: Theory and methods* (2nd ed., 795–849). New York: Wiley

- Sakaguchi, K., Sakai, Y., Ueda, K., & Hasegawa, T. (2007). Robust association between sociosexuality and self-monitoring in heterosexual and non-heterosexual Japanese. *Personality and Individual Differences, 43*, 815-825. doi:10.1016/j.paid.2007.02.006
- Schmitt, D. P. (2005a). Is short-term mating the maladaptive result of insecure attachment? A test of competing evolutionary perspectives. *Personality and Social Psychology Bulletin, 31*, 747-768. doi:10.1177/0146167204271843
- Schmitt, D. P. (2005b). Sociosexuality from Argentina to Zimbabwe: A 48-nation study of sex, culture, and strategies of human mating. *Behavioral and Brain Sciences, 28*, 247-311. doi:10.1017/S0140525X05000051
- Schmitt, D. P., Shackelford, T. K., & Buss, D. M. (2001). Are men really more 'oriented' toward short-term mating than women? *Psychology, Evolution and Gender, 3*, 211-239. doi:10.1080/14616660110119331
- Schmitt, D. P., Shackelford, T. K., Duntley, J., Tooke, W., & Buss, D. M. (2001). The desire for sexual variety as a key to understanding basic human mating strategies. *Personal Relationships, 8*, 425-455. doi:10.1111/j.1475-6811.2001.tb00049.x
- Simpson, J. A., & Gangestad, S. W. (1991). Individual differences in sociosexuality: Evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology, 60*, 870-883. doi:10.1037/0022-3514.60.6.870
- Shulman, S., Walsh, S. D., Weisman, O., & Schelyer, M. (2009). Romantic contexts, sexual behavior, and depressive symptoms among adolescent males and females. *Sex Roles, 61*, 850-863. doi:10.1007/s11199-009-9691-8
- Stepp, L. S. (2007). *Unhooked: How young women pursue sex, delay love, and lose at both*. New York, NY: Riverhead Books.

- Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, *9*, 78-108. doi:10.1186/1479-5868-9-78
- Thornton, A., & Young-DeMarco, L. (2001). Four decades of trends in attitudes toward family issues in the United States: The 1960s through the 1990s. *Journal of Marriage and the Family*, *63*, 1009-1037. doi:10.1111/j.1741-3737.2001.01009.x
- Townsend, J. M. (1995). Sex without emotional involvement: An evolutionary interpretation of sex differences. *Archives of Sexual Behavior*, *24*, 173-206. doi:10.1007/BF01541580
- Townsend, J. M., & Wasserman, T. H. (2011). Sexual hookups among college students: Sex differences in emotional reactions. *Archives of Sexual Behavior*, *40*, 1173-1181. doi:10.1007/s10508-011-9841-2
- Vrangalova, Z., Bukberg, R., & Rieger, G. (2013). Birds of a feather? Not when it comes to sexual permissiveness. *Journal of Social and Personal Relationships*. Advance publication ahead of print. doi:10.1177/0265407513487638
- Walker, B. A., Somerfeld, E., & Robinson, R. (1978). One-night stands: A challenge for family therapists. *Family Therapy*, *5*, 259-265.
- Weaver, S. J. & Herold, E. S. (2000). Casual sex and women: Measurement and motivational issues. *Journal of Psychology and Human Sexuality*, *12*, 23-41. doi:10.1300/J056v12n03\_02
- Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Social and Personality Psychology*, *98*, 222-244. 10.1037/a0016984

- Wentland, J. J., & Reissing, E. D. (2011). Taking casual sex not too casually: Exploring definitions of casual sexual relationships. *The Canadian Journal of Human Sexuality, 20*, 75-91.
- Whipple, B., Knowles, J., & Davis, J. (2003). The health benefits of sexual expression. *White Paper*. New York: Planned Parenthood Federation of America, Inc, and the Society for the Scientific Study of Sexuality. [Updated 2007 by Gianotten, W. L., & Golub, D.].
- Young, L., & Wang, Z. (2004). The neurobiology of human mating. *Nature Neuroscience, 7*, 1048-1054. doi:10.1038/nn1327
- Yzerbyt, V. Y., Muller, D., & Judd, C. M. (2004). Adjusting researchers' approach to adjustment: On the use of covariates when testing interactions. *Journal of Experimental Social Psychology, 40*, 424-431. doi:10.1016/j.jesp.2003.10.001
- Zeifman, D., & Hazan, C. (1997). Attachment: The bond in pair-bonds. In J. A. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp. 237-263). Mahwah, NJ: Erlbaum.