

The Relationship between Academic Self-Concept and Achievement in High School and
Risky Sexual Behavior in College-Aged Females Over Time

Senior Honors Thesis

Audrey Wittrup

University of Michigan

Advisors

Jacquelynne S. Eccles, Ph.D.

Meeta Banerjee, MSW, Ph.D.

Abstract

Using data from the Michigan Study of Adolescent Life Transitions ($N=744$), this study examines the connection between academic self-concept, academic achievement and risky sexual behavior in college-aged females over time. The current study investigated three hypotheses: 1) academic achievement at Time 1 will be negatively related to risky sexual behavior Time 2, 2) academic self-concept at Time 1 will be negatively related to risky sexual behavior at Time 2, and 3) academic self-concept will moderate the relationship between academic achievement and risky sexual behavior. The association between academic self-concept, achievement, and risky sexual behavior was tested using a hierarchical regression, controlling for student socioeconomic status and grade level. Risky sexual behavior was measured with three scales: frequency of having unprotected sex, risky sexual behaviors and attitudes and using protection during sexual intercourse. Academic self-concept was assessed via academic ability self-concept and academic dissatisfaction. Results indicated that academic achievement and self-concept were linked to certain risky sexual outcomes. Moreover, a significant interaction between academic dissatisfaction, academic performance, and sexual behaviors and attitudes was found. Implications for the importance of studying these aspects in late adolescent females are discussed.

Keywords: risky sexual behavior, achievement, self-concept, adolescence, females.

The Relationship between Academic Self-Concept and Achievement in Predicting in Risky Sexual Behavior in College-Aged Females

Adolescence is marked by a period of self-discovery. It is characterized by transitions in emotional, social and cognitive development. In high school, students are exposed to social opportunities, and are able to exercise more freedom compared to their experiences during their elementary or middle school years (Eccles, Lord, & Roeser, 1996). This sense of independence is important for adolescents' personal growth and identity. The transition to high school also indicates a corresponding heightened emphasis on intrinsic motivation and relative ability (Eccles, Lord, & Roeser, 1996). A substantial concern for high school students can be balancing academic achievement with peer acceptance and approval (Juvonen, 2006).

Eccles and colleagues (1996) demonstrated that as adolescents negotiate these internal and external challenges, they begin to establish a more coherent sense of personal identity and self-concept. The challenges of this period can help some grow and forge a positive sense of self-esteem. For some, however, the developmental challenges can render them more vulnerable to poor self-esteem, and more susceptible to involvement in risk taking and problem behaviors (Eccles et al., 1996). Studies have found that poor academic self-concept can lead to disengagement from school, and a downward spiral over time toward poor grades, and behavioral transgression (Duncan, Boisjoly, Kremer, Levy & Eccles, 2005; Eccles et al., 1996; Honken & Ralston, 2013).

Adolescence is also the onset of puberty and the emergence of sexuality. Adolescent sexuality is now considered a normative aspect of development, and is no longer equated with danger (Tolman & McClelland, 2009). More recent research in the

field of adolescent sexuality has addressed not only the physiological processes but also the psychological processes involved in the development of a sexual identity (Tolman & McClelland, 2009). This trend has led to an increase in research on the formation of a sexual selfhood in adolescence (Dawson, Shih, De Moor & Shrier, 2008). For instance, a study done by Dawson and colleagues (2008) found multiple associations between psychological health, and the motivations stated by the adolescents. In particular, female adolescents with higher impulsivity ratings on the Eysenck impulsivity questionnaire reported that their reasons for sex were less driven by intimacy than other adolescents in the study (Dawson et al., 2008). Similarly, Robinson, Holmbeck, and Paikoff, (2007) found that those who sought to increase their self-esteem through sex, were also less consistent condom users than those motivated by other reasons, such as desire. Physical risks associated with risky sexual behavior include sexually transmitted infections (STIs) and increased chances of unplanned pregnancy. Risky sexual behavior is often reported as a negative emotional experience by women, and is associated with lower psychological wellbeing (Owen, Rhoades, Stanley, & Fincham, 2010).

It is important to note that if students are not performing well in school, which is a salient part of their identity, they could shift their values, finding self-worth through engagement in risky behaviors (Eccles, Lord, Roeser, Barber, & Hernandez, 1997). The current study analyzes the relationship between academic achievement, academic self-concept, and risky sexual behavior in later adolescence. Specifically, this study will investigate the relationship between low academic achievement and risky sexual behavior. Furthermore, the way in which academic self-concept buffers the association between academic achievement and risky behavior will be analyzed. A better

understanding of the relationship between these three variables could inform school-based intervention on academic self-concept and the etiology and prevention of risky behavior.

Theoretical Framework

The current study ventures to explain the association between academic self-concept and risky sexual behavior using the Eccles expectancy-value theory of achievement motivation (Eccles, Wigfield, & Schiefele, 1998). The Eccles expectancy-value model posits that multiple mechanisms explain the relationship between youth's self-concept and corresponding behavior (Simpkins, Fredricks, & Eccles, 2012). Further, adolescent's behaviors can be predicted by motivational beliefs and self-esteem. These beliefs mediate behavioral pathways (Simpkins et al., 2012). Achievement-related choices are assumed to be influenced by two sets of beliefs: the individual's expectations for success and the importance or value the individual attaches to the various options perceived as available. This model also specifies the relation of these beliefs to cultural norms, experiences, aptitudes, and personal beliefs and attitudes (Eccles et al., 1998).

With regards to academic achievement, the theory posits that individuals will engage most fully in school, if they have confidence in their ability to do well and place high value on performing well. High confidence in one's academic ability results from a history of doing well in school, as well as encouragement from adults and peers (Wigfield, Eccles, Chiegele, Roeser, Davis-Kean, 2006). Given the value placed on academic achievement, it is natural that underperforming students may disengage in school to protect their self-esteem. This can be explained from a self-enhancement perspective, in that, individuals will tend to augment positive self-concepts and diminish

the negative ones (Brown & Dutton, 1995). For instance, if a student is not performing well at school they may be more likely to seek out positive reinforcement in other ways. Students detach their self-esteem from a domain in which it is threatened, so their self-esteem is no longer affected by poor feedback (Eccles et al., 1997; Eccles, Midgley, Buchanan, Wigfield, Reuman, & Maciver, 1993).

Academic Achievement: The Importance of Doing Well in School

Given the importance of tangible results in an achievement driven society, it is natural that some students consider grades to be very important. Academic achievement is commonly measured by exams or grades (Ward, Stoker, & Murray-Ward, 1996). More broadly, academic achievement can be viewed as the extent to which a student, teacher or school has achieved their educational goals (Ward et al., 1996). Academic achievement is important for both concrete and abstract reasons (Honken & Ralston, 2013). For example, a good grade point average in high school can increase a student's chance of admission into a college of their choice, and increase their eligibility for academic scholarships (Honken & Ralston, 2013).

In school settings, there is considerable emphasis on individual achievement, and student self-esteem tends to be linked to such achievement (Covington, 2000). Given that for adolescent girls, depressive problems and academic achievement has shown a bidirectional relationship, it also can be linked to general mental health (Verboom, Sijtsma, Verhulst, Penninx, Ormel, 2014). Consistent with these findings, El-Anzi (2005) found a positive link between academic achievement and both optimism and self-esteem in adolescents. The study also demonstrated a negative association between academic achievement and anxiety and pessimism: Lower academic achievement was

related to higher levels of anxiety and pessimism (El-Anzi, 2005). More broadly, Creed, Patton, and Bartrum (2002) found high optimism to be associated with higher levels of exploration, career planning, decision-making confidence, and career-related goals. Inversely, high pessimism was associated with career indecision, low achievement, low self-esteem and increased psychological distress (Creed et al., 2002). Ultimately, academic achievement plays an integral role in adolescents' self-concept and college preparedness.

Academic Achievement & Well-Being

Although school achievement is associated with higher self-esteem, the opposite is also true in that poor academic performance can threaten an adolescent's self-esteem (Honken & Ralston, 2013). Honken & Ralston (2013) found that lower academic achievement is also associated with higher levels of depressed mood and learned helplessness. Additionally, Richardson and colleagues (2005) found that high school students perceiving their academic achievement as failing or below average had lower self-esteem, more depressive symptoms, and were at a greater risk for deliberate self-injury, and suicide attempts. Taken together these findings suggest the fundamental importance of academic achievement in shaping developmental trajectories. Poor early performance can undermine a student's sense of self-concept (Richardson, Bergen, Martin, Roeger, & Allison, 2005). By contrast, academic achievement can reinforce adolescents' sense mastery and connection to school, contributing to positive self-esteem and academic self-concept.

The Relationship between Academic Achievement & Ability Self-Concept

Self-concept is a collection of beliefs about oneself (Flook, Repetti, & Ullman, 2005). Research has demonstrated that self-concept is a construct made up of multiple dimensions (Hoffman, Hattie, & Borders 2005). For instance, for adolescents, self-concept consists of both academic and nonacademic components (Hoffman et al., 2005). As found by Eccles (1983), one major source of self-concept is ability-related feedback such as school achievement and general intellectual self-esteem. Non-academic components include peer-acceptance, athletic ability, and general global self-esteem (Hay & Stewart, 1999). Academic self-concept, or beliefs about oneself as a student, has been shown to have both direct and indirect effects on a range of educational outcomes, even after controlling for factors such as previous achievement histories, and these effects can persist into higher education (Valentine & DuBois, 2004).

There is a large body of research that has linked academic self-concept with academic achievement (Hay & Stewart 1999, Gniewosz, Eccles, & Noack, 2012; Marsh & Martin, 2011;). For example, Gniewosz and colleagues (2012) found that during the transition to secondary school, the impact of grades on students' academic self-concept increased. Given that adolescents' self-concepts of ability emerge out of a plethora of informational sources, various situational characteristics may influence the relative importance of these sources (Gniewosz et al., 2012). It has also been shown that individuals at a given academic skill level tend to have lower academic self-concepts when they attend schools that are relatively high achieving. Hay & Stewart (1999) noted that as students noticed that their achievement scores fell below the class average, their self-concept decreased, even if their scores were above the national average. This trend

could reflect students' use of social comparison to arrive at a judgment of their own skills relative to peers (Gest, Domitrovich, & Welsh, 2005). These findings highlight the subjectivity of academic self-concept, and the ways in which it is not based solely on innate ability, but also more subjective and relative feedback.

Additionally, it has also been shown that negative academic self-concept can effect non-academic domains of self-concept. Berg and Klinger (2009) explored the relationship between academic self-concept in individual subject areas and self-reported depressed mood in 86 elementary-age boys and girls. Results indicated that academic self-concept was related to self-reported depressed mood (Berg & Klinger, 2009).

Though low academic self-concept is associated with negative outcomes, an increase in academic self-concept could predict other positive outcomes. Swann (1987) found that an increase in academic self-concept is related to increases in achievement and other desirable outcomes such as self-esteem. Research has also demonstrated a positive association between high school academic self-concept in high school seniors for academic adjustment and success in the first year of college (Wouters, Germeijs, Colpin, & Verschueren, 2011).

The construction of one's academic self-concept is influenced by a variety of sources of information. The reflected appraisal of others also plays an important role in the construction of achievement related self-views (Gest et al., 2005). Given that academic self-concepts often based on relative feedback, it can moderate the relationship between academic performance and overall self-concept. High academic self-concept may also act as a protective factor against risky behavior in the face of negative feedback. For instance, Chamorro-Premuzic and Furnham (2006) postulate that academic self-

concept buffers the effects of aptitudes on learning and academic performance. Research has demonstrated that an increase in academic self-concept can lead to increases in academic achievement and other desirable outcomes (Marsh & Martin, 2011). Therefore, self-concept is not only an important variable itself, but can influence other desirable outcomes.

Academic Predictors of Risky Sexual Behavior

Adolescents who are not performing well in school may attempt to enhance their self-concepts in aspects that are unrelated to their areas of inadequacy (Eccles et al., 1997). It is possible that if an individual has access to positive information in one domain, it can protect against the damage of negative information in another (Heine & Lehman, 1997).

In identifying and understanding factors that may predispose adolescents to risky sexual behavior, it is important to consider both environmental and dispositional factors. Zietsch and colleagues (2010) found risky sexual behavior to be positively associated with impulsivity, extraversion, and neuroticism (Zietsch, Jerweij, Bailey, Wright & Martin, 2010). Self-esteem may also be an important predictor of risky sexual behavior: Boden and Horwood (2002) found that lower self-esteem at age 15 was associated with greater risks of engaging in unprotected sex a greater number of sexual partners, and a greater risk of pregnancy at ages 15–25. Harris and colleagues (2002) found that adolescents who express high expectations for their future health and education will perceive greater risks associated with engaging in risk behaviors and will avoid risk taking. In contrast, adolescents with low expectation for their futures may not fully consider the implications of risks (Harris, Dunon, & Boisjoly, 2002).

Moreover, research has demonstrated that the frequency of risky behaviors has an inverse relationship to grade point average in first year college students (Honken & Ralston, 2013). In particular, Honken & Ralston (2013) found that freshman with lower GPAs were more likely to have participated in risky behaviors, such as unprotected sex and binge drinking, in both in high school and in college. It may be that these students seek out reinforcement from their peers, to compensate for the negative academic feedback in both high school and college. Moreover, Lohman & Billings (2008), found that early parental monitoring and higher academic achievement protected adolescent boys against early sexual debut, and risky sexual behaviors. Similarly, Aspy and colleagues (2012) also found that feeling connected to school protected against risky behaviors such as early initiation of sexual intercourse and alcohol consumption in fourteen year old students.

Accordingly, low self-esteem could increase the chances of participating in risky sexual behavior. In a representative survey of college students, Cooper, Shapire & Powers (1998) found that women are more likely to use sex to minimize threats to self-esteem. This study also found that young women are motivated by enhancement goals. Enhancement and coping motives were found to be consistently and strongly related to risky sexual behavior (Cooper et al., 1998). For this reason, a low academic self-concept or general low self-esteem could increase the likelihood of participating in risky sexual behavior. Owen and colleagues (2010) found an association between young adults who experience negative reactions to casual sexual encounters and increased likelihood of poor psychological health.

In addition, failure to disclose having had unprotected sex with previous partners is common in a college setting (Desiderato & Crawford, 1993). Adolescents who engage in risky sexual behavior with multiple partners are less likely to use condoms, putting many at risk for STIs (Biglan, Metzler, Wirt, Ary, Noell, Ochs, French, & Hood, 1990). According to recent data from the Centers for Disease Control and Prevention (2010), 39% of adolescents reported that they did not use a condom and 77% that they did not use birth control pills the last time they had sex. Engagement in such behaviors places adolescents at risk for sexually transmitted infections, pregnancy, and a host of other problems (Kirby, 2001). Though research has explored the relationship between academic engagement and risky sexual behavior, the longitudinal relationship between academic achievement in high school and risky sexual behavior in college has not been fully explored. Understanding a longitudinal relationship between academic achievement and risky behaviors could better inform preventative interventions.

The Role of Gender in Sexuality

This study only considers females, to control for gender differences in attitudes regarding sexual behavior. Traditional gender roles prescribe different sexual expectations for men and women. Stereotypically, men are the “initiators” of sexual activity and women are “gatekeepers” by resisting and limiting such activity (DeLamater, 1987). Evidence, however, regarding gender differences is mixed. Some studies findings have reinforced these gender norms, while others note the convergence of sexual attitudes and activities (Edgar & Fitzpatrick, 1993). In late adolescence, however, social motivational factors may increase the likelihood of adolescents complying with perceived sexual norms (Paul et al. 2000). In fact, research as suggested that such peer influence

exerts a greater impact on adolescent girls' sexual attitudes and behaviors than boys' (Brown, 1982). Additionally, Risky sexual behavior is often reported as a negative emotional experience by women, and is associated with lower psychological wellbeing (Owen, Rhoades, Stanley, & Fincham, 2010).

The Moderating Role of Academic Self-Concept

Self-concept enhancement is considered a central goal of education and an important vehicle for addressing performance disparities (Marsh & Craven, 2006). Academic self-concept has been shown to have both direct and indirect effects on a variety of educational outcomes, even after controlling for factors such as previous achievement (Valentine & DuBois, 2004). For this reason, it can serve as an important moderating variable between academic achievement and risky behavior. Research has shown that when academic self-concept is enhanced, there is an increase in drive and academic accomplishments (Ludtke, Koller, Artelt, Stanat, & Baumert, 2002). Conversely, a negative academic self-concept may bias a student toward environmental input. When faced with negative performance feedback, high academic ability self-concept could buffer the association between academic achievement and risky behavior.

Tormala and colleagues (2002) found that people who already feel insecure in a particular domain (such as academic ability) are more sensitive to criticism relevant to their insecurity (Tormala, Petty, & Briñol, 2002). For example, a student who has experienced academic failure and has a negative academic self-concept (e.g. "I am a poor student") will be more biased toward environmental inputs such as teacher remarks, or messages that reinforce that identity.

Self-verification theory postulates that individual's primary motive is not always enhancing the positivity of self-concepts, but rather, confirming the existing self-concept, even if that self-concept is negative (Marsh & Martin, 2011). Academic self-concept could influence sexual self-concept, a combination of sexual attitudes, behaviors and feelings, as well as beliefs about one's attractiveness and self-worth (Murry, Brody, McNair, Luo, Gibbons, Gerrard, & Wills, 2005). Lou and colleagues (2009) found that high sexual self-concept, a combination of sexual attitudes, behaviors and feelings, as well as beliefs about one's attractiveness and self-worth, significantly predicts consideration of sexual risks, and open sexual communication in a sample of 748 adolescents (Lou, Chen, Li, & Yu, 2009). Those who expressed higher levels of self-concept reported engaging in fewer types of risky sexual behaviors. Given this relationship, promoting academic self-concept could serve as a protective factor.

Academic self-concept could serve as an important moderating variable in regards to risky sexual behavior. A high academic self-concept could be protective while a poor self-concept could serve as a risk factor. Research shows that academic self-concept in high school has a significant relation to adjustment and success in college (Wouters et al., 2011). In addition, enhancement and coping motives are consistently related to risky sexual behavior in college students (Cooper et al., 1998). Given the state of the current literature, we know less about the relation between academic self-concept and risky sexual behavior. In particular, it has not been examined if academic self-concept and achievement is correlated to risky sexual behavior. Finding a longitudinal association between low academic self-concept and factors that put young women at risk for sexually

transmitted infections and unintended pregnancies might have implications for early intervention and prevention programs for adolescents.

Current Study

The current study investigates the links between academic achievement, academic self-concept and risky sexual behavior in a sample of late adolescent females. It investigates three different hypotheses. The first hypothesis predicts that academic achievement will be negatively related to risky sexual behavior over time. Specifically, that poor academic achievement in high school (Time 1) will be related to greater reports of risky sexual behavior in college (Time 2). The second hypothesis predicts that academic self-concept at Time 1 will be negatively related to risky sexual behavior at Time 2. In particular, individuals with low academic self-concept will report participating in greater amounts of risky sexual behavior. The third hypothesis is that academic self-concept will moderate the relationship between academic achievement and risky sexual behavior. Specifically, within the context of low academic achievement, individuals with low academic self-concept will report participating in more risky sexual behaviors. Conversely, high academic self-concept will buffer the effects of low academic achievement on risky sexual behavior.

Method

Participants

The sample for the current study was taken from the Michigan Study for Adolescent and Adult Life Transitions (MSALT). This longitudinal study began in 1983 with a group of fifth and sixth graders from ten different school districts in Southeastern Michigan. The current study was comprised of individuals that participated in both waves

six and seven of MSALT. In the spring of 1990, the sixth wave of data was collected for 2,381 adolescents ages 17-18 still remaining in the school districts. The total sample at Wave 7 is composed of 2452 individuals. However, the current study includes only the females from these two samples. The final sample size for the current study was 744 participants.

Wave 7 data were collected in 1992 and 1993, when the sample was two years out of high school. The sample ranged from 18-22 years old with an average age of 20 ($SD = 0.55$ years). The majority of the female respondents (91%) were European American. Approximately, 4% were African American, 1% were Asian, and 3% of individuals were identified as either multiracial, Native American, or Latino. The school districts sampled were located in predominately working and middle class areas. The average annual household income was reported to be approximately \$40,000. Reported annual household incomes ranged from less than \$10,000 to over \$80,000.

At Wave 7, participants' level of educational attainment varied. Approximately 44% had completed two years of college, 19.7% had completed one year of college, and 16% had completed their senior year of high school. The marital status of the participants varied at this stage as well. The majority of participants (75%) were single. Of the rest of the sample, 8% were married, 8% were engaged, and 6% lived with a partner.

Measures

Academic Achievement was measured by youth self-reports of academic grade point average. Grades in Math, English, and Science were collected for Wave 6. Students' overall GPA was measured on a 500 scale, with an A being designated as a 400

in a regular class and as a 500 in an honors or advanced placement class. This measure was created by taking the mean of 11th and 12th grade cumulative GPA.

Academic Self-concept was assessed in two ways: *academic ability self-concept* and *academic dissatisfaction*. Dr. Jacquelynne Eccles created these measures (Eccles & Midgley, 1990).

Academic Ability Self-Concept. This scale was comprised of students' beliefs about their general ability in mathematics, English, and science comparative to their peers. The scale included eleven items that were then averaged to create a total score. A sample item includes, "*How good at math are you*". Respondents were asked to rate their answers on a scale of 1 to 7, 1 being "*not good at all*" 7 being "*very good*". Another sample item from this measure is, "*If you were to rank all the students in your English class from the worst to the best in English, where would you put yourself*". Again, participants were asked to rate their responses on a scale of 1 to 7, 1 being "*the worst at English*" to 7 being "*the best at English*". This scale was collected during Wave 6, and had an alpha of 0.80.

Academic Dissatisfaction. This scale consisted of four items. Respondents were asked to rate their answers on a scale of 1 to 7, to the degree with which they agree with the statement "*I wish I was better at*" for all four main academic subjects (math, physical science, biology, & English). The responses were then averaged to create a total score. This scale was collected during Wave 6, had an alpha for 0.72.

Risky Sexual Behavior. Risky behavior was measured through three different scales: sexual attitudes and behaviors, and type of protection used, and frequency of unprotected sex. This data was collected in 1992 and 1993. The sexuality and behavior

measure was developed by Dr. Bonnie Barber in conjunction with Dr. Jacquelynne Eccles, and include questions about attitudes towards sex and frequency of activity.

Sexual Protection. Respondents were asked check what type of protection they used (if any) from a list of options such as “1= condom”, “2= birth control pills”, or “3= withdrawal”. There were a total of twelve types of methods listed. The responses were summed in order to create the sexual protection scale.

Unprotected Sex. Unprotected sex frequency was assessed by a single item, which asked how often in the past six months participants engaged in unprotected sex. Responses ranged on a scale of 1 to 7, 1 being “never” and 7 being “21 or more times”.

Sexual Behaviors and Attitudes. This measure was comprised of four items. An example item is, “How often does it happen because you want it to happen”. Participants were asked to rate their responses on a 6-point scale were 1 ‘never’ and 6 ‘always’. The scores of respondents were averaged to create this measure. The alpha of this measure is 0.61.

Procedure

The Michigan Study for Adolescent and Adult Life Transitions initially began in 1983 in 10 public schools in southeast Michigan. Youth and their parents were recruited while in sixth grade to participate in a study that examined the factors that contribute to adolescent transitions while in middle school. The participants were recruited through their elementary schools, and participation was optional. The study included approximately 3,248 adolescents (47% female). Participants were followed over time, with researchers collecting data while in high school and college.

Wave 7 and Wave 6 data were collected in 1990, and 1992-1993 respectively. During Wave 6 data collection, participants completed a 57-page questionnaire in their high school auditorium or cafeteria. Adolescents who were absent on the day the survey was administered were sent the questionnaire with postage paid envelopes. For Wave 7, participants were mailed a questionnaire to be completed and returned by mail. Upon completion of the survey, participants were sent \$20 as compensation.

For the current study, the sample will be exclusively the female population during Wave 6 (12th grade) and Wave 7 (college-aged) in which participants were approximately 20-21 years of age. In Wave 7, the students who did not attend college were given a separate interview. Both those students in college and those who were not were included in the sample. Majority of the sample is European American. The data from this study are de-identified.

Results

Data Analysis

Preliminary analyses were conducted through descriptives and correlations to provide further understanding of the data. To investigate the relation between academic achievement, academic self-concept and risky sexual behavior over time, hierarchical regressions were conducted as suggested by Cohen and colleagues (2005). First participants' age and socioeconomic status were identified as covariates in the regression models. Second, within this model, academic achievement and academic self-concept were identified as independent variables while risky sexual behaviors were the designated dependent variable.

In order to examine how academic self-concept buffers the association between academic achievement and risky sexual behavior, we standardized academic self-concept as suggested by Frazier, Tix & Barron (2004). We then created an interaction term between academic self-concept and achievement. The interaction term was included in the third step of the regression model. Three different regression analyses were done to investigate the links between achievement and self-concept on the three measures of risky sexual behavior (i.e., sexual protection, sexual behaviors and attitudes, and unprotected sex).

Preliminary Analyses

Preliminary analyses were conducted on the study variables (Table 1). It was found that individuals reported a range of scores for academic dissatisfaction. On average, participants reported a score of 4.79 ($SD = 1.36$) of academic dissatisfaction. Meaning that, most students mildly agree they wish to do better in their main academic subjects. Additionally, the participants varied in academic ability self-concept, with a mean rating of 4.15, which represents an average rating of academic ability ($SD = 0.98$). Reported sexual behaviors and attitudes were lower on average, suggesting a lower sexual desire and lower reported sexual activity ($M = 3.26$, $SD = 0.87$). Sexual protection showed less range, with a mean of 1.37, reflecting that most participants used a condom (1) or birth control pills (2) the last time they had sexual intercourse ($SD = 0.68$). Participants reported, an average, engaging in unprotected sex between once and three times over the last six months ($M = 2.55$, $SD = 2.18$).

Correlations between some study variables showed significant relationships (Table 2). Higher academic ability self-concept was positively related to academic

dissatisfaction ($r = 0.15, p < .01$). Individuals who reported higher academic ability self-concept also reported that they wish they could perform better in school. Academic dissatisfaction was also negatively correlated with frequency of unprotected sex ($r = -0.17, p < .01$). Lower the desire to improve academically was associated with higher reports of unprotected sex. Academic achievement was positively correlated with academic self-concept ($r = 0.31, p < .01$). Academic achievement was negatively related to sexual behaviors and attitudes ($r = -0.13, p < .01$). Individuals with lower grade point averages, reported lower levels of sexual desire and frequency. Unprotected sex and academic self-concept were negatively correlated ($r = -0.11, p < .01$). Participants that reported higher frequencies of unprotected sex over the past six months also reported lower ability self-concept.

Hierarchical Regressions

Hierarchical regressions were conducted to investigate the study hypotheses. Six different regression models were analyzed. The first set analyzed the links between academic achievement, academic ability self-concept and risky sexual behaviors (Table 3). Surprisingly, results showed that academic achievement and academic ability self-concept were not, in fact, significantly linked with reports of sexual protection. A negative relationship was found between academic achievement and sexual behaviors and attitudes ($b = -0.00, p < .01$). This demonstrates that females with low academic achievement also reported higher levels of sexual behaviors and attitudes. A negative association was also found between academic ability self-concept and sexual behaviors and attitudes ($b = -0.12, p < .01$). Females with low academic self-concept reported higher levels of sexual behaviors and attitudes. Similarly, academic achievement was

found to be negatively associated with reported levels of unprotected sex in the past six months ($b = -0.01$; $p < .01$). Females with low academic achievement reported a higher frequency of unprotected sex over the past six months.

The second set of hierarchical regressions investigated the relation between academic achievement, academic dissatisfaction and risky sexual behaviors (Table 4). Surprisingly, academic achievement and academic dissatisfaction were not significantly linked with reports of sexual protection. It was found that academic achievement was negatively related to reports of unprotected sex ($b = -0.01$, $p < .01$). Females with low academic achievement reported higher frequency of unprotected sex over the past six months. Additionally, a negative relationship was also found between academic achievement and sexual behaviors and attitudes ($b = -0.00$; $p < .01$). Females with lower academic achievement reported higher measure of sexual behaviors and attitudes.

Interestingly, a significant interaction was found between academic achievement, academic dissatisfaction, and sexual behaviors and attitudes ($b = -0.00$; $p < 0.01$). When students' academic achievement was low, those individuals with lower reports of academic dissatisfaction reported higher levels of sexual behaviors and attitudes (Figure 1). In other words, low achieving students with a lower desire to improve academically reported higher levels of sexual behaviors and attitudes.

Discussion

Results from this study demonstrate some important associations between academic performance and self-concept in high school, and specific measures of risky sexual behavior in college for females. As hypothesized, academic self-concept and academic achievement in high school (Time 1) were both were negatively associated with

certain risky sexual behavior outcomes at Time 2. In particular, academic achievement and academic self-concept were linked with reports of engaging in unprotected sexual intercourse. Similarly, academic achievement and academic self-concept were also associated with risky sexual behaviors and attitudes. Surprisingly, no association was found between academic achievement, academic self-concept and sexual protection.

Academic Achievement, Academic Self-Concept & Unprotected Sex

Results from this study show that academic achievement during high school was significantly associated with unprotected sex over time. Additionally, academic self-concept was also related to unprotected sex over time. Individuals with lower grade point averages in high school, reported engaging in more unprotected sexual intercourse two years after high school. These findings were consistent with studies that demonstrate the relationship between academic achievement and risk taking behavior (Creed et al., 2002; Honken & Ralston, 2013; Richardson et al., 2005). These findings also fit well within the Eccles expectancy-value model of achievement motivation (Eccles et al., 1998).

Students' with low confidence in their ability to do well may place a lower value on achievement. If students' do not value school performance, they may seek other forms of self-enhancement. This may explain why students with lower academic achievement and self-concept reported higher frequencies of unprotected sex. An alternative explanation may be that adolescents who express high expectations for their future will perceive greater risks associated with engaging in unprotected sex, and will therefore avoid risk taking (Sitkin & Weingart, 1995). These results underscore that academic achievement and self-concept are related to frequency of unprotected sex, and ways to promote academic achievement should be examined.

Linking Academic Achievement, Self- Concept & Sexual Behaviors and Attitudes

Academic achievement and academic self-concept were also found to be significantly associated with sexual behaviors and attitudes over time. Specifically, lower grade point average was found to be associated with higher reports of sexual behaviors and attitudes. These findings also provide support for the research hypotheses proposed in this study. Furthermore, these findings can be explained using the Eccles expectancy-value framework (Eccles et al., 1998). Specifically, women that do not view themselves as strong students may seek other ways to promote their self-concept. In other words, if young women are not doing well in school, a salient part of their identity, they may seek to enhance their self-concept through engaging in sexual behavior. This is consistent with findings that women are more likely to use sex to minimize threats to self-esteem (Cooper et al., 1998). These findings highlight the association between academic achievement, academic self-concept, and sexual behaviors and attitudes. They also highlight the importance of promoting positive academic self-concept.

Academic Achievement, Self-Concept & Sexual Protection

Unlike frequency of unprotected sex and sexual behaviors and attitudes, this study showed that sexual protection was not associated with academic achievement or self-concept. This could be due to the nature of the measure. Unlike high frequency of unprotected sex, a high score on sexual protection may not be directly related to risky sexual behavior. Additionally, we do not know what particular situation the respondent may be referencing when answering these items. If an individual is not having sexual intercourse frequently, they may be only responding to one or two instances. Similarly, someone who is more sexually active could be answering the items in reference to

multiple instances of sexual intercourse. It could be that women in this study may use a variety of different birth control or sexual protection methods at different instances. This could explain the lack of significant relationship between sexual protection and academic achievement and self-concept.

The Moderating Role of Academic Self-Concept

As hypothesized, academic self-concept moderated the relationship between academic achievement and risky sexual behavior (Table 5). In particular, there was a significant interaction between academic achievement, academic dissatisfaction, and sexual behaviors and attitudes. Those with low academic achievement and lower academic dissatisfaction reported higher rates of sexual behaviors and attitudes. In other words, students who did were satisfied with their performance in academic subjects but had lower academic achievement, reported greater levels of risky sexual attitudes. This may be because those students that were academically disengaged were more likely to participate in risky sexual behavior to promote self-concept. It also may be that a high academic dissatisfaction may lead to increased efforts and engagement in school, to improve performance and quell dissatisfaction. Adolescents that did not value performing better in school were more likely to engage in risky sexual behavior. This may also relate to the gender of the sample, as adolescent girls who do not value performing well in school are at a greater risk for early sexual debut and other risky sexual behaviors (Schaneveldt et al., 2002). This interaction highlights the ways academic self-concept can buffer the association between academic achievement and risky behavior.

Limitations and Future Directions

A major strength of the current study is the nature of the data set. It is a large sample, and was collected longitudinally. This lends to the validity of the results as well as demonstrates a relationship over time. Although this data was collected in 1990 and 1992, the results and findings still hold true for today's youth. This study, however, is conducted on secondary data, which limits the range of variables assessed by the survey, and the extent to which the scales were valid to research questions. For instance, information about sexuality is limited to the questions in this survey. Variables, such as frequency of unprotected sex, are often used to measure risky sexual behavior. Some sexuality measures, however, may not necessarily reflect risk behavior, when participants are in a committed and monogamous relationship. A more extensive set of questions could address this.

It is also worth considering that the data are self-reported for academic self-concept and the risky sexual behavior outcomes. This could compromise the accuracy of information regarding academic self-concept and sexuality. When interpreting academic self-concept, is it worthwhile to consider the importance of academic achievement placed by parents and teachers. To extend these findings, one could survey teachers' and parents' value of academic achievement, and if these perceptions mediate the interaction between academic-achievement and risky sexual behavior. Future studies could include specific questions regarding sexual motivations, which could further explain associations

In addition, the results may not apply to historically under-represented groups. The sample also contains a lower proportion of ethnic minorities, with the majority (91%) of respondents being white. For this reason, it is unclear if these results reflect the

experiences of ethnic minorities. It is also important to note the sample's SES. Given that the sample was predominately middle class, it may not apply to lower income areas. For instance, leaving home during young adulthood is a major transition, and low SES adolescents are less likely to do so. It is also limited in the extent to which these findings apply to more urban and or costal areas. Subsequent studies in the field would benefit from the inclusion of a more representative sample, recruited from different regions and school districts. Future studies could also consider male participants, to better understand the role of gender in risky sexual behavior.

Implications

The present study provides evidence of a salient relationship between academic self-concept and risky sexual behavior in college-aged females. Educational attainment and success is widely recognized as a protective factor for adolescents' physical and mental health (Egerter, Braveman, Sadegh-Nobari, Grossman-Kahn & Dekker, 2009). Academic self-concept could serve as an available point of intervention to promote school success and prevent risky sexual behavior. Implications of this study are particularly relevant within the context of school interventions that aim to promote academic achievement. Teaching instruction and school policy that promotes developing a positive academic self-concept could likely provide benefit to all students. Self-concept can influence both academic and life decisions. Schoon (2001) demonstrated that educational attainment in adulthood is predicted by academic aspirations in adolescence. Promoting healthy academic self-concept could also potentially serve as a protective factor against risks associated with unprotected sex in college.

It is important to consider the gender of the sample. Women have been shown to be more likely to use sex to minimize threats to self-esteem (Cooper et al., 1998). This may partially explain the results of this analysis. If young women are not doing well in school, a salient part of their identity, they may seek to enhance their self-concept through engaging in risky sexual behavior. The findings indicate that academic self-concept is an important component of adolescents' self-concept, and is longitudinally related to risky sexual behavior in college. These results were consistent with similar previous studies. Schaneveldt and colleagues (2002) demonstrated the bidirectional relationship between academic-involvement and age at first intercourse (Schaneveldt, Miller, Berry, & Lee 2002). This also is consistent with Honken & Ralston's (2013) findings that college freshman with lower GPAs were more likely to have participated in risky behaviors.

The findings from this study illustrate the importance of academic achievement and self-concept in high school. Promoting academic achievement is viewed as an important goal in and of itself, but also could protect against risky sexual behavior in college. Academic self-concept is based on relative feedback and malleable. For this reason, it could be responsive to interventions achievable within school settings. This study emphasizes the important role enhancing academic self-concept and achievement could have for at-risk adolescents.

References

- Aspy, C. B., Vesely, S. K., Oman, R. F., Tolma, E., Rodine, S., Marshall, L., & Fluhr, J. (2012). School-related assets and youth risk behaviors: alcohol consumption and sexual activity. *Journal of School Health, 82*(1), 3-10. DOI:
- Berg, D. H., & Klinger, D. A. (2009). Gender differences in the relationship between academic self-concept and self-reported depressed mood in school children. *Sex Roles, 61*(7-8), 501-509.
- Biglan, A., Metzler, C. W., Wirt, R., Ary, D., Noell, J., Ochs, L., French, C., & Hood, D. (1990). Social and behavioral factors associated with high-risk sexual behavior among adolescents. *Journal of Behavioral Medicine, 13*(3), 245-261.
- Boden, J. M., & Horwood, L. J. (2006). Self-esteem, risky sexual behavior, and pregnancy in a New Zealand birth cohort. *Archives of Sexual Behavior, 35*(5), 549-560.
- Brown, B. B. (1982). The extent and effects of peer pressure among high school students: A retrospective analysis. *Journal of Youth and Adolescence, 11*, 121-133.
- Centers for Disease Control and Prevention. (2010). Youth risk behavior surveillance—United States, 2007, *MMWR Surveillance Summaries, 59*, 1-142.
- Chamorro-Premuzic, T., & Furnham, A. (2006). Intellectual competence and the intelligent personality: A third way in differential psychology. *Review of General Psychology, 10*(3), 251.
- Cohen, J., Cohen, P., West, S.G. & Aiken, L.S. (2003). *Applied Multiple Regression/Correlational Analysis for the Behavioral Sciences (3rd ed.)*. Hillsdale, NJ: Lawrence Erlbaum Associates.

- Cooper, M. L., Shapiro, C. M., & Powers, A. M. (1998). Motivations for sex and risky sexual behavior among adolescents and young adults: A functional perspective. *Journal of Personality and Social Psychology, 75*(6), 1528.
- Covington, M. (2000). Goal theory, motivation, and school achievement: An integrative review. *Annual Review of Psychology, 51*, 171-200.
- Creed, P. A., Patton, W., & Bartrum, D. (2002). Multidimensional properties of LOT-R: effects of optimism and pessimism on career and well-being related variables in adolescents. *Journal of Career Assessment, 10*, 42-61.
- Dawson, L., Shih, M., de Moor, C., & Shrier, L. (2008). Reasons why adolescents and young adults have sex: Associations with psychological characteristics and sexual behavior. *Journal of Sex Research, 45*, 225 – 232.
- DeLamater, J. (1986). Gender differences in sexual scenarios. *Females, Males, and Sexuality, 127-140*.
- Desiderato, L. L., & Crawford, H. J. (1995). Risky sexual behavior in college students: Relationships between number of sexual partners, disclosure of previous risky behavior, and alcohol use. *Journal of Youth and Adolescence, 24*(1), 55-68.
- Duncan, G.J., Boisjoly, J., Kremer, M., Levy, D.M., & Eccles, J. (2005). Peer effects in drug use and sex among college students. *Journal of Abnormal Child Psychology, 33*(3), 375-385.
- Eccles, J. S., & Midgley, C. (1990). Changes in academic motivation and self-perception during early adolescence. *From Childhood to Adolescence: A Transitional Period, 134-155*.
- Eccles, J., Midgley, C., Buchanan, C., Wigfield, A., Reuman, D., MacIver, D. (1993).

- Development during adolescence: The impact of stage/environment fit on young adolescents' experiences in schools and families. *American Psychologist*, 48(2), 90-101.
- Eccles, J. S., Lord, S.E., & Roeser, R.W. (1996). Round holes, square pegs, rocky roads, and sore feet: The impact of stage/environment fit on young adolescents' experiences in schools and families. In S. L. Toth & D. Cicchetti (Eds.), *Adolescence: Opportunities and Challenges* (vol. 7 pp. 49-93). New York: University of Rochester Press.
- Eccles, J.S., Lord, S.E., Roeser, R.W., Barber, B.L., & Hernandez Jozefowicz, D.M. (1997). The association of school transitions in early adolescence with developmental trajectories through high school. In J. Schulenberg, J.I. Maggs & K. Hurrelmann (Eds.), *Health Risks and Developmental Transitions During Adolescence* (pp. 283-321). New York: Cambridge University Press.
- Eccles, J. S., Wigfield, A., & Schiefele, U. (1998). Motivation to succeed. In N. Eisenberg (Ed.), *Handbook of Child Psychology* (Vol. 3, 5th ed.). New York: Wiley.
- Edgar, T., & Fitzpatrick, M. A. (1993). Expectations for sexual interaction: A cognitive test of the sequencing of sexual communication behaviors. *Health Communication*, 5(4), 239-261.
- Egerter, S., Braveman, P, Sadegh-Nobari, T, Grossman-Kahn, R. & Dekker, M. (2009). *Education matter for health* (Issue brief 6).
- El-Anzi, F. O. (2005). Academic achievement and its relationship with anxiety, self-esteem, optimism, and pessimism in Kuwaiti students. *Social Behavior &*

- Personality: An International Journal*, 33(1).
- Flook, L., Repetti, R. L., & Ullman, J. B. (2005). Classroom social experiences as predictors of academic performance. *Developmental Psychology*, 41(2), 319.
- Frazier, P. A., Tix, A. P., Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, 51, 115-134.
- Gest, S. D., Domitrovich, C. E., & Welsh, J. A. (2005). Peer academic reputation in elementary school: Associations with changes in self-concept and academic skills. *Journal of Educational Psychology*, 97, 337-346.
- Gniewosz B., Eccles J., Noack P. (2012). Secondary school transition and the use of different sources of information for the construction of the academic self-concept. *Social Development*, 12, 537-557.
- Hay, I., Ashman, A. F., van Kraayenoord, C. E., & Stewart, A. L. (1999). Identification of self-verification in the formation of children's academic self-concept. *Journal of Educational Psychology*, 91(2), 225.
- Harris, K. M., Duncan, G. J., & Boisjoly, J. (2002). Evaluating the role of “nothing to lose” attitudes on risky behavior in adolescence. *Social forces*, 80(3), 1005-1039.
- Heine, S. J., & Lehman, D. R. (1997). Culture, dissonance, and self-affirmation. *Personality and Social Psychology Bulletin*, 23, 389-400.
- Hoffman, R., Hattie, J. A., & Borders, L. D. (2005). Personal definitions of masculinity and femininity as an aspect of gender self-concept. *The Journal of Humanistic Counseling, Education and Development*, 44(1), 66-83.
- Honken, N. B., & Ralston, P. A. (2013). High-achieving high school students and not

- so high-achieving college students a look at lack of self-control, academic ability, and performance in college. *Journal of Advanced Academics*, 24(2), 108-124.
- Huang, C. (2011). Self-concept and academic achievement: A meta-analysis of longitudinal relations. *Journal of School Psychology*, 49(5), 505-528.
- Ju S., Zhang D., Katsiyannis A. (2012) The causal relationship between academic self-concept and academic achievement for students with disabilities: an analysis of SEELS data. *Journal of Disability Policy Studies*, 24(1), 4-14
- Juvonen, J. (2006). Sense of belonging, social bonds, and school functioning. In P.A. Alexander & P. Winne (Eds.), *Handbook of Educational Psychology* (655–674). Mahwah, NJ: LEA.
- Kirby, D. (2001). Emerging answers: Research findings on programs to reduce teen pregnancy. *National Campaign To Prevent Teen Pregnancy*, 1776 Massachusetts Avenue, NW, # 200, Washington, DC 20036.
- Lohman, B. J., & Billings, A. (2008). Protective and risk factors associated with adolescent boys' early sexual debut and risky sexual behaviors. *Journal of Youth and Adolescence*, 37(6), 723-735.
- Lou, J. H., Chen, S. H., Li, R. H., & Yu, H. Y. (2011). Relationships among sexual self-concept, sexual risk cognition and sexual communication in adolescents: A structural equation model. *Journal of Clinical Nursing*, 20(11-12), 1696-1704.
- Ludtke, O., Koller, O., Artelt, C., Stanat, P., & Baumert, J. (2002). Testing models on the genesis of academic self-concepts: Findings of the PISA study. *Zeitschrift Fur Padagogische Psychologie*, 16(3-4), 151-164.

- Major, B., Spencer, S., Schmader, T., Wolfe, C., & Crocker, J. (1998). Coping with negative stereotypes about intellectual performance: The role of psychological disengagement. *Personality and Social Psychology Bulletin*, 24, 34–50.
- Marsh, H.W. & Craven, R.G. (2006). Reciprocal effects of self-concept and performance from a multidimensional perspective: Beyond seductive pleasure and unidimensional perspectives. *Perspectives on Psychological Science*, 133-163.
- Marsh, H. W., & Martin, A. J. (2011). Academic self-concept and academic achievement: Relations and causal ordering. *British Journal of Educational Psychology*, 81, 59–77.
- Murry V.M., Brody G.H., McNair L.D., Luo Z., Gibbons F.X., Gerrard M. & Wills T.A. (2005) Parental involvement promotes rural African American youths self-pride and sexual self-concepts. *Journal of Marriage and Family* 67, 627–642.
- Owen, J. J., Rhoades, G. K., Stanley, S. M., & Fincham, F. D. (2010). “Hooking up” among college students: demographic and psychosocial correlates. *Archives of Sexual Behavior*, 39(3), 653-663.
- Paul, E. L., McManus, B., & Hayes, A. (2000). “Hookups”: Characteristics and correlates of college students' spontaneous and anonymous sexual experiences. *Journal of Sex Research*, 37(1), 76-88.
- Richardson, A. S., Bergen, H. A., Martin, G., Roeger, L., & Allison, S. (2005). Perceived academic performance as an indicator of risk of attempted suicide in young adolescents. *Archives of Suicide Research*, 9(2), 163-176.
- Robinson, M. L., Holmbeck, G. N., & Paikoff, R. L. (2007). Self-esteem enhancing

- reasons for having sex and the sexual behaviors of African American adolescents. *Journal of Youth and Adolescence*, 36, 453-464.
- Rostosky, S. S., Dekhtyar, O., Cupp, P. K., & Anderman, E. M. (2008). Sexual self-concept and sexual self-efficacy in adolescents: A possible clue to promoting sexual health?. *Journal of sex research*, 45(3), 277-286.
- Schoon, I. (2001). Teenage job aspirations and career attainment in adulthood: A seventeen year follow-up study of teenagers who aspired to become scientists, health professionals, or engineers. *International Journal of Behavioral Development*, 25, 124-132.
- Schvaneveldt, P. L., Miller, B. C., Berry, H.E., & Lee, T. R., (2001). Adolescence academic goals, achievement, and age at first sexual intercourse: Longitudinal, bidirectional influences. *Adolescence*, 36(144), 767-787.
- Simpkins, S. D., Fredricks, J. A., & Eccles, J. S. (2012). Charting the Eccles' expectancy-value model from mothers' beliefs in childhood to youths' activities in adolescence. *Developmental Psychology*, 48(4), 1019.
- Sitkin, S. B., & Weingart, L. R. (1995). Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. *Academy of management Journal*, 38(6), 1573-1592.
- Swann, W. B., Jr. (1987). Identity negotiation: Where two roads meet. *Journal of Personality and Social Psychology*, 53, 1038-1051.
- Tolman, D. L., & McClelland, S. I. (2011). Normative sexuality development in adolescence: A decade in review, 2000–2009. *Journal of Research on Adolescence*, 21(1), 242-255.

- Tormala, Z. L., Petty, R. E., & Briñol, P. (2002). Ease of retrieval effects in persuasion: A self-validation analysis. *Personality and Social Psychology Bulletin*, 28, 1700–1712.
- Trost, K. K., Herbst, J. H., Masters III, H. L., & Costa Jr, P. T. (2002). Personality pathways to unsafe sex: Personality, condom use, and HIV risk behaviors. *Journal of Research in Personality*, 36(2), 117-133.
- Valentine, J. C., DuBois, D. L., & Cooper, H. (2004). The relations between self-beliefs and academic achievement: A systematic review. *Educational Psychologist*, 39, 111-133.
- Verboom, C. E., Sijtsema, J. J., Verhulst, F. C., Penninx, B. W., & Ormel, J. (2014). Longitudinal associations between depressive problems, academic performance, and social functioning in adolescent boys and girls. *Developmental Psychology*, 50(1), 247.
- Ward, A., Stoker, H. W., & Murray-Ward, M. (Eds.). (1996). *Educational Measurement: Theories and applications* (Vol. 2). University Press of America.
- Wigfield, A., Eccles, J. S., Schiefele, U., Roeser, R. W., Davis-Kean, P. (2006). The development of achievement motivation. In N. Eisenberg (Ed.), *Handbook of Child Psychology* 3(6). New York: Wiley.
- Wouters, S., Germeijs, V., Colpin, H., & Verschueren, K. (2011). Academic self-concept in high school: Predictors and effects on adjustment in higher education. *Scandinavian Journal of Psychology*, 52(6), 586-594.
- Zietsch, B. P., Verweij, K. J. H., Bailey, J. M., Wright, M. J., & Martin, N. G. (2010). Genetic and environmental influences on risky sexual behaviour and its

relationship with personality. *Behavior Genetics*, 40(1), 12-21.

Table 1.

Means & Standard Deviations of Study Variables

Variable	Mean	SD	Range	Alpha
Grade Level (W6)	11.98	0.43	11.00- 14.00	----
Family's Annual Income	3.89	1.35	1.00-6.00	----
Academic Dissatisfaction (W6)	4.79	1.36	1.00-7.00	0.72
Academic Ability Self-Concept (W6)	4.15	0.98	1.00-6.83	0.80
Academic Achievement (GPA; W6)	263.05	71.06	22.00- 431.00	----
Sexual Behavior and Attitudes (W7)	3.26	.86	1.00-7.00	0.61
Sexual Protection (W7)	1.37	0.68	1.00-9.00	----
Unprotected Sex (W7)	2.55	2.18	1.00-7.00	----

Table 2.

Correlations of Study Variables

	1	2	3	4	5	6	7
1. Grade Level (W6)	-----						
2. Family's Annual Income	-0.09*	-----					
3. Academic Dissatisfaction (W6)	-0.00	0.04	-----				
4. Academic Self-Concept (W6)	-0.07	0.06	0.15**	----			
5. Academic Achievement (W6)	0.03	0.07	0.04	0.31**	----		
6. Sexual Behavior & Attitudes (W7)	-0.01	0.03	-0.03	0.02	-0.13**	----	
7. Sexual Protection (W7)	.060	-0.08	0.07	-0.02	-0.03	-0.09*	---
8. Unprotected Sex (W7)	-0.00	-0.03	-0.06	-0.11**	-0.17**	0.18**	-0.07

**= $p < .01$; * = $p < .05$; † = $p < .10$

Table 3.

Hierarchical Regressions of Risky Sexual Behavior, Achievement & Self-Concept

	<i>B (SE B)</i>	β	R^2	ΔR^2
Sexual Behaviors and Attitudes (W7)				
Step 1: Grade Level	-0.09 (0.18)	-0.03	0.01	
Income	0.04 (0.03)	0.06		
Step 2: Grade Level	-0.07 (0.17)	-0.02		
Income	0.04 (0.03)	0.07	0.04	0.03**
Academic Achievement	-0.00 (0.00)**	-0.17		
Academic Self-Concept	0.12 (0.05)**	0.15		
Step 3: Grade Level	-0.07 (0.18)	-0.02		
Income	0.04 (0.03)	0.07	0.04	0.00
Academic Achievement	-0.00 (0.00)**	-0.17		
Academic Self-Concept	0.10 (0.19)	0.12		
Achievement X Self-Concept	0.00 (0.00)	0.03		
Sexual Protection (W7)				
Step 1: Grade Level	-0.25 (0.16)	-0.09	0.01	
Income	-0.05 (0.03)	-0.07		
Step 2: Grade Level	-0.25 (0.16)	-0.09	0.01	0.00
Income	-0.04 (0.03)	-0.06		
Academic Achievement	0.00 (0.00)	-0.00		
Academic Self-Concept	-0.01 (0.04)	-0.01		
Step 3: Grade Level	-0.25 (0.16)	-0.09	0.14	0.00
Income	-0.04 (0.32)	-0.06		
Academic Achievement	0.00 (0.00)	0.01		
Academic Self-Concept	0.12 (0.17)	0.17		
Achievement X Self-Concept	0.00 (0.00)	-0.18		
Unprotected Sex (W7)				
Step 1: Grade Level	0.01 (0.41)	0.00	0.00	
Income	0.02 (0.08)	0.02		
Step 2: Grade Level	0.01 (0.40)	0.00	0.04	0.04**
Income	0.04 (0.08)	0.03		
Academic Achievement	-0.01 (0.00)**	-0.18		
Academic Self-Concept	-0.06 (0.11)	-0.03		
Step 3: Grade Level	0.01 (0.40)	0.00	0.04	0.35
Income	0.04 (0.08)	0.03		
Academic Achievement	-0.01 (0.00)**	-0.18		
Academic Self-Concept	-0.43 (0.41)	-0.21		
Achievement X Self-Concept	0.00 (0.00)	0.19		

**= $p < .01$; * = $p < .05$; † = $p < .10$

Table 4.

Hierarchical Regressions of Risky Sexual Behavior, Achievement & Dissatisfaction

	<i>B (SE B)</i>	β	R^2	ΔR^2
Sexual Protection				
Step 1: Grade Level	-0.08 (0.08)	-0.06	0.01	
Income	-0.01 (0.02)	-0.04		
Step 2: Grade Level	-0.09 (0.08)	-0.06	0.01	0.00
Income	-0.01 (0.02)	-0.04		
Academic Achievement	0.00 (0.00)	0.03		
Academic Dissatisfaction	0.01 (0.02)	0.03		
Step 3: Grade Level	-0.09 (0.08)	-0.06	0.01	0.00
Income	-0.01 (0.02)	-0.04		
Academic Achievement	0.00 (0.00)	0.06		
Academic Dissatisfaction	0.01 (0.02)	0.04		
Achievement X Dissatisfaction	0.00 (0.00)	-0.07		
Unprotected Sex				
Step 1: Grade Level	0.01 (0.41)	0.00	0.00	
Income	0.02 (0.08)	0.02		
Step 2: Grade Level	0.02 (0.40)	0.00	0.04	0.04**
Income	0.05 (0.08)	0.03		
Academic Achievement	-0.01 (0.00)**	-0.19		
Academic Dissatisfaction	-0.10 (0.10)	-0.05		
Step 3: Grade Level	0.01 (0.40)	0.00	0.04*	0.00
Income	0.05 (0.08)	0.03		
Academic Achievement	-0.01 (0.00)**	-0.18		
Academic Dissatisfaction	-0.10 (0.10)	-0.05		
Achievement X Dissatisfaction	0.00 (0.00)	-0.01		
Sexual Behaviors and Attitudes				
Step 1: Grade Level	-0.09 (0.18)	-0.03	0.01	
Income	0.04 (0.03)	0.06		
Step 2: Grade Level	-0.07 (0.18)	-0.02	0.02	0.02*
Income	0.05 (0.03)	0.08		
Academic Achievement	-0.00 (0.00)*	-0.12		
Academic Dissatisfaction	-0.06 (0.05)	-0.07		
Step 3: Grade Level	-0.06 (0.17)	-0.02	0.05	0.02*
Income	0.05 (0.03)	0.08		
Academic Achievement	-0.00 (0.00)**	-0.18		
Academic Dissatisfaction	-0.08 (0.05)†	-0.09		
Achievement X Dissatisfaction	0.00 (0.00)**	0.16		

**= $p < .01$; *= $p < .05$; †= $p < .10$

Figure 1.
Sexual Behaviors & Attitudes. Moderation: Academic Dissatisfaction

