Experimentally-Measured Susceptibility to Peer Influence and Adolescent Sexual Behavior Trajectories: A Preliminary Study

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Abstract

A performance-based measure of peer influence susceptibility was examined as a moderator of the longitudinal association between peer norms and trajectories of adolescents' number of sexual intercourse partners. Seventy-one 9th grade adolescents (52% female) participated in an experimental "chat room" paradigm involving "e-confederates" who endorsed sexual risk behaviors. Changes in participants' responses to risk scenarios before versus during the "chat room" were used as a performance-based measure of peer influence susceptibility. Participants reported their perceptions of popular peers' number of sexual intercourse partner sat baseline, and self-reported their number of sexual intercourse partners at baseline and 6, 12, and 18 months later. Susceptibility was examined as a moderator of the longitudinal association between perceptions of popular peers' number of sexual intercourse partners and trajectories of adolescents' own numbers of partners. High perceptions of the number of popular peers' sexual intercourse partners combined with high peer influence susceptibility predicted steeper longitudinal trajectories of adolescents' number of partners. Results provide novel preliminary evidence regarding the importance of peer influence susceptibility in adolescents' development of sexual behaviors.

Keywords

adolescence; sexual behavior; peer influence; susceptibility; popularity

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Peer norms and peer influences are central in adolescents' development of health-related behaviors. Several decades of scholarship have demonstrated that, on average, teens are more likely to engage in risky behaviors if they perceive a high level of such behaviors among peers (see Brechwald & Prinstein, 2011). Sexual intercourse is one health-related

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[3]Although the number of partners variable is not strictly a count measure, one-sample Kolmogorov-Smirnov tests conducted at each time point confirmed that the number of partners variable followed a Poisson distribution. Additional LGMs were also conducted using a zero-inflated Poisson distribution to accommodate the preponderance of adolescents who reported no sexual behavior. Results for both the unconditional and conditional models were found to be highly similar to those that emerged using a Poisson distribution, with the same significant patterns. Therefore, due to the small sample size and the greater parsimony of non-inflated models, results from the Poisson models are reported.

behavior that is often influenced by norms in the peer group (see Buhi & Goodson, 2007). Although sexual behavior is a normative part of adolescent development, with over 60% of U.S. students engaging in intercourse by the end of high school (CDC, 2012), many youth engage in sexual behaviors that confer risks. Nationally representative samples suggest nearly one quarter of U.S. adolescents have had sex with four or more partners; as few as half of these sexually active youth use condoms consistently (CDC, 2012). Such risk behavior contributes to the 9 million new sexually transmitted infections (STIs) and 8,300 new cases of HIV contracted among youth each year, and also can lead to unplanned pregnancy (CDC, 2011a,b).

Peers may play an especially important role in sexual socialization – the process through which adolescents adopt attitudes and norms regarding sexual behaviors and relationships (e.g., L'Engle & Jackson, 2008). Whereas parents and schools may act as health-promoting agents that slow adolescents' development of sexual behaviors, mass media and peers may serve as agents that increase adolescents' sexual behaviors (L'Engle, Brown, & Kenneavy, 2006). The importance of peer influences for adolescents' sexual behaviors is not surprising, given key characteristics of this developmental period. For most adolescents, pubertal development and concomitant sexual desires occur during a developmental period that also is marked by identity development processes (Kroger, 2003), an increasing reliance on peers for emotional support and acceptance (Harter, Stocker, & Robinson, 1996), and a strong interest in engaging in behaviors that may increase popularity among peers (Cillessen, Schwartz, & Mayeux, 2011). Research and theory suggest that perceptions of *popular* peers' behavior may exert an especially robust influence on adolescents' own risk behavior (Cohen & Prinstein, 2006; see also Cillessen et al., 2011), but this phenomenon has not yet been empirically tested for sexual behaviors.

Although peers (and perhaps especially popular peers) have been shown generally to exert strong influences on adolescents' behaviors, individual adolescents vary in the degree to which they acquiesce to conformity pressures. In other words, the extent to which perceptions of peers' behaviors influence one's own behaviors is likely dependent on the individual's level of *susceptibility* to peer influence. Leading sexual health theories that posit a direct link between peer norms and intentions to engage in sexual behaviors (e.g., Fishbein, 2000) do not explicitly acknowledge that individuals may vary in their level of conformity to those norms. Additionally, little is known about how susceptibility may be related longitudinally to behaviors such as sexual intercourse. Most studies of susceptibility to peer influence on risk behaviors have relied on explicit self-reports, which likely generate biased assessments of susceptibility to peer influence (e.g., Allen, Porter, & MacFarland, 2006; see also Prinstein & Dodge, 2008). Additionally, adolescents may have especially limited awareness of the extent to which social pressures and norms influence their own sexual attitudes and behaviors, given the bombardment of conflicting messages about sex that teens receive from a multitude of sources (e.g., L'Engle et al., 2006).

To overcome limitations of prior work, researchers have recently begun to develop experimental paradigms, which yield *in vivo*, performance-based measures of peer influence susceptibility that are unaffected by the biases involved in explicit self-reports. For example, Allen and colleagues (2006) designed a paradigm in which adolescents were asked to

participate in a hypothetical decision-making task, first alone, and again after being exposed to a close friend's differing opinions. Susceptibility was operationalized as the extent to which adolescents changed their initial decision after being exposed to the peer's differing opinion. Susceptibility was concurrently associated with higher odds of externalizing behavior and sexual intercourse, and also moderated the association between peers' substance use and adolescents' own substance use, such that friends' substance use was more strongly associated with one's own use among more highly susceptible teens. However, longitudinal analyses did not reveal susceptibility to be a significant prospective predictor or moderator of sexual or other behaviors.

Using a different innovative experimental paradigm to yield an *in vivo* measure of peer influence susceptibility, Prinstein, Brechwald, and Cohen (2011) found that susceptibility moderated the longitudinal associations between peer norms and adolescents' own deviant behaviors. In this "chat room" paradigm (Cohen & Prinstein, 2006), adolescents believe they are interacting with real peers in an Internet chat room, while in reality they are interacting with pre-programed electronic confederates ("e-confederates") who endorse risk behavior. Susceptibility is operationalized as the extent to which adolescents change their responses to risk scenarios (compared to their baseline responses to identical scenarios) after being exposed to the high-risk responses of e-confederates. In preliminary work using this paradigm, Prinstein and colleagues (2011) found that susceptibility moderated the longitudinal association between perceptions of one's best friend's behavior and adolescents' own deviant behavior.

The current preliminary investigation utilizes this novel experimental chat room paradigm to test a hypothesis regarding the socialization of sexual behavior. Specifically, a performance-based measurement of peer influence susceptibility will be obtained from adolescents, and will then be examined as a moderator of the longitudinal association between baseline perceptions of popular peers' number of sexual intercourse partners and adolescents' own longitudinal trajectories of number of intercourse partners over four time points. It is expected that under conditions of high peer influence susceptibility, higher baseline perceptions of popular peers' number of sexual intercourse partners will be associated significantly with steeper longitudinal trajectories of adolescents' own number of intercourse partners over 18 months.

Method

Participants—Participants were 71 adolescents (37 girls; 46.5% Caucasian, 23.9% African American, 18.3% Hispanic, 1.4% Asian American, 9.9% Mixed Race or Other; $M_{age} = 14.46$, $SD = .58$) in 9th grade at study onset, at a rural, low-income high school in the southeastern United States. All students in 9th grade were recruited ($N = 296$) for a study of peer influences on health risk behaviors, with the exception of students in self-contained special education classrooms. A letter of consent was distributed to each adolescent's family with an option for parents to grant or deny consent; numerous adolescent-, teacher-, and school-based incentives were used to ensure the return of these forms. Consent forms were returned by 78.7% of families ($n = 233$); of these, 79.8% of parents gave consent for their child's participation ($n = 186$). Data were unavailable for 14 participants due to school

withdrawal, yielding a Time 1 (T1) sample of 172 adolescents (58% of the eligible population). Because the experimental chat room paradigm used in this study was a time-consuming procedure involving deceptive elements, it was not possible to involve every participant who completed the baseline assessment. Thus, of the original sample of 172 adolescents, 75 randomly selected (i.e., random number generator) adolescents participated in the chat room conditions relevant to the current study hypotheses (i.e., conditions involving high- or average-status e-confederates). Of the 75 participants who completed baseline testing, 3were excluded due to incomplete data, and 1 was excluded due to being an extreme outlier (>4 *SD* above *M* in baseline number of sexual partners), yielding a final sample of 71 participants used in all analyses. Of the 71 adolescents included in the analytic sample, 63 (88.7%) had available data on number of partners at Time 2 (T2), 59 (83.1%) at Time 3 (T3), and 53 (73.6%) at Time 4 (T4). Data from all 71 participants were included in longitudinal analyses, as described further below. There were no significant differences in age, ethnicity, or number of sexual partners at baseline between the 71 participants in the current study and the original sample of 172 (all *p*s > .20), nor were there significant differences on any variable between participants with complete data at all 4 waves versus those with missing data (all *p*s > .20).

Procedures—Youth provided assent to participate in the study at baseline. The University human subjects committee approved all study procedures, including a substantial debriefing process. All data were collected in participants' schools using privatizing dividers. Participants were compensated with gift cards ranging from $10 (T1) to $30 (T4) at each phase of the study. Participation began with all adolescents' (*n* = 172) completion of a sociometric assessment, as well as self-report questionnaires measuring engagement in health risk behaviors. All youth also provided pretest responses to the hypothetical scenarios used in the experimental paradigm (described later). Next, the randomly selected sample of adolescents (*n* = 71) participated in the experimental chat room procedure. Adolescents also completed questionnaire-based assessments of the number of their sexual intercourse partners at 6, 12, and 18 months post-baseline (i.e., T2, T3, and T4).

Measures

Sexual behavior—At T1, T2, T3, and T4, adolescents self-reported their own number of sexual intercourse partners over the past six months (with the item, "In the past 6 months, how many partners did you have sexual intercourse with?") with a Likert-style response scale(0 = *0 partners,* 1 = *1 partner,* 2 = *2-3 partners,* 3 = *4-5 partners,* 4 = *6 or more partners*). At T1, participants also reported their perceptions of the number of intercourse partners of "the typical 'popular' girl in your grade" and "the typical 'popular' boy in your grade," using the same question format and scale as above. The correlation between the "popular girl" and "popular boy" items was very high (*r* =.88 among males; *r* =.91 among females); thus, responses were averaged to yield a measure of perceptions of popular peers' number of intercourse partners.

Sociometric assessment—A standard sociometric assessment was conducted with all 172 initial participants at T1, in order to measure adolescents' peer-perceived popularity. Participants were provided with two alphabetized rosters of all students in their grade, from

which they nominated an unlimited number of peers who were "most popular" and "least popular," respectively. The order of alphabetized names was counterbalanced to control for possible order effects. A sum of the number of nominations each adolescent received was computed and standardized. As is customary, a difference score between standardized "most popular" and "least popular" nominations was computed and re-standardized to obtain a measure of peer-perceived popularity, with higher scores indicating greater popularity among peers (Parkhurst & Hopmeyer, 1998). Participants also selected an unlimited number of students who were their "closest friends" and then, from this selection, specified a "very best friend" and two additional "best friends." Sociometric nomination procedures are widely accepted as the most reliable and valid measures of peer status and friendship nominations (see Rubin, Bukowski, & Laursen, 2009). Popularity ratings and friendship nominations were used in the construction of the experimental paradigm, as described below; specifically, these sociometric ratings were used to create electronic confederates of average or high peer status.

Hypothetical scenarios—Two hypothetical scenarios, adapted from previous work demonstrating the reliability and validity of hypothetical scenarios regarding broader health risk and deviant behaviors (see Cohen & Prinstein, 2006; Prinstein et al., 2011), were used to assess adolescents' endorsement of sexual risk behaviors. These two vignettes depicted situations in which adolescents might feel pressure to engage in unprotected sexual intercourse (i.e., without a condom)or unwanted intercourse (i.e., "…you don't want to have sexual intercourse [sex] with this person right now. However, he/she is pressuring you…"). Two focus groups of recent high school graduates contributed to the creation and revision of the vignettes. Each scenario was accompanied with Likert-format behavioral response options, also developed and reviewed using the focus groups.[1] Adolescents were instructed to choose the response that most closely matched what they would do in the situation. Scores were standardized and a mean composite score was created ($\alpha = .77$), such that higher scores indicated higher-risk responses.

As in prior work (Prinstein et al., 2011), these vignettes were used in two ways. First, they were used in creating the experimental manipulation. Specifically, results from a grade-wide administration of the items at baseline were used to determine the normative (i.e., mean) response to each scenario within gender. "Above average" (i.e., +1 *SD*) levels of risky behavior endorsement later were attributed to e-confederates as they ostensibly responded to the same scenarios in the simulated chat room. Second, as is discussed in further detail below, composite pre-test and post-test scores were used to compute a measure of susceptibility to peer influence.

Experimental paradigm—The experimental paradigm simulated an Internet chat room. Participants were told they would have an opportunity to communicate electronically with three same-gender students in their grade who supposedly were working on computers in

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[1]For example, response options for the condom use vignette were: 1. Agree to have sex with him/her without a condom. 2. Agree to have sex with him/her without a condom this one time but say you have to use a condom next time. 3. Tell him/her you want to use a condom, but after a few minutes of disagreeing, have unprotected sex anyway so that you don't "ruin the moment." 4. Refuse to have sex without a condom and leave if he/she insists. 5. Tell him/her you don't want to have sex with someone who practices unsafe sex, and leave.

other rooms of the school (ostensibly for a study of how teens communicate through the Internet). In reality, the three "students" in each chat room were preprogrammed, computer-generated e-confederates (using Direct RT software; Jarvis, 2004).The social status of each e-confederate was manipulated to make adolescents believe that they were interacting with average- or high-status peers. Specifically, for each e-confederate, peer status was indicated by two types of information provided on chat room screens: 1) the names of two ostensible "friends" of the e-confederate (first name and last initial of two average- or high-status peers from the participant's grade who belonged to the same friend group, determined from prior sociometric peer status and friend nomination procedures)[2]; and 2) two hobbies associated with average or high peer status (based on focus group input). For a thorough description of the experimental paradigm (e.g., creation of e-confederates, manipulation check, debriefing, and plausibility augmentation), see Cohen and Prinstein (2006). The description provided here focuses on aspects of the procedure that are critical to an understanding of the current study.

Each adolescent was instructed that he/she would communicate with other members of the chat room in a specific order, and that he/she had been randomly selected to respond to all items last. This procedure ensured that all participants were exposed to the responses of the three e-confederates before providing their own responses. After receiving an orientation to the chat room, participants responded to the same set of hypothetical scenarios they had completed during the initial questionnaire-based assessment. The e-confederates consistently endorsed high-risk behavioral responses (i.e., approximately+ 1 SD above M levels established at baseline). For each scenario, after viewing the three e-confederates' high-risk responses, participants selected the option that would best characterize their own behavioral response, which then appeared on the screen, ostensibly for the other chat room members to see. Participants' responses to each scenario were used in the computation of a performance-based index of susceptibility.

All adolescents were thoroughly debriefed following participation in the experimental paradigm, using a "funnel" procedure approved by the human subjects committee. Participants were asked first to report general impressions of the study, followed by more specific questions regarding its perceived purpose and their fellow participants. Next, debriefing included an explicit discussion of the deceptive elements of the study protocol, including that participants had communicated with e-confederates (not actual adolescents) and that these e-confederates endorsed responses higher in risk than mean grade levels. For more information about the debriefing procedure, see Cohen and Prinstein (2006).

Calculating peer influence susceptibility—As in prior work (Prinstein et al., 2011), a within-subjects standardized difference score was computed for each participant (i.e., standardized post-test composite score minus standardized pre-test composite score, re-standardized) to indicate whether responses to the same hypothetical scenarios differed

[2]The friend names that appeared were of Caucasian students. It was not possible to identify a sufficient number of students from other ethnic groups who (1) consented to participate, (2) received high peer status ratings, and (3) had identified other consented, high-status friends of the same ethnicity. Although it would have been ideal to create separate conditions for each ethnic group, this was not feasible in the current work, and thus, the decision was made to use only Caucasian e-confederates to minimize potential confounding effects of ethnicity.

when they were presented *before* versus *during* the experimental paradigm; susceptibility was operationalized as each participant's change in response. Higher positive composite scores reflected greater susceptibility to peer influence regarding sexual scenarios in the chat room; negative scores reflected resistance to peer influence.

Analysis Plan

To examine the main hypothesis that adolescents' susceptibility would moderate the longitudinal association between perceptions of popular peers' number of intercourse partners and adolescents' own number of partners, latent growth models (LGMs) were estimated in M-plus 6.0 (Muthén & Muthén, 1998-2010). First, a series of unconditional LGMs were estimated in order to identify the model that best fit adolescents' growth in number of partners over the four time points. To account for the non-normal distribution of sexual behavior, a Poisson distribution was used to model growth in the number of intercourse partners.[3] Because such models do not yield traditional fit indices (e.g., Comparative Fit Index, CFI), chi-square difference tests based on log-likelihood values were employed to compare models including different growth factors (e.g., linear vs. quadratic terms). In all models the intercept was centered at 9th grade (i.e., T1). Although it initially was of interest to examine gender in a multiple group model, sample size did not allow examination of hypotheses separately by gender. Subsequently, two conditional LGMs were performed in which the effects of covariates on the intercept and growth factors of adolescents' number of intercourse partners were introduced. In Model 1, the main effects of adolescents' perceptions of popular peers' number of partners and peer influence susceptibility were examined, after controlling for adolescents' pretest responses to the scenarios. Subsequently, in Model 2, the interaction term between adolescents' perceptions of popular peers' number of partners and peer influence susceptibility also was introduced.

As noted previously, of the 71 adolescents included in the analytic sample, 63 had available data on number of partners at T2, 59 at T3, and 53 at T4. This yielded an overall percentage of missing data of 13.4%. A Little's (1988) Missing Completely at Random (MCAR) test was conducted to compare adolescents with and without missing data. A non-significant MCAR test indicated that missing data did not depend on the observed variables, $\chi^2 (27) = 29.52$, $p = .33$, supporting the inclusion in the analyses of participants with missing data. Missing data were handled in M-plus using full information maximum likelihood estimation with robust standard errors (MLR) using a numerical integration algorithm.

Results

Descriptive statistics

Preliminary analyses were conducted to examine the number of sexual intercourse partners adolescents reported at each time point(Ms and SDs included below), as well as the bivariate correlations between number of partners, perceptions of popular peers' number of partners($M = 1.99$, $SD = 1.12$), and peer influence susceptibility ($M = 0.03$, $SD = 0.57$). Overall, the percentage of sexually active adolescents (i.e., reporting at least 1 partner in the past 6months) increased over time: 29.2% reported sexual intercourse at T1 ($M_{\text{number of partners}} = 0.44$, $SD = 0.87$), 34.9% at T2 ($M = 0.41$, $SD = 0.61$), 39.0% at T3 ($M =$

0.46, *SD* = 0.63), and 47.2% at T4 (*M*= 0.60, *SD* = 0.72).No gender differences were observed for any study variable (all *p*s > .10). Bivariate correlational analyses revealed that higher perceived peer norms were significantly associated with more sexual partners at T1 (*r* = .27, *p* = .02), T2 (*r* = .27, *p* = .03), and T3 (*r* = .28, *p*= .03), but not T4 (*r* = .14, *p*= .31). Susceptibility was not significantly associated with number of partners at any time point (all *p*s > .10).

Unconditional latent growth model (LGM)

The unconditional LGM including a linear slope fit the data better than an intercept-only model (i.e., without growth factor), χ^2 (3) = 16.34, *p* = .001. The addition of a curvilinear growth factor (i.e., quadratic term) did not improve model fit, χ^2 (4) = 5.44, *p* = .25. Thus, a model with linear growth was selected for subsequent analyses. This best-fit model showed a significant positive slope factor, b = 0.40, *SE* = 0.13, *p*< .01, indicating that overall, adolescents increased their number of partners across the four time points. Significant variance was observed around the intercept factor, b = 3.68, *SE* = 1.30, *p*< .01, implying that individual differences existed in number of baseline partners. The slope variance did not reach significance, b = 0.09, *SE* = 0.06, *p* = .12; however,non-significant variance may be due to lack of power and, as a rule of thumb, adding covariates likely increases power to detect variability. Finally, a significant negative association emerged between the intercept and slope factors, b = -0.58, *SE* = 0.27, *p*< .05, likely reflecting regression to the mean over time.

Conditional latent growth model (LGM)

Results from the conditional LGMs are presented in Table 1. In Model 1, adolescents' pretest responses to the scenarios were associated with the intercept factor, indicating that adolescents who reported higher scores on the pretest also reported higher numbers of partners in 9th grade. Moreover, the association between peer norms and the intercept factor was significant, suggesting that adolescents who at T1 perceived popular peers to have higher numbers of partners were also more likely to report higher numbers of their own partners. Susceptibility was not significantly associated with the intercept or slope factors.

In Model 2, consistent with the main hypothesis, a positive significant interaction effect between adolescents' perceptions of peers' number of partners and peer influence susceptibility was revealed on the slope of adolescents' sexual behavior.[4] To probe this interaction, the growth of number of partners was examined for adolescents at low (i.e., -1 *SD*) and high (i.e., +1 *SD*) levels of perceptions of popular peers' number of partners and peer influence susceptibility by calculating simple slopes (Preacher, Curran, & Bauer, 2006). Figure 1 shows the growth in number of partners for these four groups of adolescents. As expected, although a general trend to increase number of partners was observed, high

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[4]To further ensure the validity of these findings, two sets of additional analyses were conducted. First, because LGMs relied on a small sample, a more parsimonious Poisson regression model was also conducted in order to ensure the consistency of the main findings. Results from this Poisson regression model supported those that emerged in the LGM. Specifically, a significant interaction effect between perceptions of popular peers' number of partners and peer influence susceptibility was found on adolescents' number of partners at T4, while controlling for adolescents' T1 number of partners and pretest responses, b = .77, S.E. = .39, Wald χ^2 = 3.82, p = .05. Second, in order to ensure that results were not affected by adolescents' own level of popularity, LGMs were rerun controlling for popularity. The pattern of results remained the same.

perceptions of popular peers' number of partners were associated with steeper increases in adolescents' own number of partners for adolescents who were high in susceptibility ($b = 0.51$, $SE = 0.17$, $p < .01$), as compared to both those who were low in susceptibility ($b = 0.01$, $SE = 0.16$, $p = .95$) and those with low levels of perceptions of popular peers' number of partners ($b = 0.44$, $SE = 0.20$, $p < .05$; and $b = 0.39$, $SE = 0.16$, $p < .05$, for low and high levels of susceptibility, respectively).

Discussion

Peers are one influential source of adolescents' sexual socialization (L'Engle et al., 2006), and perceived peer norms predict sexual behavior over time for many youth (for a review, see Buhi & Goodson, 2007). Yet individual adolescents are not equally influenced by their peers' risk behaviors; teens vary in the degree to which they are susceptible to peer influences and norms (e.g., Prinstein et al., 2011). The current preliminary investigation utilized a novel performance-based measure to provide unique and valuable insights into adolescents' *in vivo* conformity to peers; specifically, this study examined whether experimentally-measured susceptibility to peer influence impacted the link between peer norms about sex and adolescents' own sexual behavior over time. Results revealed that susceptibility moderated longitudinal associations between perceptions of peers' sexual behaviors and adolescents' trajectories of sexual behavior. Specifically, youth who perceived that their popular peers had high numbers of sexual intercourse partners in 9th grade, and who also demonstrated high levels of susceptibility in an experimental paradigm, evidenced steeper longitudinal trajectories of their own number of intercourse partners over 18 months. Given the small sample, results should be considered preliminary; however, findings may offer several important contributions to the literature.

First, results provide further support for the important role of perceived peer norms (and more specifically, norms regarding popular peers) in adolescents' sexual behaviors. Past work documents the link between perceptions of other peers' (e.g., friends; unspecified "peers") behaviors and adolescents' own sexual behaviors (Buhi & Goodson, 2007), but prior research had not examined the role of adolescents' perceptions of their *popular* peers' behaviors in predicting adolescents' own sexual behaviors over time. This study provides further support for the contention that popular youth may play an especially important role in influencing other adolescents' behaviors (Cohen & Prinstein, 2006), at least among highly susceptible adolescents. Additionally, these findings may provide indirect support for peer-based interventions. For example, research has found support for employing peer educators in sexuality education programs that target perceptions of social norms (e.g., Agha & Van Rossem, 2004); the use of popular peer leaders may be especially effective.

While this study provides further evidence that peer norms are important, the results also call into question current behavioral theories that posit a *direct* link between peer norms and sexual behavior. Past research has often focused on the direct effects of perceived peer norms on youths' sexual intentions, attitudes, or behaviors, but has not accounted for adolescents' *susceptibility* to peer influence as a factor that may exacerbate or attenuate these relationships. The results of this study highlight the critical role of susceptibility to peer influence. Among adolescents who perceived their popular peers to have high numbers of

sexual intercourse partners in 9th grade, only those who were also high in susceptibility showed a significant increase in their own number of partners over time. In other words, peer norms did not predict trajectories of sexual behavior for youth who were not susceptible to peer influences. Thus, results underscore the need to incorporate the potential moderating role of susceptibility into theory and research regarding peer norms.

In addition to the potential implications for sexual behavior theories, these results suggest the potential benefit of interventions that strengthen adolescents' resistance to conformity pressures. Sexual behaviors occur within the context of interpersonal relationships, and it is possible that adolescents who are especially susceptible to general peer influences may be more likely to acquiesce to pressure from sexual partners. Thus, sexual health interventions that target communication and assertiveness skills may help improve adolescents' sexual self-efficacy and ability to refuse unwanted sexual advances (e.g., DiClemente & Wingood, 1995) and may be a particularly useful intervention approach for those teens at the greatest risk for conformity.

An additional contribution of this study is its provision of further validity data for performance-based measures of susceptibility to peer influence. More specifically, the results suggest the predictive validity of a peer influence measure specific to sexual behavior in an ethnically diverse sample. These findings lend further support to contentions that the elusive construct of peer influence susceptibility can indeed be captured using sophisticated experimental paradigms, and that such measures of susceptibility can predict the socialization of adolescents' behaviors (Allen et al., 2006; Prinstein et al., 2011). In addition to high predictive validity, the current measure of susceptibility benefits from high ecological validity, given that participants are unlikely to be aware that their attitudes are being socialized (Prinstein et al., 2011). The use of such paradigms may assist in identifying those youth who may be most susceptible to peer influences and most in need of preventive interventions.

Finally, the current results provide a developmental perspective through which to understand the role of susceptibility in adolescents' risk behavior. Specifically, the findings extend past work by demonstrating that among adolescents with high perceptions of peers' behaviors, susceptibility is associated not only concurrently with risk behavior (Allen et al., 2006) and with risk behavior measured at a specific later time point (Prinstein et al., 2011), but also with longitudinal trajectories, capturing growth in behavior over multiple time points. Although number of sexual partners is widely acknowledged as an indicator of risk among adolescents (e.g., Santelli et al., 1998), surprisingly little is known about adolescents' longitudinal trajectories of the number of partners. An understanding of normative and non-normative developmental patterns of sexual behavior is important for identifying youth who may be at risk for maladaptive outcomes.

Results of this study should be considered preliminary, and future studies would benefit from addressing some of its limitations. First, this study used a relatively small sample of low income, ethnically diverse adolescents, and thus, results cannot be generalized to the broader adolescent population or to youth whose parents did not allow them to participate. The sample size also did not yield adequate power for examination of gender or ethnicity

interactions; this is a critical avenue for future research. Second, although this study measured an important sexual behavior (i.e., number of intercourse partners), additional indicators of sexual risk were not examined (e.g., age of first intercourse, frequency of unprotected sex).Third, although this study involved an ethnically diverse sample, the identities of experimental e-confederates were based on Caucasian participants. Note that no significant differences were observed in the mean susceptibility scores across ethnic groups in this sample, but it is possible that ethnic minority participants may have been more likely to conform to e-confederates of their own ethnicity. Fourth, this study only focused on popular peers as potential sources of influential norms, yet the process of sexual socialization involves multiple sources of influence, including other peers (e.g., close friends, actual and potential sexual and romantic partners), parents, and the media (e.g., Buhi & Goodson, 2007; L'Engle et al., 2006). Future work should examine the interaction between peer influence susceptibility and a wider range of social norms. Fifth, sexual socialization involves an ongoing developmental process in which norms may change over time; however, in the current study, peer norms and susceptibility were examined only at one time point. It is interesting to note that even in the context of the wide range of messages adolescents receive about sex over time, norms from one source of influence measured at one time point played a powerful role in the longitudinal development of behavior. Future studies should expand on this preliminary work by examining developmental changes in susceptibility and examining norms as time-varying predictors. Researchers also should consider adolescents' own popularity as a potential moderator of associations among peer norms, susceptibility, and sexual behavior. Finally, future research should aim to identify those youth who are *not* susceptible to peer influences, and to understand their psychosocial profiles and developmental trajectories; resistance to peer influence may reflect developmental tasks associated with autonomy development (Allen et al., 2006; see also Brechwald & Prinstein, 2011).

Overall, this preliminary study supports the use of experimental paradigms to directly measure susceptibility to peer influence, and highlights the importance of susceptibility and of norms regarding popular peers' behaviors in predicting adolescents' longitudinal development of sexual behaviors. Sexual health campaigns may benefit from identifying adolescents who are high in susceptibility, helping at-risk adolescents to develop skills for resisting peer influences, and utilizing peer educators who are high in popularity.

Acknowledgments

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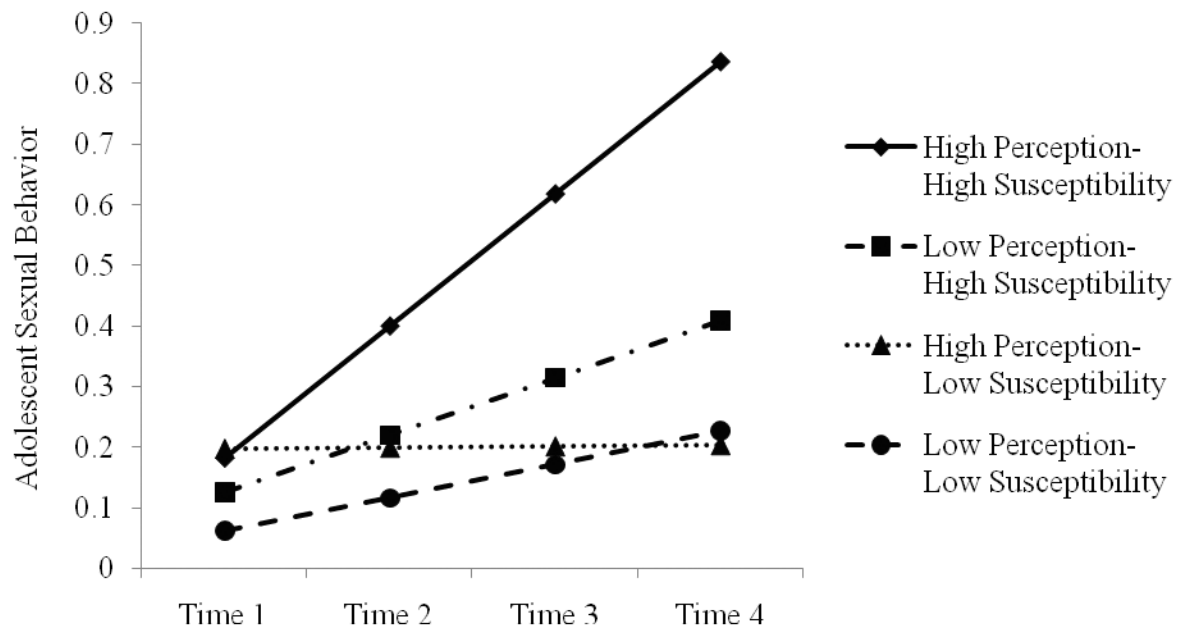
Figure 1.
Interaction effect between peer influence susceptibility and adolescents' perceptions of popular peers' number of sexual intercourse partners on adolescents' growth of number of partners.

Table 1

Unstandardized Parameter Estimates for Predictors of Adolescent Sexual Behavior Developmental Trajectories

| | Model 1 Main Effects Model | | | | Model 2 Interaction Effects Model | | | |
| | Intercept | | Linear Slope | | Intercept | | Linear Slope | |
	B	SE	B	SE	B	SE	B	SE
Pretest score responses to scenarios	1.05***	.29	-.09	.08	.99**	.30	-.04	.09
Perceptions of popular peers' sexual behavior	.41*	.19	-.10†	.06	.34†	.20	-.07	.06
Susceptibility to peer influence	.25	.60	.21	.17	.28	.60	.20	.17
Perceptions of popular peers' sexual behavior × Peer influence susceptibility					-.31	.39	.21*	.11

† *p* < .10.

* *p* < .05.

** *p* < .01.

*** *p* < .001.