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**DOES FIRST SEXUAL INTERCOURSE LEAD TO MORE POSITIVE BODY
IMAGE?: ASSOCIATIONS BETWEEN BODY IMAGE AND SEXUAL
BEHAVIOR ACROSS THE COLLEGE YEARS**

A Thesis in
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by
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ABSTRACT

Although research has described a link between body image and sexual behavior, studies of this association have used cross-sectional data, which makes it impossible to determine whether being more satisfied with appearance leads individuals to engage in sexual behavior, or whether individuals experience an increase in satisfaction with appearance after engaging in intercourse or other sexual behaviors. This study uses longitudinal data to examine the directionality of this association. **METHOD:** Our sample included college students who had not engaged in sexual intercourse prior to the start of the study ($N=180$). The sample was 49% female, 29% African American and 27% Latino American, and had a mean age of 18.4 years old at T1. At four time points students reported whether they had engaged in sexual intercourse and rated themselves on appearance orientation and appearance evaluation. **RESULTS:** Participants who were more satisfied with their appearance were more likely to transition to first intercourse during college, but appearance orientation did not predict engaging in first sexual intercourse. This association existed for both men and women, but not for African Americans. We also found limited evidence for an increase in appearance orientation after first intercourse, particularly for male and European American students. **DISCUSSION:** This study suggests that satisfaction with appearance does play a role in whether or not emerging adults engage in sexual intercourse. Future studies should follow students from early adolescence to determine if these associations are similar in those who engage in first intercourse at an earlier age.

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Does First Sexual Intercourse Lead to More Positive Body Image?: Associations
Between Body Image and Sexual Behavior Across the College Years

Introduction

Sexual behavior in adolescence and young adulthood is developmentally normative: more than half of adolescents have engaged in sexual intercourse by age 19 (Alan Guttmacher Institute, 2006), and more than 90% have done so by their mid-twenties (Jessor, Costa, Jessor, & Donovan, 1983). Despite the ubiquity of sexual intercourse during these developmental periods, most research on initiation of sexual intercourse has operated from a risk-focused framework. Researchers have called for studies that employ a normative or healthy perspective on sexual behavior which includes not only “safe sex” practices, but individuals’ desire, feelings about the event, and a broader range of sexual behaviors than vaginal intercourse (Brooks-Gunn & Paikoff, 1993; Fine, 1988; Lefkowitz & Gillen, 2006; Welsh, Rotosky and Kawaguchi, 2000). Brooks-Gunn & Paikoff (1993) have included positive feelings about the body as one of the four developmental challenges in achieving sexual well-being in adolescence. Developing a healthy view of the body includes acceptance of the new adult body, satisfaction with body shape and size, and positive beliefs about physical attractiveness and sexual desirability.

A number of studies (Ackard, Kearney-Cooke, & Peterson, 2000; Faith & Schare, 1993; Gillen, Lefkowitz, & Shearer, 2006; Impett, Schooler, & Tolman, 2006; Lammers, Ireland, Resnick, & Blum, 2000; Trapnell, Meston, & Gorzalka, 1997; Wiederman, 2000; Wiederman & Hurst, 1998) have found that individuals who feel more positive about their bodies are more likely to have ever engaged in sexual behaviors or to have sex more

often. Researchers have linked being more satisfied with one's body or appearance to receiving oral sex (Weiderman & Hurst, 1998), engaging in intercourse (Faith & Schare, 1993; Gillen et al., 2006; Lammers et al., 2000) and having more sexual experience across a range of behaviors (Faith & Schare, 1993; Trapnell et al., 1997). Studies have also shown that objectifying their bodies (Impett et al., 2006) and feeling more self-conscious about their bodies (Schooler, Ward, Merriwether, & Caruthers, 2005; Weiderman, 2000) are linked to less sexual experience in female adolescents and college students. Research with our sample has also found that those who are more oriented toward or concerned with their appearance are more likely to have engaged in intercourse (Gillen et al., 2006), although this association has not been found in all samples (Weiderman & Hurst, 1998).

One explanation for the association between body image and sexual behavior is that individuals who feel dissatisfied with their body are more likely to be self-conscious during sexual activity, which can diminish their enjoyment of or interest in sex. Masters and Johnson (1970) theorized that spectating, or engaging in a constant negative focus on the appearance or sexual functioning of one's body, hinders sexual enjoyment by keeping individuals from focusing on their own enjoyment. Drawing from feminist theory, Fredrickson and Roberts (1997) provided a similar explanation for women's lack of enjoyment of sexual behavior. Women are often presented not as a whole person, but as a collection of body parts for the use or consumption of others. They may come to internalize this objectifying male gaze, and subsequently view themselves as objects to be evaluated by men. This internalization, or self-objectification, can lead to dissatisfaction with physical appearance and engagement in surveillance, or habitual body monitoring. Thus, women who feel more dissatisfied or self-conscious about their appearance may

feel less interested in or satisfied with sex, and may refrain from sexual behavior.

Research has supported the idea that body monitoring leads to sexual dissatisfaction, finding that individuals who are distracted by concerns about their body or appearance are less satisfied with their sexual activities (Dove & Wiederman, 2000; Elliot & Donohue, 1997; Meana & Nunnink, 2006; Sanchez & Kiefer, 2007).

Most research and theory regarding body image and sexual behavior has suggested that dissatisfaction with appearance can lead to a lack of interest in sex, which could result in a decreased likelihood of engaging in intercourse or other sexual behaviors. Most studies have used a cross-sectional design with data from only one time point, but have implied a direction for the association. This research has suggested that women who are less satisfied with their bodies tend to avoid sexual behaviors where a partner can see and evaluate their body. It is also possible that the association goes in the other direction; that is, engaging in sexual behavior may lead an individual to feel better about his or her body. Individuals who are part of a culture which links attractiveness, self-worth and sexuality may feel that a partner has accepted their appearance and finds them desirable, and subsequently feel a sense of validation after engaging in first intercourse. Although it is difficult to directly test causality, using longitudinal data could help address the directionality of the association. One way to test these hypotheses is by focusing on body image before and after first intercourse, to see both whether body image predicts first intercourse and whether individuals' attitudes toward their body change after engaging in intercourse.

Transition to First Sexual Intercourse

Both popular media (movies like *Clueless* and *American Pie* and TV shows like *Dawson's Creek*) and research (Darling, Davidson, & Passerello, 1992; Jessor et al., 1983; Koch, 1998) have considered an individual's first experience of sexual intercourse to be an important and memorable transition. Despite this focus, little research has actually addressed the impact of first intercourse on adolescents and young adults. Instead, most empirical studies on this topic have operated from a risk-focused framework, and have looked at predictors of early sexual intercourse in adolescents relative to their peers (often defined as before age 15). Such studies have found that factors such as lower religiosity (Lammers et al., 2000; Manlove, Terry-Humen, Ikramullah, & Moore, 2006; Meier, 2003), lower academic achievement (Halpern, Joyner, Udry, & Suchindran, 2000; Lammers et al., 2000), more positive body image (Lammers et al., 2000), more liberal attitudes toward adolescent sexual behavior (Carvajal et al., 1999; Loewenson, Ireland, & Resnick, 2004) and longer-lasting romantic relationships (Michels, Kropp, Eyre, & Halpern-Felsher, 2005; Siebenbruner, Zimmer-Gembeck & Egeland, 2007) were associated with a greater likelihood of engaging in intercourse at an earlier age. However, not all teens engage in sexual intercourse at an early age; recent estimates have suggested that nearly half of adolescents have not engaged in sexual intercourse by age 19 (Alan Guttmacher Institute, 2006).

Understanding first intercourse in later adolescence and emerging adulthood is important from both a developmental and applied perspective. A life course perspective suggests that transitions, such as first sexual intercourse, can have vastly different outcomes depending on factors such as age, context, and the meaning ascribed to the event (Brooks-Gunn & Paikoff, 1997; Elder, 1998). Thus it is essential to examine first

intercourse at different ages in adolescence and emerging adulthood in order to better understand the differing circumstances surrounding and consequences of this transition. The transition to college provides one such context which can influence sexual behavior. College is often an individual's first experience of living away from home and independent of parents. This newfound privacy and freedom from parental authority can provide the opportunity for new sexual experiences (Farrow & Arnold, 2003). The transition to college and dorm life is also a period in which concerns about body image may be especially salient, due to the increasing opportunities for comparison to same sex peers and fears about the "Freshman 15" (Gillen et al., 2006; Delinsky & Wilson, 2008). Thus, the college years are a time when concerns about body image and sexual behavior are particularly relevant, although the transition to intercourse has rarely been studied in this context.

In addition, it is vital to study first sexual intercourse in later adolescence and emerging adulthood in order to better understand normative and healthy sexual development. Because sexual intercourse is a near-universal human behavior, initiation of sexual intercourse should be viewed not only as a potential risk behavior in adolescents, but as a normative transition (Tolman, 2001). However, many people, particularly women, experience sexual dysfunctions which may result from experiences and messages regarding sexual behavior that they received earlier in life. Because of the importance of sex in adult life, it is essential to ascertain what circumstances of first sexual intercourse lead to better psychological outcomes (Tolman, 2001). Although it is implicit in research and practice that delaying first sexual intercourse leads to healthier outcomes, this idea has not been proven to be the case outside of the teen years. In fact,

recent work (Sandfort, Orr, Hirsch, & Santelli, 2008) has suggested that delaying first intercourse to the early twenties or later can predict negative outcomes, such as sexual dysfunction in adulthood. This finding suggests that delaying intercourse until marriage, the focus of abstinence only programs, may not be the healthiest choice in regards to all psychological outcomes. Thus, it is important to examine the impact of first intercourse at different ages in adolescence and emerging adulthood, in order to determine what factors are optimal for healthy development.

Only a few studies have looked at predictors of first intercourse among emerging adults (Halpern, Waller, Spriggs, & Halfours, 2006; Jessor et al., 1983). In a study of early adults in the late 1970s, Jessor and colleagues found that 93% of youth had engaged in sexual intercourse by their mid-twenties, and that young adult virgins were more religious, more committed to work and school, and less likely to have engaged in problem behavior than their sexually active counterparts. Virgins also felt less competent in romantic relationships and less satisfied with their body. Using more recent and representative data, Halpern and colleagues (2006) estimated that 90% of youth in the United States engage in sexual intercourse before marriage, and that parental disapproval of sex and religiosity in adolescence predict sexual abstinence for individuals in their twenties. Thus, a substantial minority of individuals will engage in first intercourse during emerging adulthood, and relatively little is known about this transition.

In contrast to the relatively thorough literature on predictors of first intercourse, fewer studies have examined how engaging in sexual intercourse may impact an individual. Although research and popular culture view first intercourse as a significant and life-changing event, little research has looked at how transitioning to sexual

intercourse actually leads to psychological or attitudinal changes. The main focus of research in this area has been on the subjective experience of first intercourse. Studies on this topic suggest that boys are more physically and psychologically satisfied by first intercourse and less likely to experience guilt than girls are (Darling et al., 1992; Guggino & Ponzetti, 1997; Sprecher, Barbee, & Schwartz, 1995). Sex in the context of a longer term relationship, however, leads to a smaller gender difference in reactions to first intercourse (Sprecher et al., 1995). Despite the findings that show negative reactions to first intercourse, some girls experience positive feelings, such as curiosity and pleasure (Thompson, 1990). A recent longitudinal study of adolescent girls found that although most anticipated negative feelings associated with first intercourse prior to the event, they recalled mostly positive emotions after engaging in first intercourse (O'Sullivan & Heard, 2008).

Although there has been research on the affective outcomes of first sexual intercourse, there has been very little work on how first sexual intercourse may lead to changes in an individual's attitudes, beliefs or values. A study by Meier (2003) is a notable exception. Using two waves of Add Health data, Meier looked both at how religiosity and sexual attitudes of abstinent 15-18 year olds predicted initiation of sexual intercourse one year later. Her findings revealed that being less religious and holding more liberal sexual attitudes predicted engaging in first sexual intercourse, and that first intercourse also predicted increasingly more liberal sexual attitudes. This study provides a starting point for the study of attitudinal changes that may occur after onset of first sexual intercourse, an area in which there is an opportunity for additional research. Thus, the current study will extend prior research on body image and the transition to first

intercourse by using longitudinal data to see whether greater satisfaction with appearance predicts initiation of first sexual intercourse among previously abstinent college students, and whether students' view of their appearance becomes more positive after they engage in sexual intercourse for the first time.

Research on Body Image

Dimensions of Body Image

In addition to using longitudinal data to see how body image is associated with the transition to first sexual intercourse, this study will examine two different dimensions of body image: appearance evaluation and appearance orientation. Appearance evaluation, or whether an individual is satisfied with his or her appearance, is the dimension that fits most clearly into the popular concept of body image. However, other areas, such as orientation toward appearance, could be related to sexual behavior. Appearance orientation refers to behaviors aimed at improving physical appearance, which can be seen as a behavioral manifestation of the internalization of media ideals of beauty (Cash, 2000). Although a slightly different construct than surveillance, or monitoring of the body, described in objectification theory, appearance orientation and surveillance of the body are highly correlated (McKinley & Hyde, 1996). Thus, objectification theory would suggest that individuals who are very conscious of or oriented toward their appearance have internalized ideas of themselves as objects, leading to a variety of negative effects. Both the evaluation and objectification of the body could potentially have an impact on whether or not an individual engages in sexual intercourse by influencing comfort with engaging in sexual situations.

Research has consistently linked satisfaction with appearance and sexual behavior: that is, individuals who have are more satisfied with their appearance are more likely to engage in intercourse and other sexual behaviors and have sex more often (Ackard et al., 2000; Faith & Schare, 1993; Gillen et al., 2006; Impett et al., 2006; Lammers et al., 2000; Trapnell et al., 1997; Wiederman, 2000; Wiederman & Hurst, 1998). Less research has been performed on appearance orientation, and the findings are more mixed. Some research on seemingly-related concepts such as body objectification and body image self consciousness have found that individuals who are more self-conscious about their appearance are less likely to engage in sexual intercourse (Impett et al. 2006; Schooler et al., 2005; Weiderman & Hurst, 2000). Other studies have found that college students with a stronger orientation toward their appearance are more likely to have engaged in sexual intercourse (Gillen et al., 2006) or have found no association between appearance orientation and intercourse or other sexual behavior (Wiederman & Hurst, 1998) or that increased self-focus does not mediate the association between body image and engaging in a broader range of sexual behaviors (Trapnell et al., 1997). This study will examine the association between the transition to sexual intercourse and both appearance evaluation and appearance orientation.

Weiderman & Hurst (1998) have suggested that some of the association between body image and engaging in intercourse or other sexual behaviors may be due to a person's actual appearance, as more attractive individuals may have more opportunities to engage in sexual behavior with a partner. One aspect of attractiveness that may influence sexual desirability is weight, in that heavier individuals may be less likely to engage in intercourse or other sexual behaviors. Weight may confound the association

between body image and sexual behavior, as body mass index (BMI) and satisfaction with appearance are negatively correlated. On average, individuals with a lower BMI are more satisfied with their appearance (Wiederman, 2000). Because of the possible impact of BMI on the association between satisfaction with appearance and engaging in sexual intercourse, we will enter BMI as a control in our models.

Differences by Ethnicity and Biological Sex

Another advantage of this study is our use of a multi-ethnic sample of both men and women. Most studies of the association between body image and sexual behavior have looked primarily at European American women. However, it is possible that associations between sexual behavior and body image differ in women from other ethnic groups, as women of different ethnicities have been found to differ in their mean level of satisfaction with their bodies. Researchers initially speculated that ethnic minority women would feel more dissatisfied with their appearance, as the majority of media images present a European American ideal, which is nearly impossible for them to attain (Perkins, 1996). Research has suggested this prediction is not accurate: instead, African American women generally are more satisfied with their bodies than European American women (Akan & Grilo, 1995; Altabe, 1998; Harris, Walters, & Waschull, 1991; Miller et al., 2000; Wildes, Emery, & Simons, 2001).

Researchers have explained this difference in a number of ways. African Americans may be rejecting what they see as a racist standard of beauty (Allan, Mayo & Michel, 1993). Instead of focusing on a perfect body as a measure of attractiveness and self-worth, African Americans adopt a more flexible standard of beauty, which involves attitude, personality and how one presents herself, rather than an ideal presented in the

media (Parker et al., 1995). Rather than becoming dissatisfied with themselves because of the discrepancy between themselves and the White ideal, they may be rejecting this standard of beauty and subsequently have a more positive view of their appearance. Studies have shown that more hours of viewing of mainstream television leads to greater body dissatisfaction (Schooler, Ward, Merriwether & Caruthers, 2004) and more bulimic symptoms (Botta, 2000) in European American women, but not African American women. Because African Americans do not see others who look like them represented as frequently in mainstream media, they may be less likely to see themselves as sexual objects, and thus may not have as strong a link between their appearance and their sexual behavior.

Research on body dissatisfaction among Latina American women has been less consistent. Some have found Latina women or girls to show less concern about weight and a preference for a larger body size as compared to European American girls (Crago Shisslak, & Estes, 1996; Winkleby, Gardern & Taylor, 1996). These findings suggested that like African Americans, Latina Americans may be rejecting the White standard of beauty, and instead adopting a definition of attractiveness that focuses on hygiene and self-presentation (Rubin, Fitts & Becker, 2003). Latina American women believe Latin culture is more accepting of larger women's bodies, and Spanish-language magazines more often endorse more curvy or voluptuous shapes than English-language media (Pompper & Koenig, 2004). Research on satisfaction with appearance among Latina American women has had mixed findings. Some studies (Anderson, Eyler, Galuska, Brown & Brownson, 2002; Lopez, Blix, & Gray, 1995; Paeratakul, White, Williamson, Ryan, & Bray, 2002) have found that Latina American women are more satisfied with

their appearance than European American women, and others (Altabe 1998; Breitkopf, Littleton & Berenson, 2007; Cachelin, Rebeck, Chung, & Pelayo, 2002; Shaw, Ramirez, Trost, Randall, & Stice, 2004) have found Latina American women to have similar levels of dissatisfaction as European Americans, or to be somewhere between African Americans and European Americans in their level of body satisfaction (Miller et al., 1998). Thus, although the findings for Latina Americans are somewhat mixed, there is evidence to suggest that women from minority groups may not be internalizing the sexualized and objectifying images present in mainstream media to the same extent as European Americans, and thus may have less of an association between their view of their body and their sexual behavior.

Similarly to the lack of research on ethnic groups other than European Americans, most studies that have examined the association between body image and sexual behavior have focused on only women. Women are more likely than men to be looked at in a sexually objectifying way in both their everyday lives and in media representations, and thus concerns about appearance are seen as a more salient concern for women (Fredrickson & Roberts 1997). Research has documented how the ideals of attractiveness for women presented in the media are far different from the actual bodies of real women (Fouts & Burggraf, 1999; 2000; Silverstein, Perdue, Peterson, & Kelly, 1986; Wiseman, Gray, Moismann, & Ahrens, 1990). Studies have also found that women report greater dissatisfaction with their body or appearance than men in our (Gillen & Lefkowitz, 2006) and other (Heatherton, Nichols, Mahamedi, & Keel, 1995) college student samples. Despite the greater body dissatisfaction in women, recent research suggests that body image in men is also an important area of study. Although women

have made some gains in society, research shows that instead of women becoming less objectified, men have become more so. Many college men report dissatisfaction with their appearance (Farquhar & Waylkiw, 2007; Frederick et al., 2007; Gillen & Lefkowitz, 2006; Olivardia, Pope, Borowiecki, & Cohane, 2004). Advertisements featuring sexualized male bodies have increasingly appeared in media such as women's magazines (Pope, Olivardia, Borowiecki, & Cohane, 2001), and research has suggested that viewing such depictions can lead to self-objectification in men as well as women (Aubrey 2006; Filiault 2007; Morry & Staska 2001), although not all studies have found that viewing objectifying media is associated with body dissatisfaction in men (Johnson, McCreary and Mills, 2007). In short, current research and theory suggest that although concerns about physical appearance may not be as salient for men as they are for women, men may respond to objectifying media in similar ways than women, and thus may be dissatisfied with their body or appearance.

Hypotheses

This study will expand the literature on body image and sexual intercourse by testing several hypotheses using longitudinal data with a multi-ethnic sample of male and female college students. The first set of hypotheses deal with how body image predicts first sexual intercourse among previously abstinent college students. The second set of hypotheses focus on whether individuals' body image change as a result of engaging in first intercourse.

Does Body Image Predict Timing of First Intercourse in Previously Abstinent College Students?

As discussed above, studies have suggested that having a more positive view of their appearance makes individuals more likely to engage in intercourse and other sexual behaviors. This idea is consistent with objectification theory, which suggests that individuals who are more satisfied with their physical appearance are less likely to experience shame or engage in excessive body monitoring and other behaviors that can lead to decreased interest in and avoidance of sexual intercourse. Consequently, we predict that:

1. Greater satisfaction with physical appearance will predict engaging in first sexual intercourse during the college years in students who were sexually abstinent prior to the start of our study.

This association may differ by biological sex and ethnic group. Objectification theory posits that body monitoring and dissatisfaction are a result of an objectifying male gaze and exposure to media which presents largely White images of beauty. Thus, body dissatisfaction and, subsequently, the association between body dissatisfaction and sexual intercourse, is likely more relevant for women and European Americans than for men and African or Latino Americans. We predict that:

2. Satisfaction with appearance will be a better predictor of first sexual intercourse in college women than men, and in European American students than African American or Latino American students.

Self-objectification of the body may also influence whether or not an individual engages in sexual intercourse. Objectification theory would suggest that an increased orientation toward one's appearance could be related to surveillance of the body, which can interfere with sexual interest and pleasure (Fredrickson & Roberts, 1997), and

subsequently make individuals less likely to engage in sexual intercourse. Similarly, researchers have theorized that spectating, or engaging in a constant negative focus on the appearance of one's body hinders sexual enjoyment (Faith & Schare, 1993; Masters & Johnson, 1970). Research findings in this area have been mixed. Due to the discrepancy in these findings:

3. We will test whether previously abstinent college students with a greater orientation toward their appearance are more or less likely to engage in first sexual intercourse during college, but will make no predictions about the direction of the association.
4. Similarly, we will test whether an orientation toward one's appearance will be a better predictor of engaging in first sexual intercourse in female or ethnic minority college students, but make no prediction about the direction of the association.

Does Body Image Change After Engaging in First Intercourse?

In regard to changes that occur after first sexual intercourse, individuals who engage in first intercourse may feel that a partner found them desirable and thus feel more positive about their body after engaging in first intercourse. As discussed above, this self-objectification is theorized to be more salient for women. Thus, we predict:

5. College students who engage in first sexual intercourse will experience a greater increase in satisfaction with their body relative to their abstinent peers.
6. Women and European Americans who engage in first sexual intercourse during the college years will experience a greater increase in satisfaction with

their appearance, than men, Latino American and African American students who engage in first intercourse.

Based on theory and prior research, it is less clear how appearance orientation will change as a result of first sexual intercourse. It could lead individuals to become less appearance oriented; experiencing their bodies in terms to physical pleasure, rather than solely appearance, could result in less of a focus on the body as merely ornamental. Alternatively, engaging in physically intimate activities with a partner may lead them to pay more attention to their appearance, as they become more aware of how their partner views their body. Accordingly:

7. We will test whether appearance orientation changes after first engaging in intercourse, but make no prediction about the direction of changes.
8. Similarly, we will test whether the above association differs by gender and ethnic group, but we make no predictions about possible differences.

Method

Data are from a 4-year longitudinal study of college students at a large, northeastern university ($N=434$), for which we recruited students of traditional college age (17-19) during their first year of college. We contacted a random sample of 9% of European American students, as well as all African American and Latino American first year students at the university. The response rate for Time 1 was 52%. The resulting sample was 39% European American, 32% African American and 29% Latino American students. Participants completed a questionnaire in a campus setting at four time points (fall first year, spring first year, fall second year, fall fourth year), and received compensation of \$25-35 per time point. Because the present analyses used body image at

Time 1 to predict initiation of first sexual intercourse, we excluded participants who answered yes to the question “Have you ever engaged in penetrative sex (sex in which the penis penetrates the vagina or anus)?” at Time 1. Thus, included in these analyses are students who had not engaged in penetrative sex prior to Time 1 ($N=180$, 42% of total sample). We ran a series of 4 ANOVA and 2 chi-square tests to see if students who had not engaged in penetrative sex differed on demographic or other study variables from those who had engaged in penetrative sex prior to the start of the study. The participants included in this study did not significantly differ on biological sex, ethnicity or parents’ education, but scored lower on the appearance orientation, $F(1, 430)=7.7, p<.01$, and appearance evaluation, $F(1, 430)=11.7, p<.01$, scales. These differences are consistent with prior research and our hypotheses, which suggest that students who have already engaged in sexual intercourse would more satisfied with their appearance than sexually abstinent students.

The sample used in this study was 49% female, 29% African American and 27% Latino American, and had a mean age of 18.4 years old at T1 ($SD=0.4$). Fourteen percent of participants’ fathers and 16% of mothers had completed a high school degree or less, and 65% of fathers and 59% of mothers had completed an associate’s degree or higher. The majority of the sample identified as heterosexual at Time 1 (97%); 2% identified as bisexual, none identified as homosexual, and 1% did not provide data on sexual orientation (See Table 1 for Time 1 demographic characteristics).

Approximately 88% of this Time 1 sample remained in the study at Time 4 (see Table 2 for details on reasons for attrition). To determine whether there were attrition biases, we ran a series of 4 ANOVA and 2 chi-square tests to determine if those whose

virginity status was missing at Time 4 (i.e. did not complete the survey at Time 4 and did not report penetrative sex at an earlier time point) differed on demographic or outcome variables from Time 1. Participants whose status could not be determined due to leaving the study were more likely to be Latino American, $\chi^2=7.9, p<.02$, and have lower scores on the appearance evaluation scale at Time 1, $F(1, 179)=5.4, p<.02$.

Measures

Timing of First Sexual Intercourse

We asked participants the following question at all four time points: “Have you ever engaged in penetrative sex (sex in which the penis penetrates the vagina or anus)?”. Participants who answered “yes” responded to an open-ended follow up question asking the month and year in which they first had penetrative sex. We refer to individuals who answered “yes” at Time 2, 3 or 4 as transitioners and those who did not as abstainers.

We recoded these variables in two different ways for this study. For our first set of hypotheses, we ran an event history analysis (Cox regression), which required a variable for whether or not the event (first sexual intercourse) occurred, as well as a variable for timing of first intercourse. The variable for whether intercourse occurred was coded as 1 for transitioners and 0 for abstainers. The timing variable includes the age in months that each transitioner reported first intercourse and the age of completion of last survey for abstainers (Singer & Willet, 2003). The age in months in which each transitioner first had sex was calculated based upon his or her birth month and the month he or she reported first having penetrative sex. The age of first intercourse in months ranged from 215 (seventeen years, 11 months) to 259 (21 years, 7 months; see Table 3). For abstainers, we calculated the age in months at the last date we had information about

their sexual behavior, the date at which they completed their final survey. For participants who reported having penetrative sex but were missing information about their month of first intercourse, we calculated a range of possible ages based on their birthdate, reported age in years at first intercourse, and dates at which they completed surveys. We then entered the mean age in months of the given range as the participant's age of first intercourse in months. For example, if a participant was born in November 1983, completed his first survey in September 2002 (at age 18, or 226 months), and his second in February of 2003 (at age 19 or age 231 months) and reported first penetrative sex at Time 2 at age 19, he would receive a score of 229.5 months (the mean age in months between his nineteenth birthday and the date of the survey in which he first reported penetrative sex). Eighty-eight participants reported month of first intercourse, fifty-nine reported remaining abstinent at the end of the study, and 22 participants were missing the month of first intercourse, and thus received an estimated score as described above.

For our second set of analyses, we divided participants into four groups based on the time point when they first reported having intercourse. The size of each group was as follows: between Time 1 and Time 2=19; between Time 2 and Time 3=33; between Time 3 and Time 4=45; and abstinent at Time 4=59. Twenty-one participants' virginity status could not be determined, as they dropped out of the survey prior to Time 4, and 4 participants' exact timing could not be determined due to missing data. Thus, we excluded 25 participants from all tests that looked at changes in body image after engaging in first intercourse.

Body Image

We assessed body image with the Multidimensional Body Self Relationship Questionnaire (MBSRQ, Cash, 2000). The MBSRQ consists of scales related to different aspects of body image; we used two of these scales. On both scales, participants rated all items from 1 (definitely disagree) to 5 (definitely agree). The *appearance orientation* scale measures the participants' cognitive and behavioral investment in appearance. The scale contains 10 items, such as "Before going out in public, I always notice how I look." Possible scores ranged from 10 to 50. The *appearance evaluation* scale measured individuals' overall satisfaction with or positive feelings regarding their body and how they look. A sample item is "My body is sexually appealing" and the scale contains 7 items. The possible range of scores is 7 to 35 (see descriptive statistics in Table 3). Time 1 reliabilities were good ($\alpha=.87$ for appearance orientation and $\alpha=.88$ for appearance evaluation).

We recoded these variables in two ways for these analyses. First, we created centered scores for appearance evaluation and appearance orientation by subtracting the mean value of the scale from each score. We used these centered variables to create interaction terms with biological sex and ethnicity (for Hypotheses 2 and 4). To test hypotheses about changes after engaging in first intercourse (Hypotheses 5-8), we created a difference score variable for the appearance orientation and appearance evaluation scales for the transitioners. To create this variable we subtracted scores from the time point after each transitioner first had intercourse from his or her score on the scale at the time point before the event. We created a similar variable measuring change in body image over the course of the study for all participants by subtracting T1 appearance orientation and appearance evaluation scores from the T4 values for these variables.

Other covariates

We used biological sex (male or female), ethnicity (European American, African American and Latino American) and body mass index (BMI) as covariates in these analyses. We assessed biological sex and ethnicity by self-report at Time 1, and created three dummy coded variables based on these responses: biological sex (men=1, women=0) African American (AA=1, all others=0) and Latino American (LA=1, all others=0). European Americans and women were used as reference groups, because the majority of studies of the association between body image and sexual behavior have used samples made up of primarily European American women. We multiplied these dummy variables by the centered body image variables (appearance evaluation and appearance orientation scales) to create interaction terms.

We calculated BMI from participants' self-reported weight in pounds and height in inches, based on the formula $\text{weight} / \text{height}^2 * 703$ (CDC, 2007). Time 1 BMI ranged from 15.6 to 46.2 ($M=24.4$, $SD=4.5$). For adults, BMI in the range of 18.5-24.9 is considered normal.

Results

Does Body Image Predict Timing of First Intercourse in Previously Abstinent College Students?

To explore whether students with a more positive evaluation of their body engaged in intercourse at an earlier age (Hypothesis 1), and whether these associations varied by biological sex and ethnicity (Hypotheses 2) we ran a Cox regression (Singer & Willet 2003). This test estimated a hazard function showing the likelihood of engaging in intercourse at particular ages. Covariates are also entered, and the coefficients for the

covariates show how much more or less likely an individual is to engage in intercourse, based on his or her level of the covariate. Each coefficient (β) is interpreted as follows: a one unit increase in the predictor leads to a β increase in the log hazard of engaging in sexual intercourse.

The outcome variable in this model was whether or not a participant engaged in first intercourse over the course of the study, and the time variable is age in months. We entered predictor variables in four steps. The first step included demographic and control variables (BMI, biological sex and dummy coded variables for ethnicity). In the second step, we added appearance evaluation. The third and fourth steps contained interaction terms for appearance evaluation and biological sex and appearance evaluation and ethnicity respectively (see Table 4). Omnibus tests showed the overall model to be significant only at the fourth step. Only two predictors were significant at the fourth step: appearance evaluation and the African American by appearance evaluation interaction. The association between appearance evaluation and engaging in intercourse suggested that being more satisfied with appearance predicted a greater likelihood of engaging in first sexual intercourse. This finding is consistent with our predictions in Hypothesis 1. This association was only present for European Americans and Latino Americans; greater satisfaction with appearance did not predict a greater likelihood of initiating first sexual intercourse for African Americans. When β values were added to create coefficients for each group, the coefficients for appearance orientation for European Americans ($\beta=.10$) and Latino Americans ($\beta=.19$) were positive and the values for African Americans were smaller and negative ($\beta=-.04$). Positive values indicate a greater hazard of engaging in sexual intercourse. These findings are partially consistent with Hypotheses 2.

To test whether being more oriented toward appearance was associated with a greater risk of engaging in intercourse at an earlier age (Hypothesis 3), and whether this association differed by biological sex or ethnic group (Hypothesis 4) we ran the same Cox regression with the appearance orientation scale as a predictor (Table 5). No steps were significant, and the only significant predictor in the model was the appearance orientation score by Latino American interaction. The β values suggested that appearance orientation and transition to first intercourse were more strongly associated for Latino Americans ($\beta=-.06$) than other groups ($\beta=.04$ EA, $\beta=-.02$ AA), and that the association was negative. This interaction suggested that Latino Americans who were more oriented toward their appearance were less likely to transition to first intercourse than European and African Americans with the same degree of orientation toward their appearance. This finding should be interpreted with caution, as the step in the model is nonsignificant. In regard to Hypotheses 3 and 4, we found that appearance orientation did not predict a greater likelihood of engaging in sexual intercourse and that a greater orientation toward appearance is associated with a lesser hazard of engaging in first intercourse for Latino Americans than for other groups.

Does body image change after engaging in first intercourse?

The first step in testing whether students' feelings about their appearance changed after engaging in first sexual intercourse (Hypothesis 5) was to run a series of dependent samples t-tests comparing transitioners' scores on the appearance evaluation scale the time point before and after they first reported having sexual intercourse. We excluded participants who never reported having sexual intercourse from this analysis. There was a difference in appearance evaluation that approached significance; participants' scores

after engaging in sexual intercourse were higher than those before they engaged in sexual intercourse, as shown in Table 6. Although this test was not significant, it is consistent with our predictions in Hypothesis 5.

To test Hypothesis 6, we ran the above tests separately for men and women and by ethnic group. For men, the increase in appearance evaluation scores after first intercourse approached significance, with a moderate effect size (Cohen 1998), but for women it did not (see Table 6). There was a significant increase in appearance evaluation scores with a moderate effect size for European American students, but not for African American or Latino American students (see Table 6). Because of the differentially small sample size and the fact that the trend for Latino Americans was in the same direction as that of European Americans, we ran a follow-up test combining the European and Latino American participants. Using a dependent samples t-test in before and after intercourse appearance orientation scores for these two groups, we found a significant increase in scores for European and Latino Americans, $t(1)=2.8$, $p=.01$, not shown. We ran these tests as a repeated measures ANOVA with before and after intercourse appearance evaluation scores as the within-subjects factor and the dummy code for African American ethnicity as the between subjects factor (not shown). This test was not significant for the within subjects effect, $F(1)<.1$, $p>.05$, the between-subjects effect, $F(1)<2$, $p>.05$, and had a marginally significant interaction of appearance evaluation scores by ethnicity, $F(1)=2.88$, $p=.09$, not shown. Although this interaction should be interpreted with caution, it suggested that European and Latino Americans become more satisfied with their appearance as a result of first intercourse than African Americans, which provided partial support for Hypothesis 6.

Although the above tests gave an approximation of whether individuals' body image changed after engaging in first intercourse, they do not entirely take into account the impact of normal developmental changes. There may be a developmental trend for individuals to become increasingly satisfied with their appearance over the course of college, regardless of their sexual experience. To test whether transitioners experience a greater increase in appearance evaluation over the course of the study, we ran a repeated measures ANOVA with the Time 1 and Time 4 appearance orientation scores as the within subjects factor and whether or not they transitioned to first intercourse as the between subjects factor. Students' appearance orientation scores did increase between Time 1 and 4, $F(1)=7.6, p=.06$, but there was no significant difference between the two groups, $F(1)<1, p>.05$, not shown.

These tests looked examined whether transitioners changed more than abstainers over the course of college; however, it is possible that first sexual intercourse produces a temporary boost to feelings about the body, rather than a long-term change. To test this possibility, we ran a 4x4 repeated measures ANOVA with a series of planned contrasts. This test included time point as the within subjects factor, 4 groups for timing of first sexual intercourse (T1-T2, T2-T3, T3-T4, abstainer) as the between subjects factor, and scores on the appearance evaluation or orientation scale as the outcome. We used three contrasts to test whether participants who engaged in first intercourse between two time points changed more between those two points than those who had never engaged in intercourse at that time. The first contrast tested whether the mean difference between Time 1 and 2 is greater for those who first had sex between those time points (Group 1) than those who did not (pooled mean of groups 2-4). The second tested whether those

who had sex between Time 2 and 3 (Group 2) changed more between these two time points than those who had not engaged in sexual intercourse (pooled means of groups 3 and 4). The final test compares whether the mean differences in body image changed more between Time 3 and 4 for those who engaged in intercourse during those points (Group 3) compared to those who were abstinent at Time 4 (Group 4).

We ran models with compound symmetry, autoregressive and toeplitz error structures; compound symmetry was chosen based on BIC and AIC criteria. For appearance evaluation, there was no overall effect of time, timing group or the interaction (see results in Table 7). Although these main effects were not significant, we wanted to see the contrast that compared transitioners to abstainers at different time points in order to test whether there were short term changes in appearance evaluation after first intercourse. For these planned contrasts, no significantly different changes on appearance evaluation were found for transitioners and abstainers between Time 1 and 2, between Time 2 and 3 or between Time 3 and 4 (see Table 7, Figure 1). Taken together, these tests suggested that although there are increases in satisfaction with appearance after first intercourse, they are likely the result of a normal developmental trend.

We ran the same series of tests to look for changes in appearance orientation after first intercourse (Hypothesis 7 & 8). We found no significant difference between the scores before and after first intercourse (Table 8). There were also no significant differences in appearance orientation for men or women or by ethnic group. Next, we tested if appearance orientation changed more in transitioners and abstainers using a repeated measures ANOVA with planned contrasts comparing transitioners and

abstainers at each set of time points, as described above. We found no significant results for the main effects, interaction or contrasts (see results in Table 9).

Discussion

Associations Between Body Image and First Sexual Intercourse

This study used longitudinal data to explore if body image predicts engaging in first sexual intercourse in previously abstinent college students, and if students' feelings about their body change after engaging in first intercourse. We found that satisfaction with physical appearance was a significant predictor of the timing of first intercourse, even over and above the impact of BMI. This finding provides support for the assumption implicit in many studies of body image and sexual behavior (Faith & Schare, 1993; Trapnell et al., 1997; Wiederman & Hurst, 1998; Wiederman, 2000): that greater satisfaction with appearance predicts when and if individuals will engage in intercourse and other sexual behaviors. These findings are consistent with research on objectification theory (Fredrickson & Roberts, 1997) and sexual dysfunction (Masters & Johnson, 1997) which suggests that being comfortable and satisfied with appearance can be a precursor to engaging in intercourse and other forms of sexual activity. Individuals who are more dissatisfied with their appearance may not focus on the pleasurable aspects of sexual intercourse, but instead on the appearance of their body or what their partner may think of them. Thus, thoughts of negative evaluations of their appearance may lead individuals to be less interested in engaging in sexual activities like intercourse (Fredrickson & Roberts, 1997; Masters & Johnson, 1970).

We found that orientation toward one's appearance did not predict students' engagement in first intercourse in college. This finding is not entirely surprising, given

the mixed research findings on appearance orientation and other related concepts (Gillen et al., 2006; Impett et al., 2006; Schooler et al., 2005; Trapnell et al., 1997; Wiederman & Hurst, 1998; Weiderman, 2000). These differing findings suggest several points about an orientation toward appearance and other concepts related to self-focus, such as surveillance and spectating. Although there is some overlap among these constructs (McKinley & Hyde, 1996), appearance orientation refers specifically to a focus on appearance and the steps individuals take to improve upon it (Cash, 2000). Surveillance, spectating and body image self consciousness, on the other hand, deal with a focus on the body's appearance and how this monitoring relates to negative evaluations of the body (Fredrickson & Roberts, 1997; Masters & Johnson, 1970; Wiederman, 2000). Thus, it appears that it may be the evaluative component of these constructs, rather than the body monitoring, that is related to intercourse and other sexual behaviors. This idea is supported by the findings of this study and prior research which links satisfaction with appearance to sexual behavior and attitudes in this study others (Faith & Schare, 1993; Gillen et al., 2006; Trapnell et al., 1997; Wiederman, 1998) and provides an explanation for differing findings across studies.

In addition to looking at how body image predicts first sexual intercourse, we also examined how feelings about the body may change as a result of engaging in first intercourse. We found some evidence that there may be an increase in satisfaction with appearance after engaging in first intercourse, at least for some students. Specifically, there was either a trend toward or a significant increase in positive evaluation of the body for men and for European and Latino American students. This finding suggests that individuals who have engaged in intercourse for the first time may feel that a partner has

found them sexually appealing, and they may subsequently feel more satisfied with their appearance. In a society where attractiveness is linked to sexualized images, individuals may feel see engaging in sexual intercourse as proof that they are living up to standards of beauty. It is difficult, however, to determine whether or not the effect we observed is due to engaging in first intercourse or is a result of a normative developmental trend, due to our sample size. When groups of individuals who had transitioned to sexual intercourse at different times were compared to abstainers, the groups were relatively small, making it difficult to determine whether transitioners' satisfaction with their appearance increased more than satisfaction of students who remained abstinent. Thus, although we found some evidence of a bidirectional association between body image and sexual intercourse, it appears that the association predicted in our first hypothesis is stronger: that is, individuals with more positive evaluations of their appearance feel more comfortable engaging in sexual activities in which a partner can see their body, and thus are more likely to have engaged in sexual intercourse than students who are less satisfied with their appearance.

Differences by Ethnicity and Biological Sex

The association between a more positive evaluation of the body and greater likelihood of engaging in sexual intercourse appears to only be present for European and Latino American students, but not African Americans. There are a number of possible explanations for this finding. The average age of first intercourse is lower for African Americans, particularly African American males (Upchurch, Levy-Storms, Sucoff & Aneshensel, 1998), and this study only looked at students who had not engaged in sexual intercourse prior to college. Because of these differences in timing of first intercourse,

participants in this study may be different from other African American emerging adults in ways that affect their body image and sexual behavior. In this study, however, African Americans were not significantly more likely to have had intercourse prior to college, and similar percentages of African Americans and other ethnic groups were included in these analyses. Although African Americans may, on average, engage in sexual intercourse at an earlier age, the ethnic differences in this study do not appear to be a result of differing rates of sexual intercourse among ethnic groups prior to college.

Second, research has suggested that body satisfaction differs for African Americans due to their cultural background and status in a primarily White society. In this study and others (Akan & Grilo, 1995; Altabe, 1998; Gillen & Lefkowitz, 2006; Harris et al., 1991; Miller et al., 2000; Schooler, et al., 2004; Wildes et al., 2001), African Americans are, on average, more satisfied with their appearance than European Americans. African Americans generally hold more flexible standards of beauty, and see attractiveness not as adherence to a narrow media image of beauty, but as having a personal style and presenting oneself well (Parker et al., 1995). Instead of feeling dissatisfied about the discrepancy between themselves and the thin, White ideal, they may reject this standard of beauty and feel more positive about their appearance. Thus it is possible that because they do not see others who look like them represented as frequently in mainstream media, they pay less attention to these depictions and view their satisfaction with appearance not as whether or not they live up to a sexualized ideal, but instead as an extension of their personality. This rejection of a White standard of beauty may lead them to refrain from seeing their attractiveness as linked to being sexually

appealing and could explain the lack of an association between African Americans' evaluation of their appearance and whether they had experienced first intercourse.

Although running counter to our hypotheses, the findings related to biological sex are of interest. Despite the fact that women are more sexually objectified (Fredrickson & Roberts, 1997) and are more dissatisfied with their appearance (Gillen & Lefkowitz, 2006; Heatherton et al., 1995), satisfaction with appearance was not a better predictor of first intercourse for women. In fact, we found only one trend that suggests gender differences; when tested separately, we found that men, but not women, experienced an increase in body satisfaction after first intercourse. Although these findings contrary to the traditional focus on body image for women, there are several explanations for it. Research has found that men are becoming increasingly objectified in the media (Pope et al., 2001) and are showing more body image concerns (Farquhar & Waylkiw, 2007; Frederick et al., 2007; Olivardia et al., 2004). Differences in traditional gender roles may also explain why men may experience a greater increase in satisfaction with their appearance after engaging in first intercourse. Script theory suggests that men are socialized to initiate sexual relationships, whereas women assume a "gatekeeper" role in sexual behavior (Byers, 1996; Peplau et al., 1977). Thus, men may feel more pressure to engage in sexual intercourse, and subsequently may feel more positively about themselves and their bodies after engaging in sexual intercourse. Combined with other research on men and body image, our findings suggest that men's body image is an important area of future study.

Limitations and Future Directions

Although this study makes a number of contributions to the study of body image and first sexual intercourse, there are several limitations to this study which future research could address. First, the sample is made up of college students, which limits the generalizability, as we cannot be sure whether these associations would be present in emerging adults who do not attend a traditional four year college. According to recent estimates, fewer than half of public high school students enter a traditional four year college upon graduation from high school (National Center for Education Statistics, 2006). Individuals who do not attend a four year college or live in dormitory housing may have varying experiences in terms of living arrangements and social opportunities. These different experiences may impact both their body image and sexual behavior, as they may not have roommates to compare themselves to, or the availability of new potential sexual partners presented by dorm life. Thus, future research on emerging adult sexual behavior should include the “forgotten half” of individuals who do not attend college.

A second limitation of this study is that the sample was limited to college students who had not engaged in intercourse prior to college. However, a majority of students do engage in intercourse prior to leaving high school (Alan Guttmacher Institute, 2006). Limiting our sample in this way has two potential implications. First, we cannot determine whether the same associations will hold in students who engage in first intercourse at an earlier age. Body changes as a result of puberty are likely a more salient concern in the teen years, and factors like the timing of puberty could influence how individuals feel about their bodies and sexual behavior in ways that are different than for emerging adults. One study (Lammers et al., 2000) found that body pride predicted

engaging in sexual intercourse among adolescents, which suggests that some of our findings may also hold in adolescents. Individuals who engage in first intercourse earlier in their teens may have more negative reactions to the event (Sprecher et al., 1995), which could influence their feelings about themselves and their bodies. Thus, future research should look at adolescents' reactions to their first intercourse, including how their feelings about their body may change, in order to see whether our findings hold up in a younger sample.

Third, the inclusion of only those students who had not engaged in intercourse prior to college limited the sample size and the conclusions we can draw. In particular, the tests looking at changes in body image after engaging in first intercourse focused on the 100 students who transitioned to first intercourse during the course of the study. When these individuals were divided into subgroups based on time point of first sexual intercourse, ethnicity or gender, the groups were small, lowering the ability to find significant effects. Although the tests looking at body image as a predictor of first intercourse utilized a somewhat larger sample, tests of these hypotheses could benefit from a larger sample as well. We found ethnic differences in the association between body image and first sexual intercourse, but did not have a large enough sample to explore gender by ethnic differences in body image. For example, a larger sample would enable us to see if the association between body image and engaging in sexual intercourse differs for African American women and men. This sort of research is particularly important, as little research has looked at body image in ethnic minority men. Thus, future studies with a larger sample would be helpful both in confirming our findings

concerning changes after first intercourse and looking for differences by gender and ethnic group.

A final limitation of this study is the amount of time between when individuals engaged in first intercourse and when they completed the surveys. Although we attempted to look at the impact of first intercourse on body image, the design of our study meant that a number of months may have passed between when participants engaged in first intercourse and when they completed the wave of the survey which we used as their after intercourse score. Because of the amount of time that passed, we may not have been able to pick up on short term increases in satisfaction with appearance after first intercourse. Future research could include surveys at monthly or weekly intervals in order to better detect shorter term changes in body image or other attitudes as a result of first intercourse.

There are a number of directions future research in this area could take, based upon these findings. One of these is to further investigate how an individual's body image may or may not change after engaging in first intercourse. It is possible that engaging in sexual intercourse and changes in body image are associated, but in more complex ways than examined in this study. Aspects of individuals' first experience of intercourse and their relationship with their first sexual partners likely play a role in how they feel about the event and how they experience their body. Research has suggested, for example, that whether or not first intercourse occurred in the context of a long-term relationship has an impact on women's feelings about the event (Sprecher et al., 1995). Individuals with a more positive first sexual experience or more supportive partners may feel better about themselves or their bodies, and those with a more negative first sexual

experience may feel worse. Qualitative research would be helpful in examining how these and other aspects of sexual experience are linked to how an individual feels about his or her appearance. Information gained from this sort of exploratory work could inform quantitative research which look at variables such as aspects of the intercourse experience and relationships with the sexual partner as moderators of changes in body image that result from first intercourse.

The lack of an association between appearance orientation and having engaged in sexual intercourse suggests another area for further study. In particular, it reflects the necessity of elaborating the difference between appearance orientation and concepts that also include an element of self-focus regarding appearance, such as spectating and body image self consciousness. This study suggests that it is not the focus on appearance that leads to sexual inexperience or dissatisfaction, but the negative evaluations of the body. Monitoring the body for flaws and engaging in behaviors to improve appearance seem to be different concepts that are associated with sexual behavior in dissimilar ways. Further research should examine the similarities and differences between these constructs, as well as parse out the aspects of body image, such as monitoring, self-consciousness, and negative views about appearance, which are most relevant to sexual behavior and other outcomes.

Finally, future research on the transition to first intercourse should continue to look at outcomes, including attitudinal changes, that result from the event, in order to gain a better understanding of how first intercourse fits into adolescent and young adult development more broadly. In addition to addressing the positive and negative outcomes of sexual intercourse, research should look at sexual behaviors other than intercourse,

such as oral sex. Different behaviors may have very different predictors and outcomes, and are an important aspect of adolescent and young adult sexual development. More specific to this study, different sexual behaviors may have differing associations with body image. For example, research has shown that college women who were more satisfied with their body were more likely to have received oral sex (Wiederman & Hurst, 1998). It is also possible that individuals who feel more poorly about their bodies may prefer to perform oral sex on a partner, which is an activity in which their partner will see less of their body. Thus, studying how non-intercourse sexual behaviors relate to body image and other outcomes is important in gaining a more complete understanding of sexual behavior in young people.

Despite these limitations, this study makes several important contributions to the study of body image and first sexual intercourse. First, it uses a longitudinal design to assess how body image and engaging in first sexual intercourse are associated over the college years. These analyses provided support for the hypothesis that satisfaction with appearance does lead to individuals more likely to engage in sexual intercourse, as well as suggesting that some individuals may feel increasingly positive about their bodies after engaging in first intercourse. Second, the sample in this study is multi-ethnic and includes both women and men, which provides information about how the association between body image and sexual intercourse is the same and different in diverse groups of college students. Specifically, this study shows that European and Latino American students who were more satisfied with their appearance were more likely to engage in sexual intercourse, but this association was not present for African Americans. Finally, this study adds to knowledge of normative sexual development in emerging adulthood.

Instead of using a risk perspective, we viewed sexual intercourse as a normative developmental transition and explored a potential positive outcome of transitioning to first intercourse. We found that, at least for some individuals, first sexual intercourse can lead to greater satisfaction with appearance. This focus on a potential positive affect of first sexual intercourse contributes to the understanding of the role of first sexual intercourse as a developmental transition.

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Table 1

Time 1 demographics of sample by Time 4 virginity status

	Total Sample (N=180)		Transitioners (N=100)		Abstainers (N=59)		Cannot be determined ^a (N=21)	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Biological Sex								
Female	88	48.9	45	45.0	35	59.3	8	38.1
Ethnicity								
European American	79	43.9	49	49.0	25	42.4	5	23.8
African American	52	28.9	25	25.0	22	37.3	5	23.8
Latino American	49	27.2	26	26.0	12	20.3	11	52.4

^a Individuals who did not complete a survey at Time 4 and never reported engaging in penetrative sex at an earlier time point.

Table 2

Incomplete data by time point and reason for nonparticipation

Time missing	N Missing	Reason Missing					
		No longer student at University	Missed Appointment	Never Scheduled Appointment	Unable to Contact	Refused to participate	Did not return mailed survey
T2	3 (1.7%)	2 (1.1%)	1 (0.6)	0	0	0	0
T3	11 (6.1%)	7 (3.8%)	3 (1.7%)	1 (0.6)	0	0	0
T4	29 (16.1%)	9 (5.0%)	0	3 (1.7%)	2 (1.1%)	7 (3.9%)	7 (3.9%)

Table 3

Means, standard deviations and ranges for appearance orientation, appearance evaluation and age of first intercourse in months, by gender and ethnicity

	Appearance Evaluation			Appearance Orientation			Age of First Intercourse ^a		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
Sample	23.6	5.8	7-35	39.7	8.3	18-59	235.1	10.3	215-259
Males	25.0	5.3	7-35	37.7	8.3	20-59	234.9	10.0	215-255
Females	22.1	6.0	8-34	41.8	7.9	18-57	235.3	10.8	218.5-259
European American	23.7	5.6	8-35	38.2	8.7	18-57	236.2	9.9	221-255
African American	24.9	6.5	7-34	41.0	8.7	19-59	232.6	10.8	218.5-256
Latino American	22.2	5.2	9-34	40.7	7.1	27-56	235.3	10.6	215-259

^a Calculated only for 100 participants who engaged in penetrative sex during the study.

Table 4

Cox regression predicting timing of first sexual intercourse by biological sex, ethnicity, BMI, appearance evaluation (AE), AE x biological sex interaction, and AE x ethnicity interaction

	β	SE	Wald	Overall Model		Change from	
				X^2	df	χ^2	df
Step 1				2.03	4		
Biological Sex	.19	.22	.74				
African American	.25	.26	.94				
Latino American	.01	.27	.01				
BMI	-.02	.03	.58				
Step 2				9.41	5	7.45**	1
Biological Sex	.15	.22	.46				
African American	.07	.28	.08				
Latino American	.06	.27	.04				
BMI	-.02	.03	.47				
AE	.08	.03	7.38**				
Step 3				9.85	6	.446	1
Biological Sex	.67	.80	.70				
African American	.25	.28	.18				
Latino American	.03	.27	.01				

BMI	-.02	.03	.74				
AE	.08	.03	7.33**				
Biological Sex x AE	-.02	.03	.45				
Step 4				17.8*	8	8.73*	2
Biological Sex	.34	.82	.17				
African American	.07	.27	.06				
Latino American	.11	.27	.18				
BMI	-.01	.03	.22				
AE	.10	.04	5.24*				
Biological Sex x AE	-.01	.03	.10				
AE x African American	-.14	.07	4.00*				
AE x Latino American	.09	.07	1.56				

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

Table 5
Cox regression predicting timing of first sexual intercourse by biological sex, ethnicity, body mass index, appearance orientation (AO), AO x biological sex interaction, and AO x ethnicity interaction

				Overall Model		Change from	
	β	<i>SE</i>	Wald	Fit		Previous Step	
				X^2	<i>df</i>	χ^2	<i>df</i>
Step 1				2.03	4		
Biological Sex	.19	.22	.74				
African American	.25	.26	.94				
Latino American	.01	.27	.01				
BMI	-.02	.03	.58				
Step 2				2.95	5	.92	1
Biological Sex	.17	.22	.63				
African American	.22	.26	.70				
Latino American	-.04	.28	.06				
BMI	-.02	.03	.70				
AO	.02	.02	.92				
Step 3				2.95	6	.01	1
Biological Sex	.15	.69	.05				
African American	.22	.27	.66				
Latino American	-.07	.28	.06				

BMI	-.02	.03	.70				
AO	.02	.02	.91				
Biological Sex x AO	.01	.02	.01				
Step 4				11.51	8	7.37*	2
Biological Sex	.45	.69	.43				
African American	.17	.27	.40				
Latino American	.03	.28	.01				
BMI	-.02	.03	.36				
AO	.04	.04	2.06				
Biological Sex x AO	-.01	.02	.08				
AO x African American	-.06	.05	1.30				
AO x Latino American	-.10	.05	4.71*				

* $p < .05$.

Table 6

T-tests of differences in before and after first intercourse scores on appearance evaluation, by biological sex and ethnicity

Total Sample	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	η^2
Before	24.70	5.97	1.80+	96	.03
After	25.40	5.79			
Biological Sex					
Men					
Before	25.89	5.90	1.74+	52	.06
After	26.72	5.63			
Women					
Before	23.27	5.81	0.88	43	.02
After	23.82	5.63			
Ethnicity					
EA					
Before	24.94	5.42	2.28*	48	.10
After	25.94	5.10			
AA					
Before	26.46	7.02	.42	23	.01
After	26.04	7.03			
LA					
Before	22.46	5.45	1.60	23	.10

After	23.67	5.69
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*p<.05, +p<10.

Table 7

Repeated Measures ANOVA predicting appearance evaluation scores by time point and timing of first sexual intercourse, with planned contrasts testing differences in transitioners' and abstainers' score for each pair of time points

	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>
Time			.83	3, 445
1 (Fall 1 st Year)	23.97	5.84		
2 (Spring 1 st Year)	22.90	11.55		
3 (Fall 2 nd Year)	24.30	5.78		
4 (Fall 4 th Year)	24.08	11.80		
Timing Group			1.42	3, 152
Transition between T1 & T2	25.77	5.29		
Transition between T2 & T3	23.88	5.74		
Transition between T3 & T4	24.61	6.08		
Time 4 Abstainers	23.10	6.14		
Time X Group Interaction			.73	9, 445
Contrast 1: T1-T2			.38	1, 445
Transitioners T1	26.79	5.18		
Transitioners T2	25.89	5.37		
Abstainers T1	23.26	5.80		
Abstainers T2	23.06	6.25		
Contrast 2: T2-T3			1.63	1, 445

Transitioners T2	23.76	6.29		
Transitioners T3	24.39	5.56		
Abstainers T2	22.85	6.18		
Abstainers T3	23.38	6.13		
Contrast 3: T3-T4			1.97	1, 445
Transitioners T3	24.51	5.96		
Transitioners T4	25.93	6.13		
Abstainers T3	23.39	6.12		
Abstainers T4	24.07	6.34		

Note. Contrasts test whether participants who transitioned to first intercourse between two time points differed more between those points than individuals who remained abstinent at that time.

Table 8

T-tests of differences in before and after first intercourse scores on appearance orientation, by biological sex and ethnicity

Total Sample	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	η^2
Before	39.85	8.74	1.05	96	.01
After	40.44	7.83			
Biological Sex					
Men					
Before	38.08	8.10	1.29	52	.03
After	39.00	8.30			
Women					
Before	41.98	9.13	.22	43	.01
After	42.18	6.91			
Ethnicity					
EA					
Before	38.00	9.18	.98	48	.02
After	38.78	8.65			
AA					
Before	41.92	9.07	1.21	23	.06
After	43.25	7.18			
LA					
Before	41.55	6.80	.43	23	.01

After	41.04	5.77
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* $p < .05$, + $p < 10$.

Table 9

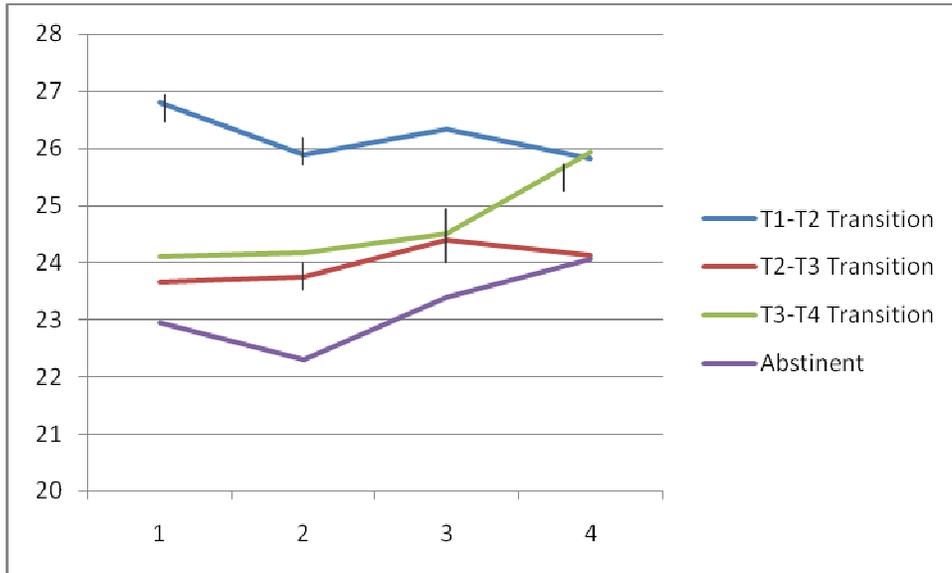
Repeated Measures ANOVA predicting appearance orientation scores by time point and timing of first sexual intercourse, with planned contrasts testing differences in transitioners' and abstainers' score for each pair of time points

	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>
Time			.32	3, 445
1 (Fall 1 st Year)	39.53	8.19		
2 (Spring 1 st Year)	38.61	13.64		
3 (Fall 2 nd Year)	40.23	8.04		
4 (Fall 4 th Year)	39.25	13.82		
Timing Group			.32	3, 152
Transition between T1 & T2	38.60	8.37		
Transition between T2 & T3	40.20	7.54		
Transition between T3 & T4	40.70	8.83		
Time 4 Abstainers	39.46	7.71		
Time X Group Interaction			.84	9, 445
Contrast 1: T1-T2			.44	1, 445
Transitioners				
T1	38.31	9.50		
T2	38.52	9.19		
Abstainers				
T1	39.69	8.09		

T2	39.75	8.09		
Contrast 2: T2-T3			.79	1, 445
Transitioners				
T2	39.48	8.18		
T3	40.42	6.92		
Abstainers				
T2	39.83	8.10		
T3	40.34	8.30		
Contrast 3: T3-T4			2.00	1, 445
Transitioners				
T3	40.76	9.16		
T4	41.27	8.41		
Abstainers				
T3	40.02	7.72		
T4	39.21	7.55		

Note. Contrasts test whether participants who transitioned to first intercourse between two time points differed more between those points than individuals who remained abstinent at that time.

Figure 1. Mean scores on appearance evaluation across college based on timing of transition to sexual intercourse



Note. Bars indicate period in which members of each timing group engaged in first sexual intercourse.