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Adolescent Susceptibility to Peer Influence in Sexual Situations


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 A B S T R A C T

Purpose: One consistent predictor of adolescents' engagement in sexual risk behavior is their belief that peers are engaging in similar behavior; however, not all youth are equally susceptible to these peer influence effects. Understanding individual differences in *susceptibility* to peer influence is critical to identifying adolescents at risk for negative health outcomes. The purpose of this project was to identify predictors of susceptibility to peer influence using a novel performance-based measure of sexual risk taking.

Methods: Participants were 300 early adolescents ($M_{\text{age}} = 12.6$ years; 53% female; 44% Caucasian) who completed (1) a pretest assessment of demographics, sexual attitudes, and hypothetical scenarios measuring the likelihood of engaging in sexual risk behavior and (2) a subsequent experimental procedure that simulated an Internet chat room in which youth believed that they were communicating with peers regarding these same hypothetical scenarios. In reality, these "peers" were computer-programmed e-confederates. Changes in responses to the sexual scenarios in the private pretest versus during the public chat room provided a performance-based measure of peer influence susceptibility.

Results: In total, 78% of youth provided more risky responses in the chat room than those in pretest. The most robust predictor of this change was gender, with boys significantly more susceptible to peer influence than girls. Significant interactions also were noted, with greater susceptibility among boys with later pubertal development and African-American boys.

Conclusions: Results confirm that not all youth are equally susceptible to peer influence. Consistent with sexual script theory, boys evidence greater susceptibility to social pressure regarding sexual behavior than girls.

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IMPLICATIONS AND CONTRIBUTION

This experimental study simulated an Internet chat room to examine teens' susceptibility to peer influence regarding sexual behavior. African-American boys, boys with later pubertal development, and youth who expected sex to increase their popularity were particularly susceptible to sexual pressure. Findings may help to target interventions for high-risk youth.

Adolescence is a critical period for the formation of intimate relationships when youth learn to develop and maintain intimacy, explore desires, and negotiate sexual relationships [1]. However, this period of exploration can also be a period of sexual risk taking involving high rates of unprotected intercourse and

short-term partnerships that increase exposure to unintended pregnancy and sexually transmitted diseases (STDs) [2]. In the United States, 15- to 24-year olds represent 25% of the sexually experienced population, yet they acquire half of all STDs [3]. Furthermore, as many as 15% of sexually active girls aged 15–19 years become pregnant annually [4]. Identifying the factors that contribute to risky sexual decision-making is critical for prevention efforts, particularly during early adolescence, when partnered sexual behavior often is initiated.

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One consistent factor that impacts adolescents' behavior is peer influence in the form of perceived risk behavior among peers [5,6]. Health behavior theories (e.g., reasoned action model [7], social cognitive theory [8]) highlight the critical influence of perceived peer norms on decision-making. Developmental research also demonstrates that changes in brain reward circuitry may contribute to a peak in the salience of peer norms during early adolescence [9–11]. Although peer influence has been documented for a broad range of behaviors (e.g., substance use, deviance) [12], peer influence may be especially relevant for sexual risk behavior, which by definition involves interpersonal processes. Indeed, a systematic review of the predictors of youth sexual behavior concluded that adolescents' perceptions of sexual behaviors among their peers were a robust predictor of their own sexual intentions and behavior [13].

Although perceived peer norms are clearly important to peer influence processes, not all youth are equally susceptible to peer influence. Some youth perceive risky behavior among peers but remain resilient to peer pressure, whereas others are more vulnerable to conformity demands [5,12,14]. Unfortunately, most of the work on adolescent sexual behavior has examined a direct link between norms and behavior, without considering individual differences in susceptibility to those norms. Or, when susceptibility has been measured directly, it often has been assessed by self-report (e.g., asking youth how susceptible they believe they are), introducing biased estimates, and limiting our understanding of this construct [12,14].

In recent years, novel experimental paradigms have been developed to directly observe susceptibility to peer influence without relying on self-report [12,14,15]. One approach utilizes a computerized procedure wherein adolescents believe that they are interacting in Internet chat rooms with same-age peers (actually preprogrammed e-confederates) [12]. First, youth complete a private pretest questionnaire about their likelihood of engaging in risky behaviors. Then, during the chat room, they respond again "publicly," after watching the e-confederates endorse high-risk responses. The change in responses from pretest to the chat room setting is operationalized as a measure of peer influence susceptibility. Recent longitudinal work utilizing this experimental approach demonstrated steeper trajectories in the number of intercourse partners among youth high in peer influence susceptibility who also perceived more sexual partners among their peers [16]. This highlights the critical importance of understanding susceptibility as a unique individual factor that can impact sexual decision-making over time.

Which adolescents are most susceptible to peer influence? Although research indicates that susceptibility is important in adolescent sexual development and associated with subsequent sexual risk behavior [16], to our knowledge, no studies have examined the factors that predict susceptibility to sexual pressures. Yet, identifying these factors may aid in more effective early interventions for youth by targeting individuals most at-risk for conformity and tailoring interventions specifically to bolster resilience skills.

Purpose/Hypotheses

This study examined predictors of adolescents' susceptibility to peer influence in sexual situations (such as when receiving sexual pressure from a partner or when an opportunity arises for casual sexual activity), using the previously described

experimental "chat room" paradigm [12]. This study had the following two primary purposes: (1) to describe patterns of susceptibility to sexual risk behavior within a diverse sample of early adolescents and (2) to examine predictors of peer influence susceptibility. Based on prior research and theory, four predictors of susceptibility were examined: gender, race/ethnicity, pubertal development, and sexual outcome expectancies.

First, we examined gender as the primary predictor of susceptibility. Extensive theory and research address the role of gender in adolescent sexual behavior and peer relations, indicating that susceptibility may be higher among adolescent boys than girls. For example, the peer relations literature highlights that boys, more than girls, tend to be oriented to group versus dyadic interactions [17,18] and are more strongly motivated by status-oriented versus connection-oriented goals [18]. In addition, contemporary sexual scripts encourage males to pursue sexual activity, with expected peer rewards; in contrast, girls receive complex messages about appropriate sexual behavior, discouraging the accumulation of "too many" partners [19]. Moreover, evolutionary theory suggests that males are strongly motivated to increase social status to gain access to sexual partners, such that status goals and sexual goals may become inextricably linked [20]. Collectively, these theories indicate that susceptibility to peer influence regarding sexual behavior should be significantly stronger among boys than girls.

Second, we examined racial/ethnic differences in susceptibility. Prior work on racial/ethnic differences in sexual behavior has demonstrated that African-American youth often initiate sexual activity at earlier ages but use condoms as often or more often than their Caucasian peers [2]. However, ethnic differences in susceptibility to sexual peer influence have not been explored. African-American adolescents self-report lower levels of susceptibility to general peer influence [11], and a separate body of work on substance use suggests that Caucasian youth may be more susceptible to peer norms regarding alcohol use than African-American or Latino youth [21,22]. Based on this related work, we hypothesized that Caucasian adolescents would demonstrate more susceptibility to peer influences regarding sexual behavior than their African-American or Latino peers.

Third, we examined pubertal development. Across the pubertal transition, adolescents experience substantial changes related to sexual maturation, increases in sexual desire, and increased attention from potential romantic or sexual partners [23]. At the same time, adolescents become acutely attuned to social cues from peers more broadly and highly motivated to engage in behaviors that may be met with social rewards [9]. These processes may be particularly salient for adolescent girls, as early pubertal timing has been linked to peer socialization with more developmentally advanced peers, older relationship partners, and early age of sexual debut [24]. Although these factors suggest that susceptibility to peer influence should increase as adolescents proceed through puberty, alternatively it is possible that early adolescents who are less developed may face heightened conformity demands. In particular, later developing boys may have heightened motivation to publically assert their sexual desires to prove their developing masculinity [25]. Given these competing possibilities and limited prior work on which to base a priori hypotheses, we included the role of pubertal development on susceptibility as an important exploratory aim.

Finally, adolescents' sexual outcome expectancies—beliefs about the positive personal or social rewards for sexual behavior [26]—were examined. Youth who believe sexual

behavior will increase their social status are more likely to engage in sexual behavior, compared with peers who expect fewer social rewards [5,27]. Given that adolescents are motivated to engage in behaviors that may be met with peer rewards [5], we expect that adolescents who endorsed more of these expectations would be more susceptible to peer influences regarding sexual behavior.

Methods

Participants

Participants were recruited for a larger study from three rural, low-income middle schools in the southeastern United States. All seventh and eighth graders, except those in special education classrooms, were recruited ($n = 1,463$) using active parental consent and student assent. Among the 1,205 youth returning consent forms, 900 parents consented; of which, 32 students were absent or declined participation, resulting in a final sample of 868 students (total response rate = 59.3%; ages 12–15 years; 54.5% girls).

From this original sample, a subset of 324 seventh graders participated in the current experimental study (all seventh graders from two schools). Valid data were available from 314 youth (eight lost to technical difficulties; two did not complete all measures). To examine differences in susceptibility in the racial/ethnic groups most heavily represented (Caucasian, African-American, Latino), we excluded 14 youth of other races/ethnicities. Thus, our final sample included 300 participants (Table 1 for descriptives). Youth were compensated with \$30 for this portion of the study. The university institutional review board approved all procedures. A thorough in-person debriefing was provided the same week as the chat room.

Measures

Demographics and sexual history. Participants answered items assessing age, gender, and race/ethnicity. Sexual activity status was assessed with one item inquiring if youth had engaged in any sexual behavior, including sexual touching.

Pubertal development. Participants completed the five-item Pubertal Development Scale [28] including items about growth spurt, pubic hair, skin changes, facial hair/voice deepening (boys), and breast development/menarche (girls). Items were rated on a four-point scale (1 = not started to 4 = seems completed);

higher scores indicate more advanced pubertal status (current sample $\alpha = .60$).

Sexual outcome expectancies. Positive peer-related expectancies for sexual behavior were assessed with a composite of four items adapted from the National Longitudinal Study of Adolescent to Adult Health [29]. Items assessed perceptions that having sex in the next year would make adolescents (1) feel cool; (2) feel mature; (3) gain respect of friends; and (4) become more popular. Items were rated on a five-point scale; higher scores indicate more positive outcome expectancies (current sample $\alpha = .86$).

Hypothetical scenarios. Three hypothetical scenarios were developed with input from a middle-school focus group to assess sexual risk behaviors. Specifically, on a scale from 1 = *not at all likely* to 9 = *extremely likely*, youth rated how likely they would be to engage in sexual behavior with (1) an attractive, unknown student from another school; (2) a popular student from one's own school; and (3) a boyfriend/girlfriend who is exerting sexual pressure. In the first two scenarios, sexual behavior was described as "doing something sexual"; in the third scenario, sexual behavior was described as "doing something physical with your boyfriend/girlfriend, even if it includes having sexual intercourse (sex)." A composite was created with higher scores indicating higher sexual risk responses (current sample $\alpha = .91$). Previous work has demonstrated the reliability and validity of using hypothetical scenarios to capture health risk behaviors in the chat room paradigm [12,15].

Peer influence susceptibility. Peer influence susceptibility was assessed through an in vivo experimental procedure, described briefly in the following section. A more thorough description, including elements designed to bolster plausibility, manipulation checks, and debriefing procedures, are detailed elsewhere [12,15,16].

Procedure

The experimental paradigm was set up in school classrooms and simulated an Internet chat room. When participants entered the classroom, they were told that they would have an opportunity to communicate electronically with three same-gender students who were working on computers in other rooms of their school. Participants were seated at individual computer workstations, "logged in" to the chat room, and connected with three other students. In reality, these students were pre-programmed, computer-generated e-confederates (constructed with DirectRT [30]). The social status of each e-confederate was manipulated to make adolescents believe that they were interacting with low- or high-status peers. The social status of peers was not a focus of the current project but was included as a control variable in all analyses to account for the experimental manipulation; a description of this manipulation can be found elsewhere [12,15,16].

After a brief orientation, participants responded to the same hypothetical scenarios involving sexual behavior that they completed during the pretest assessment. Participants were instructed that each chat room member would be providing responses to the group and that they had been randomly selected to participate last. Thus, for each scenario, participants first saw the response of each e-confederate (responses roughly one

Table 1
Demographic characteristics ($n = 300$)

	n (%)
Gender	
Male	140 (46.7)
Female	160 (53.3)
Race/ethnicity	
African-American	93 (31.0)
Latino	76 (25.3)
Caucasian	131 (43.7)
Engaged in sexual activity	80 (26.7)
Had sex in past year	20 (6.7)
Age (M [standard deviation])	12.67 (.56)

There were no significant differences in any demographic characteristic by gender (p values > .20).

standard deviation [SD] above the gender-specific mean) before providing their own responses.

As in prior work [12,16], a within-subjects standardized difference score was computed for each participant to indicate whether responses to the same hypothetical scenarios differed 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 conformity pressures; negative scores reflected greater resistance to peer influence.

Analytic plan

First, descriptive statistics were used to characterize the percentage of youth who showed conformity to peer influence (i.e., mean score in chat room was higher than mean pretest score in private), resistance to peer influence (i.e., no change in scores from pretest to chat room), and anticonformity (i.e., mean score in chat room was lower than mean pretest score). Then, to examine predictors of susceptibility, a hierarchical regression analysis was conducted. At Step 1, adolescents' pretest scores were entered as a control to account for baseline levels of willingness to engage in sexual behavior. Because prior sexual activity may impact perceptions of peer behavior [31], analyses also controlled for sexual activity status and the implied social status of the e-confederates (i.e., chat room condition). At Step 2, the main effects of gender, ethnicity, pubertal development, and sexual outcome expectancies were entered. At Step 3, the two-way interactions between gender and each other predictor were entered.

Results

Descriptive data

At baseline, participants endorsed a relatively low likelihood that they would engage in sexual activity on the hypothetical scenarios, with a mean score of 2.77 (SD = 2.16, possible range 1–9). However, in the chat room, after seeing riskier scores from ostensible peers, the sample average increased nearly two points to 4.75 (SD = 2.43). Significant individual variability was noted by gender, ethnicity, and sexual outcome expectancies, as described in the primary analysis section below.

Regarding the difference from pretest score to chat room score, 79% (n = 236) of participants demonstrated conformity to peer influence, 11% (n = 34) showed resistance to peer influence, and 10% (n = 30) showed anticonformity to peer influence. Important differences in these scores were noted by gender, with 87% of boys showing conformity compared with 72% of girls ($\chi^2 = 9.42, p = .002$). Furthermore, the percentage of youth who provided less risky responses in the chat room (i.e., anticonformers) significantly differed by gender (2% of boys but 17% of girls; $\chi^2 = 18.01, p < .001$).

Primary analysis

Within the hierarchical regression, main effects were found for gender ($B = .98, SE = .11, p < .001$), race/ethnicity ($B = .26, SE = .10, p < .05$) and sexual outcome expectancies ($B = .13, SE = .05, p < .05$; Table 2). Boys were more susceptible to peer influence than girls, African-American youth were more susceptible than Caucasian youth, and adolescents who expected

Table 2

Hierarchical regression model predicting chat room susceptibility score (n = 300)

	Statistics at step		Final statistics
	ΔR^2	B (SE)	B (SE)
Step 1	.24***		
Pretest score		-.43 (.06)***	-.67 (.06)***
Step 2: main effects	.26***		
Gender		.98 (.11)***	.75 (.14)***
Race—African American		.26 (.10) [†]	.04 (.14)
Race—Latino		.04 (.10)	-.05 (.14)
Pubertal Devp		-.05 (.08)	.13 (.11)
Sex Expectancies		.13 (.05) [†]	.05 (.06)
Step 3: gender interactions	.03**		
Gender × race African American		.52 (.20)**	.52 (.20)**
Gender × race Latino		.24 (.21)	.24 (.21)
Gender × Pubertal Devp		-.39 (.16) [†]	-.39 (.16) [†]
Gender × Sex Expectancies		.14 (.08)	.15 (.08)
Total R ²	.53***		

Reference category for race/ethnicity = Caucasian; Gender: 0 = female, 1 = male. All models control for sexual activity status and chat room condition. Of note, analyses were rerun using Latino students as the reference category for race/ethnicity. A marginally significant difference in susceptibility scores was noted between African-American and Latino youth, with African-American youth demonstrating slightly more susceptibility ($B = .22, SE = .12, p = .06$).

Pubertal Devp = pubertal development; SE = standard error; Sex Expectancies = sexual outcome expectancies.

*** $p < .001$; ** $p < .01$; [†] $p < .05$.

greater social rewards for sexual activity were more susceptible than youth with lower outcome expectancies.

However, important differences were revealed by gender. First, there was an interaction between gender and race/ethnicity ($B = .52, SE = .20, p < .01$), with African-American boys more susceptible to peer influence than Caucasian boys or girls of African-American or Caucasian ethnicity (Figure 1). Second, although there was no main effect of pubertal development, there was a significant interaction between puberty and gender ($B = -.39, SE = .16, p < .05$), with later maturing boys more susceptible to peer influence than earlier maturing boys or girls of any pubertal development status (Figure 2). Of note, gender did not significantly moderate the relationship between sexual outcome expectancies and susceptibility.

Discussion

Peer influence can lead to maladaptive outcomes, including risky sexual behavior [13,16], yet little progress has been made in identifying which youth are most susceptible to these conformity pressures. Utilizing an experimental paradigm simulating an Internet chat room, we found that youth reported significantly greater likelihood of engaging in risky sexual activity when they believed peers could see their responses: nearly three quarters of girls and >85% of boys provided riskier responses publicly than privately. Important individual differences in conformity were noted by gender, ethnicity, pubertal development, and sexual outcome expectancies.

First, we found gender differences in conformity to pressure for sexual activity, with girls being more resistant to peer influence than boys. Compared with their pretests, 17% of girls provided less risky responses in the chat room, minimizing their willingness to engage in sex when reported in the presence of peers, in contrast to only 2% of boys who resisted peer influence

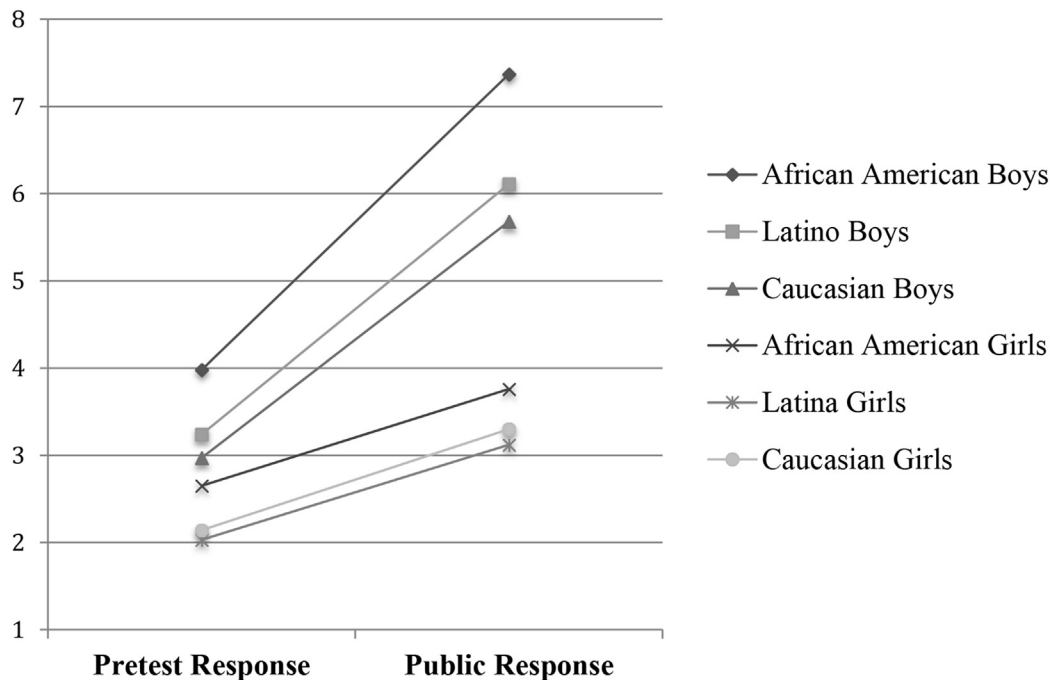


Figure 1. Pretest versus public responses to hypothetical scenarios about sexual activity: gender by ethnicity results. *Note.* This figure illustrates the magnitude of change by showing unstandardized mean values of pretest responses and public responses by gender and race/ethnicity. The mean public response of e-confederates was 6.7 for boys and 4.6 for girls (i.e., one SD above the pretest mean for each gender). Note that for primary analyses, the dependent variable was an individual's susceptibility score (i.e., standardized difference between public score and pretest score).

in this way. These findings are consistent with gender socialization theories that suggest that boys receive frequent messages tying sexual behavior to high social status [19,20], whereas girls receive more complicated messages by being treated as sexual objects, but taught that overt sexual behavior may lead to *decreased* social status [1,19]. As a result, girls may minimize or hide their sexual experiences to avoid the perception of promiscuity [1]. This tendency to downplay sexuality may be particularly true around other girls [32]. It is also possible that the perceived sexual activity status of others in the chat room or the degree to which girls wanted to be like the confederates may have influenced girls' responding. These issues provide excellent avenues for future investigation.

However, while higher than girls on average, susceptibility was not consistent for all boys. African-American boys were particularly likely to succumb to social pressure regarding sexual behavior. This contrasts prior work on self-reported resistance to peer influence [11] and research on susceptibility to peer norms regarding alcohol use; both of which had demonstrated that African-American adolescents were *less* susceptible than Caucasian youth [21,22]. These findings suggest that different peer socialization processes may be at play for substance use versus sexual activity among African-American boys. Perhaps related, although national rates of alcohol use are lower among African-American adolescents as compared with Caucasians, rates of sexual behavior are higher [2]. These effects warrant additional research attention.

In addition, among boys only, later pubertal development was associated with greater susceptibility. This association may be due to the perception that sexual behavior will be met with social rewards. Later developing boys—who may not have as many

opportunities to engage in sexual behavior as their peers who developed earlier—may be especially motivated to assert their desire for sexual behavior to peers, to prove their masculinity [25]. Pubertal timing has been more widely studied among girls for both methodological and theoretical reasons, yet the role of pubertal timing in boys' psychosocial development is clearly important and remains an area for future work [25].

Finally, both boys and girls who were higher in sexual outcome expectancies—that is, who expected more positive social rewards for sexual behavior—showed greater levels of conformity to peer influence. Prior work has revealed that youth who believe sexual behavior will result in greater rewards, such as increased social status, are more likely to engage in sexual activity [5,27], and the current findings demonstrate that these perceived social rewards may also increase the *susceptibility* of youth in conforming to risky sexual norms.

Strengths/limitations

While preliminary, this study has a number of important strengths, including attention to unanswered questions about predictors of susceptibility to peer influence and the use of an experimental paradigm to yield an *in vivo* measure of susceptibility that has predictive validity [12,16]. Furthermore, the inclusion of an ethnically heterogeneous early adolescent sample offers an important contribution to the literature on sexual peer influence. Finally, the focus on a rural, low-income area is a strength, given the unique sociodemographic and community-level factors that may influence adolescent risk taking in rural settings [33].

Nevertheless, several study limitations should be considered. First, although an experimental approach offers many benefits

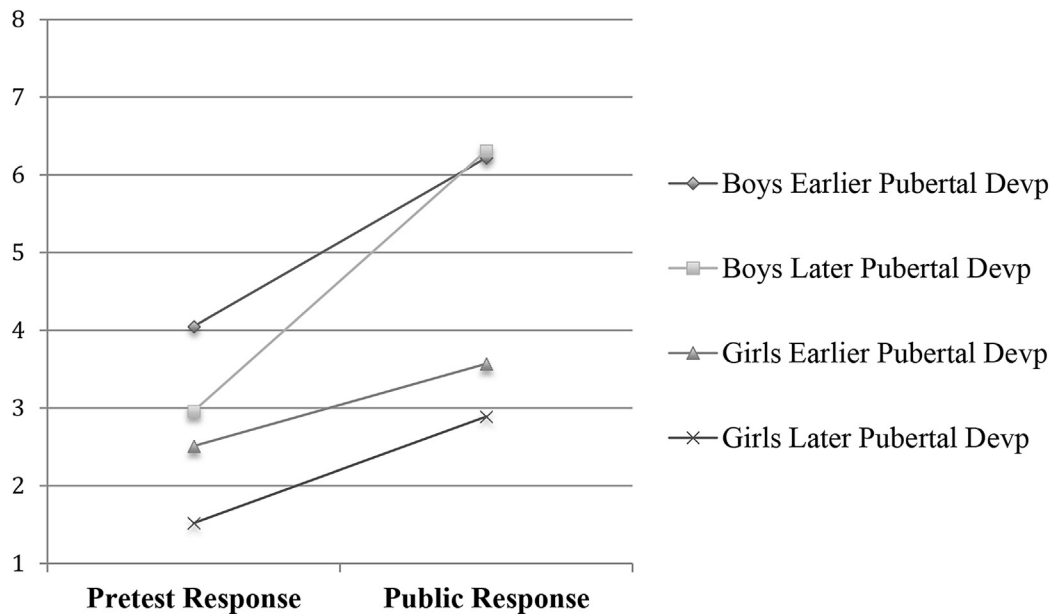


Figure 2. Pretest versus public responses to hypothetical scenarios about sexual activity: gender by pubertal development results. *Note.* Pubertal Devp = pubertal development. This figure illustrates the magnitude of change by showing unstandardized mean values of pretest responses and public responses by gender and pubertal development. The mean public response of e-confederates was 6.7 for boys and 4.6 for girls (i.e., one SD above the pretest mean for each gender). For this figure, earlier and later pubertal developments were calculated based on a median split. For primary analyses, the dependent variable was an individual's susceptibility score (i.e., standardized difference between public score and pretest score), and pubertal development was analyzed as a continuous variable.

over self-report (e.g., reducing desirability bias), it may not capture all real-world peer influence processes. For example, peers in the chat room were of the same gender, yet sexual pressure may occur in mixed-gender groups and opposite-gender dyads. Future work could utilize alternative designs that assess pressure from same- versus other-gender peers. In addition, this study did not include a control group, so we cannot say with certainty the extent to which experimental demand characteristics are present. Third, this study provides a preliminary investigation of four correlates of susceptibility, but future work should examine a broader range of predictors, including attitudinal/personality constructs known to influence sexual decision-making, and more nationally representative samples. Fourth, the field would benefit from understanding what predicts susceptibility across developmental stages—for example, by examining predictors of longitudinal trajectories of susceptibility. Finally, future research should identify the psychosocial correlates of those youth who are *not* susceptible to peer influences, as resistance to peer conformity may reflect developmental tasks associated with autonomy development [5,14].

Implications for interventions

As children transition to adolescence, desires to engage in behaviors that may be met with peer approval increase; developmental theories explain that peer rewards become more reinforcing [9], and evolutionary theories propose that social status goals and reproductive goals become inextricably linked [20]. Thus, youth who are especially attuned to potential peer rewards from sexual behavior may also be strongly motivated to conform to sex-related peer norms. These findings have

important implications for intervention efforts. Many sexual risk prevention programs fail to take a developmentally sensitive approach [34], yet such an approach may be crucial for early adolescents. For instance, renorming interventions could benefit by targeting both perceptions about how *common* sexual risk behavior is among peers (descriptive norms) and also how *cool* sexual risk behavior is perceived to be (injunctive norms) [13]. However, these interventions will likely be most successful if they specifically target those youth most susceptible to conformity demands identified here, namely, later developing and African-American boys and both boys and girls with higher sexual outcome expectancies. Advances in technology-mediated health interventions (eHealth/mHealth approaches) are ideally suited for tailoring sexual health interventions during dissemination and may allow researchers to selectively target those youth who are most vulnerable to peer influence effects and at risk for HIV and other STDs [35,36].

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