

ADOLESCENT PREDICTORS OF LIFETIME ‘HOOK-UP’ OCCURRENCE AMONG US YOUNG ADULTS

By

Shoshana Goldberg

A paper presented to the faculty of The University of North Carolina at
Chapel Hill in partial fulfillment of the requirements for the
degree of Master of Public Health
in the Department of Maternal and Child Health.

Chapel Hill, North Carolina

(April 20, 2012)

Approved by:

Abstract

OVERVIEW: Within the sexual health literature, there has been a recent focus on ‘hook-ups,’ or casual, one-time sexual encounters, predominantly addressing the prevalence and cross-sectional predictors of hook-ups in high school- or college-aged convenience samples. To date, little attention has been paid to hook-up occurrence among post-collegiate young adults, or to potential predictors from earlier developmental periods. To address this gap, this study will examine early adolescent (grades 7 to 12) sociodemographic, behavioral, and psychological predictors of ever having a hook-up by young adulthood, utilizing a US nationally-representative cohort.

METHODS: 7,717 respondents (3,586 males; 4,131 females) in Waves I and IV of the National Longitudinal Study of Adolescent Health were included. Design-based F-tests and weighted logistic regression were used to calculate gender-specific associations between primarily adolescent/pre-age18 predictors and ever-occurrence of hook-up by Wave IV ($m_{age\ at\ Wave\ IV} = 29.3$ years).

RESULTS: 70.6% of all respondents reported at least one hook-up by Wave IV; hook-ups were significantly more common among males (75.9%) than females (65.3%). For all respondents, in final multivariate models more positive personal perceptions of sexual intercourse during adolescence, higher counts of pre-age 18 sexual partners, and lifetime diagnosis of alcohol abuse or dependence were associated with higher odds of having a hook-up. For males only, a stronger desire to attend college during adolescence was also associated with higher odds of having a hook-up.

CONCLUSION: Our findings suggest that adolescent behaviors and beliefs may be associated with sexual outcomes at later stages in life.

Introduction

In both the popular and scientific literature, increased attention is being paid to 'hook-ups,' or one-time sexual encounters that are often undertaken with little expectation of a future relationship. The term 'hook-up culture' has been coined to describe the supposed rising frequency of this behavior, which is almost exclusively discussed and researched within the context of the college environment. Though estimates of its prevalence vary widely, evidence from the literature suggests that hook-ups are a common occurrence on college campuses. The percentage of college students reporting a history of hooking-up ranges from 45% to 65% for males, 26% to 56% for females, and 28% to 83% of total sample populations (Fielder & Carey, 2010; Gute & Eshbaugh, 2008; Lewis, Granato, Blayney, Lostutter, & Kilmer, 2011; Olmstead, Pasley, & Fincham, 2012; Owen, 2010; Owen, Fincham, & Moore, 2011; Paul, McManus, & Hayes, 2000; Penhollow, 2007). College is generally the first time that young men and women live in close proximity (e.g., through coed dorms) and with minimal supervision. College students also engage in binge drinking frequently, and there is a growing gender imbalance on college campuses as more women than men pursue college degrees. Each of these factors may facilitate hook-up occurrence and normalization (Heldman & Wade, 2010). Further, college is regarded as a time period where sexual behavior, and casual sex in particular, is both normative and expected, increasing the likelihood of hook-up occurrences (Heldman & Wade, 2010; Sessler, 2010).

Because of its high-frequency, hooking-up is often portrayed in the pop-culture media as inherently unsafe, and riskier than other sexual occurrences. However, empirical support for this portrayal is inconsistent, and limited by methodological issues within the literature. In contrast to popular media portrayals which depict hook-ups as anonymous encounters, Paul, McManus, and Hayes (2000) found that only 49% of respondents who engaged in sexual intercourse during

a hook-up did not see that partner again, whereas Lewis et al. (2010) found that the majority of college-aged respondents who had a hook-up did so with a causal acquaintance (24.0%), a friend (53.8%), or a former romantic partner (13.8%).

Additional portrayals of the associated risks of hooking-up have focused on observed links between alcohol use, sexual activity, and hook-up behavior in particular. Across studies, alcohol use has consistently been positively associated with likelihood of hook-up (Eshbaugh & Gute, 2008; Fielder & Carey, 2010; Lewis et al., 2011; Owen, 2010; Owen et al., 2011). Often it is posited that the relationship between alcohol and sexual behavior is causal, in that the disinhibiting effects of alcohol increase the likelihood that an intoxicated individual will engage in casual sexual activity. However, most studies are unable to directly measure the temporal relationship between alcohol use and hook-ups. Examinations have focused primarily on correlating hook-up occurrence with self-reports of the typical frequency and/or amount of alcohol consumption over a specified time period (Fielder & Carey, 2010; Gute & Eshbaugh, 2008; Lewis et al., 2011; Olmstead et al., 2012; Owen, 2010; Paul et al., 2000), rather than assessing alcohol use at the time of hook-up. Of note, the only study to assess the effect of alcohol consumption during hook-up found that though 83% percent of respondents had hooked-up, only 61% had consumed alcohol while doing so. Though typical alcohol use was predictive of engaging in hook-up, the number of drinks consumed at the time of most-recent hook-up was not predictive of whether respondents engaged in oral versus vaginal sex (Lewis et al., 2011). Similarly, in a study of undergraduate college students, Sheldon, Carey, and Carey (2010) found that women who had engaged in heavy drinking directly prior to engaging in sexual intercourse were more likely to use a condom if sex was with a casual (rather than steady) partner, and that both men and women were more likely to use a condom with a casual partner during a sexual

encounter that followed mild alcohol use. Taken together, these findings suggest that the relationship between alcohol and hook-up may not be direct and/or causal, as well as highlight that hooking-up, even in the presence of alcohol, may not be as risky as assumed.

Other attempts to focus on hooking-up as a problem behavior have proposed that hook-ups may contribute to negative sexual health outcomes, such as sexually transmitted infections (STI) and HIV, which have steadily been on the rise among young adults in the United States. Young adults carry a high STI burden—in 2000, it was estimated that adolescents aged 15-24 accounted for 48% of all new cases of STIs in the United States, despite accounting for only 25% of the sexually active population (Weinstock, Berman, & Cates, 2004). Recent surveillance reports from 2008 found that about half of new cases of Chlamydia (52%) and Gonorrhea (49%) diagnosed that year were among young adults aged 20-29, and almost a third of new HIV cases were among 13 to 29 year olds (Kaiser Family Foundation, 2011).

However, evidence directly linking STI diagnosis to hook-up is inconclusive and sparse: to-date, only one study has specifically examined negative sexual health outcomes as a result of hooking-up, finding that among 3,000 college students, only 0.2% experienced an unwanted pregnancy, and 0.9% contracted an STI, as a result of a hook-up (Lewis et al., 2011).

Further, as with the previously discussed findings from Sheldon et al. (2010), evidence suggests that individuals may be highly likely to use contraception during hook-ups or sexual encounters with casual partners, regardless of concurrent drinking. Paul et al. (2000) found that 81% of participants who had engaged in sexual intercourse in a hook-up situation used a condom. In comparison, findings from the 2000 General Social Survey (GSS), a nationally representative survey of US adults aged 18 and older, found that only 19.5% of respondents used a condom in their last instance of sexual intercourse, and that while 42.7% of respondents used a

condom during their last instance of sexual intercourse outside of a relationship, only 17.5% used a condom during sex with their current dating/marriage partner (Anderson, Warner, & Macaluso, 2011). Low reported condom use in dating relationships may be the result of utilizing alternate contraceptive methods, such as birth control pills or more long-acting/permanent contraception methods (e.g. IUD, hormonal implant, etc.). But as condoms are the only method of contraception able to prevent the transmission of STIs and HIV, their higher use in casual sexual encounters suggests that hooking-up is not necessarily a contributing factor to rising STI and HIV incidence.

Researchers looking to examine predictors of hooking-up have focused on several factors. The association between hooking up and religiosity has been examined in a number of studies, as religiosity is considered an indicator of more conservative values and behaviors, and is therefore thought to be negatively correlated with hook-up occurrence. However, the constructs used to measure religiosity differ between studies, and evidence for its association with hook-ups is mixed (Fielder & Carey, 2010; Owen, 2010; Owen et al., 2011; Penhollow, 2007). Religiosity constructs usually take one of the two approaches used by Penhollow, Young, and Bailey (2007), who operationalized religiosity as separate measures of frequency of religious attendance and degree of religious feeling. In this study, religious attendance was found to be negatively associated with odds of ever hooking-up among both male and female undergraduate students, whereas religious feeling was associated with hook-up status for males only. In contrast, Owen et al. (2010) found that for female undergraduates only, current self-reported religious importance ('religious feeling') was negatively correlated with odds of having hooked-up in the previous year, but this association did not retain significance in multivariate modeling. Olmstead, Pasley, and Fincham (2012) focused on religious attendance, and in a study of

college-aged men, found that while religious attendance was negatively correlated with ever hooking-up, this association was no longer significant when controlling for age, personality, alcohol use, and other psychosocial covariates.

Much attention has also been paid to the influence on sexual behavior of both one's personal attitudes and acceptance of hooking-up and sexual activity, and one's perceptions of the attitudes of peers. Lewis et al. (2011) found that college students who believed sexual activity in the context of a hook-up was more acceptable were more likely to engage in oral and/or vaginal sex at their most recent hook-up, but beliefs about the perceptions of other 'typical' college students towards hooking-up had no association with respondent hook-up behavior. Other studies have found that more positive personal attitudes towards sex in general increased the likelihood of engaging in hook-ups (Owen, 2010), and of engaging in penetrative sex during hook-ups in particular (Olmstead et al., 2012; Owen et al., 2011).

When exploring these predictors, researchers have adapted several different frameworks in their attempts to understand 'hook-up culture.' Some have adapted the theoretical frameworks of evolutionary and exchange theories, which suggest that hooking-up may not necessarily be a college-aged phenomenon. Evolutionary theory in particular has been used to examine gender differences in motivations to engage in, and emotional reactions in response to, hook-ups, as several studies have found that men are more likely than women to engage in hook-ups and casual sex (Owen, 2010; Owen et al., 2011; Paul et al., 2000; Penhollow, 2007). In general, men are thought to be more biologically primed to seek out multiple partners in order to assert dominance and perpetuate their lineage, whereas women are primed towards sex for the purpose of building relationships with a mate that could protect them and their offspring (Buunk, Dijkstra, Fetchenhauer, & Kenrick, 2002; Campbell, 2008; Garcia, 2008).

Gendered differences in motivation to hook-up are also thought to drive psychological differences in how individuals psychologically process the hook-up experience. Because theory suggests that hooking-up is more biologically ‘natural’ for men, researchers have explored whether women experience more negative affect and psychological distress than men following hook-ups, and in general, findings have supported this hypothesis. Across studies, women who engage in hooking-up are more likely to experience a stronger, negative emotional reaction to the hook-up experience than men (Eshbaugh & Gute, 2008; Fielder & Carey, 2010; Lewis et al., 2011; Owen, 2010; Owen et al., 2011; Sassler, 2010). However, this relationship may not be absolute, as significant proportions of female respondents still report positive reactions to hooking-up (Buss & Schmitt, 1993; Campbell, 2008; Lewis et al., 2011; Owen, 2010). For women, the discordance between expected (and experienced) negative emotional reactions, and decision to hook-up, is often explained through evolutionarily-based parental investment theory. During casual sexual encounters, when there is often no expectation of a future relationship, mate selection may be driven by ‘evolutionary fitness,’ with women exchanging the ‘cost’ of losing a potential long-term partner and future negative affect, for the ‘reward’ of receiving a casual partner’s more viable sperm, as signaled by the man’s sexual aggressiveness and dominance (Buss & Schmitt, 1993; Garcia, 2008; Sassler, 2010).

Alternatively, psychologists have attempted to explain hooking-up in the context of modeling and attachment theories, focusing on the impact of available family and sexual relationship models on sexual behavior. Willingness to engage in hook-ups and casual sex may result from a lack of exposure to committed monogamous partnerships, such as if an individual were raised by single or divorced parents, or from the development of maladaptive attachment styles (insecure, anxious and/or avoidant) to parents that preclude the ability to form long-term

relationships (Buss & Schmitt, 1993; Heldman & Wade, 2010; Paul et al., 2000; Schmitt, 2005). In contrast, findings from Garcia and Reiber (2008) present a more straightforward and pragmatic ‘biopsychosocial’ approach; in an examination of over 500 undergraduate students, significantly more respondents stated their motivation for engaging in casual sex and hooking-up was to experience physical pleasure, rather than forge emotional connections or to start a relationship.

Though the context of the college environment may facilitate a hook-up culture, there is no reason to assume that such a culture could not further permeate into post-collegiate-aged life, or be experienced by those who choose not to attend college. While young adulthood and the period of late-20s/early-30s has traditionally been regarded as the period of the life course when individuals begin to transition into long-term partnerships and marriage, this is increasingly proving to no longer be the case. Within the US, young adults are delaying marriage and ‘settling down’ (Sassler, 2010), suggesting that the culturally ‘acceptable’ period for exploring different partnerships may be expanding well into adulthood. Heavy alcohol consumption and binge drinking is becoming increasingly common among all American individuals, not just college-aged young adults. Results from the 2009 Behavioral Risk Factor Surveillance System (BRFSS) found that 15.7% of adults over the age of 18 that completed the survey met the criteria for binge drinking, and 5.1% met the criteria for daily heavy drinking, a significant increase from binge drinking (14.9%) and heavy drinking (3.7%) figures reported just 10 years earlier (Centers for Disease Control and Prevention (CDC), 2009). Given that little is understood about the impact on hooking-up of new patterns of dating and sexual sequencing, and of heavy alcohol use during different developmental periods, there is a need for the hook-up literature to be expanded.

Yet despite these profound demographic shifts and the applicability of theoretical frameworks described above to hook-up behavior at most developmental periods, the scientific literature on hooking-up has almost exclusively focused on college-aged sample populations. Further, the majority of research has relied on convenience sampling (e.g., psychology courses, dormitories, etc. at US-based universities) to recruit participants, resulting in a body of literature examining hooking-up among relatively homogenous subsamples of individuals. Because studies to-date have been predominantly confined to individual college campuses, it is difficult to generalize findings to the overall young adult population, particularly those individuals who choose not to attend college. Further, inconsistencies in reported hook-up prevalence and associated risk factors and outcomes across study findings may be a result of unmeasured differences in the social atmospheres and contexts between college campuses. As a result of these data quality and methodological limitations, it is currently difficult for researchers to comprehensively assess both the true prevalence of hooking-up among young adults, as well as the resultant public health impact.

To address this gap, we use data from respondents in the National Longitudinal Study of Adolescent Health (Add Health) to examine lifetime hook-up status, adapting a more general life course framework. Life course theory holds that one's behaviors, attitudes, and beliefs do not develop in isolation, but rather are a product of the experiences and exposures an individual has encountered throughout their entire life, and as such, their timing and context may have different developmental impacts (Elder, 1998). We examine lifetime hook-up status in the context of adolescent predictors that closely map onto those commonly examined in the collegiate literature. In choosing to explore adolescent predictors of lifetime hook-up status, we hope to expand understanding of hook-up culture by placing it in the life course continuum, rather than

in the distinct period of early adulthood, and to investigate the potential long-term implications of adolescent experiences.

Methods

Data

Add Health is a prospective study that has followed a nationally representative probability sample of adolescents who were in grades 7-12 in the 1994-1995 school year. To date, one in-school and four in-home interviews have been completed. In the present analysis we use data from in-home interviews at Waves I and IV. In the 1995 Wave I in-home interview, 20,745 adolescent respondents and 17,670 parents completed separate interviews. Wave IV ($N=15,701$) was conducted in 2008 when the respondents were between the ages of 24 and 32. At-home Wave I and IV interviews were conducted using a combination of interviewer-led computer-assisted personal interview (CAPI) and, for more sensitive questions, respondent self-administered computer-assisted self-interview (CASI). All questions about sexual behavior were self-administered using CASI technology. See Harris et al. (2009) for more details about Add Health study design.

Inclusion criteria for the present analysis were participation in Waves I and IV ($n=15,701$), a valid sampling weight ($n=14,800$), valid response (including zero) to the Wave IV question on number of lifetime hookup partners ($n=14,697$), and complete data on all analysis variables ($n=7,717$). Approximately 12% of respondent loss was a result of missing data; all other losses were due to branching rules built into the Add Health study design. Of the 7,717 respondents included in the final analysis sample, 3,586 were male and 4,131 were female.

Measures

Outcome Variable-*Lifetime Sexual Hook-up History*

At Wave IV, respondents were asked the question “*Considering all types of sexual activity, with how many partners, male or female, have you had sex on one and only one occasion?*” A binary variable was generated to indicate if a respondent had ever had a hook-up (‘lifetime hook-up status’): respondents were coded as “1” if they reported one or more one-time sexual partners, otherwise they were coded as “0.” Respondents who stated they didn’t know or who were missing data were not included for analysis.

Independent Variables/Predictors

Demographic.

Age at Wave IV. We created a continuous age variable (years and fractions of years) by calculating the difference between the respondent’s date of birth and the date of the Wave IV interview.

Race/Ethnicity. Respondents were categorized into one of four mutually-exclusive race/ethnicity groups based on Wave I self-report: “Hispanic, any race;” “non-Hispanic (NH) White;” “NH-Black;” and “NH-Other” (includes Asian, American Indian and self-defined ‘other;’). For all final multivariate analyses, dummy variables were created for each race/ethnicity group, and “NH-White” was used as the referent category.

Adolescence (Wave I).

Parental education level. We used parent educational attainment at Wave I as a proxy for socioeconomic status (SES) in the respondents’ families of origin. In two parent households we used the highest level of education reported for either parent in the Wave I parent questionnaire. In single parent households, that parent’s education was used. If a parental questionnaire was not

available (approximately 15% of respondents), the respondent's Wave I report of parents' education was used. Education was dummy coded as "less than a high school diploma," "high school diploma or GED," "some college or vocational school," and "college graduate (Bachelor's Degree) or higher." For all analyses, "college graduate or higher" served as the referent category.

Family Structure During Adolescence. Respondents were categorized into one of four groups, based on self-report of current family/parental structure within their household/home residence at Wave I: "2 biological parents;" "other 2-parent structure;" "single mother;" or "other." In multivariate analyses, "2 biological parents" served as the referent.

Public Religiosity. At Wave I, respondents separately reported the frequency of attending religious services, and the frequency of participating in religious youth activities, in the 12 months preceding the survey, utilizing a 4-item Likert scale (0=never; 1= less than once/month; 2= more than once/month, but less than once/ week; 3= once/week). Respondent answers to both questions were summed to derive a composite, continuous measure of 'public religiosity,' with final scores ranging from 0 to 6; higher scores indicate more frequent public religious engagement and participation. In analytical models, mean 'public religiosity' scores, by gender and hookup status, were utilized.

Private Religiosity. Respondents were asked to report how important religion was to them (4-item Likert scale; 0= not important at all; 3=very important), and how often they prayed (5-item Likert scale; 0= never; 1=less than once/month; 2=once/month; 3=once/week; 4=once/day). Answers to both questions were summed to derive a composite, continuous measure of 'private religiosity,' with final scores ranging from 0 to 7. As with 'public

religiosity,' higher scores indicate stronger religiosity, and mean 'private religiosity' scores, by gender and hookup status, were utilized for analytical modeling.

Positive Peer Attitudes Toward Sexual Intercourse. At Wave I, respondents were asked to indicate how much they agreed that, if they had sexual intercourse, "*your friends would respect you more*" and "*it would make you more attractive to (opposite gender of respondent).*" These questions, and all other attitude questions, were only presented to unmarried respondents who were at least 15 years old at the time of the Wave I interview. The same 5-item Likert scale (0=strongly disagree; 4=strongly agree) was used for all attitude questions. Respondents' 'scores' on both questions were summed to derive a composite, continuous measure of 'positive peer attitudes,' with final scores ranging from 0 to 8; higher scores indicate respondents' perception that their friends had more positive feelings towards sexual activity. In analysis, mean 'positive peer attitude,' by gender and hook-up status, was utilized.

Negative Peer Attitudes Toward Sexual Intercourse. Respondents indicated how much they agreed that, if they had sexual intercourse: "*your partner would lose respect for you*" and "*it would upset (name of respondents' mother).*" The former question was only presented to those respondents who listed a mother (or mother figure) during the Wave I interview. Responses to both questions were summed to derive a final composite, continuous measure of 'negative peer attitudes,' with scores ranging from 0 to 8; higher scores indicate perception that peers had a more negative view of sexual activity.

Positive Self-Attitude Toward Sexual Intercourse. Respondents indicated how much they agreed that if they had sexual intercourse, "*it would give you a great deal of physical pleasure*" and "*it would relax you.*" Responses to both questions were summed to derive composite,

continuous measure ‘positive self-attitudes,’ with scores ranging from 0 to 8; higher scores indicate higher self-perceptions towards sexual activity.

Negative Self-Attitudes Toward Sexual Intercourse. Respondents indicated how much they agreed that if they had sexual intercourse, “*you would feel guilty.*” Response was used to devise a continuous measure ‘negative self-attitudes,’ with scores ranging from 0 to 4; higher scores indicate more negative self-perceptions towards sexual activity.

Marriage Expectations. Utilizing a 5-item Likert scale (1=no chance; 5=almost certain), respondents indicated how likely it was that they would be married by 25.

College Expectations. Utilizing a 5-item Likert scale (1=low; 5=high), respondents indicated how likely it was that they would go to college.

College Desirability. Utilizing a 5-item Likert scale (1=low; 5=high), respondents indicated how much they wanted to go to college.

Adult Predictors (Wave IV).

Wave IV educational attainment. Respondents reported the highest level of education they had obtained by the time of the Wave IV survey. Answers were coded into three categories: “less than HS/HS diploma;” “some college/vocational education;” “Bachelor’s degree or higher.” In multivariate analyses, “Bachelor’s degree or higher” served as the referent.

Alcohol abuse/dependence. At Wave IV, a lifetime diagnosis of alcohol abuse or dependence was assessed based on DSM-IV symptoms and assessment of tolerance and withdrawal symptoms. Symptoms measured in Add Health are a subset of the full DSM-IV assessment (American Psychiatric Association, 1994).

Pre -Age 18 Partner Count. In Wave IV, respondents were asked, in two separate questions regarding male and female partners, “*Considering all types of sexual activity, with how*

many (male/female) partners did you have sex before you were 18 years old?” Respondents who indicated “don’t know” were asked “*what is your best estimate?*” and given the options “0,” “1 to 4,” “5 to 10,” “11 to 20,” “21 to 30,” and “more than 30.” For the categorical follow up, we used the midpoint of the range as the count. Combining both answers, we created separate pre-age 18 counts of opposite-sex, same-sex, and total partners for each respondent. Continuous partner counts were recoded into categorical ranges based on the quartiles of opposite-sex, same-sex, and total-partner distributions. For opposite-sex partner counts, “0 to 1,” “2 to 5,” and “6 or more,” were used, with “2 to 5 partners” serving as the referent. For same-sex partner counts, “0,” and “1 or more” were used, with “0 partners” serving as the referent (too few respondents reported multiple pre age-18 same-sex partners for additional partner-count categories to be explored). For total partner counts, “0,” “1,” “2 to 3” and “4 or more” were used, with “1 partner” serving as the referent.

Statistical Analysis

Separately for males and females, we used bivariate logistic regression models (for continuous variables) and design-based F tests (for categorical variables) to identify characteristics associated with hookup status. All predictors were then fit into gender-specific final multivariate logistic regression models, using Stata 12.0 (StataCorp., 2011) with adjustments for sampling design and weights.

Results

Distributions of demographics and predictors, by respondent gender, are reported in Table 1. All percentages and means are weighted, and all n’s are unweighted.

A total of 70.6% of respondents (75.9% of males and 65.3% of females) had at least one hook-up by Wave IV. Males were significantly more likely than females to have had a hookup

(OR=1.68, 95% CI=1.44, 1.95, [results not shown]). Overall, respondents had a mean of slightly more than four lifetime hook-ups (SD=13.29; range, 0-396,). As expected, male respondents reported significantly more hook-ups than females; males reported a mean of almost six hook-ups (SD=16.32; range ,0-396,), whereas females reported a mean of almost three (SD=8.15; range, 0-350).

The mean age of respondents was 29.3 years. The majority of respondents were non-Hispanic White, raised in households by two biological parents (a majority of whom had at least a Bachelor's degree), and had completed at least some college education by Wave IV.

Gender differences were noted in attitudes/perceptions of sex and religiosity: At Wave I, females perceived their peers to have lower positive, and higher negative, views towards sexual intercourse than males did. Similarly, mean positive self-attitudes were lower, and mean negative self-attitudes were higher, for females compared to males. Females had higher mean religiosity scores than males for both public and private measures of religion.

A similar percentage of males (32.0%) and females (31.3%) had no sexual partners before the age of 18. A higher percentage of males (25.4%) than females (18.0%) had “four or more” total pre-age 18 sexual partners of any gender, though a slightly higher percentage of females (25.2%) than males (24.6%) reported ‘two-to-three’ total pre-age 18 sexual partners of any gender. For gender-specific counts, a similar percentage of females (2.9%) and males (2.8%) had at least one pre-age 18 same-sex partner, whereas a higher percentages of males (35.2%) than females (32.3%) had “two to five”, and “six or more” (13.6% versus 10.0%), opposite-sex sexual partners.

Table 1. Characteristics of Sample Population (Weighted %/means; unweighted *n*)

Variable	Females (n=4,131)	Males (n=3,586)	Total (n=7,717)
Primary Outcome			
Lifetime Hook-up Status (1+), %			
By Wave IV	65.33 (2,647)	75.94 (2,677)	70.64 (5,324)
# Hook-ups, mean ¹			
By Wave IV	2.87 (SD=8.15)	5.65 (SD=16.32)	4.26 (SD=13.29)
Demographics			
Chronological Age, mean			
At Wave IV	29.23 (0.04)	29.42 (0.04)	29.33 (0.03)
Race, %			
NH-White	64.31 (2,025)	66.13 (1,913)	65.22 (3,938)
Hispanic	12.05 (761)	11.69 (659)	11.87 (1,420)
NH-Black	17.83 (979)	15.90 (676)	16.86 (1,655)
NH-Other	5.81 (366)	6.28 (338)	6.04 (704)
WI Family Structure, %			
2 Bio-parents	58.07 (2,291)	60.11 (2,085)	59.09 (4,376)
Other 2 parents	16.25 (731)	16.49 (657)	16.37 (1,388)
Single mom	21.72 (929)	18.78 (710)	20.25 (1,639)
Other	3.96 (180)	4.62 (134)	4.29 (314)
WI Parent Education Attainment, %			
< HS diploma	12.67 (590)	10.57 (433)	11.62 (1,023)
HS diploma/GED	27.81 (1,044)	26.54 (849)	27.18 (1,893)
Some College	27.87 (1,132)	30.12 (1,077)	28.99 (2,209)
≥ Bachelor's	31.65 (1,365)	32.77 (1,227)	32.21 (2,592)
W IV Respondent Education Attainment, %			
≤ HS diploma	19.16 (725)	26.12 (885)	22.65 (1,610)
Some College	43.36 (1,831)	42.93 (1,629)	43.14 (3,460)
≥ Bachelor's	37.48 (1,575)	30.95 (1,072)	34.21 (2,647)
Psychological			
Attitudes towards sex ² , mean			
Positive Peer Score	2.14 (0.04)	3.34 (0.04)	2.74 (0.04)
Negative Peer Score	4.80 (0.05)	4.33 (0.06)	4.57 (0.05)
Positive Self Score	3.84 (0.05)	5.01 (0.05)	4.43 (0.05)
Negative Self Score	2.32 (0.04)	1.91 (0.04)	2.11 (0.03)
Religiosity ³ , mean			
Public	5.38 (0.07)	4.94 (0.06)	5.16 (0.06)
Private	3.15 (0.07)	2.91 (0.07)	3.03 (0.07)
Motivations ⁴ , mean			
Married by 25	3.29 (0.03)	3.15 (0.03)	3.22 (0.03)
Likely to attend college	4.32 (0.04)	4.08 (0.05)	4.20 (0.04)
Wants to attend college	4.53 (0.03)	4.34 (0.04)	4.44 (0.03)
Behavioral			
Alcohol Use, %			
Lifetime diagnosis of abuse/dependence	19.57 (1,118)	33.96 (2,468)	26.77 (1,843)
Pre-18 opposite sex partners, %			
0-1	57.77 (2,487)	51.24 (1,865)	54.50 (4,352)
2-5	32.26 (1,270)	35.19 (1,245)	33.73 (2,515)

	6+	9.97 (374)	13.57 (476)	11.77 (850)
Pre-18 same sex partners, %	0	97.07 (4,004)	97.17 (3,478)	97.12 (7,482)
	1+	2.93 (127)	2.83 (108)	2.88 (235)
Pre-18 total partners, %	0	32.02 (1,395)	31.27 (1,138)	31.64 (2,533)
	1	24.79 (1,052)	18.66 (674)	21.72 (1,726)
	2-3	25.20 (989)	24.64 (886)	24.92 (1,875)
	4+	18.00 (685)	25.43 (888)	21.72 (1,583)

¹Weighted Standard Deviations are provided for number of hook-ups. Weighted Standard Errors are provided for all other predictors.

²Ranges for attitude score as follows:

Positive Peer: 0-8

Negative Peer: 0-8

Positive Self: 0-4

Negative Self: 0-8

³Range for religiosity scores as follows:

Public Religiosity: 0-6

Private Religiosity: 0-7

⁴Range for expectations: 1-5

Bivariate Associations

Bivariate associations between predictors and lifetime hook-up status, by gender, are presented in Table 2. For both males and females, lifetime hook-up status was associated with respondent educational attainment by Wave IV, peer- and self- attitudes towards sex at Wave I, lifetime diagnosis of alcohol abuse/dependence, and pre-age18 same-sex, opposite-sex, and total sexual partner counts. For females only, lifetime hook-up status was also associated with Wave I family structure and both private and public measures of religiosity.

For both males and female, having only completed some college education by Wave IV was associated with higher likelihood of lifetime hook-up than having completed a Bachelor's degree. Males who had obtained a high-school degree or less were more likely than males with a Bachelor's degree to have had a hook-up, but females with a high-school degree or less were less likely than college-educated females to have a hook-up.

Respondents of both genders with a lifetime history of hook-up reported higher positive peer- and self-attitude scores, and lower negative peer- and self-attitude scores, than respondents

who had never hooked-up. The vast majority of both males (87.5%) and females (84.7%) with a lifetime diagnosis of alcohol abuse or dependence at Wave IV had at least one hook-up.

Respondents with more pre-age 18 sexual partners were also more likely to have had a hook-up, an association which held true for opposite-sex, same-sex, and total sexual partners. Over 56% of females, and 68% of males with zero to one pre-age 18 opposite-sex partners had a hook-up, compared to 89% of females and 91% of males with six or more opposite-sex partners. Over 64% of females, and 75% of males, with zero pre-age 18 same-sex partners had a hook-up, whereas 94% of females, and 91% of males with at least one pre-age 18 same-sex partner had. Further, 53.4% of females, and 63.2% of males with zero pre-age 18 sexual partners of any gender reported having a hook-up by Wave IV, compared with the 88.4% of females, and 89.9% of males with four or more pre-age 18 sexual partners who had a hook-up by Wave IV.

For females, lower Wave I religiosity scores were observed for both public (3.02) and private (5.25) measures, compared with females who reported no hook-ups (3.39 and 5.61, respectively). Additionally, females living in a single-mother (65.8%) or 2-non-bioparent (72.1%) household at Wave I were significantly more likely than those living with both biological parents (63.4%) to have had at least one hook-up by Wave IV. Similar patterns for both predictors were observed for men, however these associations did not reach statistical significance.

Table 2: Bivariate Associations Between Lifetime Hook-up Status and Predictors

Variable	Females (n=4,131)			Males (n=3,586)		
	No Hook-up (n=1,484)	1+ Hook-up (n=2,647)	<i>p</i> ¹	No Hook-up (n=909)	1+ Hook-up (n=2,677)	<i>p</i> ¹
Age, mean						
Race, %						
At Wave IV	29.24 (0.05)	29.23 (0.04)	0.780	29.40 (0.06)	29.43 (0.04)	0.673
NH-White	33.07 (685)	66.93 (1,340)		24.77 (501)	75.23 (1,412)	
Hispanic	41.68 (319)	58.32 (442)		25.81 (175)	74.19 (484)	
NH-Black	35.36 (338)	64.64 (641)	0.199	19.90 (142)	80.10 (534)	0.210
NH-Other	35.79 (142)	64.21 (224)		23.73 (91)	76.27 (247)	
WI Family Structure, %						
2 Bio-parents	36.61 (869)	63.39 (1,422)		25.14 (570)	74.86 (1,515)	
Other 2 parents	27.91 (216)	72.09 (515)		19.84 (135)	80.16 (522)	
Single mom	34.21 (330)	65.79 (599)	0.026	24.18 (166)	75.82 (544)	0.253
Other	36.68 (69)	63.32 (111)		24.41 (38)	75.59 (96)	
WI Parent Education, %						
< HS diploma	42.23 (248)	57.77 (342)		26.04 (127)	73.96 (306)	
HS diploma/GED	32.88 (359)	67.12 (685)		21.97 (204)	78.03 (645)	
Some College	33.41 (392)	66.59 (740)	0.106	25.94 (267)	74.06 (810)	0.390
≥ Bachelor's	34.34 (485)	65.66 (880)		23.37 (311)	76.63 (916)	
W IV Respondent Education, %						
≤ HS diploma	38.25 (279)	61.75 (446)		24.15 (216)	75.85 (669)	
Some College	31.17 (607)	68.83 (1,224)	0.006	21.59 (388)	78.41 (1,241)	0.022
≥ Bachelor's	36.90 (598)	63.10 (977)		27.40 (305)	72.60 (767)	
Attitudes towards sex ² , mean						
Pos. Peer Score	1.97 (0.06)	2.23 (0.04)	<0.001	3.04 (0.09)	3.44 (0.04)	<0.001
Neg. Peer Score	5.05 (0.08)	4.67 (0.06)	<0.001	4.64 (0.10)	4.23 (0.05)	<0.001
Pos. Self Score	3.51 (0.08)	4.01 (0.05)	<0.001	4.62 (0.09)	5.14 (0.06)	<0.001
Neg. Self Score	2.49 (0.06)	2.23 (0.05)	<0.001	2.15 (0.07)	1.83 (0.04)	<0.001
Religiosity ³ , mean						
Public	3.39 (0.09)	3.02 (0.08)	<0.001	3.08 (0.12)	2.86 (0.08)	0.083
Private	5.61 (0.09)	5.25 (0.07)	<0.001	5.04 (0.10)	4.91 (0.07)	0.182
Motivations ⁴ , mean						
Married by 25	3.27 (0.05)	3.30 (0.03)	0.639	3.18 (0.06)	3.14 (0.04)	0.515
Likely to attend college	4.36 (0.05)	4.30 (0.04)	0.205	4.13 (0.07)	4.07 (0.05)	0.347
Wants to attend college	4.58 (0.03)	4.50 (0.03)	0.058	4.32 (0.06)	4.35 (0.04)	0.618
Alcohol Abuse/Dependence, %						
Diagnosis at Wave IV	15.29 (111)	84.71 (614)	<0.001	12.50 (160)	87.50 (958)	<0.001
Pre-18 opposite sex partners, %						
0-1	43.26 (1,108)	56.74 (1,379)		32.18 (640)	67.82 (1,225)	
2-5	26.75 (333)	73.25 (937)	<0.001	18.21 (217)	81.79 (1,028)	<0.001
6+	10.54 (43)	89.46 (331)		8.56 (52)	91.44 (424)	
Pre-18 same sex partners, %						
0	35.55 (1,475)	64.45 (2,529)		24.51 (900)	75.49 (2,578)	
1+	5.65 (9)	94.35 (118)	<0.001	8.32 (9)	91.68 (99)	0.008

Pre-18 total partners, %							
	0	46.64 (675)	53.36 (720)			36.78 (439)	63.22 (699)
	1	40.48 (428)	59.52 (624)			26.45 (198)	73.55 (476)
	2-3	30.23 (292)	69.77 (697)	<0.001		20.54 (174)	79.46 (712)
	4+	11.61 (89)	88.39 (606)			10.06 (98)	89.94 (790)

¹ p-values for means calculated from bivariate survey regression; p-values for proportions calculated from design-based F test. **Bolded font indicates significance at p≤0.05**

² Ranges for attitude score as follows:

Positive Peer: 0-8

Negative Peer: 0-8

Positive Self: 0-4

Negative Self: 0-8

³ Range for religiosity scores as follows:

Public Religiosity: 0-6

Private Religiosity: 0-7

⁴ Range for expectations: 1-5

Multivariate Associations

Table 3 presents a multivariate model of odds ratios of lifetime hook-up status, by gender. All predictors were included in this model. In the multivariate model, only positive self-attitudes towards sex, lifetime alcohol abuse/dependence, and pre-age 18 total sexual partner counts were significantly associated with hook-up status for males and females. For males only, desire to attend college was also associated with hook-up status.

For both males and females, higher Wave I positive self-attitude towards sex was associated with higher odds of having had a hook-up (males: OR=1.12; 95% CI=1.04, 1.20; females: OR = 1.08; 95% CI= 1.01, 1.17). For males only, greater desire to attend college was associated with higher odds of lifetime hookup status (OR= 1.18; 95% CI=1.02, 1.35). Males (OR=3.00; 95% CI=2.28, 3.97) and females (OR=2.93; 95% CI=2.18, 3.95) with a lifetime diagnosis of alcohol abuse/dependence were significantly more likely to have had a hook-up as well.

There was a positive association between pre-age 18 partner counts and lifetime hook-up status. Males with four or more total pre-age 18 partners had odds of ever hooking-up 9.93 times

(95% CI=1.01, 97.16) as high as the odds for males who had only one pre-age 18 sexual partner. Similarly, males with zero pre-age 18 sexual partners were 37% less likely (95% CI=0.45, 0.87) to have hooked-up than those with one pre-age 18 partner. Compared with odds of hook-up among females who only had one pre-age 18 sexual partner, the odds of ever hooking-up were 8.17 times as high (95% CI=1.17,57.03) for those with two-to-three pre-age 18 sexual partners, , and were 22.03 times as high (95% CI =3.22, 150.66), for those with four or more pre-age 18 sexual partners.

Religiosity, family structure, respondent education, and marriage and college expectations were not significantly associated with hook-up status for either males or females in the multivariate model.

Table 3. Multivariate Odds Ratios of Lifetime Hook-up Status, by Predictors

Variable	Females		Males	
	OR	95% CI	OR	95% CI
Demographics				
Chronological Age				
	At Wave IV	1.01 (0.93-1.10)	1.00	(0.90-1.10)
Race				
	NH-White	Referent	Referent	Referent
	Hispanic	0.97 (0.66-1.44)	0.94	(0.67-1.30)
	NH-Black	1.10 (0.83-1.45)	1.17	(0.86-1.61)
	NH-Other	1.00 (0.72-1.40)	1.12	(0.71-1.76)
WI Family Structure				
	2 Bio-parents	Referent	Referent	Referent
	Other 2 parents	1.19 (0.89-1.58)	1.11	(0.82-1.49)
	Single mom	1.01 (0.74-1.36)	0.78	(0.57-1.07)
	Other	0.88 (0.56-1.38)	0.63	(0.37-1.08)
WI Parental Education				
	<HS diploma	0.85 (0.61-1.20)	0.82	(0.52-1.29)
	HS diploma/GED	1.02 (0.77-1.34)	0.97	(0.70-1.35)
	Some college	1.03 (0.79-1.34)	0.77	(0.58-1.03)
	≥ Bachelor's	Referent	Referent	Referent
W IV Respondent Education				
	≤ HS diploma	0.79 (0.58-1.09)	1.09	(0.79-1.51)
	Some College	1.10 (0.90-1.35)	1.19	(0.94-1.50)
	≥ Bachelor's	Referent	Referent	Referent
Psychological				
Attitudes towards sex				
	Pos. Peer Score	1.03 (0.97-1.11)	1.06	(0.99-1.14)
	Neg. Peer Score	0.95 (0.89-1.01)	0.92	(0.84-1.01)
	Pos. Self Score	1.08* (1.01-1.17)	1.12** (1.04-1.20)	
	Neg. Self Score	1.04 (0.95-1.15)	1.03	(0.90-1.18)
Religiosity				
	Public	0.99 (0.93-1.05)	1.01	(0.93-1.08)
	Private	0.94 (0.88-1.01)	1.03	(0.96-1.11)
Motivations				
	Married by 25	1.00 (0.92-1.10)	1.03	(0.93-1.15)
	Likely to attend college	1.01 (0.86-1.18)	0.91	(0.80-1.03)
	Wants to attend college	0.95 (0.79-1.15)	1.18* (1.02-1.35)	
Behavioral				
Alcohol Abuse/ Dependence				
	Lifetime diagnosis	2.93*** (2.18-3.95)	3.00*** (2.28-3.97)	
Pre-18 opposite sex partners				
	0-1	5.52 (0.85-36.06)	4.06	(0.44-37.54)
	2-5	Referent	Referent	Referent
	6+	1.15 (0.63-2.12)	1.43	(0.81-2.51)
Pre-18 same sex partners				
	0	Referent	Referent	Referent
	1+	2.78 (0.78-9.87)	1.90	(0.55-6.54)
Pre-18 total partners				
	0	0.89 (0.71-1.11)	0.63** (0.45-0.87)	
	1	Referent	Referent	Referent
	2-3	8.17* (1.17-57.03)	4.81	(0.53-43.50)
	4+	22.03** (3.22-150.66)	9.93* (1.01-97.16)	

* $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

This study provides the first examination of early adolescent predictors of lifetime occurrence of hook-up--defined here as a one-time sexual encounter with a partner of either gender—in a young adult population, and one of the first examinations of hook-up occurrence among a US nationally-representative population.

We found that a high percentage of respondents—approximately 76% of males, over 65% of females—had at least one hook-up by the Wave IV survey, a percentage that was higher than most presented in the college literature. (Fielder & Carey, 2010; Gute & Eshbaugh, 2008; Olmstead et al., 2012; Owen, 2010; Owen et al., 2011; Paul et al., 2000; Penhollow, 2007) There may be several reasons why the hook-up prevalence we estimated differs from that reported elsewhere. First, our definition of hook-up reflects a broad time period of consideration—respondents’ lifetime as of young adulthood—whereas other assessments confined hook-up occurrence to a specified time frame, such as a specific semester, or the previous year. Though several studies have reported lifetime hook-up prevalence (Gute & Eshbaugh, 2008; Lewis et al., 2011; Paul et al., 2000; Penhollow, 2007), our definition captures an upper age range (i.e., 24 to 32 years) that includes the typical period of college attendance, increasing the opportunity to engage in hook-ups. Second, our definition reflects a broader definition of sexual activity—including ‘all types of sex’—whereas other assessments have typically reported hook-up percentages separately for penetrative (vaginal/anal sex) and/or non-penetrative (oral/‘heavy petting’) occurrences (Owen et al., 2011; Paul et al., 2000; Penhollow, 2007).

Having at least one hook-up by the Wave IV survey, when respondents were in their late 20s/early 30s, was associated with several adolescent predictors from Wave I, when respondents

were in high school: respondents' own attitudes towards sex, their perceptions of their peers' attitudes, religiosity (female only), family structure (female only), and pre age-18 sexual partner counts. In addition, two 'lifetime' predictors--lifetime diagnosis of alcohol abuse/dependence and respondent educational attainment by Wave IV—were also associated with hook-up status, though respondent educational attainment was significant only for females in bivariate models. Key findings are discussed below.

In bivariate models, higher public and private religiosity scores were observed among males and females who had never had a hook-up, but in multivariate modeling, the relationship between religiosity and hook-up was non-significant, similar to patterns reported by both Olmstead et al. (2012), and Owen et al. (2010). Taken in conjunction, these findings suggest that the negative association between religiosity and hook-up behavior may be driven not by religious feelings themselves, but rather by correlated personality factors, such as self- and perceived peer-attitudes towards sex. This may also explain why religiosity did not retain significance in multivariate modeling, but positive self-attitudes towards sex did: Given the high correlation between religiosity and attitudes and perceptions towards sex, when examined concurrently in multivariate models, only one set of variables (in this case self-attitudes) will emerge as significant.

One of our significant findings, that higher pre-age 18 total sexual partner counts were associated with increased odds of engaging in hook-ups for both males and females, can also be seen as reflecting the influence of static personality characteristics, rather than developmental time periods, on hook-up behavior. As pre-age 18 partnering measures reflect sexual partnering that may have occurred as many as 14 years prior to hooking-up, the strength of association between number of pre-age 18 partners and hooking up suggests that hook-up participation may

reflect more stable underlying personality traits or sexual motivations, rather than being a phenomenon of a certain life stage. For example, a recent prospective study found that future intention to engage in hook-ups was significantly correlated with engaging in oral and vaginal sex hook-ups over subsequent months, suggesting that underlying differences in sexual motivations and ‘styles’ may explain individual differences in sexual behaviors (Fielder & Carey, 2010). Individuals who are more motivated toward sex (possibly reflected by higher numbers of total pre-age18 partners, or more conscious intentions to engage in hook-ups) may begin sexual activity earlier, be more sexually active, and have more experiences that are outside relationships.

This explanation is further supported by our findings that more positive self-views towards sex (defined as a belief that sex would bring physical pleasure and would relax them) during adolescence (Wave I) was positively predictive of having at least one hook-up by young adulthood (Wave IV). Though several studies have demonstrated that attitudes towards hooking-up, and towards sexuality in general, are correlated with sexual behaviors, such studies have predominantly focused on contemporaneous measures (Garcia, 2008; Lewis et al., 2011; Olmstead et al., 2012; Owen, 2010; Wetherill, Neal, & Fromme, 2010). By contrast, our findings explored attitudes towards sex that were likely measured before hook-up occurrence (though data limitations do not allow explicit determination of timing), supporting life course frameworks that posit that early-life attitudes and beliefs play a role in later-life behaviors.

In final multivariate models, lifetime diagnosis of alcohol abuse or dependence was the strongest predictor of hook-up status for both men and women. This replicates findings elsewhere in the literature that have linked increased alcohol consumption to higher odds of hooking-up (Eshbaugh & Gute, 2008; Fielder & Carey, 2010; Lewis et al., 2011; Owen, 2010;

Owen et al., 2011). In the present study, we found that lifetime alcohol consumption habits are associated with lifetime occurrence of at least one hook-up, though given our current data, we are unable to determine the time sequencing of when either occurred in relation to the other. As we do not know if alcohol abuse/dependence symptoms developed before, after, or concurrently with hook-ups, these findings do not necessarily support previously tested hypotheses that posit a direct causal relationship between alcohol use and sex. Instead, our findings suggest that there may also be some unmeasured and/or underlying common personality factors that drive both behaviors.

Alcohol abuse and/or dependence reflects a different model of consumption than the binge drinking and high-frequency use that is most often studied among adolescents and young adults, and perhaps may reflect a tendency towards risk taking, sensation seeking, etc. This conclusion is supported by prior findings that individuals who had engaged in hook-ups that involved sexual intercourse were more likely to exhibit signs of alcohol intoxication symptomology, and had higher scores on personality assessments that captured autonomy and impulsivity (Paul et al., 2000). In addition, such individuals scored higher on measures of ‘ludic’ and ‘eros’ love styles from the Hendrick Love Attitudes Scale: ludos is a style characterized by game-playing and a view of love as conquest, whereas eros captures “passionate love,” or an approach to physical and emotional love characterized by pleasure and romance (Paul et al., 2000).

There are several limitations to this study. Firstly, based on the way the primary outcome question was worded in the Add Health survey, we are unable to determine specifics about the hook-ups respondents participated in. The most significant issue is that the question did not prompt respondents to indicate when the hook-up occurred, precluding comparisons of the

differing contexts associated with hook-ups that occur at different stages of life (e.g., during high school/Wave I, versus young adulthood/Wave IV). The association between predictors and hook-up status may be different when occurring earlier or later in life. By not examining the specific timing of hook-ups, we are unable to determine if/how the associated implications for sexual or psychosocial well-being change throughout the life course.

Further, from a methodological standpoint, by not knowing the timing of hook-ups, we are also unable to determine how hook-up encounters may overlap with our measures of pre-age 18 partner counts. The high correlations between lifetime hook-up status and total pre-age 18 sexual partners may be a result of the fact that reported pre-age 18 partner counts included all sexual partners, and therefore may also overlap with the hook-up(s) partners that respondents listed. However, despite this limitation, our findings are still similar to those reported elsewhere: College students who had ever had a pre-college hook-up (Fielder & Carey, 2010; Olmstead et al., 2012), and those with higher numbers of pre-college hook-up partners (Fielder & Carey, 2010; Olmstead et al., 2012; Simpson & Gangestad, 1991), were significantly more likely to engage in hook-ups during college.

A second limitation is that our definition of hook-up included occurrences with partners of both the same and opposite sex, and as such, we cannot determine if or how patterns of hooking-up may differ between heterosexual and homosexual experiences. Such experiences may be differentially related to health risk behaviors, sexual or otherwise. For example, Eisenberg (2001), found that male and female respondents in the 1997 College Alcohol Study who reported exclusively same-sex or both-sex sexual partners had more sexual partners than those with exclusively opposite-sex partners.

Finally, we do not have any information about respondents' motivations when engaging in hook-ups, and cannot determine if respondents explicitly entered into hookups with the intention of a casual, one-time occurrence, or if the encounter was a one-time occurrence for reasons outside the respondents' control. Thus we are unable to explicitly test ideas about gender differences in sexual motivations. This limitation may be particularly significant, given that gender emerged as a significant predictor of lifetime hook-up status, with a higher proportion of male than female respondents reporting at least one hook-up, consistent with findings reported elsewhere (Owen, 2010; Owen et al., 2011; Paul et al., 2000; Penhollow, 2007). Much of the hook-up literature centered on evolutionary theory focuses on how gender impacts motivations towards hook-ups, as well as emotional responses after the fact. However, as with motivations, data limitations also do not allow for a test of sex differences in response to hook-up experiences.

Ultimately, our findings suggest that attitudes, beliefs, and behaviors during adolescence may be predictive of sexual behaviors that occur later in life, specifically engaging in hook-ups. Such results highlight the importance of adolescence (and high school in particular) as a key period for interventions and programs targeted at promoting lifelong sexual behaviors. As a final caveat, when interpreting these findings, one must remember that due to our data limitations related to timing of events, we did not examine if hook-ups were associated with other sexual health outcomes and risk behaviors, and therefore we cannot assess if hooking-up in and of itself is a sexual risk behavior.

References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders, 4th edn.* (4th ed.). Washington, DC: American Psychiatric Association.
- Anderson, J. E., Warner, L., & Macaluso, M. (2011). Condom use among US adults at last sexual intercourse, 1996-2008: An update from national survey data. *Sexually Transmitted Diseases, 38*(10), 919-921. doi:10.1097/OLQ.0b013e31822545d9
- Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review, 100*(2), 204-232.
- Buunk, B. P., Dijkstra, P., Fetchenhauer, D., & Kenrick, D. T. (2002). Age and gender differences in mate selection criteria for various involvement levels. *Personal Relationships, 9*(3), 271-278. doi:10.1111/1475-6811.00018
- Campbell, A. (2008). The morning after the night before: Affective reactions to one-night stands among mated and unmated women and men. *Human Nature, 19*(2), 157-173. doi:10.1007/s12110-008-9036-2
- Centers for Disease Control and Prevention. (2009). *Behavioral risk factor surveillance system survey data.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Elder, G. H. (1998). The life course as developmental theory. *Child Development, 69*(1), 1-1. doi:10.1111/j.1467-8624.1998.tb06128.x
- Eshbaugh, E. M., & Gute, G. (2008). Hookups and sexual regret among college women. *The Journal of Social Psychology, 148*(1), 77-89. doi:10.3200/SOCP.148.1.77-90
- Fielder, R. L., & Carey, M. P. (2010). Predictors and consequences of sexual "hookups" among college students: A short-term prospective study. *Archives of Sexual Behavior, 39*(5), 1105-1119. doi:10.1007/s10508-008-9448-4
- Garcia, J. R. (2008). Hook-up behavior: A biopsychosocial perspective. *Journal of Social, Evolutionary & Cultural Psychology, 2*, 192.
- Gute, G., & Eshbaugh, E. M. (2008). Personality as a predictor of hooking up among college students. *Journal of Community Health Nursing, 25*(1), 26-43. doi:10.1080/07370010701836385
- Harris, K. M., Halpern, C. T., Whitsel, E., Hussey, J., Tabor, J., Entzel, P. & Udry, J. R. (2009). *The national longitudinal study of adolescent health: Research design.* Retrieved from <http://www.cpc.unc.edu/projects/addhealth/design>

- Heldman, C., & Wade, L. (2010). Hook-up culture: Setting a new research agenda. *Sexuality Research and Social Policy*, 7(4), 323-333. doi:10.1007/s13178-010-0024-z
- Kaiser Family Foundation. (2011). *Sexual health of adolescents and young adults in the United States*. Washington, DC: The Henry J Kaiser Family Foundation.
- Lewis, M. A., Granato, H., Blayney, J. A., Lostutter, T. W., & Kilmer, J. R. (2011). Predictors of hooking up sexual behaviors and emotional reactions among U.S. college students. *Archives of Sexual Behavior*, doi:10.1007/s10508-011-9817-2
- Marla Eisenberg. (2001). Differences in sexual risk behaviors between college students with same-sex and opposite-sex experience: Results from a national survey. *Archives of Sexual Behavior*, 30(6), 575.
- Olmstead, S. B., Pasley, K., & Fincham, F. D. (2012). Hooking up and penetrative hookups: Correlates that differentiate college men. *Archives of Sexual Behavior*, doi:10.1007/s10508-012-9907-9
- Owen, J. (2010). "Hooking up" among college students: Demographic and psychosocial correlates. *Archives of Sexual Behavior*, 39(3), 653-663.
- Owen, J., Fincham, F. D., & Moore, J. (2011). Short-term prospective study of hooking up among college students. *Archives of Sexual Behavior*, 40(2), 331-341. doi:10.1007/s10508-010-9697-x
- Paul, E. L., McManus, B., & Hayes, A. (2000). "Hookups": Characteristics and correlates of college students' spontaneous and anonymous sexual experiences. *The Journal of Sex Research*, 37(1), 76-88. doi:10.1080/00224490009552023
- Penhollow, T. (2007). Relationship between religiosity and "hooking up" behavior. *American Journal of Health Education*, 38(6), 338-338.
- Sassler, S. (2010). Partnering across the life course: Sex, relationships, and mate selection. *Journal of Marriage and Family*, 72(3), 557-575.
- Schmitt, D. P. (2005). Is short-term mating the maladaptive result of insecure attachment? A test of competing evolutionary perspectives. *Personality and Social Psychology Bulletin*, 31(6), 747-768. doi:10.1177/0146167204271843
- Scott-Sheldon, L. A., Carey, M. P., & Carey, K. B. (2010). Alcohol and risky sexual behavior among heavy drinking college students. *AIDS and Behavior*, 14(4), 845-853. doi:10.1007/s10461-008-9426-9

- Simpson, J. A., & Gangestad, S. W. (1991). Individual differences in sociosexuality: Evidence for convergent and discriminant validity: Evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology*, 60(6), 870-883. doi:10.1037/0022-3514.60.6.870
- StataCorp. (2011). *Stata statistical software: Release 12*. College Station, TX: StataCorp LP.
- Weinstock, H., Berman, S., & Cates, W., Jr. (2004). Sexually transmitted diseases among american youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health*, 36(1), 6-10. doi:10.1363/psrh.36.6.04
- Wetherill, R. R., Neal, D. J., & Fromme, K. (2010). Parents, peers, and sexual values influence sexual behavior during the transition to college. *Archives of Sexual Behavior*, 39(3), 682-694. doi:10.1007/s10508-009-9476-8