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# Predictors and Consequences of Sexual "Hookups" among College Students: A Short-Term Prospective Study

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## Abstract

"Hookups," sexual interactions between partners who do not expect a romantic commitment, are believed to be common among adolescents and young adults. Little research has been done on hookups and most existing research is cross-sectional and has not investigated the antecedents or consequences of hookups. To our knowledge, this study provides the first prospective investigation of the hypothesized predictors of penetrative sex hookups (i.e., oral, vaginal, and anal sex) and the first exploration of the short-term mental health consequences of hookups. A total of 140 first-semester college students (109 females, 31 males) completed an anonymous survey early in their first semester; the survey assessed 18 potential predictors of hooking up that were identified from theory and past research. At the end of their first semester, students again responded to a survey and provided data on their oral and vaginal sex hookup behavior (occurrence and number of partners), distress, and self-esteem. Baseline and follow-up data were linked using unique codes that protected participants' anonymity. Pre-college hookup patterns, peak intoxication level, and situational triggers for hookups were consistent predictors of oral and vaginal sex hookup behavior (and number of hookup partners) in the first semester of college. Penetrative sex hookups increased psychological distress for females, but not for males. Implications for education and intervention as well as suggestions for future research are discussed.

### Keywords

sexual behavior; hookup; casual sex; mental health; adolescents; emerging adults; college student

## INTRODUCTION

"Hookup" is a catch-all term used by adolescents and young adults to describe a sexual interaction between two partners who expect no romantic commitment. Hookups are believed to be very common on college campuses, with estimates ranging as high as 81% of students reporting at least one hookup experience (Bisson & Levine, in press; Lambert, Kahn, & Apple, 2003; Owen, Rhoades, Stanley, & Fincham, in press; Paul & Hayes, 2002; Paul, McManus, & Hayes, 2000). Popular books (e.g., Bogle, 2008; Seaman, 2005; Stepp, 2007) suggest that hookups have negative outcomes, but research on the predictors and consequences of hookups has been scarce.

### Predictors of Sexual Hookups

Potential predictors of sexual hookups have been suggested by both theory and research. For example, the Theory of Interpersonal Behavior (Triandis, 1977, 1980) has been used to explain

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casual sex intentions and behavior (Apostolopoulos, Sönmez, & Yu, 2002; Maticka-Tyndale, Herold, & Mewhinney, 1998). Triandis suggested that *attitudes* and *norms* influence *behavioral intentions*, which–along with *situational factors* and *prior experience* with a behavior–determine whether an individual will engage in a future (sexual) behavior.

Evolutionary theories (e.g., Symons, 1987) may also help to increase understanding of the origins of hookup behavior. This perspective suggests that *gender* should be an important predictor of hookup behavior; that is, because males accrue advantages from having multiple partners, they should be more likely to engage in hookups. In contrast, females would be expected to eschew sexual encounters devoid of emotional intimacy in order to find a mate who invests more in the relationship. Sociocultural perspectives might challenge this view, and suggest that, because gender roles are socially constructed, differences between men and women should diminish as social norms change to be more egalitarian.

Social-cognitive theory (Bandura, 1977) provides a more general framework for understanding how the social environment shapes behavior. This approach recognizes the powerful role that modeling and vicarious learning play in the formation of behavior patterns. For many young people, the most salient model of an intimate relationship is their *parents'* relationship. In addition, the immediate social environment of the college campus (represented by *social norms*) and the larger cultural context, transmitted through *mass media*, would also be expected to shape sexual behavior.

In addition to these theoretical frameworks, prior qualitative and quantitative research has identified other potential predictors of hookups, comprising person characteristics, parental influences, and situational (social-cultural) factors.

At least four person variables might be expected to influence hookup behavior: religiosity, gender, career-mindedness, and the desire to be carefree. The popularity of "virginity pledges" suggests that *religiosity* might affect sexual behavior and, indeed, some research suggests that religiosity affects sexual behavior choices (e.g., Rostosky, Wilcox, Wright, & Randall, 2004; Thornton & Camburn, 1989; Zaleski & Schiaffino, 2000). Religious feelings and attendance at religious services were related to number of hookups and frequency of intercourse during hookups in a recent study (Penhollow, Young, & Bailey, 2007).

As noted earlier, *gender* is likely to influence hookup behavior. Compared to women, men have more sexual partners, are more sexually permissive (Oliver & Hyde, 1993), and are more likely to engage in sex without emotional involvement (Maticka-Tyndale et al., 1998; Townsend, 1995). Despite this, prior studies of hooking up have found no gender differences in hookup experience (Flack, Daubman, Caron, Asadorian, D'Aureli, Gigliotti, et al., 2007; Paul & Hayes, 2002). The lack of gender differences has led to speculation about a possible "change" in gender roles.

Based on interviews with high-achieving female college and high school students, Stepp (2007) suggests that, for some females, *career-mindedness* (i.e., academic and career goals) may take priority over personal relationships; for such females, the time commitment needed for a long-term relationship may limit their ability to seek out educational or career opportunities that would benefit them personally, making them more willing to engage in hookup behavior in lieu of committed relationships. Similar to the qualitative findings from Stepp (2007), Glenn and Marquardt (2001) suggested that the *desire to be carefree in college* may motivate hookup behavior, especially for high-achieving adolescent females. They argued that young women who strive for self-sufficiency and independence prefer hookups to traditional committed relationships because hookups provide sexual interaction with interesting or attractive men without compromising their freedom or independence.

Several parental factors may influence hookups. For example, there is some evidence that the *marital status* of parents may influence adolescents' attitudes about relationships and sexual behavior (Jennings, Salts, & Smith, 1991; Newcomer & Udry, 1987). Numerous studies have found an effect of *parental attitudes about sex* on the sexual attitudes and behavior of adolescents (Daugherty & Burger, 1984; Dittus & Jaccard, 2000; Maguen & Armistead, 2006). Furthermore, *parental discouragement of relationships* may motivate some young people to avoid serious relationships due to parental messages suggesting that relationships might reduce their opportunities or distract them from academic and career goals (Glenn & Marquardt, 2001; Stepp, 2007).

There are other situational factors that influence college students' beliefs and hookup practices. Alcohol use, social norms, and exposure to media messages about sexuality emerge as likely influences on hookups. Alcohol use (and intoxication) before hookups is common; for example, 65% of Grello, Welsh, and Harper's (2006) sample reported drinking before their most recent episode of casual sex. Paul et al. (2000) found that frequency of alcohol intoxication was lowest among individuals who had never hooked up, was higher among those who had a history of hookups without sexual intercourse, and was highest among those who had a history of hookups with sexual intercourse. Moreover, Owen et al. (in press) found that an average of quantity and frequency of alcohol use was a multivariate predictor of hooking up in a recent cross-sectional study.

*Social norms* have also been implicated as possible determinants of sexual hookups. College students overestimate the frequency of their peers' sexual behavior and number of sexual partners (Martens, Page, Mowry, Damann, Taylor, & Cimini, 2006; Scholly, Katz, Gascoigne, & Holck, 2005) as well as acceptance of casual sex (Cohen & Shotland, 1996). Norm misperceptions are associated with increased sexual activity and multiple partners (Page, Hammermeister, & Scanlan, 2000). Students also overestimate the percentage of their peers with hookup experience (actual: 70% vs. estimated: 85%; Paul & Hayes, 2002). The perception that "everyone's doing it" may encourage some students to hook up themselves.

There are two types of social norms (Carey, Borsari, Carey, & Maisto, 2006). *Descriptive norms* refer to an individual's perception of the prevalence of a certain behavior, whereas *injunctive norms* refer to perceptions of peer approval of a behavior. Both descriptive and injunctive norms tend to be overestimated for risky behaviors, and research suggests that the greater the discrepancy between a student's personal behaviors and attitudes, and the behaviors and attitudes of their peers (i.e., self-other differences [SODs]), the greater the pressure that student will feel to conform to the perceived norms.

Finally, *mass media* (e.g., music videos, magazines, the internet) are rife with sexual content (Escobar-Chaves, Tortolero, Markham, Low, Eitel, & Thickstun, 2005; Greenberg & Hofschire, 2000). Cross-sectional (L'Engle, Brown, & Kenneavy, 2006) and longitudinal studies (Collins et al., 2004) demonstrate the effects that media depictions of sex can have on adolescent sexual behavior.

In summary, based on several social-cognitive theories, as well as empirical evidence, we identified a large number of plausible predictors of hookup behavior, from the individual to the sociocultural level. At the time of its initiation, this study was the first prospective study of predictors of hooking up. Therefore, we explored the utility of a wide variety of hypothesized predictors of hookup behaviors in college students. The purpose of this exploratory study was to conduct an initial evaluation of the strength of these hypothesized predictors in order to improve our conceptual understanding of, and future research on, hookup behavior.

## Consequences of Hooking Up

Sexual behavior may involve risk for physical and mental health. Physical health consequences include unintended pregnancy, sexually transmitted infections (STIs), and sexual assault. Unintended pregnancies are relatively rare on most college campuses (Scholly et al., 2005) due to the widespread availability of hormonal contraceptives. STIs (Rimsza, 2005) and sexual assaults (Messman-Moore, Ward, & Brown, in press) appear to be more common, but still have received relatively limited investigation, especially in the hookup context. Challenges limiting such research include the relatively low base rates of some outcomes, the high cost and perceived invasiveness of biological testing, and the stigma and legal issues associated with sexual assault.

Hookups might also be expected to have mental health consequences, which are easier to investigate. According to traditional "sociocultural expectations" (Paul, 2006, p. 146), men are lauded for sexual prowess and experience, whereas women are shamed for these. This "double standard" means that women are more likely to feel guilty or anxious if they engage in casual sex (Herold & Mewhinney, 1993; Lottes, 1993). As a result, hooking up may lead to short-term *psychological distress* for women. On the other hand, a prospective study of younger adolescents suggested that distress may lead to hookups, not vice versa (Grello, Welsh, Harper, & Dickson, 2003); however, this relationship has not been examined prospectively in college students. In a cross-sectional study of college students, Grello et al. (2006) found that women who had engaged in casual sex reported more distress than virgins or women who had engaged in sex with only romantic partners. In contrast, men who had engaged in casual sex had lower levels of distress than virgins or men who had engaged in sex with only romantic partners. Distress increased for women, but not for men, as the number of partners increased. The temporal sequence of the hookups and distress remains unclear due to the use of a cross-sectional design. Another recent cross-sectional study revealed that male and female college students have different emotional reactions to hookups (Owen et al., in press). Females were more likely than males to report a negative reaction to hookups over the past year, and females were less likely than males to report a positive reaction.

Engaging in hookups may also affect other mental health outcomes, such as an individual's self-esteem. In the only study to examine self-esteem related to hooking up in college students, Paul et al. (2000) found that both males and females who had ever hooked up had lower self-esteem than those who had not; however, this study used a cross-sectional design, precluding causal inference.

## Study Objectives

The purposes of this study were: (1) to explore a range of possible predictors of sexual hookups as suggested by previous theory and research and (2) to investigate the short-term psychological consequences of hooking up in college students. Unlike previous cross-sectional studies (e.g., Grello et al., 2006; Owen et al., in press; Paul et al., 2000; Paul & Hayes, 2002), we used a prospective design. Thus, when students arrived on campus (T1), we assessed pre-college hookup behavior and hypothesized predictors of future hookups; at the end of their first semester (T2), we assessed collegiate hookup behavior and psychological consequences. We focused on penetrative sex (i.e., oral, vaginal, and anal sex) hookups because of their public health importance.

This prospective design permitted evaluation of two sets of hypotheses:

1. We predicted that penetrative sex hookup behavior at T2 would be more likely for students with the following characteristics at study entry: male gender, having divorced parents, having engaged in pre-college hookup behavior/having more pre-college hookup partners, greater self-other differences in injunctive norms, greater

hookup prevalence overestimations, stronger intentions to engage in hookups, less religiosity, more permissive parental attitudes toward hooking up, more situational triggers, higher peak intoxication levels, greater media exposure, and more permissive media messages about hooking up. We also predicted interactions between gender and five predictors, such that the likelihood of T2 hookup behavior would be increased for females (but not males) who reported greater distress, lower self-esteem, greater career-mindedness, greater desire to be carefree in college, and greater parental discouragement of relationships.

2. We predicted that females who transitioned from no previous penetrative sex hookups at study entry to a penetrative sex hookup by the end of their first semester would report increased distress and decreased self-esteem.

## METHOD

### Participants

Participants were 140 first-semester college students, 18 to 19 years old ($M$ = 18.03 years, $SD$ = 0.18).[1] Most were female (78%) and Caucasian (69%); other racial/ethnic identities included Asian (13%), Hispanic (10%), African American (5%), and other (3%). The sample was representative of the typical psychology class from which they were recruited.[2] Most (61%) females were single or uninvolved at study entry, whereas 18% were in a committed relationship, 19% were dating one person, and 1% were dating more than one person. Most (77%) males were single or uninvolved at study entry, whereas 13% were in a committed relationship, 6% were dating one person, and 3% were dating more than one person. On average, females reported 2.5 lifetime oral sex partners ($SD$ = 3.3, median = 2) and 1.5 lifetime vaginal sex partners ($SD$ = 1.9, median = 1), and males reported 2.8 lifetime oral sex partners ($SD$ = 4.1, median = 1) and 1.6 lifetime vaginal sex partners ($SD$ = 3.0, median = 1). However, 25% of participants reported that they had not yet had either oral or vaginal sex.

### Measures

Descriptive information (i.e., gender, age, ethnicity, sexual orientation, relationship status, weight) was assessed with six items. Only *gender* was used as a predictor. Sexual history (i.e., number of lifetime oral, vaginal, and anal sex partners) was assessed with three items.

To assess *pre-college oral (vaginal) sex hookup behavior* (yes/no), students were given the following definition[3] of a casual partner: "someone whom you were not dating or in a romantic relationship with, and at the time of the sexual interaction, you understood that there was no mutual expectation of a romantic commitment." Students were asked with how many casual partners they had engaged in oral (vaginal) sex *before* arriving on campus. These responses also provided the *pre-college number of oral (vaginal) sex hookup partners*.

*Religiosity* was measured using one item that asked students to indicate the intensity of their religious beliefs (0 = not at all intense to 20 = very intense). This item was reported by Mahoney

[1]A total of 158 students enrolled in the study; for the T2 assessment, 144 participants returned, for a retention rate of 91%. There were no differences between attriters and completers on any of the predictor variables or number of oral or vaginal sex hookup partners at study entry. Of the 144 students providing data at both T1 and T2, two students were excluded due to sexual orientation (because the hookups of homosexual individuals may differ from those of heterosexual individuals), and two were excluded because they provided contradictory answers on their T1 surveys (undermining data quality). Thus, the final sample size at T2 was 140.

[2]Enrollment in the introductory psychology course is typically at least 65% female. At the university overall, 62% of first-year students that year were Caucasian.

[3]Pilot testing of our survey items with ten individuals confirmed that participants understood the definition provided in the survey. All pilot participants completed the survey and were asked for feedback regarding the survey. None of the pilot participants expressed confusion over or suggested clarification regarding any of the relationship or sexual behavior terms used in the survey. Furthermore, none of the 158 participants asked questions about the meaning of terms or definitions used in the survey.

(1980) to have a high ($r$ = .88) correlation with Rohrbaugh and Jessor's (1975) eight-item religiosity scale that assesses four dimensions of religion.

*Self-esteem* was measured with the Rosenberg (1965) scale. The 10-item scale is internally consistent (α = .86), has high test-retest reliability ($r$ = .82), and has demonstrated convergent and discriminant validity (Blascovich & Tomaka, 1991). Self-esteem was used as a predictor of T2 hookups and as a consequence of T1 hookup transition.

*Distress* was assessed with the 9-item Center for Epidemiological Studies–Depression scale (CES-D; Santor & Coyne, 1997). The 9-item CES-D correlates highly with the 20-item version ($r$ = .93). Higher scores indicate greater distress (α = .78). Distress was used as a predictor of T2 hookups and as a consequence of T1 hookup transition.

*Intentions* were assessed by asking students to rate (1 = strongly disagree to 7 = strongly agree) two statements: (1) in the coming semester, I plan to have oral sex with a casual partner, and (2) in the coming semester, I plan to have vaginal sex with a casual partner.

*Social norms* were assessed following published procedures (Carey et al., 2006). Therefore, to assess general injunctive norms, students rated (1 = strongly disagree to 7 = strongly agree) four statements: (1) hooking up is a part of the college experience, (2) college students are expected to hook up, (3) freshmen look forward to being able to hook up at college, and (4) hooking up is important to my social life (cf. Rimal & Real, 2005). Students also rated the extent to which a typical male and female freshman would agree with those statements. To assess *self-other differences* (SOD) for the *general injunctive norm* (GIN-SOD), the student's average score was subtracted from the average score that the student provided for the typical same-sex freshman. A positive value indicates that the typical same-sex student is perceived to be more permissive than the participant.

Next, to assess hookup limits, students were asked "Which statement best captures how far (1) you, (2) the typical male freshman at this school, and (3) the typical female freshman at this school, would think it is okay to go sexually with a casual partner?" Response options were: no sexual activity of any kind, kissing, touching each other's bodies, oral sex, and vaginal sex. To obtain a *hookup limit injunctive norm SOD* (HLIN-SOD), the rank of the statement endorsed by the student was subtracted from the rank of the typical same-sex freshman.

To assess descriptive norms at T1, students estimated the percentage of male and female freshmen who had engaged in oral and vaginal sex with a casual partner before college. *Prevalence accuracy* was formed by subtracting the actual T1 prevalence rate of oral (vaginal) sex with a casual partner among the student's gender from the estimated T1 prevalence rate of oral (vaginal) sex with a casual partner among the participant's gender. A positive value indicates that the student overestimated the prevalence of hooking up.

*Peak intoxication level* was assessed using peak blood alcohol content (BAC) in the past month. Participants indicated the number of standard drinks (i.e., a 10–12 oz. can or bottle of 4%–5%-alcohol beer, a 4-oz. glass of 12%-alcohol table wine, a 12-oz. bottle or can of wine cooler, or a 1.25-oz. shot of 80-proof liquor either straight or in a mixed drink; Dufour, 1999) they had on their heaviest drinking day in the past month and how many hours passed from the beginning of the first drink to the finishing of the last drink (Carey et al., 2006). Peak intoxication level was calculated using the formula BAC = [(drinks/2) * (GC/weight)] – (.016*hours), where (1) drinks = number of standard drinks consumed, (2) GC = gender constant (9.0 for females and 7.5 for males), (3) weight = weight in pounds, and (4) hours = number of hours over which the drinks were consumed (Matthews & Miller, 1979).

*Situational triggers for oral (vaginal) sex hookups* were assessed with three items (adapted from Apostolopoulos et al., 2002; Herold, Maticka-Tyndale, & Mewhinney, 1998; Maticka-Tyndale et al., 1998). Participants rated (1 = not at all likely to 7 = extremely likely) if they would engage in oral (vaginal) sex with a casual partner in three situations: (1) when you meet someone at a bar or party, (2) when someone attractive wants to hook up with you, and (3) when it seems like everyone else is hooking up. Responses to these items were averaged (oral sex α = .89, vaginal sex α = .88); higher scores indicate a greater effect of the situation on the participant.[4]

*Perceived parental attitudes toward hooking up* were assessed with items adapted from Daugherty and Burger (1984). Participants rated (1 = strongly disagree to 7 = strongly agree) the extent to which their parents would agree with four statements: (1) hooking up is bad or wrong, (2) hooking up is pleasurable or fun, (3) there are problems connected with hooking up (pregnancy, loss of respect, emotional difficulties), and (4) hooking up is okay. After reverse scoring, responses were averaged (α = .79); higher scores indicate more permissive attitudes.

*Parental marital status* was assessed by asking students if their biological parents were currently married. *Parental discouragement of relationships* was assessed with two items designed to capture this construct: (a) my parents encourage me to avoid getting too serious in romantic relationships while I am young, and (b) my parents would be disappointed if I got engaged or married while I was still in college. Participants rated (1 = strongly disagree to 7 = strongly agree) each statement. Responses were averaged (α = .59), with higher scores indicating greater parental discouragement.

*Career-mindedness* was assessed with four items: (a) I have educational and career goals that I want to accomplish before I settle down in a serious relationship, (b) I am too focused on succeeding in school to invest my time in a serious relationship right now, (c) With all my school, work, and/or social activities, I don't have time for a serious relationship right now, and (d) I want to go to graduate school and/or establish my career before I commit to a serious relationship. Participants rated (1 = strongly disagree to 7 = strongly agree) each statement. Responses were averaged (α = .83); higher scores indicate a greater degree of career-mindedness.

*Desire to be carefree* in college was assessed with seven items (e.g., Being involved in a committed relationship would prevent me from enjoying my time in college to the fullest; I don't want to be "tied down" with a committed relationship while I am in college). Participants rated (1 = strongly disagree to 7 = strongly agree) the extent to which they agreed with each statement. Responses were averaged (α = .87); higher scores indicate a greater desire to be carefree.

*Media exposure* was assessed using seven items asking participants how many hours they spend in a typical week (1) watching television, (2) listening to music, (3) watching music videos, (4) reading popular magazines, (5) watching movies, (6) using social networking websites, and (7) reading campus newspapers. The number of hours spent using all seven media types were summed to create a composite media exposure score.[5]

*Permissiveness of media messages about hooking up* was assessed with seven items adapted from a study by L'Engle et al. (2006). Participants rated their agreement (1 = strongly disagree to 7 = strongly agree) with items such as "The messages that college students get from television shows are that it's okay for people our age to hook up." The other items substituted songs

[4]The situational triggers predictors were not confounded with alcohol use. Peak intoxication level and situational triggers for oral sex hookups did not correlate highly, $r = .22$, $p = .005$, and peak intoxication level and situational triggers for vaginal sex hookups were not correlated, $r = .07$, $p = .42$.

lyrics, music videos, magazines, movies, social networking websites, and campus newspapers for television shows. Responses were averaged ($\alpha = .88$), with higher scores indicating more permissive perceived media messages about hooking up.

The dichotomous outcome variable *T2 oral (vaginal) sex hookup behavior* (i.e., engaged in oral [vaginal] sex with a casual partner in the first semester: yes/no) was determined based on the students' responses to these questions: Since you arrived on campus, with how many casual partners have you had oral (vaginal) sex? Students who reported zero partners were coded as "no," and participants who reported one or more partners were coded as "yes." Responses to this question also indicated *T2 number of oral (vaginal) sex hookup partners*.

## Procedure

Students enrolled in an Introductory Psychology course responded to electronically-posted invitations to participate in a study of the health behaviors and interpersonal relationships of young adults. After receiving an overview of the study, students provided written consent and completed a self-administered, anonymous survey in small groups with ample privacy. The initial survey was administered in mid-to-late September (T1); the follow-up survey was administered 10 weeks later, during the last two weeks of the semester (T2). Predictor variables were assessed at T1, and criterion variables were assessed at T2. Each survey took 30 minutes to complete. Upon completion, students received course credit. All procedures were approved by the Institutional Review Board.

Participants' responses on the T1 and T2 surveys were linked using a unique identification code that only they would know. This nine-digit code was designed such that (1) it would protect participants' anonymity (i.e., it could not be linked to participants' identities by the researchers) and (2) its contents could not be forgotten by the participants (i.e., all digits were unlikely to change over the course of the semester). The code comprised the first two digits of the participants' university identification number, their day of birth (e.g., 05 for the $5^{th}$), the second two digits of their university identification number, their month of birth (e.g., 07 for July), and the first letter of the city in which they were born. The code allowed the T1 and T2 data to be linked but also to remain anonymous.

## Data Analysis

Prior to running any statistical tests, the data were examined for outliers and checked for univariate and multivariate normality. The relatively few outliers were replaced with the unstandardized score for which $z = 3$. Continuous predictors were inspected for multicollinearity and were centered at their means prior to analysis (Tabachnick & Fidell, 2007). All *p*-values were two-tailed unless otherwise indicated, with alpha set at .05. When a directional effect was hypothesized (i.e., for *a priori* contrasts), one-tailed tests were used.

Stepwise regression was used for model development due to the large number of predictors included, the lack of previous research on predictors of hooking up, and the absence of theoretical rationale for entering certain predictors first. The first step in the model development process was univariate analyses to determine which predictors to test in the exploratory multivariate model. All predictors with $p < .25$ in univariate analyses were retained for

[5]To minimize participant burden, these questions measure general media exposure rather than exposure to sexual media content in particular. A recent review confirmed that sexual content is pervasive on television, in song lyrics and music videos, in movies, in magazines, and on the internet (Escobar-Chaves et al., 2005); thus, we assumed that participants with greater media exposure in general would have greater exposure to sexual media content. Social networking internet websites were included due to their popularity with college students in particular, their high traffic volume, and the high amount of photo-sharing (e.g., Facebook: Statistics, n.d.). Campus newspapers were included because the campus newspaper had featured articles on hooking up within the past year (e.g., Tousigant, 2007).

multivariate analyses (Hosmer & Lemeshow, 2000). Stepwise logistic regression was conducted using an entry probability of .15 and a removal probability of .20 (Hosmer & Lemeshow, 2000). For the two logistic regression models, the continuous variables selected by the stepwise regression procedure were checked for linearity in the logit; there were no violations of this assumption. Next, all potential interactions between variables selected in the stepwise regression were tested. Significant interactions and the predictors were then entered simultaneously into another regression model. If any predictors had $p < .05$ in these models, the models were re-run without those predictors, and the models with and without the predictor were compared to determine if the predictor should be retained. Models were also run with and without any interactions to determine if the interactions should be retained in the final model.

Paired samples *t*-tests were used for the specific tests of hypothesis two. Two separate repeated-measures analyses of variance (ANOVAs) were conducted on distress and self-esteem for further analysis of the effect of hookup transition group among women; the within-groups independent variable was time, and the between-groups independent variable was hookup transition group.[6] There were three groups: inexperienced—no transition (i.e., never hooked up at T1 or T2), transition-to-hooking-up (i.e., had not hooked up at T1 but hooked up at T2), and experienced (i.e., had hooked up at T1 and may or may not have hooked up at T2).

## RESULTS

### Predictors of Hooking Up

Using a prospective design and psychometrically valid measures of hypothesized predictors, we sought to develop models of four outcomes: oral sex hookup behavior (yes/no), vaginal sex hookup behavior (yes/no), number of oral sex hookup partners (count), and number of vaginal sex hookup partners (count). These four outcomes were selected because of their public health importance (i.e., greater likelihood of generating mental and physical health consequences).[7]

**Oral Sex Hookup Behavior—**The dependent variable (DV) in this model was T2 oral sex hookup behavior (yes/no). During their first semester of college, 33% of the sample reported an oral sex hookup. Table I displays predictors with *p*-values < .25 in the univariate logistic regression analyses. In the stepwise regression procedure, three predictors entered the model: situational triggers for oral sex hookups, peak intoxication level, and pre-college oral sex hookup behavior. There were no significant interactions. In the final model, situational triggers for oral sex hookups, peak intoxication level, and pre-college oral sex hookup behavior predicted T2 oral sex hookups, Likelihood Ratio (LR) $\chi^2$ ($df = 3$) = 41.87, $p < .0001$. Parameter estimates and odds ratios for the final model are displayed in Table II.

Given a prior probability of 50%, the model correctly identified (ID) 76% of cases. Sensitivity, or the proportion of participants who had an oral sex hookup in the first semester of college and were correctly predicted as doing so by the model, was 50%. Specificity, or the proportion of participants who did not have an oral sex hookup and were correctly predicted as doing so by the model, was 88%. For this model, *c*, which is equivalent to the area under the receiver operating characteristic curve and ranges from .5 to 1 (Tabachnick & Fidell, 2007), was .81. Chance prediction is represented by a *c* of .5 and perfect prediction is represented by a *c* of 1; *c* of .8–.9 is considered excellent discrimination (Hosmer & Lemeshow, 2000). The Hosmer and Lemeshow Goodness-of-Fit test was not significant, $\chi^2(df = 8) = 4.97$, $p = .76$, indicating good model fit (Tabachnick & Fidell, 2007). The Akaike Information Criterion (AIC) for the final model was 143.4 and the deviance was 135.4. The performance of the final model

[6]The effect of hookup transition group could not be meaningfully examined in males due to small cell sizes.
[7]No participants reported engaging in anal sex during a hookup; therefore, we report only on oral and vaginal sex hookups.

improved on the fit of a model with pre-college oral sex hookup behavior as the only predictor (AIC = 165.3, deviance = 161.3, correct ID = 44%) and a model with pre-college oral sex hookup behavior and peak intoxication level as the only predictors (AIC = 155.1, deviance = 149.1, correct ID = 70%). The difference in deviance between the final model and the two-predictor model was significant, LR $\chi^2(df = 1) = 13.7$, $p = .0002$.

**Vaginal Sex Hookup Behavior—**The DV in this model was T2 vaginal sex hookup behavior (yes/no). During their first semester of college, 28% of the sample reported a vaginal sex hookup. Table I displays predictors with *p*-values < .25 in the univariate logistic regression analyses. In the stepwise regression procedure, six predictors entered the model: pre-college vaginal sex hookup behavior, peak intoxication level, HLIN-SOD, situational triggers for vaginal sex hookups, gender, and distress. None of the interactions between these six predictors was significant.

The six predictors were entered as predictors for the multivariate model. The model was re-run with five, four, and three predictors when distress, gender, and situational triggers for vaginal sex hookups, respectively, had *p*-values > .05. The different models were compared on AIC, deviance, correct ID, number of predictors with $p > .05$, and number of predictors. The three-predictor model, LR $\chi^2(df = 3) = 44.54$, $p < .0001$, was retained as the final model. The four-, five-, and six-predictor models produced lower deviances and AICs than the three-predictor model; however, they each included at least one non-significant predictor. The difference in deviance between the three- and four-predictor models was not significant, $\chi^2(df = 1) = 3.2$, $p = .07$; therefore, the model with fewer variables was favored to avoid over-fitting the model (Tabachnick & Fidell, 2007). The three-predictor model also resulted in a higher percentage of correct ID and specificity than the four- and five-predictor models. Parameter estimates and odds ratios for the final model appear in Table III.

Given a prior probability of 50%, the final model correctly identified 77% of cases. Sensitivity was 49%, and specificity was 88%. The Hosmer and Lemeshow Goodness-of-Fit test was not significant, $\chi^2(8) = 3.54$, $p = .90$, indicating good model fit (Tabachnick & Fidell, 2007), and *c* was .83. The final model's AIC was 129.1, and deviance was 121.1. The final model improved on the fit of a model with pre-college vaginal sex hookup behavior as the only predictor (AIC = 147.8, deviance = 143.8, correct ID = 76%) and a model with pre-college vaginal sex hookup behavior and peak intoxication level as the only predictors (AIC = 134.7, deviance = 128.7, correct ID = 76%). The difference in deviance between the final model and the two-predictor model was significant, LR $\chi^2(df = 1) = 7.6$, $p = .006$.

**Number of Oral Sex Hookup Partners—**The DV in this model was T2 number of oral sex hookup partners. Table I displays predictors with *p*-values < .25 in the univariate regression analyses. In the stepwise regression procedure, four predictors entered the model: situational triggers for oral sex hookups, number of oral sex hookup partners, peak intoxication level, and parental discouragement of relationships. All six potential interactions between the four predictors were tested with a Bonferroni-corrected $\alpha = .008$; three were significant: parental discouragement and situational triggers for oral sex hookups, $F(1, 132) = 13.03$, $p = .0004$; peak intoxication level and situational triggers for oral sex hookups, $F(1, 132) = 8.19$, $p = .005$; and peak intoxication level and number of oral sex hookup partners, $F(1, 132) = 12.68$, $p = .0005$. The three interactions were included with the four predictors in the final multivariate model, $F(7, 130) = 20.97$, $p < .0001$, $R^2 = .53$, adjusted $R^2 = .51$. The interactions were retained in the final model because their addition resulted in a significant increase in variance explained by the model, $\Delta R^2 = .13$, $F(3, 134) = 11.81$, $p < .0001$. Parameter estimates for the final model are displayed in Table IV. The final model explained more variance than a model with number of oral sex hookup partners as the only predictor, $R^2 = .21$, and a model with number of oral

sex hookup partners and peak intoxication level as the only predictors, $R^2 = .26$, $\Delta R^2 = .27$, $F(5, 132) = 16.31$, $p < .0001$.

**Number of Vaginal Sex Hookup Partners—**The DV in this model was T2 number of vaginal sex hookup partners. Table I displays predictors with *p*-values < .25 in the univariate regression analyses. In the stepwise regression procedure, five predictors entered the model: situational triggers for vaginal sex hookups, peak intoxication level, number of vaginal sex hookup partners, gender, and parental attitudes. The interaction between situational triggers for vaginal sex hookups and gender was significant, $F(1, 133) = 9.94$, $p = .002$.

The five predictors and one interaction were entered as predictors of T2 number of vaginal sex hookup partners. The model was run without parental attitudes ($p = .16$), and the two models were compared, $\Delta R^2 = .02$, $F(1, 133) = 3.85$, $p = .052$; the more parsimonious fivepredictor model was retained to avoid over-fitting the model (Tabachnick & Fidell, 2007). Inclusion of the interaction of situational triggers for vaginal sex hookups and gender resulted in a significant increase in variance explained, $\Delta R^2 = .06$, $F(1, 134) = 10.61$, $p = .001$. Thus, the final model included the following predictors: situational triggers for vaginal sex hookups, peak intoxication level, gender, number of vaginal sex hookup partners, and the interaction of situational triggers for vaginal sex hookups and gender. $R^2$ for the final model was .29, and adjusted $R^2$ was .27. Parameter estimates for the final model are displayed in Table V. The final model explained more variance than a model with number of vaginal sex hookup partners as the only predictor, $R^2 = .09$, and a model with number of vaginal sex hookup partners and peak intoxication level as the only predictors, $R^2 = .16$, $\Delta R^2 = .13$, $F(3, 134) = 8.18$, $p < .0001$.

## Consequences of Hooking Up

Table VI summarizes the mental health consequences (i.e., psychological distress and self-esteem) of hooking up, by gender, for each of the three hookup transition groups.

**Psychological Distress—**As summarized in Table VI, the mean CES-D score for females in the transition-to-hooking-up group increased from 6.91 at T1 to 8.91 at T2; despite a large effect size ($d = .45$), this change was not statistically significant, $t(10) = -1.44$, $p = .09$, one-tailed.

The effect of hookup transition group on distress was examined in females. Neither the between-subjects effect, $F(2, 106) = 2.42$, $p = .09$, nor the time-by-transition group interaction were significant, $F(2, 106) = 1.14$, $p = .32$. However, *a priori* contrasts confirmed that (a) the inexperienced group and the transition-to-hooking-up groups ($M = 6.45$) reported less distress at T1 than the experienced group ($M = 8.36$), $F(1, 106) = 3.64$, $p = .03$, one-tailed; and (b) the inexperienced group ($M = 6.86$) reported less distress than the transition-to-hooking-up group and the experienced groups ($M = 8.40$) at T2, $F(1, 106) = 2.79$, $p = .05$, one-tailed.

An additional analysis tested whether increases in distress for females were restricted to hookups in which penetrative sex occurred. The effect of the transition to non-penetrative sex hookups and the effect of the transition to penetrative sex hookups could not be compared because only two females made the former transition. Instead, *a priori* contrasts were conducted separately at T1 and T2. Females who had hooked up before college but did not engage in penetrative sex during their hookups ($M = 6.2$, $SD = 3.7$, $n = 38$) reported lower distress at T1 than those who had engaged in penetrative sex hookups prior to college ($M = 8.1$, $SD = 4.5$, $n = 60$), $F(1, 115) = 4.76$, $p = .02$, one-tailed. In addition, females who hooked up in their first semester but did not engage in penetrative sex during those hookups ($M = 6.0$, $SD = 4.3$, $n = 33$) reported lower distress at T2 than females who engaged in penetrative sex

hookups in the first semester of college, ($M$ = 8.9, $SD$ = 4.6, $n$ = 39), $F(1, 106) = 7.07$, $p = .005$, one-tailed.

**Self-esteem—**A paired samples $t$-test conducted on T1 and T2 self-esteem in females who transitioned to hooking up revealed no change in self-esteem over the first semester, $t(10) = -0.11$, $p = .55$, one-tailed, $d = -.03$. The effect of hookup transition group on self-esteem was examined in females. Neither the between-subjects effect of hookup transition group, $F(2, 106) = 1.53$, $p = .22$, nor the time-by-transition group interaction was significant, $F(2, 106) = 0.04$, $p = .96$. Similarly, *a priori* contrasts of group differences at T1 and T2 indicated that the three groups did not differ (all $p$s > .10).

An additional analysis tested whether changes in self-esteem for females were restricted to hookups in which penetrative sex occurred. Females who had hooked up prior to college but did not engage in penetrative sex during their hookups ($M$ = 33.7, $SD$ = 4.6, $n$ = 38) and those who had engaged in penetrative sex hookups prior to college ($M$ = 34.1, $SD$ = 4.7, $n$ = 60) did not differ in self-esteem at T1 ($p > .10$). However, females who hooked up in the first semester of college but did not engage in penetrative sex during those hookups ($M$ = 35.5, $SD$ = 3.6, $n$ = 33) reported higher self-esteem at T2 than females who engaged in penetrative sex hookups in the first semester of college, ($M$ = 32.9, $SD$ = 4.9, $n$ = 39), $F(1, 106) = 6.39$, $p = .005$, one-tailed.

## DISCUSSION

This study provides the first prospective exploration of the hypothesized predictors of penetrative sex hookups and the short-term mental health effects of hooking up for females.

### Predictors of Hooking Up

We identified three consistent predictors for sexual hookup outcomes, namely: prior hookup behavior/number of hookup partners, peak intoxication level, and situational triggers for sexual hookups. Prior hookup behavior/number of hookup partners and peak intoxication level (or their interaction) were significant predictors in all four models. Situational triggers for hookups was a significant predictor in three of the four models. The finding that situational triggers and past behavior predicted future hookups supports the Theory of Interpersonal Behavior (Triandis, 1977, 1980) and corroborates past research on casual sex (e.g., Apostolopoulos et al., 2002; Maticka-Tyndale et al., 1998). The link between heavy drinking and hookup behavior also corroborated previous research that has found an association between alcohol use and hookup behavior (e.g., Grello et al., 2006; Owen et al., in press; Paul et al., 2000). Alcohol may facilitate hookups by lowering emerging adults' inhibitions, increasing their confidence to approach potential partners, or increasing their susceptibility to real or perceived social pressures to hook up. In addition, alcohol use may serve an "anticipatory excuse function" (Paul, 2006, p. 151), allowing students to attribute their behavior to alcohol.

The social environment does not appear to overwhelm students' pre-existing personal characteristics or family-of-origin influence. For example, social norms predicted vaginal sex hookups, but not as we expected; that is, as hookup limit self-other differences increased, the likelihood of vaginal sex hookups decreased, contrary to our hypothesis and past alcohol research (cf. Carey et al., 2006; Prentice & Miller, 1993). The vast majority (94%) of students who indicated a stringent hookup limit at study entry did not engage in a vaginal sex hookup during their first semester. Thus, those students who accounted for the large, positive self-other differences remained firm in their beliefs, despite feeling that their peers did believe oral and vaginal sex hookups were acceptable. Future research might investigate moderators of such findings, such as religiosity and alcohol use, to determine when such beliefs are protective and when they result in pressure to conform to the perceived norm.

One family-of-origin influence emerged as an important predictor of number of oral sex partners, namely, parental discouragement of relationships. As expected, the more students perceived parental discouragement of relationships, the more oral sex partners they reported. Some students may find benefits from heeding their parents' preference that they remain unattached while in college (e.g., greater independence); at the same time, they may not want to forego sexual intimacy. Oral sex hookups may be an acceptable compromise in this situation.

Many hypothesized predictors assessed at T1 were not associated with any of the criterion variables. Possible explanations for the lack of hypothesized relationships include restriction of range (e.g., self-esteem), imprecise measurement (e.g., media exposure), and study design. Regarding the latter, a single semester may be too brief for exaggerated descriptive norms to influence students' behavior, and data collection during the first semester may be too soon to observe the influence of career-mindedness. Conceptual notions may need revision, such as parental variables (e.g., may be too distal to participants' first semester in college; cf. Owen et al., in press) and gender (e.g., cultural norms regarding female sexuality may have changed). Because no single study is definitive, the hypothesized relationships should be examined again with larger samples.

Other variables emerged as univariate, but not multivariate, predictors of oral or vaginal sex hookups and number of partners. Intentions to hook up predicted all four outcome measures in the univariate context, but not in the multivariate context. Although intentions to hook up likely vary as a function of numerous situational factors (e.g., availability of attractive partners, mood, alcohol use), we measured intentions only once at T1. Accordingly, situational triggers and peak intoxication level may have cancelled out or suppressed intentions in the multivariate models because early-semester intentions are more distal than situational triggers, which were also measured only once at T1 but reflect a more general pattern of behavior. Desire to be carefree, hookup limit norms, and general injunctive norms were consistent univariate predictors, but not multivariate predictors. Thus, these variables in particular need to be assessed in future studies to determine their utility in predicting hookup behavior.

## Mental Health Consequences of Hooking Up

Our findings suggest that penetrative sex hookups may lead to an increase in distress for females. This result emerged despite the relatively small number of participants in the transition-to-hooking-up group, and corroborates results from a cross-sectional study (Grello et al., 2006). At study entry, females with prior hookup experience reported higher distress than females in the two inexperienced groups. At T2, females in the experienced group still reported relatively high levels of distress, and females in the inexperienced group still reported relatively low levels of distress; however, females in the transition group, who had their first penetrative sex hookup in the first semester of college, reported a level of distress similar to the experienced group. Thus, the pattern of means for the three groups at T1 and T2 is what would be expected if penetrative sex hookups were indeed detrimental to the short-term mental health of females.

In contrast to the pattern seen in females, males in the inexperienced group reported the highest levels of distress at T1 and T2. For males, having a high number of sexual partners is associated with higher self-esteem (Walsh, 1991) and masculinity (Pleck, Sonenstein, & Ku, 1993; Walsh, 1995); accordingly, those who are "missing out" on hooking up could be expected to show poorer mental health than those who are hooking up. The relationship between hooking up and mental health in males warrants further investigation with larger samples.

The temporal order of poorer mental health and hookups is unclear. Distress was not a significant predictor of oral or vaginal sex hookups in our sample. However, in a study of younger adolescents, Grello et al. (2003) found that distress preceded hookups, not vice versa.

Developmental differences between adolescents and college students may explain the disparate results. Continued investigation of the mental health—hookup relationship is needed. Because students undergo several life transitions during their first year of college (e.g., leaving home, social and academic adjustment), and these transitions may also affect their mental health (Friedlander, Reid, Shupak, & Cribbie, 2007; Lucas & Berkel, 2005), we cannot be sure that the increase in distress we observed in some women is due exclusively to hookup experiences. To best characterize the consequences of hookups, future research will be most informative if investigators also assess these co-occurring experiences and transitions.

Self-esteem was also examined as a second indicator of mental health. Participants showed few changes from T1 to T2 in self-esteem, regardless of hookup transition group. In lieu of the global measure of self-esteem that was used, a measure of sexual self-esteem may be more appropriate to detect related changes in this construct. Alternatively, the 10-week follow-up interval may not have been long enough for changes to occur in self-esteem.

## Public Health Implications

Our findings suggest that engaging in penetrative sex hookups may lead to an increase in distress for young women. If replicated, these findings should be communicated to young adults, especially females, so they can be informed about the emotional risks of hooking up. Females are less likely than males to experience positive emotions and more likely than males to experience negative emotions following hookups (Owen et al., in press). Townsend (1995) found that even women who entered sexual relationships without intending to become emotionally involved experienced emotional vulnerability and concern over their partners' investment in the relationship. Post-hookup reasons for regret among women and men appear to differ, with women focusing more on emotional factors (e.g., feeling "used") and men focusing more on physical factors (e.g., partner was unattractive; Paul & Hayes, 2002). Thus, despite hooking up as much as men, women are not affected by hookups in the same way. Young women may benefit from personal reflection and group discussion about gender differences in how hookups are experienced. Another potential focus for intervention is the link between alcohol use and hookups. Interventionists may educate college students on the connection between alcohol use and hooking up and offer suggestions for monitoring alcohol use (Sugarman & Carey, 2007).

Education related to hookups should begin in middle or high school. Younger adolescents hook up (Manning, Giordano, & Longmore, 2006; Manning, Longmore, & Giordano, 2005), and those who do so prior to college are likely to continue hooking up upon entering college. Indeed, the strongest predictors of penetrative sex hookup behavior and number of hookup partners in the first semester of college were pre-college hookup behavior and number of hookup partners.

## Limitations and Future Research

These findings must be interpreted mindful of study limitations, which can also guide future research. First, we used a convenience sample of heterosexual, primarily female and Caucasian college students; therefore, generalization to other student sub-groups is premature. To broaden our understanding of hookup behavior and its consequences, future research should sample more broadly, including more males; ethnic minority students; gay, lesbian, and bisexual students; upperclassmen; and members of fraternities and sororities.

Second, we measured only two mental health outcomes: distress and self-esteem. Future research can extend our examination of mental health consequences by including a broader range of health indicators, such as positive and negative affect, perceived stress, and relationship and sexual satisfaction. Longer-term follow-up intervals will provide information on the durability of these effects and allow more time for delayed effects to emerge.

Investigation of the positive (as well as negative) consequences of hooking up can help increase understanding of the full range of sexual, social, and psychological effects associated with sexual hookups. In addition, research might explore how students interpret their hookup experiences and the mechanism(s) by which hooking up influences mental health.

Third, although our sample included 140 students, only a small number transitioned to penetrative sex hookups in the first semester of college; as a result, the mental health analyses were underpowered. In addition, the sample size prevented cross-validation of the four models that were developed. Future research should recruit larger samples to address these limitations.

Fourth, we relied upon self-report data; participants may have had inaccurate memories or may have responded in a socially desirable way. To minimize memory difficulties, we used measures with short-term recall intervals. To limit social desirability responding, our survey was anonymous and self-administered. To improve overall measurement precision, most of the measures we used were already established, psychometrically validated measures. When new scales were necessary, we conducted factor analyses and internal consistency analyses prior to model development to confirm their appropriateness; however, we did not assess test-retest reliability of the new scales.

Fifth, we did not compare sex during hookups to sex in the context of romantic relationships. Thus, we cannot be sure that the predictors and consequences we identified are specific to hookups or are related to sex in general or to new sexual relationships in general. Research might compare the predictors of oral and vaginal sex during these two relationship contexts to determine if (and how) romantic and hookup relationships differ.

Sixth, our data raise many interesting questions. For example, we cannot determine the level of hookup intimacy required to trigger negative mental health effects. Our findings suggest that non-penetrative hookups may be benign, but hookups that include penetrative sex may lead to negative health consequences. Perhaps moderate hookup involvement allows young women to participate in the dominant social scene on campus (Bogle, 2008) and experience physical pleasure, without having to worry about the consequences of penetrative sex hookups (e.g., feeling as if they were “used” for sex). We did not assess participants’ motives for, interpretation of, or satisfaction with their hookups; any of these experiential variables may affect the potential mental health effects of hookups. Research might investigate the differences in emotional risk between hookups that do and do not progress to penetrative sex, and explore the individual and situational factors that influence the transition from non-penetrative to penetrative sex hookups.

Seventh, we included a wide array of hypothesized predictors, but there are other person variables that should be explored as potential predictors of hookup behavior (cf. Gute & Eshbaugh, 2008). For example, sensation-seeking is positively correlated with number of sexual partners (Kraft & Rise, 1994; Walsh, 1995). In addition, conscientiousness, extraversion, gregariousness, and impulsivity might also be explored as potential risk or protective factors in relation to hooking up. For females, acceptance of traditional gender roles may impact willingness to engage in hookups.

In summary, this study expands the existing knowledge about the hookup phenomenon. The strongest predictors of first-semester penetrative sex hookups are prior hookup behavior, peak intoxication level, and situational factors that encourage hookups. Our prospective assessment of the effect of hooking up on participants’ mental health suggests that penetrative sex hookups may lead to an increase in distress among females, but not males. To extend knowledge, we encourage replication with larger and more diverse samples, longer follow-up intervals, and a broader array of health outcomes and predictor variables.

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## Table I

Univariate Relationships between Predictors and Sexual Risk Behaviors

| Predictors (measured at Time 1) | Criterion Variables (measured at Time 2) | | | |
|---|---|---|---|---|
| | Oral Sex Hookup Behavior | Oral Sex No. of Partners | Vaginal Sex Hookup Behavior | Vaginal Sex No. of Partners |
| Self-esteem | | | | .17 |
| Psychological distress | | | .12 | .12 |
| Intentions to hook up in first semester | <.0001 | <.0001 | .003 | .005 |
| Career-mindedness | | .06 | | |
| Desire to be carefree in college | .002 | <.0001 | .06 | .06 |
| Parental attitudes toward hooking up | | | | .23 |
| Parental discouragement of relationships | | .14 | | |
| Situational triggers for hookups | <.0001 | <.0001 | .003 | .002 |
| Peak intoxication level | <.0001 | <.0001 | .0003 | .001 |
| Media exposure | .249 | | | |
| Permissiveness of media messages about hooking up | .04 | .04 | .23 | |
| Prevalence accuracy[a] | .11 | .02 | .15 | .19 |
| Injunctive norm SOD, limit | .01 | .006 | .0008 | .005 |
| Injunctive norm SOD, general | .01 | .002 | .02 | .006 |
| Gender | .23 | .18 | | |
| Pre-college hookup behavior or number of partners | .0001 | <.0001 | <.0001 | .0003 |
| Parental marital status | | | | |
| Religiosity | .15 | | | |
| Gender × self-esteem | | | | |
| Gender × psychological distress | .22 | | | |
| Gender × desire to be carefree | | | | |
| Gender × parental discouragement of relationships | | | .18 | |
| Gender × career-mindedness | | | | |

*Note*. Unless otherwise noted, $N = 138$ for oral sex hookup behavior and number of hookup partners analyses, and $N = 140$ for vaginal sex hookup behavior and number of partners analyses. The absence of a value in any cell indicates that $p > .25$. SOD = self-other difference.

[a] $N = 137$ for oral sex analyses and 139 for vaginal sex analyses.

**Table II**

Final Model: Multivariate Predictors of Time 2 Oral Sex Hookup Behavior

| Predictor (measured at Time 1) | *B* | *SE* | Wald $\chi^2$ (*df* = 1) | *p* | Adjusted Odds Ratio | 95% *CI* |
|---|---|---|---|---|---|---|
| Intercept | −1.44 | 0.33 | 19.40 | <.0001 | | |
| Situational triggers for oral sex hookups | 0.46 | 0.13 | 12.47 | .0004 | 1.58 | 1.23–2.04 |
| Peak intoxication level[a] | 6.09 | 2.40 | 6.43 | .01 | 1.84 | 1.15–2.94 |
| Pre-college oral sex hookup behavior[b] | 1.06 | 0.43 | 5.90 | .02 | 2.88 | 1.23–6.74 |

*Note.* *N* = 140. B coefficients represent logits. SE = standard error; CI = confidence interval.

[a]For the odds ratio, the unit for BAC is .10, instead of 1.

[b]Reference group is no pre-college oral sex hookup behavior.

**Table III**

Final Model: Multivariate Predictors of Time 2 Vaginal Sex Hookup Behavior

| Predictor (measured at Time 1) | *B* | *SE* | Wald $\chi^2$ (*df* = 1) | *p* | Adjusted Odds Ratio | 95% *CI* |
|---|---|---|---|---|---|---|
| Intercept | −1.91 | 0.33 | 33.40 | <.0001 | | |
| Pre-college vaginal sex hookup behavior[a] | 1.88 | 0.47 | 15.78 | <.0001 | 6.57 | 2.59–16.61 |
| Peak intoxication level[b] | 9.28 | 2.58 | 12.96 | .0003 | 2.53 | 1.53–4.19 |
| Same-sex hookup limit injunctive norm SOD | −0.55 | 0.21 | 6.73 | .01 | 0.58 | 0.38–0.87 |

*Note.* *N* = 140. SOD = self-other difference. B coefficients represent logits. SE = standard error; CI = confidence interval.

[a]Reference group is no pre-college vaginal sex hookup behavior.

[b]For the odds ratio, the unit for BAC is .10, instead of 1.

**Table IV**

Final Model: Multivariate Predictors of Time 2 Number of Oral Sex Hookup Partners

| **Predictor (measured at Time 1)** | ***B*** | ***SE*** | **β** | ***t* (*df* = 1)** | ***p*** |
|---|---|---|---|---|---|
| Intercept | 0.45 | 0.08 | 0 | 5.98 | <.0001 |
| Peak intoxication level[a] | 0.30 | 0.08 | .02 | 3.55 | .0005 |
| Peak intoxication level[a] × number of oral sex hookup partners | 0.14 | 0.05 | .03 | 2.84 | .005 |
| Peak intoxication level[a] × situational triggers for oral sex hookups | 0.14 | 0.06 | .02 | 2.26 | .03 |
| Situational triggers for oral sex hookups | 0.22 | 0.05 | .32 | 4.55 | <.0001 |
| Parental discouragement of relationships × situational triggers for oral sex hookups | 0.11 | 0.03 | .26 | 4.22 | <.0001 |
| Parental discouragement of relationships | 0.10 | 0.04 | .15 | 2.50 | .01 |
| Number of oral sex hookup partners | 0.03 | 0.05 | .05 | < 1 | ns |

*Note*. *N*= 138. SE = standard error.

[a]Unit for BAC is .10, instead of 1.

**Table V**

Final Model: Multivariate Predictors of Time 2 Number of Vaginal Sex Hookup Partners

| Predictor (measured at Time 1) | *B* | *SE* | β | *t* (*df* = 1) | *p* |
|---|---|---|---|---|---|
| Intercept | 0.67 | 0.08 | 0 | 8.15 | <.0001 |
| Situational triggers for vaginal sex hookups | 0.34 | .07 | 0.52 | 4.73 | <.0001 |
| Gender × situational triggers for vaginal sex hookups | −0.36 | 0.11 | −0.37 | −3.25 | .002 |
| Peak intoxication level[a] | 0.24 | 0.08 | 0.02 | 3.11 | .002 |
| Number of vaginal sex hookup partners | 0.17 | 0.06 | 0.23 | 3.05 | .003 |
| Gender[b] | −0.36 | 0.20 | −0.15 | −1.78 | .08 |

*Note.* $N = 140$. SE = standard error.

[a] Unit for BAC is .10, instead of 1.

[b] Coded as female = 0, male = 1.

**Table VI**

Psychological Distress and Self-esteem over the First Semester of College by Gender and Hookup Transition Group

| | | | T1 | | T2 | |
|---|---|---|---|---|---|---|
| **Gender** | **Hookup Transition Group** | ***n*** | **Mean (*SD*)** | **Range** | **Mean (*SD*)** | **Range** |
| | | | Psychological Distress | | | |
| Females | Inexperienced, no transition | 44 | 6.34 (3.75) | 0–16 | 6.86 (4.16) | 0–17 |
| | Transition to hooking up | 11 | 6.91 (3.73) | 2–13 | 8.91 (4.93) | 4–21 |
| | Experienced | 54 | 8.36 (4.59) | 0–20 | 8.30 (4.96) | 1–19 |
| Males | Inexperienced, no transition | 12 | 7.00 (5.19) | 0–17 | 6.92 (4.74) | 0–15 |
| | Transition to hooking up | 4 | 3.25 (2.22) | 1–6 | 4.25 (2.06) | 2–7 |
| | Experienced | 15 | 5.89 (2.92) | 1–12 | 5.33 (2.41) | 0–10 |
| | | | Self-esteem | | | |
| Females | Inexperienced, no transition | 44 | 33.05 (4.63) | 20–40 | 33.05 (4.42) | 25–40 |
| | Transition to hooking up | 11 | 31.55 (4.95) | 23–37 | 31.68 (4.61) | 23.5–37 |
| | Experienced | 54 | 34.02 (4.75) | 19.5–40 | 33.91 (4.48) | 24–40 |
| Males | Inexperienced, no transition | 12 | 34.17 (4.99) | 26–40 | 34.17 (4.53) | 25–40 |
| | Transition to hooking up | 4 | 36.75 (0.96) | 36–38 | 35.50 (3.11) | 33–40 |
| | Experienced | 15 | 35.47 (3.11) | 30–40 | 35.47 (3.04) | 29–40 |