# Entering the Campus Courtship Culture:
Factors that Influence College Students' Relationship Types

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# Acknowledgments

# Abstract

Drawing on data from a 2007 random sample of Duke University seniors (369 males and 381 females), this paper analyzes individual factors that influence whether men and women were more likely to engage in the hook-up culture or an exclusive romantic relationship (ERR) as compared to doing nothing. There is substantial research to support that relationship styles are changing on college campuses as students delay marriage and maintain more liberalized views on sex before marriage. The economic theory of marital-specific capital may provide some insight into why students on college campuses are developing more casual relationships as time becomes an important factor. In this college environment, student characteristics as well as personal beliefs and perceptions about these particular courtship styles may influence whether a college student will be hooking-up or in an exclusive romantic relationship his or her junior and senior year. Results from this study indicate that students on financial aid, a time variable, will be less likely to be in an exclusive romantic relationship or hook-up during their junior or senior year as compared to doing nothing. In addition, although it is difficult to attribute causality for peer effects, Duke students who believe a higher percentage of their friends hook-up will also be more likely to hook-up. Also, Duke students who have their first intercourse at a older age and are more religious are less likely to hook-up. Finally, students are persistent in their relationship behavior, meaning that their behavior junior year is a strong predictor of behavior senior year.

# I. Campus Courtship Culture

College campuses offer a unique environment for competing courtship styles as students choose to either participate in the hook-up culture, engage in an exclusive romantic relationship or opt out of the dating scene completely. In recent years, university students have been focusing more on participating in the hook-up culture and less on forming serious romantic relationships. Many students on today's college campuses are "hooking-up," which is a term to describe a social system in which young adults seek to engage in a casual sexual encounter with a partner and have no expectations for future commitment (Bogle 2008). The shift from traditional dating to hooking-up began as part of a social change in the mid-1960s when students on college campuses were delaying marriage and developing more liberal views on premarital sex (Bogle 2008). Currently, the age of first marriage for instance is at an all time high, with men's average age at 27 and women's average age at 25 (Bogle 2008). Furthermore, the legalization and distribution of birth control allowed women to partake in sexual activities with less risk (Goldin 2002). Two other reasons for the demise of dating is that the age of first intercourse has been lowered to about 17 and enrollment in colleges has increased dramatically, almost 78%, from 1970 to 2000 (Bogle 2008). This means that because of the social system that universities cultivate, more young adults' sexual experiences are occurring on college campuses.

During junior and senior year of college, a student may be hooking-up, in an exclusive romantic relationship, or doing neither. For these courtship-style markets on university campuses, a single person will only enter either market if the expected benefits equal or exceed the costs. Furthermore, there may be underlying predictors that increase the likelihood of the three outcomes including whether the student is on financial aid or the type of major he or she is pursuing. Another factor that could contribute to a student's relationship status in college includes a student's personal beliefs or views about the hook-up culture. Recent literature has illustrated that the ambiguity of the term ''hook-up'' may increase peer pressure and contribute to the notion that students generally believe more people are hooking-up than are actually doing so (Bogle 2008). The ideas that students maintain about the hook-up culture may influence their behavior in the long-run. This paper will attempt to shed light on what types of characteristic or belief variables influence the outcomes of a student's relationship status his or her junior and

senior year and will provide a description of the campus courtship culture at Duke University.

There will be ten main sections included in this paper beginning with Section II, which will review published theories and empirical findings from economics, sociology, and psychology on patterns in marriage and cohabitation as well as misperceptions about sexual behavior. Section III will contain a description of the economic theories that underlie research pertaining to the hook-up culture and romantic relationships. After an explanation of the data set in Section IV, Section V will illustrate the differences in the types of relationships men and women form during their junior and senior year of college. Section VI will describe which time variables affect whether men and women hook-up or are in an exclusive romantic relationship. Section VII includes peer estimation variables and Section VIII includes personal characteristic variables that could influence the formation of particular relationships. The final regressions in Section IX will combine previous variables into three levels of endogeneity. The conclusion in Section X will summarize the results of the paper, relate the findings to theories in different fields of study, and suggest future research.

## II. Economic, Sociological, and Psychological Perspectives on the Campus Courtship Culture

Recent literature in economics, sociology, and psychology has demonstrated the changing behaviors among men and women when it comes to engaging in particular types of relationships. Economics has focused on theories regarding the gains to marriage and how forming relationships is a type of sexual negotiation. Sociology coupled with economics explains cohabitation as a rising option for young adults who use this as a trial arrangement to determine their compatibility with a partner. In the field of psychology, misperceptions of other's sexual behavior and pressure from friends can lead to participation in more risky courtship styles. All three of these disciplines contribute different theories about college relationships and when put together, can form a reasonable model for describing student behavior on campus. Table 1 outlines some of the theories and predictions that will be discussed throughout this section.

## Table 1: Theories and Research Predictions

| Author | Theory | Prediction for ERR or Hook-up[1] |
|---|---|---|
| Gary Becker | 1) Choices are shaped by marriage market forces and individual preferences <br> 2) Gains to marriage | Factors that increase the gains to hooking-up or being in an exclusive romantic relationship (ERR) will increase the probability that a student hooks-up or engages in an ERR. |
| Roy Baumeister and Kathleen Vohs | 1) Sexual exchange market <br> 2) Men give "gifts" in return for sex from women | Men are more likely to prefer to hook-up and women are more inclined to want to be in an exclusive romantic relationship. |
| Peter Arcidiacono | 1) Persistence of teen sex-stemming from high initial psychological cost | Men and women who have sex for the first time at an earlier age will be more likely to hook-up as compared to doing nothing. |
| Valerie Oppenheimer Neil Bennett | 1) Cohabitation serves as a trial union and may lead to marriage <br> 2) Breaking up a cohabitation is cheaper than divorcing | There will be a relationship between the hook-up culture and exclusive romantic relationships. Students will be more likely to hook-up and then be in an ERR than vice versa. |
| Bernard Whitley Charles Manski | 1) Peer estimation of behavior <br> 2) Selective exposure <br> 3) The Reflection Problem | Students that believe there friends are hooking up more often will also hook-up more as compared to doing nothing. However, it will be noted that endogeneity effects exists in this analysis. |
| Gary Becker Michael Keeley Carmel Chiswick | 1) Household allocation of time <br> 2) Time as a valuable resource <br> 3) Relationship specific capital | People who have less time (factors include, financial aid, area of study and varsity athlete) will be less likely to hook-up or be in an ERR. |

[1] Assuming exclusive romantic relationship, hooking-up, and doing nothing is analogous to marriage, cohabitation, and remaining single

*Gary Becker: Maximization of Utility and Cost-Benefit Analysis*

Economics provides some insight into the reasons behind different courtship styles on college campuses. For example, students will tend to engage in college relationships in the same way they would if they were pursuing a marital partner. Gary Becker laid the foundation for this idea and many others through an economic approach to marriage markets and human behavior. In his book "The Economic Approach to Human Behavior," Gary Becker derives several assumptions about human behavior that relate to students' relationship status. The first assumption in his model is that individual behavior in a market system will be determined by the costs and benefits of each one's preferences. Secondly, individuals will seek outcomes that will maximize their utility given these preferences (Becker 1976). Through this idea, students' behavior on college

campuses is shaped not only by the market but also by the preferences and characteristics of each individual. The current market for students at universities involves hooking-up, exclusive romantic relationships, or doing neither, while preferences vary by individual. Furthering this idea, Becker discusses the gains to marriage in his Theory of Marriage Part I, which relates to the formation of relationships on campus. According to his model, people engage in marriage only if the utility level of being married is greater than the level of being single and if the gains from marriage are positive (Becker 1973). This concept can be applied to the courtship cultures on university campuses in that a student will only engage in a hook-up or exclusive romantic relationship if the gains from doing so outweigh the benefits from being single. However, the difference in Becker's model is that marriage requires strict contracts not found when forming exclusive romantic relationships or hooking-up. Thus, the costs of entry into an exclusive romantic relationship will be much lower than marriage, with hooking-up having the lowest investment cost.

*Roy Baumeister and Kathleen Vohs: Dating Market*

In their article about sex as a female resource, Roy Baumeister and Kathleen Vohs describe sexual negotiations in the context of an economic cultural system in order to explain men and women's mating behaviors. In this type of marketplace, men and women become buyers and sellers that are consequently affected by other players in the market (Baumeister and Vohs 2004). The authors show that men and women's sexuality are valued differently in the context of society and that these differences will organize the behavior of most individuals. Baumeister and Vohs base their ideas on social exchange theory, which assumes that each individual in an exchange will give something up and get something in return. In the case of a sexual exchange, female sexuality is endowed with a certain amount of value while male sexuality is essentially worthless as treated by society. As a result, sexual intercourse is an exchange in which the male is getting something of value from the woman, and in order to make the exchange equal, a man must give the woman something in return such as, "material gifts, consideration and respect, commitment to a relationship as desired by her, or other goods" (Baumeister and Vohs 2004). Therefore, it is natural for men to try to minimize the amount of material and intangible goods they must give to a woman in exchange for sex while women will try to

maximize the gifts they receive. This concept described above, may have contributed to the emergence of the hook-up culture. Men seeking to minimize the goods that they give to a woman will likely try to hook-up with them instead, while a woman may seek to engage in an exclusive romantic relationship to maximize the goods she receives. These gender differences illustrate how men and women make different choices when it comes to what type of relationships each one wants to form. This study will illustrate that females will prefer to be in an exclusive romantic relationship as compared to hooking-up and given different factors, will be more likely to do nothing than hook-up.

*Peter Arcidiacono: Persistence of Sex*

Another economic model that may influence the types of relationships formed by students is in a study on contraception policy by Peter Arcidiacono et. al. In their paper, the authors develop a theory based on the persistence of teen sex by illustrating that once an adolescent has sex they are more likely to have sex in the future. The patterns in their data suggest that there could be a fixed cost, which is a moral or psychological barrier that has been crossed when an adolescent has sex for the first time (Arcidiacono). Therefore, once an individual has made an investment in sex they are more willing to continue participating in sexual activities. In the context of modern courtship styles, college students that have had sex earlier in their life may be more likely to hook-up during their junior or senior year as compared to being in an exclusive romantic relationship or doing neither. The concept of persistence can also show how men and women in a particular relationship style will continue to pursue that type of relationship over a period of time. For example, it is probable that a male student who is hooking-up junior year will also be more likely to hook-up his senior year. This concept will be illustrated in the regression analysis portion of the paper.

*Valerie Oppenheimer and Neil Bennett: Cohabitation*

Sociology and psychology also provide additional perspectives on the changing dating culture between men and women. In sociology, there is evidence to support the increase in delayed marriage and the development of nonmarital cohabitation. In her article, "Cohabiting and Marriage During Young Men's Career-Development Process," Valerie Oppenheimer provides an application of Gary Becker's theory of marriage and

describes the affects of both forming and disbanding cohabitating unions for men. She cites a study by Bumpass and Lu (2000) that found that from 1987 to 1995, the percentage of young women aged 35-39 who had ever cohabited in the United States increased from 30% to almost 50%. Men and women are also cohabitating more with their partners before marriage (about 52% of women between 1990 and 1994). Oppenheimer suggests that one reason for the emergence of cohabitation can be found in the idea that cohabitation may act as a trial or exploratory union so that it can address uncertainties about a particular mate. Since the costs of separation in cohabitation is substantially less than in a marriage, men and women would be able to test whether they are compatible with their partner in a cohabiting relationship. This idea is not exclusive to ideas in sociology however, as literature in economics has provided further insight into cohabitation. From the National Bureau of Economic Research papers in labor studies, Bennett et al. wrote a paper on cohabitation that found that women who cohabitate have higher marriage dissolution rates than women who do not. They suggest that the reason for this trend is that individuals who cohabitate have a weaker commitment to the institution of marriage (Bennett 1988). Similarly, hooking-up allows males and females to test the compatibility of a partner and see if the two individuals could develop a romantic relationship. However, as Kathleen Bogle has described, it seems unlikely that exclusive romantic relationships form very often after two individuals hook-up. In this paper, I will discuss how more students move from hooking-up to engaging in an exclusive romantic relationship between their junior and senior year as compared to the other way around.

*Bernard Whitley: Peer Pressure*

In psychology, the behavior of individuals on college campuses can also be explained by peer pressure and peer estimation of behavior. Research has shown that students generally believed that their peers have hooked-up more often than they actually did (Bogle 2008). These misperceptions of actual behavior create pressure and can affect choices in terms of whether students decide to hook-up or be in an exclusive romantic relationship. In his paper on college student perceptions on sexual behavior, Bernard Whitley discusses the concept of false consensus in which people usually overestimate the population prevalence. For instance, Whitney's results indicate that, sexually

experienced women made higher estimates of peer sexual activity than inexperienced women. One proposed explanation for this phenomenon is selective exposure to others, meaning that the people that college-aged women interact with could influence their perceptions (Whitley 1998). With regard to hook-up culture, if a student's friends are hooking-up and he or she is exposed mostly to this particular type of behavior then that student would probably be more likely to hook-up. I will test this idea to see if men and women who believed their friends at Duke University were hooking-up would also be more likely to hook-up their junior and senior year. Researchers in economics such as Charles Manski, have furthered this idea of social influences on individual behavior by studying identification problems that arise in empirical analysis. In one of his papers, Manski describes the reflection problem in which researchers attempt to infer that the behavior of an individual is influenced by the average behavior of the group. He finds that it is not possible to make this correlation unless information is known specifically about the group (Manski 1993). Therefore, it is important to recognize and evaluate endogenous and correlated effects that make it difficult to establish two-way causality.

Overall, these three disciplines provide a good overview of the issues that pertain to the courtship culture on university campuses and how scholars have analyzed and studied new dating styles. Economics, sociology, and psychology all contribute some insight into individual behavior when forming relationships but not much research has been conducted that actually evaluates the hook-up culture and what characteristics influence students' decisions. Therefore, clearly understanding the different courtship cultures on college campuses and how individual preferences and characteristics influence decisions to form such relationships is becoming increasingly important for comprehending national trends.

## III. Theory: Time as a Factor for Forming Relationships

Investments in time and marital-specific human capital are two concepts that could influence whether a student hooks-up or forms an exclusive romantic relationship his or her junior and senior year. Gary Becker provided the framework for how "complementary" males and females benefited from allocating their time to different activities. Males spend more time in market production and females in household production, but couples still need to be make decisions on how much time to designate

toward each activity (Becker 1973). In "The Economics of Family Formation," Michael Keeley provides an application of Becker's theory on time by illustrating that to enter the marriage market and obtain a marriage offer certain resources need to be expended (Keeley 1977). One of these resources includes time, and an individual with more valuable time will have greater direct costs of search. Designating m* as the maximum offer that is possible for an individual given a certain set of characterisitics, a single person will enter a marriage if the costs of doing so are less than or equal to m*. Relating this to campus courtship culture, a relationship seeker will place a probablity of $\alpha$ on finding a hook-up or exclusive romantic partner that yields him or her a certain measure of benefit, where $m_0$ is the lowest offer an individual will accept (Keeley 1977):

$$\alpha = \Pr\,(m_0 \leq m \leq m^*)$$

This idea can be applied to students who will remain single only if the benefits from doing so outweigh the direct costs of search time and other factors.

A component of search time for courtship-style markets is described in the theory of marriage-specific human capital, which states that the full economic gains from marriage would be realized if an individual invests more time in specialized non-market human capital (Chiswick 1989). This pricinciple is illustrated by market-specific human capital in which a greater specialization in market work increases the wage rate and incentives for investments in skills. Therefore, Chiswick argues that couples who invest in spouse-specific capital enhance the stability of their marriage. Some examples of spouse-specific investments could include learning about the partner's culture or hobbies as well as getting to know the partner's family. For college-aged students who are not necessarily searching for a spouse, marriage-specific human capital is synonymous with relationship-specific human capital. This concept shows that in order to obtain an offer to engage in an exclusive romantic relationship, a student must invest time in relationship-specific investments. This could include learning about a partner's likes and dislikes, taking an individual on dates, meeting his or her family, or providing socio-emotional support. When a person does not have the time or motivation to invest in this capital, they may instead try to form casual relationships such as a hook-up or do nothing at all. For a hook-up, individuals do not need to invest as much time and energy as compared to a student who wants to engage in an exclusive romantic relationship. Furthermore, there is probably stronger evidence to support that an individual who has a little amount of time

may choose not to be involved in either the hook-up culture or an exclusive romantic relationship. The focus of this paper will be to see if time variables have a strong correlation with the relationships that are formed junior and senior year. Furthermore, this paper will analyze other relevant factors such as peer estimation effects, personal background, and persistence of behavior to see which characteristics influence a student's decision the most.

## IV. Method for Attaining the Data (from Phillip S. Morgan)

Data used in this paper were collected in November of 2007 by three Duke Professors including Peter Arcidiacano (Economics), S. Philip Morgan (Sociology) and Suzanne Shanahan (Sociology). The data collection was supported by a Provost Common Fund Grant and by the Faculty Fellows Program sponsored by the Social Science Research Institute. Using the Duke registrar, Arcidiacano, Morgan and Shanahan obtained two random samples of 1000 freshmen and 1000 senior students enrolled at Duke for the fall of 2007. In each class there are close to 1600 students. Individuals in these samples were contacted using their Duke e-mail addresses in early November and were asked to fill out a questionnaire regarding the campus courtship culture. Specifically the study indicated:

> "You have been invited to participate in a 20-minute online survey about your romantic and sexual relationships, conducted by three faculty members at Duke. We are interested in learning more about what college men and women are doing, thinking, and feeling about sex, dating, courtship, marriage, and family. We hope to understand more about the relationship culture on campus from people who are participating in it to a wide range of degrees—from not at all to a lot. We are interested in how you assess this culture and how you interpret your motivations and experiences.
>
> Your participation is completely voluntary. Your individual privacy will be maintained in all published and written data resulting from the study. That is, your participation will remain confidential and your name will never be associated with your responses.
>
> You will be compensated $15 for your participation. Funds will be deposited directly into your flex account."

Students who did not fill out the questionnaire were re-contacted by Arcidiacano, Morgan and Shanahan up to a maximum of three times over a 17 day period. On the final request

the incentive was increased to $25 if the respondent filled out the questionnaire within 24 hours of receiving it. The overall response rate from the 1000 student sample was about 75% for both seniors and freshmen. The random selection of respondents and the high response rates likely makes this data set representative of Duke Students in the senior and freshmen classes of fall 2007.  The data gatherers suspect, but cannot prove, that this sample is typical of students at elite universities in this year. Only additional surveys can determine if the sample is more broadly representative of students at other colleges. The senior data set was the only one used for this study.

Table 2 shows some comparative statistics between the overall population of the class of 2008 and the sample that was gathered from the class of 2008 for the data set. The table demonstrates that the sample is representative of the overall population of the class of 2008. However, the percent of students that are in a fraternity or sorority for the sample is a little higher than in the population. Intuitively, this could make sense because students that are members of a fraternity or sorority are more likely to share information about hooking-up. Nevertheless, the comparative statistics indicate that the data set reflects the population of the class of 2008 relatively well.

### Table 2[1]: Class of 2008 Population vs. Data Set

| Comparative Factors | Class of 2008: Population | Class of 2008: Data Set |
|---|---|---|
| % of students on financial aid | 50% | 45% |
| % of students majoring in the natural sciences or engineering | 33% | 34% |
| % of students majoring in the arts and humanities, social sciences, economics, or public policy | 67% | 66% |
| % of students who are varsity athletes | 10% | 9% |
| % of students who are part of a fraternity or sorority[2] | 36% | 43% |

[1]A special thanks to Nerissa Rivera, Connie Simmons, Lee Baker, Chris Kennedy, and Daniel Scheirerii for helping me locate all necessary information for Duke's class of 2008

[2] Includes students who are a part of the Interfraternity Council (IFC), Inter-Greek Council (IGC), Panhellenic Council (Panhel), and National Pan-Hellenic Council (NPHC) as well as off-campus fraternities

## V. Results 1: Describing Changes in Behavior Junior and Senior Year

The first part of this study was to develop some descriptive statistics about the competing courtship styles at Duke University and determine how they relate to the

theories described above. I developed three final outcome variables of *Neither*, *Hooked-up*, and *In an Exclusive Romantic Relationship (ERR)* using the questions:

1) Have you been in an exclusive romantic relationship during your senior year (since Aug. 20, 2007)?
2) Were you in an exclusive romantic relationship during your junior year (year prior to Aug. 20 2007)?
3) During your senior year (Since August 20, 2007) have you engaged in sexual activity with someone outside of an exclusive romantic relationship (i.e., "hook-up" with someone)?
4) During your junior year (year prior to Aug. 20 2007) did you engage in sexual activity with someone outside of an exclusive romantic relationship (i.e., "hook-up" with someone)?

As shown in Table 3 below, Duke students hooked-up their junior year (44.34%) as compared to their senior year (34.34%) about 10% less. Part of the reason for this decrease is because the survey was conducted in November of the school year, which gives a participant less time to find a potential hook-up partner (about three months). Therefore, this could explain the 5% increase in students who did neither in their senior year. This change could also be explained by length-biased sampling in which longer relationships are captured more frequently than short-term relationships (Heckman 1990). Since a hook-up is short in duration by nature, the study would be more likely to catch someone in a long-term relationship. In addition, there was a 5% increase in the number of students that were in an exclusive romantic relationship their senior year as compared to junior year. It is important to note that the total sample populations from junior year and senior year are different. Junior year contains a 751 person sample while senior year has a 749 person sample because two individuals did not answer one of the four questions above.

Another idea illustrated in Table 3 is that the majority of students in this sample were in an exclusive romantic relationship or hooking-up their junior year (78.73%) and senior year (73.7%) as compared to doing nothing. This illustrates that the gains of being in one of these types of relationships for most students outweigh the gains from remaining single or the costs of finding a partner. Therefore, the high percentage of sample participants engaged in either hooking-up or an exclusive romantic relationship ensure that this is a good sample for studying why students engage in these different types of relationships.

## Table 3: Changes From Junior to Senior Year

|  | Junior Year | Senior Year | Difference |
|---|---|---|---|
| **Neither** | 21.17% [159/751] | 26.30% [197/749] | ↑ 5.13% |
| **Hooked-up** | 44.24% [333/751] | 34.45% [258/749] | ↓ 9.79% |
| **In an ERR** | 34.49% [259/751] | 39.25% [294/749] | ↑ 4.76% |

There are also gender differences that exist between junior and senior year as shown in Tables 4 and 5. With a p-value of .071 the gender differences shown in Table 4 are statistically significant as are the differences in Table 5 (p-value of .024). The tables indicate that men hook-up more often than women and that women are a little more likely to be in an exclusive romantic relationship or do neither. These findings are consistent with the ideas that men are more likely to pursue a hook-up, which requires less investments in time and goods for females. In addition, these two tables indicate that there is a difference between the Duke University sample and the relative population. If this sample were of the entire population, there would most likely be no differences between males and females relationship styles. However, since there are differences, this means that men, for example, may be hooking-up with more women that are younger or outside the population. Women too may be dating someone from high school or someone from another school, which would explain why women are more likely to be in an exclusive romantic relationship. Nevertheless, given the difference between the sample and entire population, these tables do show that there are relationship style preferences for both males and females.

## Table 4: Relationship Type Preferences for Males and Females Junior Year

| Junior Year | Female | Male | Difference |
|---|---|---|---|
| Neither | 87 [22.83%] | 72 [21.20%] | 15 |
| Hooked-up | 153 [40.16%] | 179 [44.27%] | -26 |
| In an ERR | 141 [37.01%] | 118 [34.53%] | 23 |
| Total | 381 | 369 | p-value = .071 |

## Table 5: Relationship Type Preferences for Males and Females Senior Year

| Senior Year | Female | Male | Difference |
|---|---|---|---|
| Neither | 114 [30.00%] | 83 [22.55%] | 31 |
| Hooked-up | 116 [30.53%] | 142 [38.59%] | -26 |
| In an ERR | 150 [39.47%] | 143 [38.86%] | 7 |
| Total | 380 | 368 | p-value = .024 |

Depicted in Table 6 below are the conditional transition probabilities, which show that between junior and senior year, most students maintain the same type of relationship they did during their previous year at school. Thus, for an individual who was in an exclusive romantic relationship their junior year, 10.42% were neither, 13.90% hooked-up, and 75.68% were in an ERR. These numbers reveal the idea of persistence, which means that behavior from one year to the next stays relatively consistent. Furthermore, more students participate in the hook-up culture their junior year and engage in an exclusive romantic relationship their senior year than vice versa. For this sample, a student at Duke University would be more likely to hook-up their junior year and then engage in an exclusive romantic relationship their senior year (22.36%) than be in an exclusive romantic relationship their junior year and hook-up their senior year (13.90%). With regard to relationship-specific capital, students that hook-up will only invest a little bit of time in getting to know the person as compared to someone in an exclusive romantic relationship. However, these numbers illustrate a cohabitation argument in which students may use the hook-up culture as a test market to find a person they may possibly want to pursue a romantic relationship with especially in their senior year.

## Table 6: Conditional Transition Probabilities for All Students

| | | Senior Year | | | |
|---|---|---|---|---|---|
| | | Neither | Hooked-up | In An ERR | Total |
| **Junior Year** | Neither | 76.10% [121/159] | 8.81% [14/159] | 15.09% [24/159] | 159 |
| | Hooked-up | 14.80% [49/331] | 62.84% [208/331] | 22.36% [74/331] | 331 |
| | In An ERR | 10.42% [27/259] | 13.90% [36/259] | 75.68% [196/259] | 259 |
| | Total | 197 | 258 | 294 | 749 |

The unconditional transition probabilities displayed in Table 7 depicts the percentage of students that did change their behavior from junior to senior year as compared to those that did not. For this section, I divided the number of students in a particular cell by the sample population. For instance, I took the total number of students that hooked-up their junior year and hooked-up their senior year and divided it by the total sample population (208/749) = 27.79%. This number is equivalent to saying the probability of a student hooking-up senior year given he or she hooked-up junior year times the probability of hooking-up junior year:

$$(208/331)*(331/749) = (208/749) = 27.79\%.$$

This means that 27.70% of the sample population hooked-up junior year and then hooked-up senior year. Using the numbers calculated in Table 7, I was able to determine the percentage of students that did not change their behavior over the two years by adding up the percentages on the diagonal:

$$(16.15\%)+(27.78\%)+(26.17\%) = 70.10\%.$$

Additionally 100% minus the 70.10% gives the percentage of students that did change their behavior which is 29.90%. Thus, even though changes exist, there is again strong evidence that students exercise persistence of behavior when it comes to developing relationships.

### Table 7: Unconditional Transition Probabilities for All Students

| | | Senior Year | | | |
|---|---|---|---|---|---|
| | | Neither | Hooked-up | In An ERR | Marginal Probabilities |
| **Junior Year** | Neither | 16.15% [121/749] | 1.87% [14/749] | 3.20% [24/749] | 21.22% [159/749] |
| | Hooked-up | 6.54% [49/749] | 27.78% [208/749] | 9.88% [74/749] | 44.20% [331/749] |
| | In An ERR | 3.60% [27/749] | 4.81% [36/749] | 26.17% [196/749] | 34.58% [259/749] |
| | Marginal Probabilities | 26.29% [197/749] | 34.46% [258/749] | 39.25% [294/749] | 100% [749/749] |

The same analysis was conducted with both males and females to determine if differences exist across gender. The first tables illustrate again the percentage of students that were in one type of relationship their junior year and another their senior year. For example, of the females that hooked-up their junior year 18.42% of them were doing

nothing, 61.84% were hooking-up, and 19.74% were in an ERR their senior year. Comparatively, of the males that hooked-up junior year 11.80% of them were doing nothing, 64.04% were hooking-up, and 24.16% were in an ERR their senior year. Furthermore, the tables show that both male and female students are similar when it comes to changing their behavior from junior to senior year. For females, 17.89%+24.74%+27.63% = 70.26% did not change their behavior while 14.44%+30.98%+24.73% = 70.15% of males did not change their behavior. This means that 29.74% of females and 29.85% of males did form different types of relationships between junior and senior year. These numbers are comparable to the ones found in the whole sample in Tables 6 and 7 and illustrate that there is not necessarily a gender difference in the change of behavior between junior and senior year for students at Duke University.

### Table 8:  Conditional and Unconditional Transition Probabilities for Females

|  |  | Senior Year | | | |
|---|---|---|---|---|---|
|  |  | Neither | Hooked-up | In An ERR | Total |
| **Junior Year** | Neither | 78.16% [68/87] | 4.60% [4/87] | 17.24% [15/87] | 87 |
|  | Hooked-up | 18.42% [28/152] | 61.84% [94/152] | 19.74% [30/152] | 152 |
|  | In An ERR | 12.77% [18/141] | 12.77% [18/141] | 74.47% [105/141] | 141 |
|  | Total | 114 | 116 | 150 | 380 |

|  |  | Senior Year | | | |
|---|---|---|---|---|---|
|  |  | Neither | Hooked-up | In An ERR | Marginal Probabilities |
| **Junior Year** | Neither | 17.89% [68/380] | 1.05% [4/380] | 3.95% [15/380] | 22.89% [87/380] |
|  | Hooked-up | 7.37% [28/380] | 24.74% [94/380] | 7.89% [30/380] | 40.00% [152/380] |
|  | In An ERR | 4.73% [18/380] | 4.73% [18/380] | 27.63% [105/380] | 37.11% [141/380] |
|  | Marginal Probabilities | 30.00% [114/380] | 30.53% [116/380] | 39.47% [150/380] | 100% [368/368] |

## Table 9: Conditional and Unconditional Transition Probabilities for Males

| | | Senior Year | | | |
|---|---|---|---|---|---|
| | | Neither | Hooked-up | In An ERR | Total |
| **Junior Year** | Neither | 73.61% [53/72] | 13.89% [10/72] | 12.50% [9/72] | 72 |
| | Hooked-up | 11.80% [21/178] | 64.04% [114/178] | 24.16% [43/178] | 178 |
| | In An ERR | 7.63% [9/118] | 15.25% [18/118] | 77.12% [91/118] | 118 |
| | Total | 83 | 142 | 143 | 368 |

| | | Senior Year | | | |
|---|---|---|---|---|---|
| | | Neither | Hooked-up | In An ERR | Marginal Probabilities |
| **Junior Year** | Neither | 14.44% [53/368] | 2.72% [10/368] | .82% [9/368] | 19.56% [72/368] |
| | Hooked-up | 5.71% [21/368] | 30.98% [114/368] | 11.68% [43/368] | 48.37% [178/368] |
| | In An ERR | .82% [9/368] | 4.89% [18/368] | 24.73% [91/368] | 32.07% [118/368] |
| | Marginal Probabilities | 22.55% [83/368] | 38.59% [142/368] | 38.86% [143/368] | 100% [368/368] |

As shown above, about 70% of women and 70% of men did not change their relationship status between junior and senior year, which provides a strong evidence for the idea of persistence of behavior among Duke students. However, given the results in this following section, it is clear that in general some differences between men and women with regard to their preferred relationship styles do exist. Specifically, men are more likely to prefer to hook-up and women are more inclined to want to be in an exclusive romantic relationship. This idea may be linked to Baumeister and Vohs' theory on sexual negotiation as men seek to minimize the time and "gifts" they give to a female they are courting while females seek to maximize these gifts. Furthermore, there is some evidence in this sample that relates to the cohabitation argument in which students hook-up because they are attempting to test the compatibility they have with a partner since there are more people that hook-up but subsequently engage in an ERR than vice versa.

# VI. Results 2: Time Variables Regression Analysis

For the first part of the regression analysis, time variables were used and are listed as follows:

1) Are you on financial aid?
2) What category describes your first major?
3) Are you a varsity athlete?
4) Are you on an athletic scholarship?

I assumed that students on financial aid would devote more time to work study programs as well as more time to school work. The variable for major compares students who study the natural sciences or engineering to all other majors including the humanities, economics, and public policy. Students who study natural sciences or engineering have to attend lab periods that can last several hours a week and usually have more work to conduct outside of class as compared to other liberal arts majors. Finally, a varsity athlete would also be devoting a lot of his or her time to a sport and may not have as much time to hook-up or form exclusive romantic relationships. For my analysis of the variables, I used a multinomial logit model, which applies when the dependent variable is nominal, meaning that it consists of more than two categories and is not ordered in a meaningful way (Bull 1987). In the case of this analysis, I used the three dependent variables: *Neither*, *Hooked-up*, and *In an Exclusive Romantic Relationship*. I made *Neither* the base variable and compared it to the two other variables *Hooked-up*, and *In an Exclusive Romantic Relationship*. Making *Neither* the base outcome allows for easier interpretation of the results such as the effect of time on how students form different relationships. I also decided to stratify the results by gender to distinguish between the variables that effect males versus females. I performed this regression for junior year, senior year, and senior year given the relationship type formed junior year.

The interpretation of the coefficients is a key component to this analysis. Displayed in all of the tables is the log-odds ratio, which is the natural log of the odds ratio. The odds ratio is a measure of the strength of association between two variables. For instance, the table for time variables indicates that the coefficient for males on financial aid during their senior year with past behavior junior year included is equal to -.856. Exponentiating this number: $e^{(-.856)}$, gives the value of .425, which is the odds ratio. This means that if a male is on financial aid his senior year his likelihood of hooking-up

will be reduced by a factor of .425. Another example shows that the odds ratio can indicate an increase in the likelihood of a male hooking-up such as in the case of males in their senior year that hooked up their junior year. For this example, 3.28 is the log-odds ratio so exponentiating this number gives the value of 26.58, meaning that males who hook-up their junior year increase their likelihood of hooking-up senior year by a factor of 26.58. Furthermore, a negative value of the log-odds ratio coefficient in the tables simply means that a student is less likely to hook-up or engage in an exclusive romantic relationship as compared to doing *Neither* (base outcome).

As illustrated in the regression table below, financial aid and major were statistically significant variables whereas being a varsity athlete was not. The results indicate the following for financial aid: given the negative coefficients, a male or female student who is on financial aid will be more likely to do nothing than to hook-up or be in an exclusive romantic relationship. For students with an engineering or natural science major, the negative coefficient means that these students were also more likely to do nothing than hook-up or be in an exclusive romantic relationship. It is also clear that the type of relationship formed junior year has a profound effect on the type of relationship formed senior year. In the part of the table that compares hooking-up to doing nothing, the coefficients for hooked-up junior year and in an ERR junior year for females are 4.11 and 2.90 respectively, which means that the odds ratios are 60.95 and 18.17. This signifies that if a female student was hooking-up her junior year she would be more likely to hook-up her senior year as compared to doing nothing by the factors 60.95 and 18.17 if she had been in an ERR. Thus, there is a stronger effect if the female hooked-up junior year as compared to being in an ERR her junior year. This part of the analysis shows that being in an ERR and hooking-up are related, and a student who initiates this past behavior in general will try to form either type of relationship as compared to doing nothing. In addition, this means that in the analysis that includes relationship status junior year, a student on financial aid is still more likely to do nothing than form either type of relationship

I also tested whether there was a difference in the coefficients between males and females for this regression using a likelihood-ratio test. This test determines whether males and females are different apart from the constant term. For example, the unrestricted time variables regression for junior included the log-likelihood for the male

and female regressions of -392.28 and -361.86 respectively. I also ran a separate regression with a female dummy variable to develop a restricted regression that produced a log-likelihood of -757.79. Then using the equation $2(L_{unrestricted} - L_{restricted})$ I received the following result: $2((-392.28-361.86)-(-757.79)) = 7.30$. With 8 degrees of freedom 7.30 is less than 13.36, which means I cannot reject the null hypothesis that the coefficients are the same. Thus, there is not a statistically significant difference between the coefficients of males and females overall. I conducted the analogous test for all of the regressions in this paper and received similar results. This suggests that men and women are affected by individual factors in the same way when it comes to forming relationships. Overall, from the regression analysis below, it is clear that time variables have a statistically significant impact on whether a student forms either type of relationship. Therefore, there exists some evidence that supports the idea that students who have higher values of time are less likely to form these two relationship types.

# Table 10: Time Variables

| | Variables | Junior Year | | | Senior Year | | | Senior Year | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX |
| | | Females | Males | Pooled | Females | Males | Pooled | Females | Males | Pooled |
| **Hooked-up** | Financial Aid | -.648** | -.555** | -.596*** | -1.09*** | -.867*** | -.969*** | -1.09*** | -.856** | -.969*** |
| | Engineering or NS Major | -.748** | -1.20*** | -.941*** | -.415 | -.993*** | -.671*** | .018 | -.464 | -.206 |
| | Varsity Athlete | -.549 | -.268 | -.364 | -.394 | -.881 | -.622 | -.062 | -.996 | -.593 |
| | Athletic Scholarship | 1.35 | .426 | .846 | 1.33 | 2.04* | 1.64** | .788 | 2.49** | 1.73** |
| | Female | -- | -- | -.409** | -- | -- | -.528*** | -- | -- | -.467* |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 4.11*** | 3.28*** | 3.58*** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 2.90*** | 2.20*** | 2.45*** |
| | Constant | 1.10*** | 1.73*** | 1.58*** | .698*** | 1.40*** | 1.27*** | -2.30*** | -.975** | -1.33*** |
| **In An Exclusive Romantic Relationship** | Financial Aid | -.455 | -.673** | -.544** | -.919*** | -1.07*** | -.981*** | -1.05*** | -1.08*** | -1.06*** |
| | Engineering or NS Major | .023 | -.816*** | -.374* | -.144 | -.724** | -.271 | .175 | -.375 | -1.03 |
| | Varsity Athlete | -.766 | -.591 | -.619 | -.552 | -.488 | -.423 | -.194 | -.311 | -.179 |
| | Athletic Scholarship | .450 | 1.06 | .849 | .673 | 1.71* | 1.15* | .639 | 1.70 | 1.11 |
| | Female | -- | -- | -.032 | -- | -- | -.282 | -- | -- | -.410* |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 1.73*** | 2.42*** | 2.06*** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.38*** | 3.99*** | 3.67*** |
| | Constant | .760*** | 1.23*** | .963*** | .741*** | 1.39*** | 1.16*** | .1,10*** | -1.06*** | -.879*** |
| Number of Obs. | | 375 | 361 | 736 | 374 | 360 | 734 | 374 | 360 | 734 |
| Pseudo R² | | .023 | .030 | .025 | .028 | .036 | .032 | .292 | .276 | .282 |
| Chi²/(def.) | | 18.38/(8) | 22.75/(8) | 38.86/(10) | 23.24/(8) | 27.99/(8) | 50.15/(10) | 238.19/(12) | 211.96/(12) | 449.07/(14) |
| Log-Likelihood | | -392.28 | -361.86 | -757.79 | -396.28 | -370.75 | -770.96 | -288.81 | -278.77 | -571.51 |
| Likelihood-ratio Test Statistic | | 7.30 | | | 7.86 | | | 7.86 | | |
| p < .01 = ***, p < .05 = **, p < .10 = * | | | | | | | | | | |

# VII. Results 3: Regression Analysis of Peer Estimation of Behavior Variables

The four questions on the survey that were used to explore peer estimation effects and explain a student's relationship status his or her junior and senior year included:

1) What percent of your friends do you think participate in the hook-up culture?
2) What percent of your friends do you think are in an exclusive romantic relationship?
3) What percent of Duke students do you think participate in the hook-up culture?
4) What percent of Duke students do you think are in an exclusive romantic relationship?

Similar to time variables, a student's views on hooking-up and being in an exclusive romantic relationship may influence his or her relationship status junior or senior year. According to the data, there is a statistically significant difference between the number of students who hooked-up their junior year and senior year and student's thoughts about the hook-up culture. This is because although only 44.34% of students their junior year and 34.45% of students their senior year hooked-up, Duke students believed that the average percentage of students who hooked-up was about 55.72%. Furthermore, 34.49% of students in their junior year and 39.25% in their senior year were in an exclusive romantic relationship. However, students only thought that on average 23.98% of students were in an exclusive romantic relationship at Duke. Therefore, Duke students are overestimating hook-up behavior and underestimating the formation of exclusive romantic relationships. This shows an important difference between perceptions of behavior and actual behavior.

The results of this analysis indicate that if students think more of their friends hook-up then they too are more likely to hook-up or be in an ERR junior and senior year as compared to doing nothing. This is illustrated in Table 11 below by all of the statistically significant, positive coefficients. Another interesting point about this table is that if males and females think more percentage of students as compared to friends are hooking-up, this does not necessarily have as strong of an effect on their behavior. For instance, in the pooled regression for senior year comparing hooked-up to doing nothing (Column IX), the coefficient for percentage of friends who they believed hook-up is .038 and the coefficient for percentage of students they believed hook-up is -.009. Thus, the odds ratios are 1.04 and .991 respectively, which means that for students who thought a higher

percentage of their friends hooked-up their likelihood of hooking-up senior year increased by a factor of 1.05. However, for students who thought a higher percentage of students hooked-up, their likelihood of hooking-up decreased by a factor of .991. This idea is consistent with Whitley's argument that selective exposure to a certain type of behavior may influence a person's own behavior. In the regression of all variables included in this study, the variable percentage of friends students thought hooked-up was still statistically significant, meaning that given other factors perceptions have an important role in student's behavior (Appendix I). However, it is important to consider Charles Manski's argument that there may be endogeneity effects in regressions involving peer effects and thus, it is difficult to establish two-way causality. This is because students are more likely to make friends that are similar to themselves so their friends may not necessarily be causing them to behave in a certain way. Again, similar to the time variable regression, ones previous year behavior has a strong affect on whether a student hooks-up or is in an exclusive romantic relationship junior and senior year.

# Table 11: Peer Variables

| | Variables | Junior Year | | | Senior Year | | | Senior Year | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX |
| | | Females | Males | Pooled | Females | Males | Pooled | Females | Males | Pooled |
| **Hooked-up** | % Friends Who Hook-up | .048*** | .047*** | .047*** | .046*** | .055*** | .051*** | .032*** | .050*** | .038*** |
| | % Friends In An ERR | .010 | .019* | .011 | .001 | .002 | .001 | -.005 | -.003 | -.006 |
| | % Students Who Hook-up | -.019 | -.006 | -.012 | -.006 | -.016 | -.011 | .003 | -.023** | -.009** |
| | % Students In An ERR | -.012* | -.014 | -.011* | .029* | .006 | .018* | .044** | .010 | .027** |
| | Female | -- | -- | -.271 | -- | -- | -561** | -- | -- | -.571*** |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 3.51*** | 2.53*** | 2.87*** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 2.67*** | 2.63*** | 2.41*** |
| | Constant | -.828 | -1.26** | -.988** | -3.21*** | -1.75*** | -2.10*** | -5.58*** | -2.88*** | -3.63*** |
| **In An Exclusive Romantic Relationship** | % Friends Who Hook-up | .019*** | .017** | .018*** | .015*** | .029*** | .021*** | .011* | .035*** | .020*** |
| | % Friends In An ERR | .021** | .019* | .020*** | .020** | .010 | .015** | .012 | .000 | .005 |
| | % Students Who Hook-up | -.015 | -.002 | -.008 | -.006 | -.013 | -.009 | -.000 | -.022** | -.008 |
| | % Students In An ERR | .002 | -.012 | -.004 | .004 | -.008 | -.000 | .003 | -.006 | -.000 |
| | Female | -- | -- | .074 | -- | -- | -.237 | -- | -- | -.400 |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 1.33*** | 1.90*** | 1.59* |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.13*** | 4.33*** | 3.57*** |
| | Constant | -.089 | -.280 | -.267 | -.655 | -.119 | -.252 | -2,25*** | -1.92*** | -1.81*** |
| Number of Obs. | | 380 | 362 | 742 | 379 | 361 | 740 | 379 | 361 | 740 |
| Pseudo R² | | .129 | .119 | .125 | .131 | .119 | .125 | .322 | .315 | .312 |
| Chi²/(def) | | 105.09/(8) | 89.04/(8) | 195.89/(10) | 108.26/(8) | 92.14/(8) | 200.34/(10) | 266.09/(12) | 243.53/(12) | -501.78/(14) |
| Log-Likelihood | | -354.70 | -330.35 | -686.63 | -359.27 | -340.20 | -703.23 | -280.35 | -264.50 | -552.51 |
| Likelihood-ratio Test Statistic | | | 3.16 | | | 7.52 | | | 15.32 | |
| p < .01 = ***, p < .05 = **, p < .10 = * | | | | | | | | | | |

# VIII. Results 4: Regression Analysis of Personal Background Variables in College

In the third regression, I looked at personal background variables that could influence a student's relationship status including alcohol per week, whether a student was in a fraternity or sorority, age of first intercourse, how religious they are, and their parents' relationship status. These variables were created from the following five questions:

1) How often do you drink alcohol in a normal week? (never, once a week, several times a week, nightly)
2) Are you a member of a fraternity or sorority?
3) If yes, how old were you the first time you had sexual intercourse?
4) How often do you attend religious activities? (Never, Less than once a week, Once a week, More than once a week)
5) Are your biological or adoptive parents currently: (Married, Separated, Divorced and Widowed)

For this analysis, the religiosity variable was developed by combining "Never" with "Less than once a week" and then "Once a week" with "More than once a week" to create a binary variable. The parents married variable was created by eliminating the "Widowed" answers due to the small number of responses and comparing "Married" to a single variable of "Separated" or "Divorced." In this part of the study, the three statistically significant variables included how often a student drinks alcohol in a normal week, age of first intercourse, and religiosity. The regression purports to show that males and females that drink more alcohol are also more likely to hook-up. According to Kathleen Bogle this result should not be surprising since hooking-up and drinking alcohol usually coincide with one another. However, female students are more strongly affected by the amount of alcohol they drink per week than male students. For instance, in the hook-up as compared to doing nothing regression for senior year with previous behavior (Columns VII and VIII), the coefficients for alcohol per week for females and males are 1.52 and .764 respectively, which gives odds ratios of 4.57 and 2.14. This means that the more alcohol females drink per week the likelihood that they will hook-up as compared to doing nothing increases by a factor of 4.57. While males on the other hand, only increase their likelihood by a factor of 2.14. This difference between males and females is consistent throughout all regressions for senior year including the regression that includes all variables in Appendix I. Thus, it is clear that females are more strongly affected by the amount of alcohol they drink per week as compared to males. In addition, age of first

intercourse had a relatively strong effect, which means that males but not necessarily females who delay sex until later are more likely to do nothing than hook-up. For example, in the same regression as above in Column VII the log-odds ratio for males was -.255 and the odds ratio was .775, which means that males who have sex for the first time later decrease their likelihood of hooking-up as compared to doing nothing by a factor of .775. Furthermore, it is important to note that there were no statistically significant coefficients when comparing age of first intercourse and being in an exclusive romantic relationship. This result provides some evidence discussed by Peter Arcidiacono on the persistence of teen sex, namely that students who have sex initially are more likely to engage in more risky behavior that involves sexual intercourse.

In addition, if students' parents are married as compared to being divorced or separated, students will be more likely to be in an ERR. Although in this regression only the coefficient for females was significant in Column I, there are more statistically significant variables in the regression of all variables in Appendix I. The log-odds ratio for this variable was 1.21, which means that in their junior year, females whose parents are married will be more likely to be in an exclusive romantic relationship by a factor of 3.35 (odds ratio). This result may indicate that students are affected by the relationship status of their parents, and if their parents are married and together, students will be more likely to pursue a binding relationship. Finally, students who are more religious and attend more religious activities per week are less likely to hook-up or be in an exclusive romantic relationship. This indicates the effect religion plays in relationship choices for college students.

<div align="center">

**Table 12: Personal Background Variables**

</div>

| | Variables | Junior Year | | | Senior Year | | | Senior Year | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX |
| | | Females | Males | Pooled | Females | Males | Pooled | Females | Males | Pooled |
| **Hooked-up** | Alcohol Per Week | -.317 | .254 | -.068 | 1.05*** | .608* | .802*** | 1.52*** | .764** | 1.06*** |
| | Greek | .619 | .078 | .434 | .284 | .105 | .136 | .204 | .096 | .073 |
| | Age of First Intercourse | -.217 | -.206 | -.197* | -.142 | -.260* | -.190** | -.139 | -.255* | -.197** |
| | Religiosity | -.475 | -2.09*** | -1.10** | -1.15** | -.745 | -.946** | -1.36** | -.114 | -.703 |
| | Parents Married | .601 | .942 | .750** | .164 | .603 | .317 | -.106 | .355 | .036 |
| | Female | -- | -- | -.657 | -- | -- | -.544* | -- | -- | -.424 |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 3.91*** | 2.38*** | 2.99*** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.49*** | 2.83*** | 2.95*** |
| | Constant | 4.57 | 5.01* | 4.78** | 1.46 | 4.69* | 3.31* | -2.11 | 2.34 | .692 |
| **In An Exclusive Romantic Relationship** | Alcohol Per Week | -1.05*** | -.221 | -.664** | .057 | -.023 | .032 | .642* | .266 | .447* |
| | Greek | .527 | .043 | .385 | .116 | .276 | .170 | .025 | .356 | .158 |
| | Age of First Intercourse | -.021 | -.087 | -.050 | .115 | -.025 | .058 | .080 | -.035 | .032 |
| | Religiosity | -1.04* | -1.31** | -1.11** | -.756* | -.567 | -.689* | -.486 | -.464 | -.444 |
| | Parents Married | 1.21** | .965 | 1.067*** | .094 | .776 | .340 | -.576 | .605 | -.100 |
| | Female | -- | -- | -.209 | -- | -- | -.367 | -- | -- | -.542* |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 1.48*** | .558 | 1.02** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.65*** | 3.48*** | 3.43*** |
| | Constant | 1.71 | 2.99 | 2.31 | -1.16 | 1.05 | -.020 | -2.76 | -.508 | -1.41 |
| Number of Obs. | | 231 | 267 | 498 | 231 | 266 | 497 | 231 | 266 | 497 |
| Pseudo R² | | .064 | .051 | .059 | .075 | .053 | .068 | .277 | .215 | .241 |
| Chi²/(def) | | 28.20/(10) | 22.84/(10) | 53.29/(12) | 35.34/(10) | 26.38/(10) | 67.06/(12) | 129.66/(14) | 108.07/(14) | 236.24/(16) |
| Log-Likelihood | | -206.43 | -214.62 | -425.91 | -216.54 | -238.18 | -456.75 | -169.38 | -197.34 | -374.16 |
| Likelihood-ratio Test Statistic | | | 9.72 | | | 4.06 | | | 14.88 | |
| p < .01 = ***, p < .05 = **, p < .10 = * | | | | | | | | | | |

# XI. Results 5: Combined Effects

The final regressions combine variables from previous regressions into three endogeneity groups. In an ideal world, I would have instruments to correct for endogenous variables, but given the limitations of the survey, I do not believe that I would have been able to do so. The first regression, which is displayed in Appendix I has several variables that could be considered endogenous including "Alcohol Per Week," "Greek," and peer estimation variables. The statistically significant variables in this regression included financial aid, percent of friends that hooked-up, percent of students in an ERR, alcohol per week, parents married, age of first intercourse, female, hooked-up junior year, and in an ERR junior year. The results for these variables are consistent with those of previous regressions. The second regression depicted in Table 13 includes

variables in which endogeneity is likely to be less of a problem while the final regression in Table 14 includes variables that have no endogeneity effects.

According to the regression in Table 13, the variables that were statistically significant include financial aid, age of first intercourse, religiosity, hooked-up junior year, and in an ERR junior year. The analysis indicates that students on financial aid were more likely to do nothing than be in an ERR or hook-up. This time variable shows that students on financial aid may not have the time or resources to invest their efforts into forming these two particular relationships. The odds ratio for financial aid in Column IX is .333 so the likelihood a student on financial aid hooks-up is reduced by a factor of .333 when previous behavior is included in the regression. .320 is the odds ratio for the same regression when comparing exclusive romantic relationships and doing nothing, which is similar and means that the likelihood a student on financial aid is in an ERR as compared to doing nothing is reduced by a factor of .320. Furthermore, similar to the results above males and females who delay having sex for the first time or are more religious are less likely to hook-up as compared to doing nothing. For example, in Column VII females who attend religious activities once a week or more than once a week as compared to never or less than once a week will be less likely to hook-up by a factor of .295. Finally, as shown in previous regressions, the relationship status junior year has a profound effect on relationship status senior year. Students that were in an exclusive romantic relationship or hooked-up their junior year were much more likely to be in one of these types of relationships senior year. This continues the idea of persistence of behavior and is the most important variable for determining relationship status senior year.

I also ran the same regression as in Table 13 but made the base outcome *Hooked-up* instead of *Neither* so I could evaluate whether females would prefer engaging in an ERR or hooking-up. For junior year the coefficient for females is .551 (p-value of .005), which gives an odds ratio of 1.73 and the coefficient for senior year without previous behavior is .303 (p-value of .136), which gives an odds ratio of 1.35. Therefore, this result gives further evidence that females prefer to be in an ERR than to hook-up, which follows Roy Baumeister and Kathleen Vohs' theory on sexual exchange markets.

## Table 13: Combined Effects – Less Endogenous Variables

| | Variables | Junior Year | | | Senior Year | | | Senior Year | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX |
| | | Females | Males | Pooled | Females | Males | Pooled | Females | Males | Pooled |
| **Hooked-up** | Financial Aid | -.093 | .821 | .239 | -.888** | -.844* | -.863*** | -1.00** | -1.21** | -1.10*** |
| | Engineering or NS Major | .417 | -.416 | .133 | .202 | .141 | .218 | .248 | .268 | .286 |
| | Varsity Athlete | -.195 | .628 | .190 | .303 | -.842 | -.403 | .680 | -1.13 | -.581 |
| | Athletic Scholarship | 22.23*** | -1.01 | .444 | .857 | 21.64*** | 2.24* | -.172 | 23.52 | 2.44* |
| | Age of First Intercourse | -.182 | -.175 | -.191* | -.137 | -.300** | -.200** | -.110 | -.318** | -.196* |
| | Religiosity | -.289 | -2.41*** | -1.13*** | -1.03* | -.942 | -.971** | -1.22** | -.198 | -.658 |
| | Parents Married | .544 | 1.12* | .732* | .098 | .626 | .273 | -.200 | .568 | .049 |
| | Female | -- | -- | -.632* | -- | -- | -.634** | -- | -- | -.501 |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 3.54*** | 2.82*** | 3.04*** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.01*** | 3.05*** | 2.81*** |
| | Constant | 4.28 | 4.70 | 5.05*** | 3.59 | 6.76*** | 5.21*** | .538 | 4.65* | 2.69 |
| **In An Exclusive Romantic Relationship** | Financial Aid | .070 | .763 | .313 | -1.03** | -.652 | -.815 | -1.42*** | -.914* | -1.14*** |
| | Engineering or NS Major | .841 | -.244 | .362 | .518 | .070 | .298 | .359 | .068 | .245 |
| | Varsity Athlete | -.140 | .235 | .021 | -.010 | -.267 | -.188 | -.016 | -.136 | -.197 |
| | Athletic Scholarship | 20.24 | -.158 | .383 | .266 | 20.81 | 1.52 | .484 | 21.81*** | 1.61 |
| | Age of First Intercourse | .059 | -.045 | -.013 | .183 | -.025 | .088 | .156 | -.050 | .062 |
| | Religiosity | -.671 | -1.47** | -.896** | -.581 | -.598 | -.526 | -.326 | -.493 | -.305 |
| | Parents Married | .900* | 1.05 | .895** | -.237 | .731 | .140 | -.906* | .788 | -.215 |
| | Female | -- | -- | -.082 | -- | -- | -.331 | -- | -- | -.506 |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 1.54*** | .850 | 1.20*** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.69*** | 3.71*** | 3.52*** |
| | Constant | -.442 | 1.74 | 1.04 | -1.60 | 1.66 | .010 | -2.59 | .609 | -.786 |
| Number of Obs. | | 232 | 264 | 496 | 232 | 263 | 495 | 232 | 263 | 495 |
| Pseudo R² | | .051 | .045 | .042 | .057 | .050 | .054 | .262 | .230 | .238 |
| Chi²/(def) | | 22.57/(14) | 20.18/(14) | 38.05/(16) | 26.67/(14) | 24.83/(14) | 52.90/(16) | 123.49/(18) | 114.79/(18) | 233.38/(20) |
| Log-Likelihood | | -211.49 | -213.84 | -433.79 | -222.67 | -236.65 | -463.19 | -174.26 | -191.67 | -372.95 |
| Likelihood-ratio Test Statistic | | 16.92 | | | 7.74 | | | 14.04 | | |
| p < .01 = ***, p < .05 = **, p < .10 = * | | | | | | | | | | |

The third group of variables included ones that would have no endogeneity effects. These variables included financial aid, age of first intercourse, parents married, and gender. The age of first intercourse variable was manipulated so that it would compare students that had sex age twenty and below (before junior year) and those students that had sex after the age of twenty. This was done with an interaction term by creating a binary variable and then multiplying it by the original variable age of first intercourse. The results here indicate that financial aid and age of first intercourse were statistically significant variables for senior year. Thus, students on

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financial aid or those who had sex after the age of twenty were less likely to hook-up or be in an exclusive romantic relationship. Furthermore, females were more likely to do nothing than hook-up. The log-odds ratio in the regression that compares hooked-up and doing nothing for females junior and senior year are -.767 and -.720, which gives an odds ratio of.464 and .487 respectively. Therefore, the likelihood of females hooking-up is decreased by a factor of .464 junior year and .487 senior year. This again supports the idea that females in general would prefer to do nothing than hook-up.

## Table 14: Combined Effects – Strict Endogeneity Variables

| | Variables | Junior Year | | | Senior Year | | |
|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VII |
| | | Females | Males | Pooled | Females | Males | Pooled |
| **Hooked-up** | Financial Aid | .076 | .441 | .191 | -.834** | -.620 | -.709** |
| | Age of First Intercourse | -.176 | -.018 | -.073 | -.90 | -.347** | -.186** |
| | Parents Married | .457 | .646 | .545 | .034 | .460 | .143 |
| | Female | -- | -- | -.767** | -- | -- | -.720** |
| | Constant | 4.24* | 1.90 | 3.02** | 2.71* | 7.57*** | 4.99*** |
| **In An Exclusive Romantic Relationship** | Financial Aid | .211 | .560 | .301 | -.894** | -.545 | -.703** |
| | Age of First Intercourse | -.221 | -.013 | -.090 | -.137 | -.318** | -.187** |
| | Parents Married | .969* | .785 | .875** | -.114 | .820 | .251 |
| | Female | -- | -- | -.153 | -- | -- | -.310 |
| | Constant | 4.54* | 1.07 | 2.39** | 4.00*** | 6.73** | 4.87*** |
| Number of Obs. | | 233 | 267 | 500 | 233 | 267 | 500 |
| Pseudo R² | | .022 | .005 | .023 | .025 | .025 | .028 |
| Chi²/(def) | | 9.86/(6) | 2.43/(6) | 21.27/(8) | 11.81/(6) | 12.49/(6) | 27.68/(8) |
| Log-Likelihood | | -218.66 | -224.82 | -445.36 | -230.82 | -245.18 | -479.14 |
| Log-Likelihood Test Statistic | | 3.76 | | | 6.28 | | |
| p < .01 = ***, p < .05 = **, p < .10 = * | | | | | | | |

# X. The Concluding Effects

The majority of students on college campuses are involved in two competing courtship styles, hooking-up and being in an exclusive romantic relationship. Given market conditions and individual preferences, a student may be influenced in a certain way to be a part of at least one of these types of relationships as opposed to doing nothing. One of the most significant variables that I found to predict the type of relationship formed by Duke students junior and senior year was financial aid. The analyses using this variable demonstrate that men and women who are on financial aid are more likely to do nothing than be in either type of relationship. This is consistent with Keeley's theory on marital specific capital and the value of time as the benefits for

financial aid students remaining single outweigh the costs of search time and investment in capital. Furthermore, following views in psychology, men and women who believe a higher percentage of their friends hook-up will also be more likely to hook-up or be in an exclusive romantic relationship. This result reveals that perceptions of other students' behaviors significantly affect individual preferences especially the behavior of friends. Additionally, religiosity and age of first intercourse are important factors that influence students' decisions about whether they will hook-up. This means that the more religious students are and the later males have intercourse for the first time, the less likely they are to hook-up. Finally, persistence of behavior had the largest effect on predicting the type of relationship Duke students formed junior and senior year. An individual who hooked-up or was in an ERR was more likely to be in either type of relationship senior year. It is important to note that if a student hooked-up junior year, it did not only have a statistically significant effect on hooking-up senior year but also engaging in an ERR senior year. This means that there exists two distinct groups of students, those that do nothing and those that hook-up or are engaging in exclusive romantic relationships. The results found here would indicate that there is a link between these two relationship types and each one is not mutually exclusive.

It is reasonable to assume that marriage, cohabitation, and remaining single is analogous to engaging in an exclusive romantic relationship, hooking-up, and doing nothing on university campuses. With interesting associations between economics, sociology, and psychology on the topic of the campus courtship culture, further research needs to be conducted on this topic. This research could include a study on how time influences student choices on whether they want to be single or engage in romantic relationships. The study would focus on finding information on time variables such as how much time students spend doing homework, socializing, watching TV, attending religious activities, doing community service, playing on the computer, going out with friends, etc. This would give a good overview of the time each student expends on various activities and would allow for better understanding of how students value time and investments in relationships.

Over the past fifty years, different scripts for dating have encouraged students to develop new campus courtship cultures. Although there are a few minor differences between genders, men and women seem to have similar values when it comes to the

factors that influence their relationship status as the majority seek to hook-up or form exclusive romantic relationships. Understanding how students' perspectives and preferences influence their own behavior puts this new dating culture into a larger context, and provides insights into why some students do not participate in either type of relationship. Nevertheless, it is important to realize that students entering the campus courtship culture are ultimately influenced not only by the market conditions they face but also by a variety of factors including time, friends, personal characteristics, and previous behaviors.

# Works Cited

Arcidiacono, Peter, Khwaja, Ahmed, and Ouyang, Lijing. "Habit Persistence and Teen Sex: Could Increased Access to Contraception have Unintended Consequences for Teen Pregnancies?"

Baumeister, R. F. and K. D. Vohs (2004). "Sexual Economics: Sex as Female Resource for Social Exchange in Heterosexual Interactions." Personality & Social Psychology Review (Lawrence Erlbaum Associates) 8(4): 339-363.

Becker, G. S. (1973). "A Theory of Marriage: Part I." Journal of Political Economy 81(4): 813.

Becker, G.S. (1976). The Economic Approach to Human Behavior. Chicago, IL: University of Chicago Press.

Bennett, N. G., A. K. Blanc, et al. (1988). "Commitment and the Modern Union: Assessing the Link Between Premarital Cohabitation and Subsequent Marital Stability." American Sociological Review 53(1): 127-138.

Bogle, K. A. (2008). Hooking Up: Sex, Dating, and Relationships on Campus. New York: New York.

Bull, S. B. and A. Donner (1987). "The Efficiency of Multinomial Logistic Regression Compared With Multiple Group Discriminant Analysis." Journal of the American Statistical Association 82(400): 1118-1122.

Chiswick, C. U. and E. L. Lehrer (1990). "On Marriage-Specific Human Capital: Its Role as a Determinant of Remarriage." Journal of Population Economics 3(3): 193-213.

Goldin, C. and L. F. Katz (2002). "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions." The Journal of Political Economy 110(4): 730-770.

Heckman, James. (1990). "Varieties of Selection Bias." The American Economic Review 80(2): 313-318.

Keeley, M. C. (1977). "The Economics of Family Formation" Economic Inquiry 15(2): 238.

Manski, C. F. (1993). "Identification of endogenous social effects: the reflection problem." 60(3): 531.

Oppenheimer, V. K., M. Kalmijn, et al. (1997). "Men's Career Development and Marriage Timing During a Period of Rising Inequality." Demography 34(3): 311-330.

Stepp, L. (2007). Unhooked How Young Women Pursue Sex, Delay Love, and Lose at Both. New York, Penguin Group.

Whitley, B. E., Jr. (1998). "False Consensus on Sexual Behavior Among College Women: Comparison of Four Theoretical Explanations." 206.

# Appendix I

## **Table 15: All Variables**

| | Variables | Junior Year | | | Senior Year | | | Senior Year | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII | IX |
| | | Females | Males | Pooled | Females | Males | Pooled | Females | Males | Pooled |
| **Hooked-up** | Financial Aid | .452 | 1.05 | .546 | -.487 | -.907* | -.670* | -.783 | -1.17* | -.913** |
| | Engineering or NS Major | .426 | -.440 | .252 | .601 | .214 | .496 | .734 | .181 | .632 |
| | Varsity Athlete | -.293 | .841 | .229 | .187 | -1.24 | -.578 | .205 | -1.24 | -.660 |
| | Athletic Scholarship | 21.44*** | -2.14 | -.333 | .381 | 22.46*** | 1.87 | -.321 | 22.59*** | 1.96 |
| | % Friends Who Hook-up | .040*** | .039*** | .038*** | .022** | .054*** | .032*** | .010 | .058*** | .026*** |
| | % Friends In An ERR | .023 | -.021 | .014 | -.006 | -.021 | -.013 | -.016 | -.005 | -.017 |
| | % Students Who Hook-up | -.015 | -.009 | -.011 | .011 | -.022 | -.002 | .016 | -.027* | -.000 |
| | % Students In An ERR | -.018 | .055* | -.001 | .037* | .059** | .043** | .054** | .046 | .044** |
| | Alcohol Per Week | -.859* | .104 | -.488 | .773** | .091 | .472* | 1.44*** | .366 | .880 |
| | Greek | .410 | -.280 | .126 | -.090 | -.582 | -.300 | -.230 | -.467 | -.318 |
| | Age of First Intercourse | -.208 | -.117 | -.163 | -.155 | -.286* | -.190* | -.135 | -.329* | -.205* |
| | Religiosity | -.261 | -2.56*** | -1.01** | -.874 | -.889 | -.762 | -1.14 | -.600 | -.471 |
| | Parents Married | .647 | 1.84** | .918** | .267 | 1.38** | .569 | .050 | 1.33* | .300 |
| | Female | -- | -- | -.681* | -- | -- | -.573* | -- | -- | -.432 |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 4.55*** | 1.91** | 2.99*** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.90*** | 3.80*** | 3.28*** |
| | Constant | 3.90 | .630 | 3.04 | -.342 | 3.34 | 1.52 | -4.67 | 1.84 | -.948 |
| **In An Exclusive Romantic Relationship** | Financial Aid | .193 | .860 | .384 | -1.04** | -.797 | -.818** | -1.32** | -.990 | -1.07*** |
| | Engineering or NS Major | .708 | -.329 | .367 | .652 | .110 | .408 | .567 | -.059 | .411 |
| | Varsity Athlete | -.154 | .358 | .008 | -.092 | -.551 | -.261 | -.395 | -.142 | -.165 |
| | Athletic Scholarship | 19.98 | -.811 | .083 | .172 | 21.82 | 1.46 | .534 | 20.99 | 1.24 |
| | % Friends Who Hook-up | .013 | .017 | .015 | -.002 | .030*** | .010 | -.001 | .044*** | .014* |
| | % Friends In An ERR | .022 | -.014 | .015 | .013 | -.006 | .005 | .009 | .008 | .005 |
| | % Students Who Hook-up | -.007 | -.009 | -.008 | .000 | -.022 | -.006 | -.003 | -.030* | -.008 |
| | % Students In An ERR | -.000 | .044 | .005 | -.005 | .032 | .008 | -.014 | .020 | -.002 |
| | Alcohol Per Week | -1.22*** | -.241 | -.843* | .118 | -.389 | -.114 | .671 | -.041 | .322 |
| | Greek | .481 | -.085 | .288 | -.142 | -.139 | -.064 | -.272 | .009 | -.095 |
| | Age of First Intercourse | .005 | -.051 | -.038 | .186 | .019 | .095 | .190 | -.018 | .094 |
| | Religiosity | -.974 | -1.69** | -.993** | -.632 | -.651 | -.468 | -.319 | -.926 | -.217 |
| | Parents Married | 1.15** | 1.54** | 1.07** | -.206 | 1.13* | .203 | -.913 | 1.28* | -.255 |
| | Female | -- | -- | -.202 | -- | -- | -.287 | -- | -- | -.418 |
| | Hooked-up Junior Year | -- | -- | -- | -- | -- | -- | 1.71** | .091 | 1.03** |
| | In an ERR Junior Year | -- | -- | -- | -- | -- | -- | 3.82*** | 4.44*** | 3.73*** |
| | Constant | 1.03 | .911 | 1.64 | -1.85 | 1.03 | -.466 | -3.67 | -1.06 | -2.16 |
| | Number of Obs. | 228 | 257 | 485 | 228 | 256 | 484 | 228 | 256 | 484 |
| | Pseudo R² | .145 | .117 | .112 | .156 | .146 | .140 | .340 | .308 | .299 |
| | Chi²/(def) | 63.33/(26) | 51.08/(26) | 98.76/(28) | 71.88/(26) | 70.47/(26) | 133.88/(28) | 157.11/(30) | 148.96/(30) | 285.13/(32) |
| | Log-Likelihood | -186.45 | -193.05 | -393.03 | -195.02 | -206.72 | -410.02 | -152.41 | -167.48 | -334.40 |
| | Likelihood Ratio Test Statistic | | 27.06 | | | 16.56 | | | 29.02 | |
| | p < .01 = ***, p < .05 = **, p < .10 = * | | | | | | | | | |