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The Effects of Self-Esteem and Depressive Symptoms on Adolescents' Sexual Onset

Although adolescence is considered a period of great self-reflection as well as a period of increased interest in intimate relationships, researchers have a limited understanding of how adolescents' self-reports of esteem and depression affect sexual onset. In this paper we address whether self-esteem and depressive symptoms influence sexual onset once important controls such as movement into dating and sociodemographic characteristics are taken into account. Analyses are based on the two waves of the restricted use sample of National Longitudinal Study of Adolescent Health. We focus on the respondents who reported, at time one, that they had not had sexual intercourse. Using logit models, run separately for males and females, to predict sexual onset between interview waves, we find self-esteem and depressive symptoms at time one significantly predict sexual onset at time two for adolescent girls, while only depressive symptoms at time one significantly predict sexual onset for boys. Further, it appears that depressive symptoms have a stronger impact on sexual onset than self-esteem for both boys and girls. For boys, self-esteem interacts with age such that the effect of self-esteem is greater for younger than older boys. For girls, we find that depressive symptoms interact with age such that the effect of depressive symptoms is greater for younger than for older adolescents, and depressive symptoms interact with race such that depression significantly predicts sexual onset among White but not African-American girls.

Adolescent Sexual Onset and the Effects of Self-Esteem and Depressive Symptoms

Adolescence is an ego-centered, full-of-changes and self-examination stage in the life course. Much of an adolescent's self-evaluations are associated with opposite sex relationships and sexual behavior. In fact, sexual activity during the high school years has become a statistically normative experience. In 1997, for example, 61 percent of high school seniors reported that they have had sexual intercourse (Kann et al. 1998).

Decisions about whether to have sex are affected by social psychological and contextual factors. However, most literature considers issues such as sexual behavior, self-perceptions of esteem and depressive symptoms, and adolescent dating as separate objects of inquiry. Furthermore, prior studies on adolescent sexual behavior typically have focused on the influence of socioeconomic background, as well as the influence of significant others including parents, siblings, and peers (e.g., Brazzell and Acock 1988; East, Felice, and Morgan 1993; Hogan and Kitagawa 1985; Jaccard, Dittus, and Gordon 1998; Miller and Moore 1990; Miller, Forehand, and Kotchick 1999; Miller et al. 1997; Whitbeck, Conger, and Kao 1993). However, other recent work moves beyond the structural and social network emphases by focusing on the relationship or dating context in which sexual behavior occurs (Elo, King, and Furstenberg 1999; Manning, Longmore, and Giordano 2000; Miller et al. 1997; Thornton 1990).

Here, we add another level of complexity by examining the effects of self-evaluative and affective processes on the pace of adolescent sexual onset. As in the studies of adult development and change, a newer trend in the adolescence literature is to

consider this developmental period from a more holistic perspective -- that is, to specifically focus on how the various self-perceptions, behaviors and choices are associated (see also Steinberg and Belsky 1996). Following this approach, we examine the roles of self-esteem and depressive symptoms as precursors of adolescent sexual involvement. Such variables are central in motivating behavior (Gecas 2001; Rosenberg 1979), particularly sexual behavior (Longmore 1998). Self-esteem and depressive symptoms are associated with risk and resilience and may delay, or conversely, accelerate the pace of adolescents' sexual onset. Yet, surprisingly little research has focused on how such self-evaluations and affective states influence adolescent sexual onset.

We use the two waves of the restricted sample of the National Longitudinal Study of Adolescent Health (Add Health) to examine how self-esteem and depressive symptoms affect adolescent sexual onset. We address three questions: (1) do self-esteem and depressive symptoms influence adolescent sexual onset once important controls such as movement into dating and sociodemographic characteristics are controlled; (2) do the effects of self-esteem and depressive symptoms on adolescent sexual onset differ according to sociodemographic background; and (3) which social psychological predictor has a greater effect on sexual onset -- self-esteem or depressive symptoms? In the next section we provide a theoretical rationale for why self-esteem and depressive symptoms should influence adolescent sexual onset. We also address why effects may differ by sociodemographic background, and why we expect depressive symptoms to have a greater effect than self-esteem on adolescents' sexual debut.

THEORETICAL BACKGROUND

Self-Esteem

One approach to understanding adolescent sexual onset is to focus on factors that may delay sexual behavior. Such variables are often called protective factors. Jessor (1998:3) states: "Conceptually, protective factors have both direct and indirect effects; they lessen the likelihood of engaging in risk behavior, or of adverse outcomes from having engaged in them, but they also can serve as moderators of or buffers against exposure to risk factors or actual involvement in risk behaviors themselves." Recent research has examined the concept of protective factors in a wide range of adolescent risk behavior and, increasingly, to understand adolescent sexual activity.

One such protective factor is self-esteem. Self-esteem refers to the positive or negative regard in which an individual holds him- or herself. There is widespread recognition of self-esteem's importance for resilience and personal well-being in a variety of diverse contexts (Gecas 1982; Gecas and Burke 1995; Rosenberg 1979). In brief, self-esteem is important for personal well-being because it motivates behavior. Rosenberg (1979) suggests that the motive to achieve and maintain self-esteem is the most powerful in the entire human repertoire of motives. Even individuals with low self-esteem are motivated to maintain that level of self-worth and not to feel any less worthy.

Although many scholars who study self-esteem emphasize that low self-esteem impairs effective decision-making (e.g., Harter 1993; Tice 1993), recent reviews and commentaries (e.g., Baumeister 1991, 2001; Gecas 2001; Gecas and Longmore forthcoming; Hewitt 1998; Kohn 1994) also stress that self-esteem cannot be considered

a panacea that protects youth from all manner of risk. Baumeister (1991, 2001), for example, argues that high self-esteem is more a result than a cause of successful behavior. Similarly, Gecas (2001) argues that self-esteem must be combined with other positive characteristics for it to have salutary effects. Although we agree with this line of reasoning, nevertheless, it is intuitive that positive self-regard is generally more helpful, and thus more protective, than low self-esteem. Further, according to Pearlin and his associates (e.g., Pearlin and Lieberman 1979; Pearlin et al., 1981) and others writing in the area of stress, risk, and resilience (e.g., Longmore and DeMaris 1997; Mirowsky and Ross 1989; Seff et al. 1992), dimensions of self-concept, including self-esteem, are psychological resources upon which individuals can draw to deal with problems.

To understand how self-esteem might influence sexual onset, it is plausible to emphasize both positive and negative processes. On the positive side, adolescents with high self-esteem may balance opposite-sex relationships with other interests and life goals and also believe that they will be capable of attracting a new partner(s) if the current relationship does not work out. Conversely, adolescents with low self-esteem may be less likely to maintain this sense of balance/proportion and be more likely to invest heavily in the current relationship. McDonald and McKinney (1994) examined the relationship between self-esteem and having a steady boyfriend/girlfriend among 122 high school sophomores. Results indicated that girls with the highest self-esteem were those who had gone steady in the past and were no longer doing so, while the girls who had gone steady in the past and were still going steady had the lowest self-esteem scores. For boys, however, there was little difference in self-esteem between those who were

going steady and those who were not. Additionally, a review of cross-sectional findings from the National Longitudinal Study of Adolescent Health (Resnick et al. 1997) shows that low self-esteem is associated with several problem behaviors including suicide risk and the use of cigarettes, alcohol, and marijuana, although the analyses did not show low self-esteem to be associated with violence, age of first sex, or the risk of getting pregnant.

Depressive Symptoms

In addition to protective factors such as high self-esteem, risk factors, including depressive symptoms, may affect adolescent sexual onset. Symptoms of depression include feeling blue, feeling sad, having difficulty completing tasks, and being bothered by things that typically are not bothersome. Although depressive symptoms often accompany low self-esteem, the two are distinct social psychological constructs that impair resiliency among children, adolescents, and adults (Battle 1987; Longmore and DeMaris 1997; Tice 1993).

Depressive symptoms may also be conceptualized in terms of an immobilizing process because a negative affective state impedes the ability to take appropriate independent actions that are in the individual's best interest. As Ball-Rokeach, Rokeach, and Grube (1984:31) note, "a diffuse negative affective state leads to cognitive indecision and behavioral vacillation." In other words, depressive symptoms make effective decision-making, and therefore, effective action extremely difficult. Depressive symptoms are associated with individuals not taking a proactive approach to situations experienced in their lives. Thus, a reasonable expectation is that higher levels of depressive symptoms will result in a failure to delay sexual intercourse.

A limited number of recent studies have examined the impact of depressive symptoms and/or self-esteem on adolescent sexual activity. Whitbeck et al. (1992) using cross-sectional data from a survey of 543 boys and girls found that depressive symptoms both directly and indirectly increased the probability of sexual activity among girls, but did not influence boys' sexual activity. Similarly, Kowaleski-Jones and Mott (1998), based on a cross-sectional study of high-risk youth, report that low self-esteem and depressive symptoms are associated with sexual behavior among girls but not boys. Although both studies establish a relation between self-conceptions and sexual activity, one question left unanswered is the causal ordering. Do depressive symptoms influence adolescents' sexual debut or is it a consequence of such involvement?

Whitbeck et al. (1993) addressed this issue of causality using panel data based on adolescent girls and their parents. Examining the effects of parenting quality, depressive symptoms, and peer behaviors on sexual activity, they found that depressive symptoms at time one had a weak direct effect on time two sexual activity. Although the use of panel data clarified the causal ordering among the variables, still unanswered are questions concerning depressive symptoms and sexual activity among boys. Moreover, does self-esteem, along with depressive symptoms, influence sexual onset? Examining self-esteem in tandem with depressive symptoms is more consistent with theoretical work on adolescent behavior, which increasingly has emphasized multiple variable explanations of risk behaviors (e.g., Jessor 1998).

Gender

We are also interested in whether the connections between self-esteem, depressive

symptoms and sexuality are gendered in important respects. For example, qualitative and quantitative research indicate that young women still are concerned with issues of reputation (Schlossman and Cairns 1993), and numerous demographic studies document that adolescent females experience the most direct consequences of their becoming sexually active, including primary responsibility for child care and lower educational attainment (Luker 1996). (That child care is the girl's responsibility is exemplified in the Add Health data set with regard to a question about dropping out of school. Girls are provided the response category of getting pregnant as a reason for dropping out; yet getting a girl pregnant is not provided as a reason for an adolescent male dropping out of school). Other scholars suggest that females may be socialized to feel ambivalent about sexual behavior itself, quite apart from these two consequences (Attie and Brooks-Gunn 1989). Thus, girls, perhaps, are socialized to be sexually attractive, but not too overtly sexual.

There is evidence that the meaning and consequences of romantic relationships differ for adolescent girls and boys. Using the two waves of data from the Add Health, Joyner and Udry (2000) found that adolescent girls and boys who dated between interview waves report larger increases in depressive symptoms than adolescents who do not report romantic relationships. Key to our position is that adolescent girls with romantic relationships report a larger increase in depressive symptoms than adolescent boys with romantic involvements. This leads us to believe that the meaning of movement into sexual intimacy is still gendered, and that emotional well-being could be linked in several ways to the decision that young girls and boys make to be sexually intimate. If

young girls who are concerned about their reputation or the direct consequences of sexual activity -- or who are ambivalent about sex -- tend to have an interest in delaying sexual behavior, then experiencing more symptoms of depression and lower self-esteem should have the effect of immobilizing decision-making that is in their best interests.

Sociodemographic Background

Mirowsky and Ross (1989) argue that self-evaluations and affective states are related to social conditions and positions in the social structure such that psychological distress is influenced by race, age and income. These sociodemographic variables mark the realities of individuals' lives. These same sociodemographic variables are associated with adolescent sexual onset. For example, African-American compared with White adolescents appear more accepting of sexual intercourse at younger ages (Smith and Zabin 1993; Zabin et al. 1984), and first intercourse occurs earlier among African-Americans than Whites (Alan Guttmacher Institute 1994). Older adolescents are more likely to have sexual intercourse than are younger adolescents (Alan Guttmacher Institute 1994). Similarly, lower socioeconomic background is associated with sexual onset among adolescents (e.g., Dorius, Heaton, and Steffen 1993; Feldman and Brown 1993; Lauritsen 1994; Miller et al. 1997; Moore et al. 1995).

The Present Study

The present study adds to prior work by assessing the impact of self-esteem and depressive symptoms on adolescents' first sexual intercourse. Our approach is to distinguish between a personal resource, i.e., self-esteem, and a risk-promoting affective condition, i.e., depressive symptoms, that may affect sexual onset. We also take into

account individuals' sociodemographic backgrounds. Third, the present study recognizes that the impact of social psychological variables may vary because the meaning of sexual activity itself is highly gendered (Kowaleski-Jones and Mott 1998). Thus, while girls often are socialized to delay sexual initiation and because they experience the consequences of sexuality most directly, there is less of a cultural press to engage in first sexual intercourse. Similarly, there is a stronger cultural press for boys to increase their sexual experiences with less concern for damaging their reputation or experiencing direct consequences of sexual activity. Following from this we expect that the social psychological predictors, particularly those that are individual deficits such as lower self-esteem and experiencing more symptoms of depression, would be less important predictors of movement into sexual intimacy for boys than girls.

On the basis of the theoretical arguments offered and prior research on adolescents, we propose the following hypotheses that correspond to our research questions. Note that based on prior research, relationships are hypothesized for adolescent girls but not boys, thus the current analyses are exploratory for our sub-sample of adolescent boys.

Hypothesis 1a. Self-esteem affects sexual onset such that those female adolescents who report higher self-esteem experience later sexual onset.

Hypothesis 1b. Depressive symptoms affect sexual onset such that those female adolescents who report more depressive symptoms experience earlier sexual onset.

We also expect that depressive symptoms would have a greater effect on sexual onset relative to self-esteem. This expectation is based on the view that depressive

symptoms would have a greater immobilizing effect, and thus, would impair decision-making.

Hypothesis 2. Depressive symptoms, compared to self-esteem, have a greater effect on sexual onset.

Prior empirical research reports that older adolescents (e.g., Alan Guttmacher Institute 1994; Ford, Sohn, and Lepkowski 2001; Svetaz, Ireland, and Blum 2000), African-American adolescents, and adolescents from lower socioeconomic backgrounds have higher rates of early sexual onset (e.g., Alan Guttmacher Institute 1994; Resnick et al. 1997); thus, it can be more readily viewed as normative for these adolescents. We might expect that self-esteem and depressive symptoms would be more salient predictors for youth for whom movement into sexual activity might be less normative. Thus, we propose the following hypotheses.

Hypothesis 3a. Self-esteem moderates the impact of age, race, and income on adolescent sexual onset such that the influence of self-esteem is greater for younger than for older adolescents, Anglos than for African-Americans, and higher income than for lower income adolescents.

Hypothesis 3b. Depressive symptoms moderate the impact of age, race, and income on adolescent sexual onset such that the influence of depressive symptoms is greater for younger than for older adolescents, Anglos than for African-Americans, and higher income than for lower income adolescents.

METHODS

Data

The data for this study are from the National Survey of Adolescent Health (Add Health). The Add Health is a recently collected, school-based, data collection effort that focuses on adolescent health behaviors. These data are appropriate for our purposes for

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several reasons. First, prior work has focused largely on small-scale, regional data and generally has not relied on nationally representative data sources (e.g., Kowaleski-Jones and Mott 1998; Whitbeck et al. 1992). Second, the Add Health data include comprehensive measures of sexual onset, self-esteem, depressive symptoms, adolescent dating, and demographic background for males and females. This allows us to move beyond prior studies by examining the effects of a protective and a risk factor on sexual onset net of dating experience and demographic background. Third, the longitudinal design allows analysis of the independent variables measured at time one on behavioral outcomes that occurred between the interview waves.

From the Add Health, we use the first two waves of the restricted use sample of in-home surveys that represent adolescents enrolled in grades 7 through 12 in 1995 (Bearman et al. 1997). The first wave is based on a sample of 18,924 students. The second wave of data were collected one year later, and in-home interviews were completed with 72 percent of the students selected for re-interview (n=13,570).

For the purposes of our analyses, we begin with the adolescents who were re-interviewed and have a second wave sample weight (n=13,570). We focus on the 8,809 respondents who at time one had not had sexual intercourse[1]. We initially included adolescents who had valid information on sexual activity between the interview waves (n=7,995). In other words, we excluded 168 respondents who did not report a date of first sexual intercourse, 64 respondents who did not respond to the questions about sexual

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[1] This number is based on self-reports of having not had sexual intercourse at time one, as well as 136 respondents whose answers to first sexual activity are based on the wave two questionnaire. For these 136 respondents who gave an answer of "refused," "don't know," or a legitimate skip in their wave 1 response, we checked their time two reported date of first sexual intercourse to verify sexual intercourse status at wave one.

activity, and 582 respondents who provided inconsistent information about the timing of sexual intercourse. We also eliminated thirty respondents who did not answer any of the items on either the self-esteem or the depressive symptoms scales. Our final sample consists of 7,965 respondents (3,665 boys and 4,300 girls).

The loss of cases due to missing data on key variables most likely introduces some bias into empirical findings. In particular, those who fail to answer questions about self-esteem or depressive symptoms probably have lower self-esteem and higher depression. However, as we indicated few respondents were eliminated due to missing data on these variables.

We note that information about sexual experiences was collected using audio-assisted self-interview technology. The adolescent's use of headsets and laptop computers to answer sensitive questions increases confidentiality of the answers and reduces interviewer bias (e.g., Hagan and Foster 2001; Joyner and Udry 2000).

Because the original survey used a multistage cluster sample design, the observations are not independent nor identically distributed. Using the STATA statistical package we incorporate these design characteristics and present in our multivariate tables the unbiased parameter estimates and corrected standard errors (Chantalla and Tabor 1999).

Measures

The dependent variable. The dependent variable, *sexual onset*, is based on responses to the following question asked at time one: "Have you ever had sexual intercourse, we mean when a male inserts his penis into a female's vagina?" At waves

one and two, a follow-up question regarding when sexual intercourse took place is asked: "In what month and year did you have sexual intercourse for the very first time?" We base the analyses on adolescents who did not have sexual intercourse at time one and estimate whether sexual intercourse occurred between interview waves. We find that 12.3 percent of the sample report experiencing first sexual intercourse between the interview waves (see table 1).

The independent variables. For ease of presentation, we group the independent variables into three categories: social psychological variables (i.e., self-esteem and depressive symptoms), dating variables, and background variables.

We measure self-esteem and depressive symptoms using items that are representative of standardized instruments used in analyses of both adolescents and adults. We measure *self-esteem* using six items. Respondents are asked the degree to which they agreed with the following items: (1) "You have a lot of good qualities;" (2) "You have a lot to be proud of;" (3) "You like yourself just the way you are;" (4) "You feel like you are doing everything just about right;" (5) "You feel socially accepted;" and (6) "You feel loved and wanted." Items 1 and 2 are from Rosenberg's well-known self-esteem scale (Rosenberg 1989), and the other four items are quite comparable to those in the Rosenberg scale. A five-level response format ranging from (1) strongly disagree to (5) strongly disagree follows each item. Following procedures used by Longmore and DeMaris (1997) and Glass and Fujimoto (1994) in constructing similar social psychological scales, we construct a self-esteem score for every respondent who recorded valid responses for at least 75 percent of the items (4 of 6 items). We calculated the scale

score as the mean of the items, multiplied by six. In this sample, the scores range from 7 to 30, with 30 indicating the highest level of self-esteem. The alpha reliability of the scale is .63 in the current sample.

The *depressive symptoms* scale is composed of eleven items from the widely used Center for Epidemiologic Studies Depression Scale (CES-D) (see Radloff 1977 for a fuller description of this scale). This scale is used to assess symptoms of depression in the general population. Although high scores on depression scales such as the CES-D do not necessarily suggest a clinical diagnosis of depression, the CES-D does discriminate between clinically depressed individuals and others, and it correlates highly with other scales of depressive symptoms (Ross, Mirowsky, and Huber 1983; Weissman et al. 1977).

Respondents are asked how often each of the following was true during the past week: (1) "You were bothered by things that usually don't bother you;" (2) "You didn't feel like eating, your appetite was poor;" (3) "You felt that you could not shake off the blues, even with help from your family and your friends;" (4) "You had trouble keeping your mind on what you were doing;" (5) "You felt depressed;" (6) "You felt you were too tired to do things;" (7) "You felt fearful;" (8) "You talked less than usual;" (9) "You felt lonely;" (10) "You felt sad;" and (11) "It was hard to get started doing things." Response categories range from (0) never or rarely, (1) sometimes, (2) a lot of the time, to (3) most of the time or all of the time. We construct a depressive symptoms score for every respondent who recorded valid responses for at least 82 percent of the items (9 of 11 items). We calculate the depressive symptoms score as the mean of the items answered,

multiplied by eleven. In this sample the scale ranges from 0 to 25, with 25 indicating the greatest degree of depressive symptoms. The alpha reliability of the scale is .79 in the current sample.

Currently dating, as well as *having ever dated*, are examined based on the assumption that individuals who are dating are exposed to the potential for sexual activity more often (e.g., Herceg-Baron et al. 1990). Using the adolescent's report of dating or participating in dating behaviors (i.e., holding hands, kissing, and telling each other "I love you") we code dating status of the respondent as "never dated," "has dated," (but is not currently), and "currently dating." For multivariate analyses, this variable is used to create two dummy variables with "never dated" as the contrast category.

We include age, race, and income measured at time one as independent variables. Adolescent's *age* at the time of the first interview is calculated from the adolescent's reported birth date and the interview date. The adolescent's r*ace/ethnicity* is self-reported. Response categories include White non-Hispanic, African-American non-Hispanic, Hispanic, and other. For multivariate analyses we create three dummy variables with White non-Hispanic as the contrast category. Consistent with past research (e.g., Wu and Martinson 1993), we measure income as *logged household income*. However, 18.9 percent of the respondents are missing information for this variable, so we substitute the mean for these cases. We test for the effect of substituting the mean for those missing on income using a dichotomous variable marking these cases.

We also include two other sociodemographic background variables found in other studies to affect adolescent sexual activity. These are mother's education (e.g., Dorius,

Heaton, and Steffen 1993; Hogan and Kitagawa 1985; Miller and Moore 1990; Mosher and McNally 1991) and type of family structure (Lauritsen 1994; McLanahan and Sandefur 1994). These variables could potentially confound relationships between the explanatory variables of primary interest and the dependent variable. Failure to control for potentially confounding variables may result in an inflated estimate of the impact of some independent variables on adolescent sexual onset.

To measure *mother's education level* we initially took the information from the adolescent's questionnaire, but for 208 respondents this information was missing. Rather than deleting these cases, we substituted the mother's report of her level of education for 120 cases, and the current modal score of education for the remaining 23 missing cases. The four response categories for mother's education are less than twelve years of school, twelve years of school, thirteen to fifteen years of school, and sixteen or more years of school. For multivariate analyses, this variable is used to create three dummy variables with an education level of twelve years as the contrast category.

To measure type of family structure, we use the adolescent's report of who is living in their household and that person's relationship to the adolescent. The *family type* variable includes four response categories: "biological parents" (i.e., households with both biological parents), "step-parent" (i.e., households with one biological parent and one step-parent), "single parent" (households with only one biological parent), and "other" (households with some other situation, such as grandparent care or foster parents). From this variable, we create three dummy variables with "biological parents" as the contrast category.

Statistical Analysis

The multivariate analyses are based on logistic regression models. Our analytical strategy is to first estimate models that include the zero-order effects of the social psychological variables, measured at time one separately, on sexual onset between the interview waves. The second model includes dating and the background variables.

These models are estimated separately for boys and girls and are used to test Hypotheses 1a and 1b regarding effects of self-esteem and depressive symptoms, respectively, on adolescent sexual onset (Tables 2 and 3). Running models separately for boys and girls is consistent with research on (a) adult as well as adolescents' depressive symptoms (e.g., Joyner and Udry 2000; Mirowsky and Ross 1989; Seff, Gecas and Ray 1992), (b) gender differences in adolescent self-esteem (see review by Kearney-Cooke 1999) and depression (e.g., Joyner and Udry 2000) and (c) adolescent depressive symptoms and sexual activity (e.g., Whitbeck et al. 1992).

In our next set of analyses, we address Hypothesis 2. We examine the effects of both self-esteem and depressive symptoms on sexual onset for boys (Table 4) and girls (Table 5). Our models first regress self-esteem and depressive symptoms on sexual onset, then we add the dating and sociodemographic background variables.

With regard to the models that include interaction effects, we show only those models with significant interactions (Tables 6, 7, and 8). (Other interaction results are available from the authors). These models are used to test Hypotheses 3a and 3b regarding the differential effects of self-esteem and depressive symptoms conditional on sociodemographic background.

We examine the moderating effects of self-esteem on the relationship between demographic background (i.e., age, race, and income) and sexual onset via the cross-product terms age x self-esteem, race x self-esteem, and income x self-esteem. To test globally for the presence of significant interaction, we first estimate a model in which sexual onset is regressed on the independent variables as outlined previously. We then add the cross-product terms. We do similar analyses for the cross-product of the depressive symptoms scale and age, race, and income, respectively. To avoid excessive collinearity, we center the self-esteem and depressive symptoms scales before taking their cross-products (Jaccard, Turrisi, and Wan 1990).

RESULTS

Distribution of Variables

The distribution of all variables used in the multivariate analyses are shown in Table 1. Bivariate correlation coefficients are shown in Appendices A and B[2]. We find that 12.3 percent of the sample had their first sexual experience between the two interview waves, with significantly more girls (13.5 percent) than boys (11.0 percent) reporting that their first sexual experience occurred during that one year time period.

Table 1 About Here

Turning to the social psychological variables, the sample mean of 25 suggests that self-esteem is relatively high, and it is also consistent with individuals' bias toward high

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[2]Examining the cross-sectional data in Time one shows significant differences in the self-esteem and depressive symptoms scores of virgins and non-virgins (Tables not shown). For boys, mean self-esteem for virgins (25.2) is higher than for non-virgins (24.9); the mean depressive symptoms score for virgins (4.9) is lower than for non-virgins (6.1). For girls, mean self-esteem for virgins (24.4) is higher than for non-virgins (23.7); the mean depressive symptoms score for virgins (5.9) is lower than for non-virgins (8.4).

self-esteem reported in both theoretical arguments and empirical findings (e.g., Baumeister 2001; Gecas 2001; Tice 1993). Boys report significantly higher self-esteem (mean = 25.5) than do girls (mean = 24.4). This difference is substantively small but is consistent with other gender differences in self-esteem reported in reviews of the literature (e.g., Kearney-Cooke 1999). The sample mean of 5.1 on the depressive symptoms scale suggests that on average, adolescents report relatively few depressive symptoms; however, girls report significantly more depressive symptoms (mean = 5.7) than do boys (mean = 4.6). This finding, is also consistent with findings found by others regarding higher levels of depression among adolescent girls than boys (e.g., Angold, Costello, and Worthman 1998; Joyner and Udry 2000).

Almost 20 percent of the adolescents report currently dating at the time one interview, with a significantly greater percentage of girls (22.1 percent) than boys (17.4 percent) currently dating. Although they were not currently dating at the time one interview, one-third of the sample reports having ever dated (30.6 percent), with a greater percentage of boys (33.3 percent) than girls (28.1 percent) reporting that they had ever dated. Half of the sample (49.6 percent) reports having never dated, at the time of the first interview.

Regarding the sociodemographic backgrounds of the respondents, their average age is fifteen years, 51.9 percent are female, and 48.1 percent are male. The majority, 70.2 percent, report their race/ethnicity as White, 9.6 percent as Black, 11.8 percent as Hispanic, and 8.4 percent report their race/ethnicity as 'other' than one of those mentioned.

The majority of respondents live with both biological parents (63.9 percent). Of the rest, about a quarter (24.2 percent) live with a single-parent, nearly 10 percent live in a step-family, and 2.5 percent report living in a family situation 'other' than one of those mentioned.

More than a third (34.2 percent) of the respondents report that their mothers achieved twelve years of education, while 14.4 percent report that their mothers did not complete high school. Nearly 20 percent of the adolescents report that their mothers have some college, and 31.7 percent report that their mothers have sixteen or more years of education.

Multivariate Analyses

Table 2 presents the odds ratio and standard error estimates of the effects of self-esteem, dating, and background variables, for boys and girls separately, on sexual onset between interview waves. Model 1 shows that the zero-order effect of self-esteem is not related significantly to sexual onset for boys. For girls, the zero-order effect of self-esteem shown in Model 3 is related significantly to sexual onset. Girls with higher self-esteem, measured at time one, have lower odds of experiencing sexual onset between the interview waves. Moreover, this effect is significant after including dating and the background variables in the model (Model 4), thus supporting Hypothesis 1a that higher self-esteem delays sexual onset for girls.

Table 2 About Here

Several other variables in the models predict sexual onset in ways that are consistent with previous research. Currently dating and having ever dated significantly

increase the odds of sexual onset between interview waves for adolescent boys (Model 2) and girls (Model 4) net of the other predictors. Among girls, older adolescents are more likely to experience sexual onset between the interview waves than are younger adolescents. With respect to family type, all family structures other than living with biological parents significantly increase the odds of sexual onset for boys. For girls, living with a single parent or a family type defined as 'other' versus living with biological parents increases the odds of sexual onset between the interview waves. Lastly, for girls, having a mother with a high level of educational attainment (i.e., 16+ years) decreases the odds of sexual onset between the interview waves.

Table 3 shows the odds ratio and standard error estimates of the effects of depressive symptoms on sexual onset between the interview waves, reported separately for boys and girls. The zero-order effect of depressive symptoms on sexual onset is significant for boys (Model 1), as well as for girls (Model 3). Depressive symptomology at time one increases the odds of sexual onset between the interview waves for both adolescent boys and girls. Moreover, these findings remain significant after controlling for the effects of the dating and socioeconomic background variables, thus providing support for Hypothesis 1b: for girls, greater feelings of depression at an earlier point in time is associated with sexual onset between the interview waves.

Table 3 About Here

Other results in the models are consistent with findings from other studies. For both adolescent boys and girls, similar to the findings regarding self-esteem, currently dating and having ever dated, relative to having never dated, increase the odds of sexual

onset between the interview waves (Model 2 and Model 4 respectively). For girls, age increases the odds of sexual onset. Similarly, for adolescent boys and girls, family structure affects the odds of sexual onset, such that living with step-parents (for boys but not for girls), a single parent, or other living arrangements, relative to living with biological parents, increases the odds of sexual onset between interview waves. Also, similar to the findings from the prior table regarding self-esteem, for girls, mother's high educational attainment, specifically having a four-year college degree or post-graduate education, decreases the odds of sexual onset between the interview waves.

Hypothesis 2 states that depressive symptoms will have a greater effect than self-esteem on sexual onset for both adolescent boys and girls. Table 4 shows the odds ratio and standard error estimates of the effects of self-esteem and depressive symptoms on sexual onset for boys. Model 1 includes only the effects of self-esteem and depressive symptoms, and Model 2 includes the effects of self-esteem, depressive symptoms, and the dating and background variables. Model 1 shows that depressive symptoms have a significant effect on sexual onset for boys, while self-esteem does not. Similarly, Model 2 shows that depressive symptoms, but not self-esteem, increase the odds of sexual onset between the interview waves net of the other predictors in the model. Thus we find support for our Hypothesis 2: symptoms of depression at time one have a greater effect than self-esteem on the odds of sexual onset for boys.

Table 4 About Here

Table 5 shows the odds ratio and standard error estimates of the effects of self-esteem and depressive symptoms for girls on sexual onset between the interview waves.

While self-esteem significantly effects sexual onset in Model 1, the effect of self-esteem is no longer significant with the inclusion of the other covariates in the model. Overall findings suggest that depressive symptoms, a risk factor, may be more important than self-esteem, a protective factor, in understanding girls' sexual onset. This further supports our Hypothesis 2. Moreover, as in prior models shown in Tables 2 and 3, dating, age, family type, and mother's education continue to similarly effect the odds of sexual onset for boys and girls. Other analyses (Table not shown) indicate there is not a statistically significant interaction between self-esteem and depressive symptoms for boys or girls, thus suggesting that the effects of depressive symptoms do not vary by level of self-esteem.

Table 5 About Here

Next we examine the effects of interactions of the following individual level variables on sexual onset net of other predictors. We examined models that included the effects of (a) self-esteem x age; (b) self-esteem x racial/ethnic categories; and (c) self-esteem x income (Hypothesis 3a). We then examined the various interactions substituting depressive symptoms for self-esteem (Hypothesis 3b). We present only interaction effects that are significant (other results are available from the authors).

In analyses testing Hypothesis 3a for girls, none of the interactions with self-esteem were significant. For boys, only the self-esteem and age interaction was significant. Table 6 shows the odds ratio and standard error estimates of the effects of self-esteem interacted with age on sexual onset for boys net of the other variables. The negative interaction between self-esteem and age suggests that high self-esteem among

older boys has less of an effect on decreasing the odds of sexual onset relative to its effect for younger boys. In other words, the protective effect of self-esteem in delaying sexual onset is greater for younger boys compared with older boys net of the other variables in the model.

Table 6 About Here

We next test Hypothesis 3b for boys and girls. None of the interaction effects with depressive symptoms were significant for boys, thus the negative effect of depression on sexual onset exists regardless of boys' age, race/ethnicity, or income.

For girls only the interaction effect of depressive symptoms and income was not significant. Table 7 shows the odds ratio and standard error estimates of the effects of depressive symptoms interacted with age on sexual onset for girls net of the other variables in the models. This interaction suggests that depressive symptoms have effects on girls' sexual onset between interview waves that differ by age. That is, depressive symptoms have less of an effect on older girls. Moreover, high depression appears to more greatly accelerate sexual onset between interview waves for younger girls.

Table 7 About Here

Table 8 shows the odds ratio and standard error estimates of the effects of depressive symptoms interacted with racial/ethnic categories on sexual onset for girls net of the other variables in the model. Depressive symptoms interact with race/ethnicity, such that its effect is lower for African-American girls relative to White girls, suggesting that depression plays a smaller role in sexual onset for African-American relative to White girls.

Table 8 About Here

In sum, we provide partial support for our expectation that the effects of self-esteem and depression differ according to background (Hypotheses 3a and 3b). The effects of self-esteem differ for younger than older adolescent boys but do not differ according to race/ethnicity and income. Additionally, for girls self-esteem does not have differing effects by background, and for boys, depressive symptoms do not have differing effects by background. Finally, the effects of depressive symptoms differ for younger than older adolescent girls, and for African-American relative to White adolescent girls.

DISCUSSION

A central premise of this paper is that decisions about sexuality and other health behaviors are likely influenced by individual, social and contextual factors. In this paper, we assess whether the individual level variables self-esteem and depressive symptoms significantly impact sexual onset once sociodemographic background predictors and dating context are introduced as controls. We find support for our hypothesis suggesting that higher self-esteem delays sexual onset for girls, although this is not true for boys. Our findings also support that depressive symptoms increase the likelihood of sexual onset for girls. We did not hypothesize a relationship for boys because to date the empirical literature did not warrant a hypothesis. However, since we did find this relationship for boys as well, one contribution of our study is to clarify that the relationship between depressive symptoms and sexual onset exists for both adolescent girls and boys.

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Overall, these individual predictors of sexual onset appear to be more important for female versus male, White versus African-American, and younger versus older adolescents. In addition, when logistic regressions include both individual level predictors, self-esteem is no longer significant. Thus, although many positive benefits of self-esteem have been suggested, here we find that the conceptual and empirical link between low self-esteem and depressive symptoms may be most pivotal (though other analyses not shown indicate that depressive symptoms and self-esteem do not interact to significantly affect sexual onset).

While it is generally appropriate to consider sexual onset a high-risk health behavior, these data suggest some of the limitations of this problem-oriented view. When socialization pressures encourage sexual experimentation (as occurs with males more often than with females and among older, in contrast to younger adolescents), individual level "deficit" type variables may not be very important in distinguishing which adolescents become sexually active. Conversely, among younger adolescents, who as a subgroup may have more incentive to "delay" sexual intimacy, these kinds of variables appear to be more salient as predictors. The significant interactions involving age are suggestive of this general notion. Additionally, that level of depressive symptoms and self-esteem appeared to be more significant predictors of sexual onset for White than African-American adolescents would be consistent with the known group-level differences in the percentage of African-American and White females having intercourse at each age.

With regard to limitations of the present study, future research should examine the

relationship context of adolescent sexual onset. While some research emphasizes the contextual importance of dating with respect to sexual onset (e.g., Miller and Moore 1990; Miller et al. 1997; Thornton, 1990), sexual onset with non-romantic partners is much less widely studied, with a few notable exceptions (e.g., Elo et al. 1999). The especially short duration of these sexual relationships may increase exposure to multiple partners and subsequently may increase the risk of exposure to sexually transmitted diseases. Additionally, since dating is associated with more effective contraceptive use, it is possible that non-dating or non-romantic sexual onset is associated with higher risk for sexually related health problems (Manning et al. 2000). In this vein, our future research based on a current data collection effort will examine whether adolescents have their first sexual experience within a dating relationship or with a non-romantic partner may be influenced by self-esteem and depressive symptoms.

There is considerable interest in policies and programs designed to meet the mental health needs of adolescents. This paper demonstrates that in addition to improving adolescents' psychological well-being, such efforts could also influence the timing of sexual onset and perhaps movement into risky sexual behaviors. This is particularly true for those adolescents we typically regard as being at "low-risk" of initiating sexual intercourse, and thus, may sometimes not be considered when designing policies and programs geared toward sexual education and empowerment.

With respect to our contribution to theoretical development, we suggest that low self-esteem (i.e., not feeling good about oneself) has different consequences for adolescent sexual onset compared with feeling depressed. We argue that self-esteem is

key to healthy functioning because it pervades all realms of an individual's life via its effect on perception. Individuals with low self-esteem are particularly cognizant of outer indicators of their self-worth (Rosenberg 1989), and therefore, an individual with low self-esteem is constantly striving; albeit he or she is striving to simply maintain his or her low self-esteem, nevertheless, it is striving behavior. Such an individual does not want to feel any worse about him or herself, and perhaps as a consequence actually protects the self better than an individual who is dealing with depressive symptoms.

Depression, on the other hand, affects decision-making. An individual who is experiencing many depressive symptoms is likely to make decisions by default, that is, 'things' just happen to the individual without him/her actively making decisions that affect his/her life. As we argued earlier, depressive symptoms have an immobilizing effect that makes efficacious decision-making difficult. Thus, an adolescent who is suffering from symptoms of depression may not be making decisions that are in his or her best interest.

REFERENCES

Alan Guttmacher Institute. 1994. *Sex and America's Teenagers*. New York: Alan
Guttmacher Institute.

Angold, A., E. J. Costello, and C. M. Worthman. 1998. "Puberty and Depression: The
Roles of Age, Pubertal Status and Pubertal Timing." *Psychological Medicine* 28:
51-61.

Attie, Liana and Jeanne Brooks-Gunn. 1989. "Development of Eating Problems in
Adolescent Girls: A Longitudinal Study." *Developmental Psychology* 25:70-79.

Ball-Rokeach, Sandra J., Milton Rokeach, and Joel W. Grube. 1984. *The Great American
Values Test*. New York, NY: The Free Press.

Battle, James. 1987. "Relationship Between Self-Esteem and Depression Among
Children." *Psychological Reports* 60: 1187-90.

Baumeister, Roy F. 1991. "Should Schools Try to Boost Self-Esteem? Beware of the
Dark Side." *American Educator* Summer: 14-43.

Baumeister, Roy F. 2001. "Violent Pride." *Scientific American* 384 (4): 96-101.

Bearman, Peter S., Jo Jones, and J. Richard Udry. 1997. *The National Longitudinal
Study of Adolescent Health: Research Design*. [On-Line]. Available:
URL:http://www.cpc.unc.edu/projects/addhealth/resdesign/index/htm.

Brazzell, J. and Alan Acock. 1988. "Influences of Attitudes, Significant Others, and
Aspirations on How Adolescents Intend to Resolve a Premarital Pregnancy."
Journal of Marriage and the Family 50:413-25.

Chantalla, Kim and Joyce Tabor. 1999. "Strategies to Perform a Design-Based Analysis Using the Add Health Data." Carolina Population Center, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Dorius Guy L., Tim B. Heaton, and Patrick Steffen. 1993. "Adolescent Life Events and Their Associations with the Onset of Sexual Intercourse." *Youth and Society* 25:3-23.

East, Patricia, Marianne Felice, and Maria Morgan. 1993. "Sisters' and Girlfriends' Sexual Childbearing Behavior: Effects on Early Adolescent Girls' Sexual Outcomes." *Journal of Marriage and the Family* 55:953-63.

Elo, Irma T., Rosalind Berkowitz King, and Frank F. Furstenberg Jr. 1999. "Adolescent Females: Their Sexual Partners & the Fathers of Their Children." *Journal of Marriage and the Family* 61:74-84.

Feldman, S. Shirley and Nancy L. Brown. 1993. "Family Influences on Adolescent Male Sexuality: The Mediational Role of Self-Restraint." *Social Development* 2:15-35.

Ford, Kathleen, Woosung Sohn, and James Lepkowski. 2001. "Characteristics of Adolescents' Sexual Partners and Their Association with Use of Condoms and Other Contraceptive Methods*." Family Planning Perspectives* 33(3): 100-105 & 132.

Gecas, Viktor. 1982. "The Self-Concept." *Annual Review of Sociology* 8:1-33.

Gecas, Viktor. 2001. "The Self-Concept as a Social Force." In *Extending Self-Esteem Theory and Research: Sociological and Psychological Currents*, edited by

Timothy Owens, Sheldon Stryker, and Norman Goodman. New York: Cambridge University Press.

Gecas, Viktor and Peter Burke. 1995. "Self and Identity." Pp. 41-67 in *Sociological Perspectives on Social Psychology*, edited by K. Cook, G. Fine, and J. House. Boston, MA: Allyn and Bacon.

Gecas, Viktor and Monica A. Longmore. Forthcoming. "Self-Esteem." *In International Encyclopedia of Marriage and Family Relationships*, edited by D. M. Cavalieri. New York, NY: Macmillan Reference.

Gecas, Viktor and Monica A. Seff. 1990. "Families and Adolescents: A Review of the 1980s." *Journal of Marriage and the Family* 52:941-58.

Glass, Jennifer and Tetsushi Fujimoto. 1994. "Housework, Paid Work and Depression among Husbands and Wives." *Journal of Health and Social Behavior* 35:179-191.

Hagan, John and Holly Foster. 2001. "Youth Violence and the End of Adolescence." *American Sociological Review* 66: 874-899.

Harter, Susan. 1993. "Causes and Consequences of Low Self-Esteem in Children and Adolescents." Pp. 87-116 in *Self-Esteem: The Puzzle of Low Self-Regard*, edited by R. F. Baumeister. NY: Plenum Press.

Herceg-Baron, Roberta, Kathleen Mullan Harris, Kay Armstrong, Frank F. Furstenberg, Jr., and Judy Shea. 1990. "Factors Differentiating Effective Use of Contraceptives Among Adolescents." Pp. 37-50 in *Advances in Adolescent Mental Health: Contraception, Pregnancy, and Parenting,* vol. 4, edited by A. R. Stiffman and R. A. Feldman. London: Jessica Kingsley Publishers Ltd.

Hewitt, John P. 1998. *The Myth of Self-Esteem: Finding Happiness and Solving Problems in America*. New York, NY: St. Martin's Press.

Hogan, Dennis P. and Evelyn M. Kitagawa. 1985. "The Impact of Social Status, Family Structure, and Neighborhood on the Fertility of Black Adolescents." *American Journal of Sociology* 90:825-55.

Jaccard, James, Patricia J. Dittus, and Vivian V. Gordon. 1998. "Parent-Adolescent Congruency in Reports of Sexual Behavior and in Communications about Sexual Behavior." *Child Development* 69:247-61.

Jaccard, James, Robert Turrisi, and Choi K. Wan. 1990. *Interaction Effects in Multiple Regression*. Thousand Oaks, CA: Sage.

Jessor, Richard. 1998. "New Perspectives on Adolescent Risk Behavior." Pp. 1-12 in *New Perspectives on Adolescent Risk Behavior*, edited by Richard Jessor. New York: Cambridge University Press.

Joyner, Kara and J. Richard Udry. 2000. "You Don't Bring Me Anything But Down: Adolescent Romance and Depression." *Journal of Health and Social Behavior* 41: 369-91.

Kann, Laura, Steven A. Kinchen, Barbara I. Williams, James G. Ross, Richard Lowry, Carl V. Hill, Jo Anne Grunbaum, Pamela S. Blumson, Janet L. Collins, Lloyd J. Kolbe, and State and Local YRBSS Coordinators. 1998. "Youth Risk Behavior Surveillance - United States, 1997." *Journal of School Health* 68:355-69.

Kearney-Cooke, Ann. 1999. "Gender Differences and Self-Esteem*." The Journal of Gender-Specific Medicine* 2: 46-52.

Kohn, Alfie. 1994. "The Truth About Self-Esteem." *Phi Delta Kappan* 4:272-83.

Kowaleski-Jones, Lori and Frank L. Mott. 1998. "Sex, Contraception and Childbearing among High-Risk Youth: Do Different Factors Influence Males and Females?" *Family Planning Perspectives* 30:163-69.

Lauritsen, Janet L. 1994. "Explaining Race and Gender Differences in Adolescent Sexual Behavior." *Social Forces* 72:859-84.

Longmore, Monica A. 1998. "Symbolic Interactionism and the Study of Sexuality." *The Journal of Sex Research* 35:44-57.

Longmore, Monica A. and Alfred DeMaris. 1997. "Perceived Inequality and Depression: The Moderating Effect of Self-Esteem." *Social Psychology Quarterly* 60:172-84.

Longmore, Monica A., Wendy D. Manning, and Peggy C. Giordano. 2001. "Preadolescent Parenting Strategies and Teens' Dating and Sexual Initiation: A Longitudinal Analysis." *Journal of Marriage and the Family* 63: 322-35.

Luker, Kristin. 1996. *Dubious Conception: The Politics of Teenage Pregnancy*. Cambridge, MA: Harvard University Press.

Manning, Wendy D., Monica A. Longmore, and Peggy C. Giordano. 2000. "The Relationship Context of Contraceptive Use at First Intercourse." *Family Planning Perspectives* 32:104-110.

McLanahan, Sara and Gary D. Sandefur. 1994. *Growing Up With a Single Parent: What Hurts, What Helps*. Cambridge, MA: Harvard University Press.

McDonald, Donna A. and John P. McKinney. 1994. "Steady Dating and Self-Esteem in High School Students." *Journal of Adolescence* 17:557-64.

Miller, Brent C., and Kristin A. Moore. 1990. "Adolescent Sexual Behavior, Pregnancy, and Parenting: Research Through the 1980s." *Journal of Marriage and the Family* 52:1025-44.

Miller, Brent C., Maria C. Norton, Thom Curtis, E. Jeffrey Hill, Paul Schvaneveldt, and Margaret H. Young. 1997. "The Timing of Sexual Intercourse Among Adolescents: Family, Peer, and Other Antecedents." *Youth and Society* 29:54-83.

Miller, Kim S., Rex Forehand, and Beth A. Kotchick. 1999. "Adolescent Sexual Behavior in Two Ethnic Minority Samples: The Role of Family Variables." *Journal of Marriage and the Family* 61:85-98.

Mirowsky, John and Catherine E. Ross. 1989. *Social Causes of Psychological Distress*. New York, NY: Aldine de Gruyter.

Moore, Kristen A., Brent C. Miller, Dana A. Glei, and Donna R. Morrison. 1995. *Adolescent Sex, Contraception, and Childbearing: A Review of Recent Research*. Washington, D.C.: Child Trends, Inc.

Mosher, and James W. McNally. 1991. "Contraceptive Use at First Premarital Intercourse: United States, 1965-1988. *Family Planning Perspectives* 23: 108-16.

Overby, Kim J. and Susan M. Kegeles. 1994. "The Impact of AIDS on an Urban Population of High-Risk Female Minority Adolescents: Implications for Intervention." *Journal of Adolescent Health* 15:216-27.

Pearlin, Leonard I. and Morton A. Lieberman. 1979. "Social Sources of Emotional Distress." Pp. 217-48 in *Research in Community and Mental Health*, vol. 1, edited by R. G. Simmons. Greenwich, CT: JAI.

Pearlin, Leonard I., Morton A. Lieberman, Elizabeth G. Menaghan, and Joseph T.
Mullan. 1981. "The Stress Process." *Journal of Health and Social Behavior*
22:337-56.

Radloff, Lenore S. 1977. "The CES-D Scale: A Self-Reported Depression Scale for
Research in the General Population." *Applied Psychological Measurement* 1:
385-401.

Resnick, Michael D., Peter S. Bearman, Robert W. Blum, Karl E. Bauman, Kathleen M.
Harris, Jo Jones, Joyce Tabor, Trish Beuhring, Renee E. Sieving, Marcia Shew,
Marjorie Ireland, Linda H. Bearinger, and J. Richard Udry. 1997. "Protecting
Adolescents from Harm: Findings from the National Longitudinal Study on
Adolescent Health." *Journal of the American Medical Association* 278:823-32.

Rosenberg, Morris. 1965 [1989]. *Society and the Adolescent Self-Image*. Revised ed.
Middletown, CT: Wesleyan University Press.

Rosenberg, Morris. 1979. *Conceiving the Self*. New York, NY: Basic Books.

Ross, Catherine E., John Mirowsky, and Joan Huber. 1983. "Dividing Work, Sharing
Work, and In-Between: Marriage Patterns and Depression." *American
Sociological Review* 48: 809-23.

Schlossman, Steven and Robert B. Cairns. 1993. "Problem Girls: Observations on Past
and Present." Pp. 110-30 in *Children in Time and Place: Relations Between
History and Developmental Psychology*, edited by G. H. Elder Jr., R. D. Park, and
J. Modell. New York: Cambridge University Press.

Seff, Monica A., Viktor Gecas, and M. Ray. 1992. "Injury and Depression: The Mediating Effects of Self-Concept." *Sociological Perspectives* 35:573-91.

Smith, Edward A. and Laurie Zabin. 1993. "Marital and Birth Expectations of Urban Adolescents." *Youth and Society* 25:62-74.

Steinberg, Laurence and Jay Belsky. 1996. "An Evolutionary Perspective on Psychopathology in Adolescence." Pp. 93-124 in *Adolescence: Opportunities and Challenges*, edited by Dante Cicchetti and Sheree L. Toth. Rochester, NY: University of Rochester Press.

Svetaz, Maria V., Marjorie Ireland, and Robert Blum. 2000. "Adolescents With Learning Disabilities: Risk and Protective Factors Associated With Emotional Well-Being: Findings From the National Longitudinal Study of Adolescent Health." *Journal of Adolescent Health* 27: 340-48.

Thornton, Arland D. 1990. "The Courtship Process and Adolescent Sexuality." *Journal of Family Issues* 11:239-73.

Tice, Diane M. 1993. "The Social Motivations of People With Low Self-Esteem." Pp. 37-53 in *Self-Esteem: The Puzzle of Low Self-Regard*, edited by R. F. Baumeister. NY: Plenum Press.

Weissman, Myrna M., Diane Sholomskas, Margaret Pottenger, Briggette A. Prusoff, and Ben Z. Locke. 1977. "Assessing Depressive Symptoms in Five Psychiatric Populations: A Validation Study." *American Journal of Epidemiology* 106: 203-14.

Whitbeck, Les B., Rand D. Conger, and Meei-Ying Kao. 1993. "The Influence of

    Parental Support, Depressed Affect, and Peers on the Sexual Behavior of Girls."

    Journal of Family Issues 14:261-78.

Whitbeck, Les B., Dan R. Hoyt, Martin Miller, and Meei-Ying Kao. 1992. "Parental

    Support, Depressed Affect, and Sexual Experience among Adolescents." *Youth &*

    Society 24:166-77.

Wu, Lawrence L. and Brian C. Martinson. 1993. "Family Structure and the Risk of a

    Premarital Birth." *American Sociological Review* 58: 210-32.

Zabin, Laurie S., Marilyn B. Hirsch, Edward A. Smith, and Janet B. Hardy. 1984.

    "Adolescent Sexual Attitudes and Behavior: Are They Consistent." *Family*

    Planning Perspectives 16:181-85.

Table 1. Distribution of Variables

	TOTAL	BOYS	GIRLS
	Percent/Mean	Percent/Mean	Percent/Mean
Sexual Onset (T2)*			
Sex between waves	12.3	11.0	13.5
Never had sex	87.7	89.0	86.5
Social Psychological Variables (T1)			
Self-Esteem* Range: 7-30	25.0	25.5	24.4
Depressive Symptoms* Range: 0-25	5.1	4.6	5.7
Dating (T1)*			
Currently dating	19.8	17.4	22.1
Ever dated	30.6	33.3	28.1
Never dated	49.6	49.3	49.9
Background (T1)			
Age	15.1	15.1	15.0
Gender			
Female	51.9		
Male	48.1		
Race/Ethnicity*			
White	70.2	72.7	68.0
Black	9.6	7.7	11.4
Hispanic	11.8	10.8	12.8
Other	8.4	8.9	7.8
Family type*			
Bio-parents	63.9	65.0	63.0
Step-parents	9.4	10.4	8.4
Single-parent	24.2	22.6	25.7
Other	2.5	2.1	2.9
Income			
Logged family income	3.6	3.7	3.6
Missing income	18.7	18.1	19.2
Mother's education			
<12 years	14.4	12.9	15.9
12 years	34.2	34.5	33.9
13-15 years	19.7	18.6	20.7
16+ years	31.7	34.1	29.5

Source: National Longitudinal Study of Adolescent Health
N=7,965 N for boys = 3,665, N for girls = 4,300
*Denotes significant difference between boys and girls.

Table 2. Odds Ratio and Standard Error Estimates of the Effects of Self-Esteem for Boys and Girls on Sexual Onset Between Interview Waves

	BOYS				GIRLS			
	Model 1		Model 2		Model 3		Model 4	
	e^b	(s.e.)	e^b	(s.e.)	e^b	(s.e.)	e^b	(s.e.)
Self-Esteem	0.96	(.02)	0.98	(.02)	0.93***	(.01)	0.95***	(.01)
Dating								
Currently dating			5.33***	(1.24)			4.52***	(.77)
Ever dated			3.66***	(.74)			2.95***	(.49)
(Never dated)								
Background								
Age			1.08	(.16)			1.29***	(.05)
Race/Ethnicity								
Black			1.39	(.27)			0.82	(.18)
Hispanic			1.12	(.23)			0.89	(.19)
Other			1.06	(.34)			0.93	(.23)
(White)								
Family type								
Step-parents			1.60*	(.34)			1.13	(.23)
Single-parent			2.53***	(.46)			1.56**	(.25)
Other			2.27*	(.85)			2.80**	(.94)
(Bio-parents)								
Income								
Logged family income			0.95	(.10)			0.93	(.08)
Missing income			1.30	(.25)			0.97	(.17)
Mother's education								
<12 years			0.94	(.26)			0.89	(.18)
13-15 years			0.80	(.17)			0.93	(.13)
16+ years			1.05	(.19)			0.54***	(.09)
(12 years)								
Log likelihood	-1266.76		-1131.88		-1687.93		-1515.00	
N	3665		3665		4300		4300	

Source: National Longitudinal Study of Adolescent Health
Note: Omitted category in parentheses.
*p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 3. Odds Ratio and Standard Error Estimates of the Effects of Depressive Symptoms for Boys and Girls on Sexual Onset Between Interview Waves

	BOYS				GIRLS			
	Model 1		Model 2		Model 3		Model 4	
	e^b	(s.e.)	e^b	(s.e.)	e^b	(s.e.)	e^b	(s.e.)
Depressive Symptoms	1.06***	(.01)	1.04**	(.01)	1.07***	(.01)	1.05***	(.01)
Dating								
Currently dating			5.26***	(1.20)			4.31***	(.73)
Ever dated			3.61***	(.73)			2.84***	(.48)
(Never dated)								
Background								
Age			1.08	(.13)			1.28***	(.05)
Race/Ethnicity								
Black			1.35	(.27)			0.77	(.16)
Hispanic			1.10	(.23)			0.89	(.19)
Other			0.99	(.32)			0.91	(.24)
(White)								
Family type								
Step-parents			1.61*	(.33)			1.11	(.23)
Single-parent			2.48***	(.45)			1.51**	(.25)
Other			2.37*	(.91)			2.76***	(.92)
(Bio-parents)								
Income								
Logged family income			0.96	(.10)			0.94	(.08)
Missing income			1.31	(.25)			0.99	.(17)
Mother's education								
<12 years			0.92	(.25)			0.88	(.18)
13-15 years			0.81	(.17)			0.91	(.12)
16+ years			1.05	(.18)			0.53***	(.09)
(12 years)								
Log likelihood	-1255.88		-1131.88		-1667.47		-1508.40	
N	3665		3665		4300		4300	

Source: National Longitudinal Study of Adolescent Health
Note: Omitted category in parentheses.
*p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 4. Odds Ratio and Standard Error Estimates of the Effects of Self-Esteem and Depressive Symptoms for
Boys on Sexual Onset Between Interview Waves

	Model 1		Model 2	
	$\underline{e}^b$	(s.e.)	$\underline{e}^b$	(s.e.)
Self-Esteem	0.99	(.02)	1.00	(.02)
Depressive Symptoms	1.06***	(.01)	1.05**	(.01)
Dating				
Currently dating			5.25***	(1.20)
Ever dated			3.61***	(.73)
(Never dated)				
Background				
Age			1.08	(.13)
Race/Ethnicity				
Black			1.34	(.27)
Hispanic			1.10	(.23)
Other			0.99	(.32)
(White)				
Family type				
Step-parents			1.61*	(.34)
Single-parent			2.48***	(.45)
Other			2.38*	(.91)
(Bio-parents)				
Income				
Logged family income			0.96	(.10)
Missing income			1.32	(.25)
Mother's education				
<12 years			0.92	(.26)
13-15 years			0.81	(.17)
16+ years			1.05	(.19)
(12 years)				
Log likelihood	-1255.87		-1131.84	
N	3665		3665	

Source: National Longitudinal Study of Adolescent Health
Note: Omitted category in parentheses.
*p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 5. Odds Ratio and Standard Error Estimates of the Effects of Self-Esteem and Depressive Symptoms for Girls on Sexual Onset Between Interview Waves

	Model 1		Model 2	
	e^b	(s.e.)	e^b	(s.e.)
Self-Esteem	0.97**	(.01)	0.97	(.01)
Depressive Symptoms	1.06***	(.01)	1.04***	(.01)
Dating				
Currently dating			4.34***	(.74)
Ever dated			2.81***	(.47)
(Never dated)				
Background				
Age			1.28***	(.05)
Race/Ethnicity				
Black			0.79	(.17)
Hispanic			0.89	(.19)
Other			0.90	(.24)
(White)				
Family type				
Step-parents			1.11	(.23)
Single-parent			1.51**	(.24)
Other			2.74***	(.92)
(Bio-parents)				
Income				
Logged family income			0.93	(.08)
Missing income			0.99	(.17)
Mother's education				
<12 years			0.87	(.18)
13-15 years			0.92	(.12)
16+ years			0.53***	(.09)
(12 years)				
Log likelihood	-1665.28		-1506.42	
N	4300		4300	

Source: National Longitudinal Study of Adolescent Health
Note: Omitted category in parentheses.
*p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 6. Odds Ratio and Standard Error Estimates of the Effects of Self-Esteem
Interacted with Age on Sexual Onset for Boys Net of Other Variables

	e^b	(s.e.)
Self-Esteem	1.46*	(.26)
Depressive Symptoms	1.04**	(.01)
Dating		
Currently dating	5.16***	(1.15)
Ever dated	3.58***	(.72)
(Never dated)		
Background		
Age	1.16***	(.05)
Race/Ethnicity		
Black	1.31	(.26)
Hispanic	1.07	(.22)
Other	0.98	(.32)
(White)		
Family type		
Step-parents	1.62*	(.34)
Single-parent	2.57***	(.47)
Other	2.31*	(.88)
(Bio-parents)		
Income		
Logged family income	0.95	(.10)
Missing income	1.27	(.24)
Mother's education		
<12 years	0.90	(.25)
13-15 years	0.80	(.16)
16+ years	1.03***	(.18)
(12 years)		
Interaction		
Esteem * Age	0.97*	(.01)
Log likelihood	-1125.30	
N	3655	

Source: National Longitudinal Study of Adolescent Health
Note: Omitted category in parentheses.
*p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 7. Odds Ratio and Standard Error Estimates of the Effects of Depressive Symptoms
Interacted with Age on Sexual Onset for Girls Net of Other Variables

	e^b	(s.e.)
Self-Esteem	0.97*	(.01)
Depressive Symptoms	1.37**	(.14)
Dating		
Currently dating	4.28***	(.73)
Ever dated	2.81***	(.47)
(Never dated)		
Background		
Age	1.32***	(.05)
Race/Ethnicity		
Black	0.78	(.16)
Hispanic	0.89	(.19)
Other	0.92	(.24)
(White)		
Family type		
Step-parents	1.10	(.23)
Single-parent	1.51***	(.24)
Other	2.71**	(.90)
(Bio-parents)		
Income		
Logged family income	0.93	(.08)
Missing income	0.98	(.17)
Mother's education		
<12 years	0.87	(.18)
13-15 years	0.92	(.12)
16+ years	0.54***	(.10)
(12 years)		
Interaction		
Depressive * Age	0.98**	(.01)
Log likelihood	-1502.34	
N	4300	

Source: National Longitudinal Study of Adolescent Health
Note: Omitted category in parentheses
*p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 8. Odds Ratio and Standard Error Estimates of the Effects of Depressive Symptoms
Interacted with Race on Sexual Onset for Girls Net of Other Variables

	e^b	(s.e.)
Self-Esteem	0.97	(.01)
Depressive Symptoms	1.06***	(.01)
Dating		
Currently dating	4.30***	(.75)
Ever dated	2.80***	(.47)
(Never dated)		
Background		
Age	1.28***	(.05)
Race/Ethnicity		
Black	0.92	(.20)
Hispanic	0.90	(.23)
Other	1.11	(.28)
(White)		
Family type		
Step-parents	1.12	(.24)
Single-parent	1.50*	(.24)
Other	2.89***	(.96)
(Bio-parents)		
Income		
Logged family income	0.93	(.08)
Missing income	0.98	(.17)
Mother's education		
<12 years	0.86	(.18)
13-15 years	0.91	(.12)
16+ years	0.53***	(.09)
(12 years)		
Interactions		
Depressive * Black	0.93*	(.02)
Depressive * Hispanic	0.99	(.03)
Depressive * Other	0.92	(.04)
Log likelihood	-1501.08	
N	4300	

Source: National Longitudinal Study of Adolescent Health
Note: Omitted category in parentheses.
*p ≤ .05, **p ≤ .01, ***p ≤ .001