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Peer Acceptance and Sexual Behaviors from Adolescence to Young Adulthood

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Abstract

Well-liked adolescents are more likely than their peers to engage in sexual behaviors, which may place them at higher risk of negative outcomes such as sexually transmitted infections and unwanted pregnancy. Yet, little is known regarding whether peer acceptance in adolescence predicts sexual outcomes in young adulthood. Understanding developmental links between peer acceptance and sexual outcomes will inform theories of how peers affect health and can help identify targets for health promotion efforts. Using longitudinal sociometric data from 1,878

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Authors' Contributions

RW collaborated on the research questions, conducted the statistical analyses, and helped to draft the manuscript. DAK collaborated on the research questions, developed the analysis plan, and helped to draft the manuscript. ESL collaborated on the research questions and helped to draft the manuscript. MEF helped to draft the manuscript. All authors read and approved the final manuscript.

Conflicts of Interest

The authors report no conflicts of interest.

Data Sharing Declaration

This manuscript's data will not be deposited.

Disclosure of Potential Conflicts of Interest

Research Involving Human Participants and/or Animals

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Ethical Approval

The procurement of the data required for this study was approved by the Iowa State University and Pennsylvania State University institutional review boards.

Informed Consent

All youth and families were informed about and consented to participate in this project.

participants in the PROSPER study (54% female, 82% White, mean age = 11.79 at baseline), the present research examined the association of adolescent peer acceptance, reported annually from grades 6–11, with adolescent and young adult sexual outcomes. Well-liked adolescents were more likely to have sexual intercourse by age 16. At age 19, well-liked individuals were more likely to have had sexual intercourse but were less likely to be diagnosed with a sexually transmitted infection. For boys but not girls, peer acceptance was linked to having more past year sexual partners in young adulthood. Adolescent peer acceptance was not associated with other young adult sexual outcomes, such as sex without a condom or casual sex. Overall, well-liked adolescents demonstrated healthy sexual development into young adulthood, despite a higher likelihood of sexual initiation early in adolescence. Findings demonstrate the importance of peer acceptance for healthy development into young adulthood and suggest that well-liked adolescents may be appropriate targets for peer-led sexual health education programs.

Keywords

peer acceptance; sexual behavior; sexual health; gender differences

Introduction

Although rates of adolescent sexual intercourse, sex without condoms, and unintended pregnancy have declined significantly over the past several decades (Centers for Disease Control and Prevention [CDC] 2016; Martin et al. 2018), adolescent sexual behaviors remain a significant public and policy concern. A 2015 national survey found that 41% of American high school students had ever had sexual intercourse and 43% who were sexually active did not use a condom during their most recent sexual intercourse (CDC 2016). Moreover, adolescents and young adults are at greater risk of sexually transmitted infections (STIs) than any other age group, and STI rates for these age groups have increased over the past few years (CDC 2016). Understanding the risk factors precipitating these trends is a vital research concern.

Social scientists have focused particular attention on peer contexts for understanding adolescent sexual behaviors (Ali and Dwyer 2011) and risk-taking (Potard, Courtois, and Rusch 2008). Sexual behaviors during adolescence may offer social rewards, thus encouraging sexual behaviors (Cooper, Shapiro, and Powers 1998). In this vein, Moffitt's (1993) typological theory of antisocial behavior offers an explanation for why engaging in sexual behaviors—whether “risky” or not—may be associated with social rewards, particularly peer acceptance. According to Moffitt, sexual behaviors in adolescence exemplify “pseudomature” behavior: an adult-like behavior that helps adolescents assert their social independence. Engaging in sexual behaviors allow adolescents to overcome the “maturity gap” that results from a disjunction between their biological and social ages. During adolescence, pseudomature behaviors become a marker of social status, indicating to peers that one is independent and mature. Thus, adolescents who are sexually active should also be well-liked by peers and being well-liked should, in turn, increase sexual opportunities and behaviors.

Peer Acceptance and Adolescent Sexual Behaviors and Outcomes

Several researchers have drawn on Moffitt's (1993) typological theory of antisocial behavior to test whether peer acceptance, the degree to which an individual is well-liked and easily navigates social relationships, increases the likelihood of adolescent sexual intercourse. Researchers often operationalize peer acceptance with sociometric data using peers' nominations of friendship, likeability, or popularity. Consistent with Moffitt's theory, this research demonstrates that adolescents who are more accepted by their peers are more likely than their less-accepted peers to have sexual intercourse (e.g., Agan et al. 2015).

Although researchers have identified links between peer acceptance and normative sexual behaviors, findings regarding associations between peer acceptance and sexual risk are mixed. For example, some research indicates that adolescents who are more accepted by their peers—whose peers consider them to be more likeable or popular—have fewer sexual partners than their less accepted peers (Prinstein, Meade, and Cohen 2003) and are less likely to become pregnant (Miller-Johnson et al. 1999). The results of other research suggest that peer acceptance is not associated with number of sexual partners (Prinstein, Choukas-Bradley, Helms, Brechwald, and Rancourt 2011), pregnancy (Underwood, Kupersmidt, and Coie 1996), or frequency of sex without condoms (Hawke and Rieger 2013). Past studies have examined either normative sexual behaviors or sexual risk indicators, not both. Thus, additional research is necessary to better understand associations of peer acceptance with both normative sexual behaviors and sexual risk/poor sexual health outcomes. In addition, examining multiple sexual health outcomes in one sample will eliminate some factors that vary across previous studies and may contribute to disparate results (e.g., sample demographics), thereby helping to clarify conflicting findings.

Adolescent Peer Acceptance and Young Adult Sexual Behaviors and Outcomes

A related underexplored question is whether peer acceptance during adolescence is linked prospectively to young adult sexual outcomes. After leaving high school, young adults may consider themselves to be more mature following transitions in their financial, social, educational, and familial roles (Benson and Furstenberg 2006). Upon such transitions, the maturity gap of adolescence closes and previously pseudomature behaviors, such as having sexual intercourse, may no longer indicate maturity and confer social benefits. In this case, well-liked adolescents may mostly conform to Moffitt's (1993) "adolescent limited" behavioral trajectory in which they become less likely to engage in previously pseudomature behaviors as they age and adopt adult roles. Individuals conforming to this trajectory may engage in similar, or fewer, sexual practices in young adulthood than their peers. An alternate possibility following Moffitt's (1993) logic is that pseudomature sexual behaviors during adolescence may have short-term status benefits, but also become "snares," analogous to the idea that early mild substance use is considered a gateway to riskier behaviors. In this case, well-liked adolescents engaging in early sex may be at greater risk of STI contraction or exhibit increased sexual risk-taking during young adulthood.

Associations between peer acceptance and young adult sexual outcomes may occur through two processes. First, well-liked adolescents may experience *status changes*—permanent sexual outcomes that persist beyond adolescence, such as having had sex or having been

diagnosed with a permanent STI. For example, well-liked adolescents may be at greater risk of contracting an incurable STI like herpes, HIV, or HPV because of their involvement in risky or less risky sexual behavior. Second, peer acceptance in adolescence may be associated with *recent behaviors*—sexual behaviors that occur within and are limited to a specific period, such as past year casual sex and condom use in young adulthood. If well-liked adolescents are more likely to engage in any sexual behaviors in adolescence, this trend may continue in young adulthood. The same trend may apply to risky sexual behaviors. Exploring associations between adolescent peer acceptance and young adult sexual outcomes has been difficult due to a lack of long-term longitudinal data with both sociometric and sexual health measures. The authors identified only one study in this area, which found that peer rejection (i.e., not being well-liked by peers) during childhood was associated with greater sexual risk in young adulthood (Lansford, Dodge, Fontaine, Bates, and Pettit 2014). However, this study examined sexual risk as a composite latent variable rather than examining individual sexual risk outcomes. Additional research is warranted to examine the associations between peer acceptance and specific adolescent and young adult sexual outcomes.

Developing a comprehensive understanding of the association between adolescent peer acceptance and young adult sexual outcomes requires inclusion of both normative and risky sexual outcomes. Sexual initiation between ages 16–24, sex in monogamous romantic partnerships, and safer sexual practices are associated with, or defined as, healthy sexual development (Vasilenko, Lefkowitz, and Welsh 2014). Other sexual behaviors in adolescence confer substantially greater health risks. Sexual initiation prior to age 16 (Zimmer-Gembeck and Helfand 2008), multiple sexual partners, sex with casual partners, and sex without condoms increase the risk of negative sexual health outcomes, including unintended pregnancy (Mirzaei, Ahmadi, Saadat, and Ramezani 2016) and STIs (Lyons 2017). Because not all sexual behaviors have equal health consequences, understanding links between peer acceptance and diverse sexual outcomes is important.

Gender Differences

Prior research suggests that the association between adolescent peer acceptance and sexual behaviors may vary by gender. For instance, one Australian study found that well-liked 9th grade boys are 9 times more likely to have sexual intercourse than well-liked 9th grade girls (Hawke and Rieger 2013). Gendered perceptions for the acceptability of sexual behaviors may explain these differences, given that intercourse may be perceived as more acceptable for adolescent boys than girls, and more likeable boys may have more sexual opportunities than less-liked male peers. This explanation is consistent with a sexual double standard, where sexual permissiveness would be more socially rewarding for boys than girls (Kreager, Staff, Gauthier, Lefkowitz and Feinberg 2016). As the sexual double standard may also persist into young adulthood (e.g., Lefkowitz, Shearer, Gillen and Espinosa-Hernandez 2014), it is important to consider gender differences in associations between peer acceptance and later sexual outcomes.

Current Study

The goal of the present research is to examine associations between adolescent peer acceptance and sexual outcomes in adolescence and young adulthood. The design utilizes multiple waves of sociometric friendship data collected from the PROSPER study (Spoth, Greenberg, Bierman, and Redmond 2004; Spoth et al. 2007) that began in early adolescence and includes measures of an adolescent outcome (early sexual intercourse) and young adult outcomes, including status changes (sexual intercourse, STI diagnoses) and recent sexual behaviors (past year sexual partners and casual sex, and condom use at last sexual intercourse). In addition, these sexual outcomes include indicators of both normative sexual development (lifetime sexual intercourse) and indicators of sexual risk (early sexual intercourse, number of sexual partners, casual sex, and [lack of] condom use). The data thus allow us the novel opportunity to explore whether adolescent peer acceptance is protective for diverse short-term and long-term sexual outcomes, and if these patterns vary by gender.

The authors hypothesize that, consistent with past research (e.g., Agan et al. 2015), individuals who are well-liked across adolescence will be more likely to have early sexual intercourse (prior to age 16). In addition, well-liked individuals will be more likely to have had sexual intercourse by age 19. Because of competing possibilities and mixed research findings on other outcomes, the authors do not make directional hypotheses regarding associations between adolescent peer acceptance and other young adult outcomes: STI diagnoses, past year sexual partners, past year casual sex, or condom use at last intercourse. Similarly, it is unclear if these latter processes vary by gender, although the association between peer acceptance and intercourse in adolescence and young adulthood may be stronger for boys than girls.

Methods

Participants and Procedure

Participants come from the PROSPER project, a longitudinal randomized trial of the PROSPER partnership-based system for the delivery of evidence-based preventive interventions targeting substance use prevention in rural communities (Spoth et al. 2004; Spoth et al. 2007). PROSPER is a community-university prevention partnership following two successive cohorts of students from 28 rural communities in Iowa ($n = 14$) and Pennsylvania ($n = 14$), with 1,300 to 5,200 enrolled public school students per community. Half of the participating school districts in each state were assigned to the PROSPER intervention condition where students and families received evidence-based interventions for reducing substance use, whereas control condition school districts were free to continue any prevention activities as usual. Project school districts were predominantly White (61%–97%) and had a median household income of \$37,000. Students were surveyed in their classrooms in the fall and spring of Grade 6 (waves 1 [W1] and W2) and then every spring thereafter until Grade 12 (W8). Participation rates ranged from 86% to 90% across waves for all eligible students, with an average of 88% participation and about 11,000 students responding at each wave. Enrollment in the study was open at each wave, drawing the sample from the entire student body at each occasion. A subsample of participants was contacted 1 year after the end of high school when they were around 19 years old (W9). The present research

focuses on individuals who participated in the W9 follow-up, which is when sexual outcomes were first assessed ($N = 1,985$). The present analyses include individuals who provided complete data on the measures used in analyses ($N = 1,878$). Forty-six percent of participants in the analytic sample were male. Regarding race/ethnicity, 82% of participants were White, 3% were Hispanic, 2% were Black, <1% were American Indian, <1% were Asian, 2% reported other or multiple race/ethnicities, and 11% did not report race/ethnicity. Average age at baseline was 11.78 years ($SD = 0.38$, range = 9–13), and average age at follow-up was 19.52 years ($SD = 0.53$, range = 18–21).

Measures

Descriptive statistics for all measures and comparisons by gender are included in Table 1.

Adolescent outcome: Early sexual intercourse.

At W9, participants who indicated that they had engaged in sexual intercourse in their lifetime responded to the question, “How old were you the first time you had sexual intercourse?” Individuals who noted that they were younger than age 16 at first intercourse were considered to have initiated sexual intercourse early. Although there is no consensus definition, researchers often define early sexual initiation as occurring before age 16 (Zimmer-Gembeck and Helfand 2008).

Young adult outcomes.

Lifetime sexual intercourse.—At W9, participants responded to the question, “In your entire lifetime, have you had sexual intercourse (that is, penis in the vagina, going all the way, making love) with a female [asked to men]/male [asked to women]?” Individuals who responded “yes” were considered to have had sexual intercourse. It is important to acknowledge that the phrasing of this question and others only identifies heterosexual sexual intercourse; therefore, same-sex sexual behaviors could not be measured.

Lifetime STI diagnosis.—At W9, participants responded to the question, “Have you ever had or been diagnosed with a sexually transmitted disease such as gonorrhea (CLAP), syphilis, genital herpes or warts, chlamydia, Hepatitis B, or AIDS/HIV?” Individuals who responded “yes” were considered to have been diagnosed with an STI in their lifetime.

Past year sexual partners.—At W9, participants who indicated that they had had sexual intercourse in their lifetime responded to a similar question about sexual intercourse in the past year. Participants who indicated that they had had sexual intercourse in the past year responded to the question, “How many females [asked to men]/males [asked to women] have you had sexual intercourse with in the last year?” To reduce the undue influence of outliers, any responses of 26 or greater were recoded as 25.

Past year casual sex.—At W9, participants who indicated that they had had sexual intercourse in the past year responded to the question, “How many times in the last year have you had sexual intercourse with a female [asked to men]/male [asked to women] who you didn’t know very well?” A dichotomized version of this question indicated whether participants had casual sex in the past year.

Condom use at last sexual intercourse.—At W9, participants who indicated that they had had sexual intercourse responded to the question, “The last time you had sexual intercourse, was a condom used?” Individuals who responded “yes” were considered to have used a condom at last intercourse.

Peer acceptance.

At W1-W7, participants nominated up to seven close friends in their grade and school. These data were used to construct two measures of school-based peer acceptance. Indegree was the number of incoming friendship nominations participants received from their classmates, standardized within school and wave, and averaged across measurement occasions. Network centrality was calculated from Bonacich’s (1987) equation, which consists of each actor’s indegree plus a weighted function of the indegrees of the actor’s friends, thus conceptualizing peer acceptance as a function of both the ego and his/her alters’ acceptance. This measure was standardized within school and wave and averaged across measurement occasions. Each peer acceptance measure thus represents average acceptance across the adolescent years.

Control variables.

Socioeconomic status.—At W1-W7, participants responded to the question, “What do you usually do for lunch on school days?” Students who responded that they received free lunch from school or that they bought their lunch at school at a reduced price were coded as receiving free/reduced price lunch. Students who did not choose these responses were coded as not receiving free/reduced price lunch. The proportion of waves in which each participant received free/reduced price lunch was used in the present analyses.

Family relationships.—At W1-W7, participants answered four questions about the affective qualities of their relationship with their parents (e.g., “During the past month, when you and your mom have spent time talking or doing things together, how often did she act loving and affectionate toward you?”). They answered questions about how frequently they did each of six activities with their parents (e.g., “Work on homework or a school project together”). They also answered three questions about their parents’ inductive reasoning (e.g., “My parents give me reasons for their decisions”). For each of these three measures, the average score was standardized. The mean of these three standardized measures indicated close/involved family relationships with higher scores indicating closer/more involved family relationships.

Delinquency.—At W1-W7, participants indicated the frequency with which they engaged in 12 delinquent behaviors in the past year. Response options ranged from *never* (1) to *five or more times* (5). Sample items include “Beat up someone or physically fought with someone because they made you angry (other than just playing around),” and “Purposely damaged or destroyed property that did not belong to you.” The average response across waves was used in the present analyses.

Academic performance.—At W1-W7, participants answered the question, “What grades do you generally get in school?” Response options were *mostly A’s (90–100)* (1), *mostly*

B's (80–90) (2), mostly C's (70–80) (3), mostly D's (60–70) (4), and mostly lower than D's (5). Response options were reverse-coded such that higher scores indicated higher grades and the average response across waves was used in the present analyses.

Religious attendance.—At W1–W7, participants responded to the question, “How often do you attend church or other religious meetings?” Response options ranged from *once a week or more* (1) to *hardly ever or never* (4). Responses were reverse-coded such that higher scores indicated more frequent religious attendance and the average response across waves was used in the present analyses.

Lifetime sexual partners.—At W9, participants who indicated that they had engaged in sexual intercourse in their lifetime responded to the question, “In your entire lifetime, how many females [asked to men]/males [asked to women] have you had sexual intercourse with?” Responses were capped at 25 partners.

Intervention or control condition.—Because the PROSPER study took place in the context of a substance use intervention, analyses controlled for whether participants attended an intervention school or a control school.

Results

Prior to testing hypotheses, the authors compared the analytic sample to PROSPER participants not in the analytic sample on gender, race/ethnicity, control variables, and peer acceptance. Compared to the overall PROSPER sample, the analytic sample was more likely to be female ($\chi^2 (1) = 18.28, p < .001$). The distribution of race/ethnicity also varied by analytic group ($\chi^2 (5) = 164.49, p < .001$). Follow-up pairwise comparisons indicated that participants in the analytic sample were more likely to be White ($\chi^2 (1) = 159.60, p < .001$) and less likely to be Hispanic ($\chi^2 (1) = 81.35, p < .001$), Black ($\chi^2 (1) = 28.20, p < .001$), American Indian ($\chi^2 (1) = 11.08, p < .01$), or report other/multiple race/ethnicities ($\chi^2 (1) = 19.07, p < .001$). Participants in the analytic sample did not differ from the larger sample in their likelihood of being Asian ($\chi^2 (1) = 2.49, p > .05$). Regarding control variables, participants in the analytic sample received free/reduced lunch during a smaller proportion of waves (mean difference = $-0.13, t(2,702.66) = 15.72, p < .001$), engaged in delinquency less frequently (mean difference = $-0.08, t(2,827.48) = -9.14, p < .001$), had better grades (mean difference = $0.42, t(2,655.88) = 24.69, p < .001$), and attended church more frequently (mean difference = $0.29, t(2,468.20) = 11.34, p < .001$) averaged across waves. Participants in the analytic sample did not differ from the larger sample in their average score on a measure of close/involved family relationships (mean difference = $0.15, t(2,5424.32) = 1.85, p > .05$). Regarding peer acceptance, participants in the analytic sample were more accepted by their peers as measured by indegree (mean difference = $0.26, t(2,315.13) = 16.65, p < .001$) and Bonacich centrality (mean difference = $0.30, t(2,332.17) = 18.78, p < .001$).

In descriptive analyses, boys and girls were compared on all variables included in multivariate analyses. Gender differences were tested with independent samples *t*-tests (for continuous outcomes) and χ^2 tests (for dichotomous outcomes). Regarding predictor

variables, girls had higher indegree ($t(1876) = 7.05, p < .001$) and Bonacich centrality ($t(1876) = 5.63, p < .001$) scores than boys. Regarding outcome variables, girls were more likely to have had early sexual intercourse ($\chi^2(1) = 18.88, p < .001$), ever had sexual intercourse ($\chi^2(1) = 3.97, p < .05$), and ever been diagnosed with an STI ($\chi^2(1) = 26.73, p < .001$). Girls were less likely than boys to have used a condom at last intercourse ($\chi^2(1) = 23.05, p < .001$) and had casual sex in the past year ($\chi^2(1) = 16.92, p < .001$), and they had fewer past year sexual partners ($t(1002) = -2.62, p < .01$). Regarding control variables, girls engaged in less delinquent behaviors ($t(1876) = -6.95, p < .001$) and had better school grades ($t(1876) = 6.74, p < .001$) than boys.

Regression analyses in SAS with standard errors clustered by school tested associations between peer acceptance and sexual outcomes, net of control variables. For the continuous outcome (comfort discussing safer sex), the authors performed linear regression with the SURVEYREG procedure. For count outcomes (number of sexual partners in past year), the authors used negative binomial regression with the SURVEYREG procedure. For dichotomous outcomes (lifetime sexual intercourse, early sexual intercourse, STI diagnosis, casual sex, condom use at last intercourse), the authors used logistic regression with the GENMOD procedure, defining a logit link with a binary distribution. In each model, identifying as White, proportion of waves with free/reduced price lunch, family relationship, delinquency, school grades, religious attendance, and intervention/control group were control variables. Models for STI diagnosis and condom use at last sexual intercourse also controlled for age at first sex and lifetime number of sexual partners. Each model included interaction terms for gender*indegree or gender*Bonacich centrality. Results of regression models are reported in Table 2 (indegree) and Table 3 (Bonacich centrality). Because standard errors were clustered by school, results include robust standard errors that correct for variation in standard errors across schools.

Early Sexual Intercourse

Among individuals who had sex in their lifetime, individuals who received more friendship nominations (indegree) and individuals who were more central in their friendship networks (Bonacich) were significantly ($p < .05$) more likely to have had sex early. There were no statistically significant gender interactions for these associations.

Lifetime Sexual Intercourse

Individuals who received more friendship nominations and individuals who were more central in their friendship networks were significantly ($p < .001$) more likely to have had sex in their lifetime. There were no statistically significant gender interactions for these associations.

Lifetime STI Diagnosis

There was no significant association between number of friendship nominations received and STI diagnosis. However, individuals who were more central in their friendship networks were significantly ($p < .01$) less likely to have been diagnosed with an STI. There was no significant gender interaction for this association.

Past Year Sexual Partners

Among individuals who had sex in the past year, there was no statistically significant association between number of friendship nominations received, or centrality within friendship networks, and number of past year sexual partners. There was a significant ($p < .05$) gender interaction for number of nominations received. This interaction indicated that boys, but not girls, who received more friendship nominations had more sexual partners in the past year.

Past Year Casual Sex

Among individuals who had sex in the past year, there was no significant association between number of friendship nominations received, or centrality within friendship networks, and having had casual sex in the past year. There were no statistically significant gender interactions for these associations.

Condom Use at Last Sexual Intercourse

Among individuals who had sex in their lifetime, there was no significant main effect of number of friendship nominations received, or centrality within friendship networks, with having used a condom during their most recent sexual intercourse occasion. There were no statistically significant gender interactions for these associations.

Sensitivity Analyses

Sensitivity analyses tested whether results were similar for different operationalizations of specific variables. In the first set of analyses, age at first sexual intercourse replaced early sexual intercourse. These untabled models yielded similar results to models presented in Tables 2 and 3 (i.e., peer acceptance was associated with lower age at first sexual intercourse). In the second set of sensitivity analyses, the number of past year sexual partners was not capped at 25. These untabled models yielded similar results to models presented in Tables 2 and 3 (i.e., peer acceptance was associated with more sexual partners for boys more than for girls). In the third set of sensitivity analyses, past year number of casual partners was not dichotomized. These untabled models yielded different results to models presented in Tables 2 and 3 but consistent with findings for the number of sexual partners (i.e., peer acceptance was more strongly associated with fewer casual sexual partners for girls than for boys).

In additional untabled analyses, models included predictor variables from W1-W3 (grades 6 and 7) instead of W1-W7. The goal of these analyses was to determine if processes differed when focused only on early adolescent peer acceptance. The overall pattern of results was similar to reported results. Early adolescent peer acceptance was associated with higher likelihoods of early sexual intercourse and sexual intercourse by age 19, and a lower likelihood of STI diagnosis. Peer acceptance was associated with more past year sexual partners for boys more than for girls.

Discussion

Prior research has demonstrated that well-liked adolescents are more likely than their peers to engage in sexual behaviors (e.g., Agan et al. 2015); however, little prior research has considered longer-term associations between adolescent peer acceptance and sexual outcomes in young adulthood. Understanding whether adolescent peer processes predict later sexual outcomes informs developmental perspectives of peers and health, including normative sexual development and sexual risk. In the present research, the implications of adolescent peer acceptance for sexual health differed for adolescent and young adult sexual outcomes. Well-liked boys and girls were more likely to initiate sex by age 16, consistent with Moffitt's (1993) concept of pseudomature behaviors and social status in adolescence. Peer acceptance was also associated with an increased likelihood of having had sex by age 19, but was protective against having had an STI by age 19. In addition, peer acceptance was not associated with the majority of young adult sexual behaviors examined: past year casual sex, condom use at last intercourse, or (for girls) number of past year sexual partners. Together, these findings suggest that, despite its association with early sexual initiation, peer acceptance in adolescence is generally associated with a healthy trajectory of sexual development by young adulthood. However, for boys, peer acceptance was associated with more past year sexual partners, suggesting that gendered perceptions of acceptable sexual behaviors persist beyond adolescence.

Adolescent Peer Acceptance and Sexual Outcomes

Multiple complementary hypotheses have emerged about how adolescent peer acceptance may influence young adult health. One developmental hypothesis, supported by the current results, is that the link between peer acceptance and sexual behaviors may fade as individuals age and formerly pseudomature behaviors become normative. Individuals who initiated sex at an early age were more well-liked than their peers, suggesting that sexual intercourse in adolescence is a pseudomature behavior that confers social benefits. By young adulthood, adolescent peer acceptance was not associated with recent casual sex or condom use (although peer acceptance was associated with boys' past year sexual partners). These findings are generally consistent with Moffitt's "adolescence limited" behavioral category and research on substance use and criminal behavior, in which the association between desire for peer acceptance and substance use/criminal behavior may fade as individuals enter young adulthood (Allen, Schad, Oudekerk, and Chango 2014). This prior work (Allen et al. 2014) assessed desire for peer acceptance and its association with delinquency. The present work demonstrates it is not only perceived peer acceptance, but actual peer reported acceptance that matters. In addition, the present study extends Moffitt's theory to sexual behaviors as another form of pseudomature behaviors.

Researchers have hypothesized that the social status benefits of adolescent pseudomature behaviors may create behavioral "snares" that affect long-term health outcomes (Moffitt 1993; Allen et al. 2014). The present research findings do not support this hypothesis. Although peer acceptance was associated with increased likelihood of having sex before age 16 and by age 19, adolescent peer acceptance was protective against having an STI by age 19. It is possible that well-liked individuals may primarily be sexually active in

monogamous relationships and consistently use condoms. It is also possible that being well-liked is an indicator of responsibility and social competence, which corresponds to condom use. Past research has linked early social competence to lower risks of negative young adult outcomes ranging from mental health to crime (Jones, Greenberg, and Crowley 2015); these findings may extend to sexual health as well. Another explanation is that well-liked adolescents may be part of sexual networks characterized by low rates of STIs; therefore, despite a higher likelihood of sexual intercourse, well-liked adolescents may be less exposed to STIs than their peers. The results of the present research suggest that being well-liked in adolescence may ultimately place individuals on a path of normative, healthy sexual development at later stages, despite its link to early sexual intercourse.

Gender Differences

A key exception to the pattern of healthy sexual development for well-liked individuals emerged. Peer acceptance was associated with more young adult sexual partners for male, but not female, young adults. In sensitivity analyses, peer acceptance was associated with fewer casual sexual partners for female, but not male, young adults. The sexual double standard proposes that men's social/cultural task is to accumulate sexual partners and experiences, whereas women's task is to limit their sexual partners (Milhausen and Herold 1999). Being well-liked is a marker of competencies that promote these divergent goals. Therefore, the results regarding number of sexual partners may be evidence that young men and women use different sexual strategies in order to achieve or maintain peer status. For example, if peer acceptance affords sexual opportunities to both men and women, women may be less likely to take advantage of opportunities for sex because they fear social retribution.

Readers should be cautious in interpreting these gender-specific results because there were no significant gender interactions between peer acceptance and other young adult sexual outcomes: condom use and having any casual sexual partners in the past year. One explanation for these contrasting findings is that gendered sexual expectations are more focused on number of sexual partners than the fact that young adults engage in sexual intercourse (Bordini and Sperb 2013). These findings may also be due to reporting bias. Men tend to overreport their number of sexual partners (Alexander and Fisher 2003). Well-liked men may overreport their number of sexual partners more than their less well-liked peers to adhere to social expectations that well-liked men should be sexually experienced.

Consistent with extant research, girls reported more friends than boys did (Poulin and Pedersen 2007) in descriptive analyses. Girls were also more likely than boys to report early sexual intercourse and lifetime sexual intercourse, in contrast to some previous research on this topic (e.g., Petersen and Hyde 2010). One possible explanation for this finding is that girls tend to have older male sexual partners (Kaestle, Morisky, and Wiley 2002). This partner age difference may influence the timing of sexual intercourse. The existence of gender differences in predictor and outcome variables underscores the importance of controlling for gender and examining gender interactions in analyses.

Prevention Implications

The results of the present research can inform sexual health interventions for adolescents. Because adolescents who are accepted by their peers may be at increased risk of early sexual initiation, it is important to include these individuals in sexual risk prevention programs. Given that peer acceptance is associated with more partners for men, interventions to reduce sexual risk may target well-liked male adolescents. In addition to including well-liked male adolescents as prevention targets, these adolescents may also serve as sexual health promoters. Past interventions have recruited well-liked adolescents to spread sexual health messages. These interventions have demonstrated limited effectiveness in reducing sexual risk (Chandra-Mouli, Lane, and Wong 2015), although they may be effective in improving

knowledge, attitudes, and intentions (Kim and Free 2008). Because peer education can contribute to information sharing, the best role for peer leaders in promoting sexual health may be as sources of information and referral to services (Chandra-Mouli et al. 2015). The finding that well-liked students exhibit patterns of healthy sexual development into young adulthood suggests that they may be appropriate role models or leaders in peer education programs. Further educating well-liked adolescents to disperse information related to sexual health and motivate peers to seek sexual health services could help to improve the sexual health of other adolescents.

It is also important to distinguish early sexual behavior from other foci of prevention such as delinquency and aggression. Delinquency (Laird, Pettit, Dodge, and Bates 2005) and aggression (Laird, Jordan, Dodge, Pettit, and Bates 2001) are typically associated with rejection by peers. However, being well-liked is associated with socially transmitted behaviors such as adolescent alcohol use and sexual behaviors (Moody, Brynildsen, Osgood, Feinberg, and Gest 2011). These divergent associations highlight the need for distinct prevention strategies to target high-risk individuals and develop intervention content that is specific to socially transmitted health outcomes.

Limitations and Future Directions

The present results must be viewed in light of its limitations, which suggest directions for future research. Characteristics of the individuals and peer groups in this sample may have affected the results. The sample was predominantly White and rural; findings may differ in urban settings, which have higher prevalence rates of STIs (CDC 2013), and among different racial/ethnic groups. Similarly, participants only answered questions about sexual behaviors with other-gender partners; findings may be different for individuals with same-gender partners. This rural, predominantly White sample restricts understanding of how issues of race/ethnicity and location may have influenced results. Characteristics of peer and sexual networks may differ across groups and influence sexual outcomes—for example, higher rates of STIs among African Americans may be partially due to insular sexual networks in this population (Laumann and Youm 1999). Furthermore, the subsample of PROSPER participants selected for young adult follow-up were partially selected due to increased risk behaviors (Spath et al. 2017). The selectivity of the sample may decrease the generalizability of this study's results. Additional research is needed to understand associations between peer acceptance and sexual health in diverse populations.

The measurement of adolescent and young adult sexual outcomes in this article was limited by the use of secondary data. PROSPER first asked questions related to sexual behaviors at the age 19 survey, which made it impossible to analyze adolescent sexual outcomes such as casual partners and condom use. In order to more precisely understand links between peer acceptance and adolescent sexual outcomes, future research should incorporate measures of sexual behaviors into middle and high school samples.

It is important to recognize that sociometric measurements of school-based friendship are only one way to measure peer acceptance. Peer-reported popularity and other sociometric measures of centrality within peer groups, such as closeness or betweenness, predict substance use (Moody et al. 2011); they may also predict sexual outcomes. In addition to these measures, adolescents' perceptions of their own popularity or their desire to be popular may be associated with sexual outcomes (Simons, Sutton, Shannon, Berg, and Gibbons 2018). Finally, friendship nominations confined to school and grade may overlook important peer contexts within and beyond the school. Future research may examine how these distinct components and contexts of peer acceptance explain sexual behaviors in adolescence and young adulthood.

Despite these limitations, this research contained multiple strengths. The longitudinal measurement of sociometric friendship allowed us to create a measure of peer acceptance across adolescence. This measure may provide more information than snapshots taken at one point in time. In the future, researchers may consider measuring time-varying associations to examine whether adolescents experience better/worse sexual health at times when they are more/less well-liked by peers. The longitudinal nature of the PROSPER study also enabled us to explore how adolescent peer acceptance corresponded to sexual outcomes after high school, suggesting that the association between peer acceptance and sexual behaviors/sexual health may fade by young adulthood. Additional research is needed to understand why and when, precisely, these associations fade.

Conclusion

Prior research has demonstrated that well-liked adolescents are more likely than their peers to engage in sexual behaviors (e.g., Agan et al. 2015), but it remained unclear whether peer acceptance in adolescence corresponded to positive or negative sexual outcomes in young adulthood. Using data from the PROSPER study, the present research addressed this gap by examining the association between peer acceptance during adolescence and a range of sexual outcomes in adolescence and young adulthood. Although being well-liked may expose adolescents to risk via early sexual intercourse, adolescent peer acceptance was not associated with the majority of riskier young adult sexual outcomes, such as sex without condoms, casual sex, and (for girls) having more sexual partners. In fact, being well-liked throughout adolescence was protective against contracting an STI by young adulthood. These findings advance theory on how pseudomature behaviors may develop from adolescence to young adulthood in rural and largely White communities and suggest directions for future research and prevention

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Table 1.

Descriptive Statistics

	Proportion or Mean (<i>SD</i>)			
	Complete sample	Girls	Boys	Gender difference
All participants (<i>N</i> = 1,878)				
Ever had sex, lifetime	0.80	0.82	0.78	*
Indegree	0.12 (0.60)	0.21 (0.57)	0.02 (0.61)	***
Bonacich centrality	0.14 (0.60)	0.21 (0.59)	0.06 (0.60)	***
Proportion of Free/reduced lunch across waves	0.22	0.22	0.21	
Family Relationships	−0.06 (0.32)	−0.06 (0.33)	−0.06 (0.31)	
Delinquency	1.22 (0.34)	1.17 (0.28)	1.28 (0.39)	***
School grades	4.27 (0.67)	4.36 (0.63)	4.15 (0.71)	***
Religious attendance	2.72 (1.04)	2.75 (1.03)	2.70 (1.06)	
In intervention condition	0.51	0.50	0.51	
Participants who have ever had sex in their lifetime (<i>n</i> = 1,499)				
Early sexual intercourse (<16)	0.33	0.38	0.28	***
Ever STI diagnosis	0.04	0.05	0.02	***
Condom use at last intercourse	0.55	0.51	0.63	***
Participants who have had sex in the past year (<i>n</i> = 1,354)				
Past year sexual partners	2.25 (2.74)	2.04 (2.31)	2.53 (3.19)	**
Casual sex	0.22	0.18	0.27	***

Note. Certain sexual behavior measures were only collected from participants who ever had sex or had sex in the past year. For these variables, descriptive statistics are based on the subsample who answered the questions. Participant responses ranged from: Indegree, −1.00 – 3.19; Bonacich centrality, −1.00 – 3.32; Family relationships, −1.27 – 0.62; Delinquency, 1.00 – 3.80; School grades, 2.00 – 5.00; Religious attendance, 1.00 – 4.00. Gender differences were tested with independent samples *t*-tests (for continuous outcomes) and χ^2 tests (for dichotomous outcomes).

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$

Table 2.

Multivariate Analysis Results Predicting Sexual Outcomes from Indegree

	Early sexual intercourse (<16) ^a			Ever had sex by age 19 ^b			Ever STI diagnosis ^a			Past years sexual partners ^c			Casual sex ^c			Condom use at last intercourse ^a		
	Logistic regression			Logistic regression			Logistic regression			Negative binomial regression			Logistic regression			Logistic regression		
	B	Robust SE	N	B	Robust SE	N	B	Robust SE	N	B	Robust SE	N	B	Robust SE	N	B	Robust SE	N
Standardize d indegree across waves 1–8	0.30 [*]	0.12	1,470	0.56 ^{***}	0.14	1,878	–0.48	0.26	1,332	–0.03	0.06	908	0.13	0.19	912	0.11	0.13	1,321
Gender	0.78 ^{***}	0.17		–0.41 [*]	0.17		1.87 ^{***}	0.37		0.11	0.09		0.42 [*]	0.15		0.68 ^{***}	0.13	
White	0.13	0.23		0.09	0.24		0.55	0.48		0.06	0.12		0.05	0.28		0.05	0.23	
Proportion of Free/reduce d lunch across waves	0.46 [*]	0.19		0.17	0.22		0.36	0.33		0.22 [*]	0.10		–0.10	0.26		0.02	0.19	
Family relationships	–0.46	0.24		–0.18	0.22		0.01	0.54		0.09	0.14		–0.42	0.22		0.17	0.17	
Delinquency	1.47 ^{***}	0.19		3.04 ^{***}	0.55		0.05	0.37		0.48 ^{***}	0.14		1.08 ^{***}	0.28		0.81 ^{***}	0.15	
School grades	0.34 ^{***}	0.08		0.54 ^{***}	0.10		–0.12	0.21		0.03	0.06		0.19	0.12		0.14	0.11	
Religious attendance	–0.17 ^{**}	0.06		0.21 ^{***}	0.06		0.16	0.15		0.03	0.03		–0.01	0.09		0.16 ^{**}	0.06	
Age at first sex							0.38 ^{***}	0.08								0.12 ^{**}	0.04	
Number of partners							0.10 ^{**}	0.03								0.01	0.01	
Intervention Condition	0.05	0.12		0.19	0.11		–0.29	0.23		–0.14	0.07		–0.15	0.14		0.02	0.09	
Gender [*] Indegree	0.12	0.23		0.39	0.23		0.56	0.44		0.20 [*]	0.08		0.03	0.19		–0.03	0.18	

Note. Unstandardized coefficients are presented.

^a participants who had sexual intercourse by age 19,

^b full sample,

^c participants who had sexual intercourse in the past year

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 3.

Multivariate Analysis Results Predicting Sexual Outcomes from Bonacich Centrality

	Early sexual intercourse (<16) ^a		Ever had sex by age 19 ^b		Ever STI diagnosis ^a		Past year s exual partners ^c		Casual sex ^c		Cond in
	Logistic regression		Logistic regression		Logistic regression		Negative binomial regression		Logistic regression		Logis
<i>N</i>	1,470		1,878		1,332		908		912		
	B	Robust SE	B	Robust SE	B	Robust SE	B	Robust SE	B	Robust SE	B
Standardize d Bonacich across waves 1–8	0.26 *	0.12	075 ***	0.19	–0.90 **	0.28	0.05	0.09	–0.02	0.22	0.17
Gender	–0.77 ***	0.16	–0.46 **	0.17	–1.85 ***	0.38	0.11	0.09	0.35 *	0.16	0.68 **
White	0.12	0.23	0.05	0.24	0.58	0.48	0.05	0.12	0.03	0.28	0.04
Proportion of Free/ reduce d lunch across waves	0.43 *	0.19	0.22	0.22	0.25 *	0.32	0.25 *	0.11	–0.09	0.28	0.05
Family relationships	–0.45	0.24	–0.22	0.22	–0.05	0.54	0.09	0.13	–0.42	0.23	0.17
Delinquency	1.48 ***	0.19	3.10 ***	0.54	0.06	0.39	0.50 ***	0.14	1.10 ***	0.28	–0.80 *
School grades	–.33 ***	0.08	–0.62 ***	0.11	0.02	0.20	0.01	0.07	0.17	0.12	0.12
Religious Attendance	–0.17 **	0.06	–0.22 ***	0.06	0.18	0.15	0.03	0.03	–0.01	0.09	0.16 *
Age at first sex					–0.38 ***	0.08					0.12 *
Number of partners					0.10 **	0.03					–0.01
Intervention Condition	0.06	0.12	0.21	0.11	–0.29	0.23	–0.13	0.07	–0.14	0.14	0.02
Gender * Bonacich	–0.04	0.19	0.26	0.26	0.65	0.49	0.15	0.09	0.32	0.22	–0.03

Note. Unstandardized coefficients are presented.

^a participants who had sexual intercourse by age 19,

^b full sample,

^c participants who had sexual intercourse in the past year

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$