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Adolescents Misperceive and Are Influenced by High-Status Peers' Health Risk, Deviant, and Adaptive Behavior

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Most peer influence research examines socialization between adolescents and their best friends. Yet, adolescents also are influenced by popular peers, perhaps due to misperceptions of social norms. This research examined the extent to which out-group and in-group adolescents misperceive the frequencies of peers' deviant, health risk, and adaptive behaviors in different reputation-based peer crowds (Study 1) and the prospective associations between perceptions of high-status peers' and adolescents' own substance use over 2.5 years (Study 2). Study 1 examined 235 adolescents' reported deviant (vandalism, theft), health risk (substance use, sexual risk), and adaptive (exercise, studying) behavior, and their perceptions of *jocks'*, *populars'*, *burnouts'*, and *brains'* engagement in the same behaviors. Peer nominations identified adolescents in each peer crowd. Jocks and populars were rated as higher status than brains and burnouts. Results indicated that peer crowd stereotypes are caricatures. Misperceptions of high-status crowds were dramatic, but for many behaviors, no differences between populars'/jocks' and others' actual reported behaviors were revealed. Study 2 assessed 166 adolescents' substance use and their perceptions of popular peers' (i.e., peers high in peer perceived popularity) substance use. Parallel process latent growth analyses revealed that higher perceptions of popular peers' substance use in Grade 9 (intercept) significantly predicted steeper increases in adolescents' own substance use from Grade 9 to 11 (slope). Results from both studies, utilizing different methods, offer evidence to suggest that adolescents misperceive high-status peers' risk behaviors, and these misperceptions may predict adolescents' own risk behavior engagement.

Keywords: risk behavior, substance use, adolescence, social norms, peer crowds

As compared with research investigating *whether* peer influence occurs, relatively little attention has focused on *how* peer influence occurs (Hartup, 2005; Prinstein & Dodge, 2008). Peer influence research has documented that similarities between youths' and their peers' behaviors are due to processes of selection (i.e., affiliating with similar peers) as well as socialization or contagion effects (Kandel, 1978). Past work demonstrates that peer socialization effects are relevant for many attitudes and behaviors, including maladaptive indices such as externalizing symptoms, health risk behaviors (e.g., substance use, weight-related behaviors, nonsuicidal self-injury), and even internalizing symptoms (see Brechwald & Prinstein, 2011 for a review). Findings document that as compared with other developmental periods, adolescence is characterized by heightened susceptibility to peer influence (Steinberg & Monahan, 2007). Moreover, many different "peers" influence adolescents' behavior (Brechwald & Prinstein, 2011).

The vast majority of peer influence research has examined peer socialization processes that occur between adolescents and their closest friends, and socialization effects may be explained by social learning theories. For instance, within adolescents' dyadic friendships, social reinforcement and shared engagement in deviant talk conjointly promote adolescents' development of deviant behavior (Dishion, McCord, & Poulin, 1999; Dishion, Nelson, Winter, & Bullock, 2004; Piehler & Dishion, 2007).

Yet, peer socialization also occurs outside of a dyadic friendship context. In fact, adolescents can be influenced by highly visible peers within their social milieu with whom they have not even had significant interpersonal contact. Relatively little is known about this phenomenon. Theories are available to speculate as to how influence may occur, but empirical testing among adolescents, adopting a developmental perspective, sorely is needed.

Social psychological theories suggest that the powerful influence of high-status peers may be associated with individuals'

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construal of social norms. For example, the prototype willingness model (Gibbons & Gerrard, 1995; Gibbons, Gerrard, Blanton, & Russell, 1998) suggests that individuals are willing to engage in behaviors that approach their estimates of a favorable prototype's behavior in an effort to maintain a favorable self-image. In other words, people are likely to engage in behaviors that match their perceptions of what is "normative," and perhaps especially characteristic of those who represent idealized identities, including high-status peers.

Such theories are especially relevant to the adolescent period, due to biological and psychosocial processes unfolding within this developmental stage. Biological changes associated with the onset of puberty powerfully contribute to changes in youths' social functioning (Blakemore, Burnett, & Dahl, 2010; Crone & Dahl, 2012). Pubertal hormones (e.g., gonadal hormones) have a strong impact on the neural systems (e.g., ventral striatum, amygdala) underlying social-affective and reward processes, ultimately influencing the way in which adolescents think about their peers, interact with them, and behave in their presence (Chein, Albert, O'Brien, Uckert, & Steinberg, 2011; Crone & Dahl, 2012). This unique adolescent sensitivity to social rewards may motivate the acquisition and maintenance of high peer status.

Additionally, identity development is a critical task in adolescence. Using social comparison and reflected appraisal processes, adolescents construct a sense of identity by contrasting their own sense of values, interests, beliefs, and behaviors with their perceptions of others (Felson, 1985; Harter, Stocker, & Robinson, 1996). Favorable comparisons (i.e., adolescents' perceived similarity between themselves and admired peers) promote positive self-regard. Unfavorable comparisons create cognitive dissonance (e.g., Brown & Lohr, 1987) that can be resolved either by altering perceptions of others, or by changing one's own attitudes and behavioral proclivities. Social comparisons therefore can have strong implications for understanding peer socialization effects. Adolescents' perceptions of others' (and perhaps especially perceptions of admired peers') behavior may be associated with changes in adolescents' own behavior.

Unfortunately, adolescents and adults are remarkably inaccurate when estimating others' behaviors, or social norms more generally (see Prentice, 2008, for a review). Erroneous estimations occur with regard to multiple peer contexts, including individuals' estimations of unfamiliar peers', coworkers'/classmates', and close friends' behaviors (Borsari & Carey, 2003; Prinstein & Wang, 2005). Most typically, individuals *overestimate* the level of others' engagement in risk behaviors (Gibbons, Helweg-Larsen, & Gerrard, 1995; Perkins, Haines, & Rice, 2005; Perkins, Meilman, Leichliter, Cashin, & Presley, 1999), and *underestimate* their peers' engagement in adaptive behavior. Of course, some of this effect is likely due, at least in part, to reporting biases; individuals likely underreport their engagement in socially undesirable behaviors, and overreport their engagement in socially desirable behaviors, thus leading to apparent discrepancies in studies of social norms perceptions. Nevertheless, the consistent tendency for individuals to perceive that others engage in high levels of risk behavior has formed the basis for social norm campaigns designed to address public health crises (e.g., alcohol abuse, sexually transmitted infections). For example, to reduce substance misuse, interventions have attempted to dispel misperceptions by explicitly educating college-aged students regarding the actual frequency of peers' behavior (Wechsler, Nelson, Lee, Seibring, Lewis, & Keeling, 2003). This effort has yielded only modest success (Prentice, 2008), however, and would benefit from a stronger developmental framework. Specifically, it is likely that multiple social norms are relevant to adolescents, as youth are especially likely to rely on subgroups of high-status peers within the peer context to guide behavior.

There are multiple markers of "high status" within the adolescent peer milieu. For example, status of individual adolescents may be defined by peers' perceptions of an individual's power or social dominance, known as peer-perceived popularity, or it may be defined by peers' perceptions of their likability or social preference (sometimes referred to as sociometric popularity; Parkhurst & Hopmeyer, 1998). Additionally, within most North American school settings, the peer "crowd" system offers an especially salient marker of high status, which typically peaks around the early high school years or by midadolescence (e.g., Brown, Eicher, & Petrie, 1986; Coleman, 1974; Doornwaard, Branje, Meeus, & ter Bogt, 2012). Note that peer crowds may reflect not an individual's level of popularity, but the status associated with an entire group of adolescents; individuals' popularity may be presumed by peers merely by their reputations as crowd members. Adolescents readily identify a hierarchy of crowds that capture different themes and values presumed to be shared among their individual members (Brown, 1990; Brown & Klute, 2003; Eder, 1985). Signals regarding crowd membership and crowd members' preferences are deeply entrenched in the daily interactions, clothing, and even social geography of many adolescents' school settings (Brown, 1990; Brown & Klute, 2003; Eder, 1985). Peer crowds therefore are a construct with high ecological validity among adolescents. In other words, adolescents think of their peer relations based on their identification with, and actual or desired membership in, different reputation-based groups. This is exemplified by adolescents' use of colloquial names to describe peer crowds (e.g., jocks, populars) and adolescents' eagerness to discuss the crowd system within their school (e.g., La Greca, Prinstein, & Fetter, 2001).

Peer crowds vary predictably in their social status (Brown, 1990). Ethnographic and sociological research consistently has revealed that crowds characterized by traits that signal the successful acquisition of adolescent values (e.g., physical attractiveness, physical maturation, and athletic prowess; i.e., jocks and populars) typically are highly regarded by peers (Brown, Mory, & Kinney, 1994). Crowds characterized by behaviors that signal deviation from adolescent values (e.g., severely deviant, rule-breaking behavior; burnouts) or reluctance to eschew parent-oriented values (e.g., high achievement, hyper-obedience, rule-following behavior; brains) typically possess lower status in the peer context (Brown et al., 1994).

Although rarely examined, adolescents likely construct different social norms for each peer crowd, and these perceptions likely are inaccurate. Peer crowds are caricatures (Brown et al., 1994); crowd reputations reflect extreme levels of values, interests, and behaviors that fail to accurately characterize the individuals within each crowd. Adolescents' social comparisons with unrealistic peer crowd stereotypes, for instance, may promote unfavorable self-perceptions and perhaps even maladaptive or risky behaviors. This may be especially relevant for social comparisons with high-status crowds. Note that many deviant and risk behaviors are associated with high peer status (e.g., Cillessen & Mayeux, 2004; Mayeux,

Sandstrom, & Cillessen, 2008; Prinstein, Choukas-Bradley, Helms, Brechwald, & Rancourt, 2011); thus, social comparisons with high-status crowd members may suggest to some adolescents that they need to engage in more risk behaviors to seem more like their high-status peers. Crowd caricatures therefore could have important implications for adolescents' own behavioral decisions, particularly for crowd caricatures of groups that are highly regarded.

This series of studies examined adolescents' perceptions of social norms (i.e., Study 1), and the longitudinal association between these norm perceptions and adolescents' own behavior (i.e., Study 2). Study 1 examines health risk, deviant, and adaptive behavior among four peer crowds that have been observed most consistently within this literature (i.e., athletically oriented jocks, socially oriented populars, deviant-oriented burnouts, and academically oriented brains). Three sets of hypotheses were examined. First, it was hypothesized that jocks and populars would be identified by peers as higher status crowds, whereas burnouts and brains would be described as lower status crowds, consistent with prior work (Kinney, 1993).

Second, as has been demonstrated in prior work, it was hypothesized that members of different peer crowds would report significantly different frequencies of engagement in each of the behaviors examined (La Greca et al., 2001). Specifically, it was hypothesized that burnouts would report engaging in the highest levels of health risk behaviors, followed by populars and jocks, with brains engaging in the lowest levels of health risk behaviors (La Greca et al., 2001). Few studies have examined crowd differences in adaptive behaviors; however, consistent with stereotypes, it was anticipated that jocks would report the highest frequencies of engagement in exercise and brains would report the highest frequencies of studying.

Third, to address main study goals, and consistent with the notion of peer crowds as caricatures, it was hypothesized that adolescents would erroneously estimate prototypical peer crowd members' behavior, as compared with actual peer crowd members' self-reported behavior. Relevant to this hypothesis was the distinction between in-groups (i.e., crowd members' perceptions of their own crowd) and out-groups (i.e., crowd nonmembers' perceptions of the peer crowd). Theory suggests that caricatures most likely perpetuate in- and out-group differences (Brown et al., 1994), perhaps because in-groups have greater access to crowd-relevant information than do out-groups. This effect may be enhanced by a modest overlap between friendships and crowd membership (Urberg, Değirmencioğlu, Tolson, & Halliday-Scher, 1995). Thus, it was hypothesized that in- and out-group perceptions of crowd members' behavior would differ significantly. It was predicted that as compared with out-group perceptions, in-group perceptions would differ less notably from crowd members' reported behavior. It was of interest to examine not merely whether the magnitude of differences in behavioral frequencies varied across crowds (e.g., that burnouts use substances less than others perceive), but especially relevant for understanding social comparison processes, whether perceptions of the ordinal ranking of crowd differences in behavior engagement were erroneous (e.g., whether adolescents erroneously perceive that jocks and populars use illegal substances more than brains, for instance). It was hypothesized that out-group adolescents would overestimate the deviant and health risk behaviors of their peers, and in particular the high-status crowds (i.e., jocks and populars). It was hypothesized that estimations of peers' adaptive behavior would be similarly erroneous. However, in contrast to our expectation that adolescents would overestimate high-status peers' risk behaviors, it was expected that adolescents would underestimate high-status peers' studying, underestimate low-status peers' exercising, and overestimate brains' studying, consistent with caricatures of these crowds' behaviors.

Study 1

Method

Participants. Participants included 235 adolescents (58.3% girls) in the tenth grade (M_{age} = 16.27 years, SD_{age} = 0.50) at a suburban public high school in the northeastern United States. The ethnic distribution of the sample was 72.3% White/Caucasian, 8.9% African American, 3.8% Latino American, 1.3% Asian, 7.7% Other/Mixed Ethnicity, and 6.0% unknown (declined to respond) within a city of fairly homogeneous, middle-class socioeconomic status. According to school district records, approximately 22.3% of students were eligible for free or reduced-price lunch. All tenth grade students were recruited for participation (n = 364), with the exception of students in self-contained special education classes. Various incentives were used to promote the returning of consent forms, regardless of decisions to participate, including $10 gift cards for teachers with participating classrooms, $10 additional gift cards for teachers with more than an 80% return-rate, and candy bars and raffles (e.g., movie tickets, gift certificates) for students who returned consent forms. Consent forms were returned by 70% of families (n = 255); of these, 92% of parents gave consent for their child's participation (n = 235), yielding a final participation rate of 65%.

Procedures.

Peer crowd affiliation. Adolescents' affiliation with specific peer crowds was assessed using a modification of Clasen and Brown's (1985) social type rating procedure. This procedure involved two steps. First, 10 individual interviews and two focus groups (each n = 8) were conducted with school administrator-nominated students in the participating school to determine specific peer crowds and colloquial names relevant to this specific school context. Administrators were asked to nominate participants with knowledge of peer relationships and social dynamics at the school. Each student was given a brief description of the reputation-based peer crowd construct and asked to identify an exhaustive list of crowds (as well as the colloquial names by which they are known) in the participating school. Eight crowds were noted consistently across at least two interviews/groups, and the four crowds of focus for the current study (i.e., jocks, populars, burnouts, brains) were recognized by 100% of participants. In order to avoid any possible influence from this initial crowd-based discussion, none of the participants from this initial series of interviews and focus groups were used for sociometric ratings in the subsequent phase of research.

Second, peer nominations completed by "sociometric experts" identified the students who had the reputation of most strongly affiliating with each of these peer crowds (Clasen & Brown, 1985; Prinstein, 2007). All tenth grade English teachers were asked to nominate two students who were "social experts in tenth grade peer relationships (e.g., friendship cliques, peer popularity)." Eng-

lish teachers were selected for the nomination of experts for two reasons. First, English was a mandatory course for all tenth grade students. Second, English classes in this high school were academically tracked (i.e., eight average classes, 32% of the sample; seven high average classes, 43% of the sample; three accelerated classes, 25% of the sample); thus, this procedure ensured that experts were a stratified subsample from classes of all ability levels. A total of 36 students were selected across the 18 tenth grade English classes; of these, parental consent was available for 26 students (72.2%). The rate of parental consent for "experts" and nonexperts was not significantly different, $\chi^2(1) = 1.00$, $p = .32$. Each participating sociometric "expert" was asked to nominate an unlimited number of peers who were affiliates of each crowd on alphabetized grademate rosters. The order of names was counterbalanced (A to Z; Z to A) on each roster to control for possible effects of alphabetization on nominee selection. A tally of nominations each child received for each peer crowd was computed and standardized within the grade. Prior research has suggested that the use of peer nomination data from sociometric experts may provide a reliable and valid assessment alternative to more traditional grade-wide peer nomination, particularly on reputation-based constructs ($r = .92$; Prinstein, 2007).

Four of the eight peer crowds identified either were highly specific to the community in which the school was located or contained few individuals nominated for membership: loners ($n = 7$), smart socials ($n = 9$), alternative/nonconformists ($n = 7$), and members of a local high school fraternity ($n = 1$). These participants were excluded from analyses due to the limited utility in advancing research on peer crowd affiliations more broadly. Thus, analyses were conducted on the remaining four peer crowds that also have been highlighted in prior research in this area (i.e., jocks, populars, burnouts, brains). Crowd affiliates for each of these four crowds were determined by identifying participants who received a high number of nominations for one of these specific crowds ($z \geq .75$), but did not receive a high number of nominations for any of the other three remaining crowds (other zs $< .75$). This cutoff score was selected based on the distribution of z-scores to ensure that crowd affiliates selected were the most prototypical, representative grademates identified within each peer crowd reputation. Use of a cutoff standardized score of .75 to identify "extreme" groups has been supported in prior work (Solberg & Olweus, 2003). Using these criteria, a total of 24 participants were identified as jocks, 12 as populars, 12 as burnouts, and 46 as brains in this sample. An additional 32 participants were excluded from analyses,[1] due to receiving high ($z \geq .75$) nominations on two or more peer crowds, thus effectively precluding their ability to be studied as "pure" crowd representatives for any specific peer crowd (e.g., 11 participants received high nominations on affiliation with both the jocks and populars). Note that these hybrid popular-jocks also are discussed briefly below.

The remaining 85 participants composed the "average" group of adolescents (i.e., all remaining participants in the sample who (a) had not been included as affiliates of the four specific crowds being examined; (b) had not been excluded from analyses due to membership in the four small/nongeneralizable crowds; and (c) had not been excluded from analyses due to high nominations for multiple crowds). As such, these "average" adolescents represent youth who were not regarded by peers as having a high affiliation with any specific peer crowd (all zs $< .75$), and on average their peer-nomination data reflect low affiliation with all of the crowds (mean z-scores of -0.28 to -0.43 for affiliation with the four crowds of interest for the current analyses). Data from these participants were used as estimates of "average" or typical crowd nonaffiliated adolescents' behaviors, as well as being among the data used to compute out-group perceived norms.

Peer-reported crowd status and positive regard. Following the preliminary sociometric interviews to establish local peer crowd names and membership, all participating tenth grade students ($n = 235$) completed measures of peer crowd reputations. Students responded to two peer status items from the Peer Crowd Questionnaire (PCQ; La Greca et al., 2001). For each of the peer crowds identified at the school (i.e., jocks, populars, burnouts, brains), students answered: (a) "How much would you like to be more a part of each of these groups?" and (b) "How well-liked and well-respected are each of these groups?" Both items were measured on a 1 to 5 rating scale (for Item a: *not at all* to *very much*; for Item b: *very disliked/disrespected* to *very liked/respected*).

Peer-reported popularity and likability. All participating tenth grade students ($n = 235$) also were asked to nominate an unlimited number of peers for items assessing popularity and likability. To assess likability, participants nominated peers whom they "like the most" and "like the least." A tally of nominations was computed for each participant, and a standardized difference score between standardized "like most" and "like least" score was computed to yield a measure of likability, with higher scores indicating greater likability among peers (e.g., Coie & Dodge, 1983). To assess popularity, students were asked to nominate peers who were "most popular" and "least popular" (e.g., Parkhurst & Hopmeyer, 1998). As with likability, a standardized difference score between standardized "most" and "least popular" scores was computed, with higher scores reflecting higher levels of popularity relative to peers (e.g., Prinstein & Cillessen, 2003). Past research strongly supports the use of peer nominations to assess social reputations within the peer context (Coie & Dodge, 1983; Prinstein, 2007).

Adolescents' health risk, deviant, and adaptive behaviors. All participants also responded to 10 items assessing the frequency of engagement in health risk, deviant, and adaptive behaviors. All items were adapted from existing instruments such as the Youth Risk Behavior Surveillance System (e.g., Centers for Disease Control and Prevention, 1998; Dishion, Patterson, Stoolmiller, & Skinner, 1991; La Greca et al., 2001). Adolescents responded to each item using a 5- to 6-point Likert-scale response set corresponding to the expected range of behavior frequency commonly reported within this age group. *Health risk behaviors* included items assessing substance use and sexual risk behavior. *Substance use* items included the following: (a) number of cigarettes smoked per day in the past month (1 = *0*, 2 = *1 per day*, 3 = *2–3 per day*, 4 = *6–10 per day*, 5 = *half a pack to a pack/10–20 per day*, 6 = *More than a pack per day*); (b) frequency of drinking five or more drinks on a single occasion in the past year (1 = *0 times*, 2 = *1–2 times*, 3 = *3–5 times*, 4 = *6–9 times*, 5 = *10 or more times*); and (c) frequency of marijuana use in the past month (1 = *0 times*, 2 =

[1] Excluded participants due to multiple crowd affiliations were as follows: jocks/populars = 11, jocks/nerds = 3, jocks/populars/burnouts = 4, burnouts/populars = 10, burnouts/jocks = 3, burnouts/nerds = 1.

1–2 times, 3 = *3–9 times*, 4 = *10–19 times*, 5 = *20 or more times*). *Sexual risk behavior* items included the following: (a) number of sexual intercourse partners in the past year, and (b) number of oral sex partners in the past year (both response scales were 1 = *0 people*, 2 = *1 person*, 3 = *2 people*, 4 = *3–4 people*, 5 = *5 or more people*). *Deviant behavior* was assessed using three items including: (a) frequency of ruining or damaging others' property or possessions on purpose in the past year, (b) frequency of stealing something worth less than $5 in the past year, and (c) frequency of stealing something worth more than $50 in the past year (all response scales were 1 = *0 times*, 2 = *once*, 3 = *2–3 times*, 4 = *4–6 times*, 5 = *7 or more times*). *Adaptive behaviors* were assessed using two items: (a) time spent studying on an average school night, and (b) time spent exercising on an average weekday (both response scales were 1 = *0 min*, 2 = *1–15 min*, 3 = *15–45 min*, 4 = *45 min to 1.5 hr*, 5 = *1.5 to 3 hr*, 6 = *more than 3 hr*). For each item, adolescents were asked to report their own frequency of engagement in the behavior, as well as the frequency that an "average/typical" member of each peer crowd at that school engaged in that behavior (e.g., "an average/typical [school name] jock").

As a measure of in-group perceived norms, a mean score was computed across all crowd affiliates' perceptions of the frequency of each behavior for an average/typical member of their specific crowd (e.g., populars' reports of populars' marijuana use). As a measure of out-group perceived norms, a mean score was computed across all noncrowd members' perceptions of the frequency of each behavior for an average/typical member of a specific crowd (e.g., all nonpopulars' perceptions [i.e., the jocks', burnouts', brains', and "average" adolescents' perceptions] of populars' marijuana use). As a measure of self-reported behavior for each peer crowd, a mean score was computed for crowd affiliates' reports of their own frequency of each behavior (e.g., the mean of all populars' self-reports of their own marijuana use). Finally, as a measure of self-reported behavior for "average" teens, a mean score was computed for average teens' reports of their own frequency of each behavior (e.g., the mean of all average teens' self-reports of their own marijuana use).

Data analyses. Three sets of analyses were conducted. First, descriptive statistics were conducted to examine means and correlations among all primary variables. Second, to examine crowd differences in status/regard, a MANOVA was conducted to examine crowd differences in overall levels of likability and popularity, and paired *t* tests were conducted to examine differences in adolescents' respect for, and desire to be in each peer crowd. Third, comparisons among all crowd affiliates' self-reported behaviors were examined using a MANOVA. Last, to examine primary study hypotheses, analyses were conducted to examine differences among out-group perceived norms, in-group perceived norms, and self-reported behaviors for each of the four peer crowds and for each behavior. A series of independent samples *t* tests was utilized to compare out-group perceived norms with self-reported behaviors for each crowd. Independent samples *t* tests also were used to examine differences between out-group and in-group perceived norms. Paired samples *t* tests were utilized to compare in-group perceived norms and self-reported behaviors within each peer crowd. Due to positive skewness, all variables were square root transformed prior to conducting statistical analyses. Due to the large number of pairwise statistical comparisons required, a sequentially rejective test correction (Holm, 1979; Jaccard & Guilamo-Ramos, 2002) was used to maintain a family wise error rate of $p < .05$. This approach offers a stepwise consideration of significance. Specifically, all *p* values were placed in ascending order and then compared with a significance level of .05/*n*, where *n* represents the number of remaining comparisons to be examined. For example, to be classified as statistically significant, the first (i.e., lowest) *p* value was required to be less than .05/120 or $p < .000417$. The second *p* value was required to be less than .05/119 or .00042. This sequential process continued until a *p* value was reached that exceeded the stepwise rejective value (in this case, $p < .00055$), at which point all remaining higher *p* values were considered nonsignificant. In other words, all pairwise comparisons reported as statistically significant below had *p* values less than .00055.

Results

Preliminary analyses. Means, standard deviations, and bivariate correlations for all health risk, deviant, and adaptive behaviors are presented in Table 1. Moderate positive correlations were observed among substance use variables (frequency of cigarette, alcohol, and marijuana use), among sexual behaviors (number of sexual intercourse partners and oral sex partners), and among deviant behaviors (frequency of property damage, theft < $5, and theft > $50). Time spent studying was correlated negatively with all risk behaviors, and time spent exercising was positively associated only with time spent studying.

Peer crowd status and peer regard. Means and standard deviations are presented in Table 2 to depict crowd differences across four indicators of peer status (i.e., peer-reported likability and popularity, adolescent-reported desire to become more affiliated with peer crowds and respect for peer crowds). MANOVA results indicated that crowds differed in peer-perceived popularity and likability ($r = .69$, $p < .001$); $F(8, 346) = 24.59$, $p < .001$; Wilk's $\lambda = 0.41$. Findings were significant at a univariate level for peer-perceived popularity, $F(4, 174) = 37.99$, $p < .001$, and likability, $F(4, 174) = 10.17$, $p < .001$. Students selected as populars received higher scores of peer-perceived popularity than all other crowds, and students selected as brains were nominated as having lower peer-perceived popularity than all other groups. Jocks were significantly more popular than brains; although nonsignificant, jocks' mean popularity score also was higher than burnouts'. With regard to likability, jocks and populars were nominated as higher in likability than burnouts and brains.

Of note, with regard to peer status, 11 participants were excluded from analyses due to receiving high nominations ($z \geq .75$) for membership in both the popular and jock crowds, thus effectively precluding their ability to be studied as "pure" prototypical members of either crowd in subsequent analyses. These participants, although not "pure" populars or jocks, received the highest peer-nominations on measures of both peer-perceived popularity ($M = 1.34$, $SD = 0.81$) and likability ($M = 1.34$, $SD = 0.75$). One-way ANOVA results with the four primary crowds of interest, average youth, and these "popular-jocks" included as an additional crowd, also revealed differences in peer-perceived popularity, $F(5, 184) = 41.81$, $p < .001$, and likability, $F(5, 184) = 12.76$, $p < .001$. Post hoc comparisons revealed that populars and "popular-jocks" did not differ from each other on peer-perceived popularity;

Table 1
Means, Standard Deviations, and Correlations Among Health Risk, Deviant, and Adaptive Behaviors

	Mean (*SD*)	Alcohol	Marijuana	Intercourse partners	Oral sex partners	Property damage	Theft < $5	Theft > $50	Studying	Exercising
Cigarettes	1.42 (1.14)	.50***	.56***	.24***	.36***	.09	.02	−.01	−.20**	−.01
Alcohol	2.05 (1.38)	—	.55***	.22**	.48**	.24***	.21**	.22**	−.29***	.04
Marijuana	1.26 (0.71)		—	.36***	.47***	.19**	.19**	.09	−.25***	−.08
Intercourse partners	1.47 (0.87)			—	.59***	.02	.00	.11	−.09	.03
Oral sex partners	1.71 (1.05)				—	.12	.14*	.17*	−.29***	−.02
Property damage	1.59 (0.96)					—	.39***	.27***	−.25***	.02
Theft <$ 5	1.56 (1.07)						—	.44***	−.23***	−.07
Theft > $50	1.19 (0.65)							—	−.20**	−.09
Studying	2.86 (1.30)								—	.22**
Exercising	3.46 (1.43)									—

Note. For ease of interpretability, means and standard deviations are reported using nontransformed data. However, correlation coefficients are reported based on a square root transformation of the data.
* $p < .05$. ** $p < .01$. *** $p < .001$.

however, the "popular-jocks" were rated as higher on peer-perceived popularity than all other youth. Similarly, populars, jocks, and "popular-jocks" did not differ from each other on likability; however, the "popular-jocks" received higher peer nominations than all other groups. In sum, it is worth noting that although no data were collected on adolescents' perceptions of "popular-jocks'" health risk, deviant, and adaptive behaviors (i.e., thus pairwise comparisons described below could not be conducted for this group of youth), these data suggested some overlap in how adolescents conceptualize peers with the highest reputational-based status.

Paired-samples *t* tests revealed differences in mean levels of respect for, and desire to be part of, the four examined peer crowds. Participants did not differ on how well-liked/respected they described the jocks and populars to be, or how well-liked/respected they described the burnouts and brains to be. However, the jocks and populars were significantly more well-liked/respected than the burnouts and brains (all *p*s $< .001$, *d*s $= 1.09$ to 1.21). All four crowds differed significantly on the extent to which participants reported a desire to be a part of each crowd. Students had strongest desires to become more affiliated with the populars, followed by jocks, brains, and then burnouts (all *p*s $< .01$, *d*s $=$ 0.19 to 1.18).

Group differences in self-reported health risk, deviant, and adaptive behaviors. MANOVA analyses also revealed group differences in self-reported risk and adaptive behaviors across jocks, populars, burnouts, brains, and average teens (see Table 3), $F(40, 536.51) = 4.85$, $p < .001$; Wilk's $\lambda = 0.31$. Group differences emerged for cigarettes, $F(4, 150) = 8.46$, $p < .001$; alcohol, $F(4, 150) = 6.40$, $p < .001$; marijuana, $F(4, 150) = 31.68$, $p < .001$; number of sexual intercourse partners, $F(4, 150) = 7.66$, $p < .001$; number of oral sex partners, $F(4, 150) = 6.27$, $p < .001$; theft of goods worth more than $50, $F(4, 150) = 3.63$, $p < .01$; and time spent exercising, $F(4, 150) = 6.55$, $p < .001$. Results of post hoc comparisons (Tukey's HSD) indicated that burnouts reported significantly higher frequencies of cigarette use and binge drinking than did jocks, brains, and average adolescents. Burnouts also reported engaging in higher frequencies of marijuana use than did jocks, populars, brains, and average adolescents. For sexual risk behavior variables (i.e., number of intercourse and oral sex partners), burnouts reported having significantly more intercourse and oral sex partners than did jocks, brains, and average adolescents. Populars also reported having significantly more oral sex partners than did brains. For deviant behavior (i.e., property damage and theft), a significant effect was revealed only for the frequency of theft (> $50); results suggested higher frequencies for burnouts as compared with jocks, brains, and average adolescents. Finally, among adaptive behaviors (i.e., time spent studying and exercising), jocks reported significantly higher frequencies of exercise than did populars, burnouts, brains, and average adolescents.

Comparisons of in-group and out-group perceptions of health risk, deviant, and adaptive behaviors. In addition to data summarized above for peer crowd members' self-reported risk and adaptive behaviors, the means, standard deviations, and sample sizes for in-group and out-group perceptions of crowd members' behaviors also are presented in Table 3. Pairwise comparisons are provided for self-reported behavior, in-group perceptions, and out-group perceptions across all four crowds and 10 behavioral outcome variables. Independent samples *t* tests were utilized to compare out-group perceived norms and self-reported behavior across crowds. As hypothesized, out-group estimations significantly differed from self-reported behavior for multiple crowd/behavior combinations. Overestimations were noted particularly among out-group members' estimates of high-status peer crowd members' health risk and deviant behaviors.

Specifically, for substance use behaviors, nonjocks significantly overestimated jocks' frequency of cigarette, alcohol, and marijuana use. Nonpopulars significantly overestimated populars' frequency of cigarette use, and nonburnouts significantly overestimated burnouts' frequency of cigarette and marijuana use (see Figure 1 for an illustrative example of findings on overestimation of cigarette use across peer crowds). Similarly, among the sexual risk behavior variables, nonjocks significantly overestimated Jocks' number of sexual intercourse and oral sex partners, and nonpopulars significantly overestimated populars' number of sexual intercourse partners. Furthermore, for deviant behaviors, jocks', populars', and burnouts' frequency of property damage was overestimated significantly by out-group members, burnouts' frequency of theft (< $5) was overestimated significantly by out-group members, and jocks' frequency of theft (> $50) was overestimated significantly by out-group members. Finally, among the adaptive behavior items, out-group members significantly under-

Table 2
Means and Standard Deviations for Peer Status Variables Across Peer Crowds[2]

	Peer-perceived popularity (z-score)		Likeability (z-score)		Well-liked/ respected		Desire to be part of group	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Jocks	0.10^{b}	0.35	0.51^{a}	0.71	4.03^{a}	0.96	2.77^{b}	1.41
Burnouts	-0.20^{b}	0.68	-0.77^{b}	1.00	2.27^{b}	1.08	1.32^{d}	0.75
Brains	-1.21^{c}	1.15	-0.70^{b}	1.55	2.30^{b}	1.16	2.31^{c}	1.31
Populars	1.04^{a}	0.52	0.38^{a}	0.79	4.13^{a}	1.03	3.06^{a}	1.42
Averages	-0.10^{b}	0.29	0.15^{a}	0.56				

Note. *N*s: Jocks = 24, Burnouts = 12, Brains = 46, Populars = 12, Averages = 85. *N*s for questionnaire items range from 212 to 218 due to missing data. Superscripts denote significant differences (all *p*s $< .05$) across crowds within each outcome measure, ordered alphabetically from highest to lowest status.

estimated burnouts' time spent studying and time spent exercising. Out-group members also significantly underestimated brains' time spent exercising, but they significantly overestimated brains' time spent studying. Across these significant group comparisons, effect sizes generally were large ($d = .84$ to 2.26), suggesting robust findings.

Paired samples *t* tests were utilized to compare in-group perceptions of crowd behaviors and self-reported crowd behaviors. As hypothesized, fewer significant differences were observed among these in-group comparisons than among the out-group comparisons described above; however, even when in-group crowd members reported their perceptions of their fellow crowd members' behaviors, some instances of significant overestimation occurred (see Figure 1 for one illustrative example). For example, consistent patterns of significant overestimation were observed across substance use variables (i.e., cigarettes, alcohol, and marijuana) by jocks, as compared with jocks' self-reported frequencies of substance use. A similar pattern of significant overestimation emerged for burnouts' frequency of marijuana use, and for populars' cigarette use. Numbers of sexual intercourse and oral sex partners were overestimated significantly by jocks, and frequency of theft ($<$ \$5) also was overestimated significantly by jocks. Finally, in-group perceptions of adaptive behaviors (time spent studying and exercising) differed significantly from self-reported behaviors for brains. Specifically, brains significantly overestimated the amount of time other brains spent studying, and they underestimated the amount of time other brains spent exercising. Consistent with analyses on out-group perception biases, effect sizes were large for in-group perception biases across all significant findings reported above ($d = 0.85$ to 2.51).

Independent samples *t* tests revealed only one significant difference between in-group and out-group perceptions. Burnouts' estimates of the frequency of other burnouts' marijuana use were higher than the estimates provided by nonburnouts.

Discussion

As a developmental period defined by identity development and social comparison processes among peers, adolescence is a critical time for understanding social norm perceptions. Although substantial research has examined adolescents' perceptions of friends' risk behaviors, adolescents are exposed to norms across their social ecologies on much broader levels than close friend relationships (Brechwald & Prinstein, 2011). The current study applied a developmentally based social norms framework within the ecologically valid peer crowd system. This study further offers a valuable contribution to the literature by allowing an examination of crowd differences in self-reported health risk, deviant, and adaptive behaviors, as well as perceptions of crowd members' engagement in these behaviors within in-groups and out-groups. Compared with research on social norm estimations in social psychology, this research incorporated developmental theory by examining subgroups of the peer context and integrating theories of peer status to help understand differences in the magnitude of norm misestimations.

Consistent with hypotheses and prior research (Kinney, 1993), results suggested that crowds vary meaningfully in peer status and positive regard among other adolescents. Jocks and populars represented the highest status groups, whereas brains and burnouts represented the lowest status groups across a variety of peer status indicators (i.e., popularity, likability, respect, and desired group affiliation). Of particular note, in addition to the overall high status and regard observed for the discrete jock and popular groups, an additional subset of youth who were removed from these two "pure" crowds due to having high nominations for both crowds (i.e., "popular-jocks") were observed to have the highest levels of peer-perceived popularity and likability, further bolstering support for these youths' high standing in the adolescent social hierarchy. Given prior work demonstrating the high importance that adolescents place on popularity (e.g., LaFontana & Cillessen, 2010) and the potential for high-status peers to play uniquely influential roles in norm-perceptions and adolescents' sense of self (Brown & Lohr, 1987), adolescents' perceptions of high-status crowd members' behavior may be especially important to understand. High-status peers, such as jocks and populars, also may be especially influential sources of peer influence (e.g., Cohen & Prinstein, 2006).

[2] Note that 11 participants were removed from analyses, due to high nominations ($z \geq .75$) for membership in both the jock and popular crowds. Although not included in the findings above, these individuals received the highest scores on peer-perceived popularity ($M = 1.34$, $SD = 0.81$) and likability ($M = 1.34$, $SD = 0.75$). No values are available for these "popular-jocks" on the *well-liked/respected* and *desire to be part of the group* variables, as these values were obtained on a questionnaire regarding crowd-level perceptions for the four distinct crowds noted within the table, rather than individual-level peer nominations.

Table 3
Differences Among Crowd Members' Reported Behaviors and Perceptions of Crowd Members' Behaviors

				Planned comparisons			
	M	*SD*	*N*	Groups compared	*T*	*Df*	Effect size
Substance use variables							
Cigarettes							
Jocks' behavior	1.04	0.21	23	SR vs. I-G	4.76*	22	1.25
In-group perception	2.04	1.07	23	SR vs. O-G	5.50*	162	1.24
Out-group perception	2.27	1.16	141	I-G vs. O-G	0.87	162	0.20
Populars' behavior	1.70	1.25	10	SR vs. I-G	5.76*	8	2.51
In-group perception	3.11	0.93	9	SR vs. O-G	4.17*	161	1.36
Out-group perception	3.29	1.30	154	I-G vs. O-G	0.21	161	0.07
Burnouts' behavior	2.91	2.07	11	SR vs. I-G	3.05	10	1.00
In-group perception	4.82	1.47	11	SR vs. O-G	5.49*	163	1.71
Out-group perception	4.80	1.17	154	I-G vs. O-G	0.11	163	0.04
Brains' behavior	1.11	0.61	45	SR vs. I-G	1.35	42	0.21
In-group perception	1.21	0.60	43	SR vs. O-G	0.98	161	0.17
Out-group perception	1.18	0.50	120	I-G vs. O-G	0.18	161	0.03
Average teens' behavior	1.26	0.85	77				
Alcohol							
Jocks' behavior	1.52	0.79	23	SR vs. I-G	6.32*	22	1.35
In-group perception	3.30	1.33	23	SR vs. O-G	7.16*	164	1.61
Out-group perception	3.24	1.23	143	I-G vs. O-G	0.11	164	0.03
Populars' behavior	2.40	1.71	10	SR vs. I-G	2.66	9	0.87
In-group perception	3.90	1.20	10	SR vs. O-G	2.52	164	0.82
Out-group perception	3.24	1.20	156	I-G vs. O-G	1.55	164	0.51
Burnouts' behavior	3.45	1.37	11	SR vs. I-G	2.51	10	0.94
In-group perception	4.36	0.67	11	SR vs. O-G	1.98	163	0.62
Out-group perception	4.17	1.11	154	I-G vs. O-G	0.68	163	0.21
Brains' behavior	1.38	0.96	45	SR vs. I-G	0.91	44	0.15
In-group perception	1.22	0.47	45	SR vs. O-G	1.27	164	0.22
Out-group perception	1.20	0.49	121	I-G vs. O-G	0.36	164	0.06
Average teens' behavior	1.86	1.24	77				
Marijuana							
Jocks' behavior	1.00	0.00	23	SR vs. I-G	5.77*	22	2.46
In-group perception	1.87	0.76	23	SR vs. O-G	5.55*	159	1.25
Out-group perception	1.86	0.80	138	I-G vs. O-G	0.08	159	0.02
Populars' behavior	1.50	1.27	10	SR vs. I-G	3.44	9	1.12
In-group perception	2.80	0.79	10	SR vs. O-G	3.09	160	1.01
Out-group perception	2.24	0.86	152	I-G vs. O-G	1.94	160	0.63
Burnouts' behavior	2.70	1.06	10	SR vs. I-G	6.07*	9	2.47
In-group perception	4.82	0.40	11	SR vs. O-G	3.86*	159	1.26
Out-group perception	4.04	1.06	151	I-G vs. O-G	5.47*	27.82	1.71
Brains' behavior	1.02	0.15	44	SR vs. I-G	0.57	41	0.09
In-group perception	1.05	0.22	42	SR vs. O-G	1.22	159	0.22
Out-group perception	1.08	0.31	119	I-G vs. O-G	0.69	159	0.12
Average teens' behavior	1.11	0.35	76				
Sexual behaviors							
Number of sexual intercourse partners							
Jocks' behavior	1.30	0.93	23	SR vs. I-G	7.37*	22	1.54
In-group perception	2.91	1.12	23	SR vs. O-G	8.99*	159	2.03
Out-group perception	3.30	1.18	138	I-G vs. O-G	1.43	159	0.32
Populars' behavior	1.80	1.03	10	SR vs. I-G	1.90	9	0.61
In-group perception	2.40	0.84	10	SR vs. O-G	4.35*	159	1.42
Out-group perception	3.30	1.18	151	I-G vs. O-G	2.33	159	0.76
Burnouts' behavior	2.36	0.92	11	SR vs. I-G	0.19	10	0.10
In-group perception	2.55	1.29	11	SR vs. O-G	0.14	159	0.04
Out-group perception	2.52	1.38	150	I-G vs. O-G	0.14	159	0.04

Table 3 (*continued*)

				Planned comparisons			
	M	*SD*	*N*	Groups compared	*T*	*Df*	Effect size
Brains' behavior	1.14	0.35	43	SR vs. I-G	2.36	40	0.43
In-group perception	1.02	0.16	41	SR vs. O-G	0.09	159	0.02
Out-group perception	1.17	0.54	120	I-G vs. O-G	2.67	158.99	0.48
Average teens' behavior	1.41	0.84	76				
Number of oral sex partners							
Jocks' behavior	1.68	1.09	22	SR vs. I-G	7.36*	21	1.57
In-group perception	3.39	1.08	23	SR vs. O-G	6.54*	157	1.50
Out-group perception	3.34	1.21	137	I-G vs. O-G	0.28	158	0.06
Populars' behavior	2.11	1.36	9	SR vs. I-G	2.31	8	0.77
In-group perception	3.22	1.30	9	SR vs. O-G	3.01	158	1.03
Out-group perception	3.31	1.26	151	I-G vs. O-G	0.20	158	0.07
Burnouts' behavior	2.70	1.49	10	SR vs. I-G	0.55	9	0.17
In-group perception	3.00	1.49	10	SR vs. O-G	0.08	158	0.03
Out-group perception	2.64	1.36	150	I-G vs. O-G	0.77	158	0.25
Brains' behavior	1.17	0.38	42	SR vs. I-G	0.38	41	0.06
In-group perception	1.24	0.73	42	SR vs. O-G	0.30	157	0.05
Out-group perception	1.15	0.47	117	I-G vs. O-G	0.76	157	0.14
Average teens' behavior	1.55	0.92	75				
			Deviant behaviors				
Property damage							
Jocks' behavior	1.70	1.02	23	SR vs. I-G	3.90	22	0.84
In-group perception	2.39	0.78	23	SR vs. O-G	4.25*	163	0.96
Out-group perception	2.56	0.99	142	I-G vs. O-G	0.60	163	0.14
Populars' behavior	1.10	0.32	10	SR vs. I-G	3.34	9	1.27
In-group perception	1.80	0.79	10	SR vs. O-G	4.45*	163	1.45
Out-group perception	2.34	0.96	155	I-G vs. O-G	1.77	163	0.58
Burnouts' behavior	1.73	0.90	11	SR vs. I-G	4.24	10	1.32
In-group perception	3.00	1.34	11	SR vs. O-G	5.16*	163	1.61
Out-group perception	3.51	1.19	154	I-G vs. O-G	1.40	163	0.44
Brains' behavior	1.42	0.75	45	SR vs. I-G	2.27	44	0.35
In-group perception	1.16	0.47	45	SR vs. O-G	3.31	162	0.58
Out-group perception	1.13	0.36	119	I-G vs. O-G	0.32	162	0.06
Average teens' behavior	1.58	0.94	76				
Theft $<$ \$5							
Jocks' behavior	1.61	0.99	23	SR vs. I-G	4.05*	22	0.85
In-group perception	2.39	0.89	23	SR vs. O-G	2.82	159	0.34
Out-group perception	2.27	1.26	138	I-G vs. O-G	0.75	159	0.17
Populars' behavior	1.70	1.34	10	SR vs. I-G	2.45	9	0.80
In-group perception	2.10	1.20	10	SR vs. O-G	2.59	159	0.85
Out-group perception	2.46	1.07	151	I-G vs. O-G	1.14	159	0.37
Burnouts' behavior	2.00	1.26	11	SR vs. I-G	3.80	10	1.15
In-group perception	3.55	1.51	11	SR vs. O-G	4.67*	159	1.46
Out-group perception	3.65	1.22	150	I-G vs. O-G	0.42	159	0.13
Brains' behavior	1.33	0.68	43	SR vs. I-G	1.65	41	0.32
In-group perception	1.12	0.33	42	SR vs. O-G	1.12	159	0.20
Out-group perception	1.22	0.63	119	I-G vs. O-G	0.91	159	0.16
Average teens' behavior	1.61	1.14	76				
Theft $>$ \$50							
Jocks' behavior	1.13	0.46	23	SR vs. I-G	3.70	22	0.78
In-group perception	1.61	0.58	23	SR vs. O-G	3.72*	160	0.84
Out-group perception	1.78	0.88	139	I-G vs. O-G	0.72	160	0.16
Populars' behavior	1.10	0.32	10	SR vs. I-G	1.96	9	0.66
In-group perception	1.40	0.52	10	SR vs. O-G	2.70	160	0.88
Out-group perception	1.88	0.97	152	I-G vs. O-G	1.52	160	0.50
Burnouts' behavior	1.64	0.92	11	SR vs. I-G	4.83	10	1.57
In-group perception	3.36	1.63	11	SR vs. O-G	3.39	159	1.06
Out-group perception	2.90	1.30	150	I-G vs. O-G	0.93	159	0.29

(*table continues*)

Table 3 (*continued*)

				Planned comparisons			
	M	*SD*	*N*	Groups compared	*T*	*Df*	Effect size
Brains' behavior	1.00	0.00	44	SR vs. I-G	1.38	41	0.43
In-group perception	1.07	0.34	42	SR vs. O-G	1.48	160	0.26
Out-group perception	1.05	0.22	120	I-G vs. O-G	0.36	160	0.07
Average teens' behavior	1.18	0.67	76				
			Adaptive behaviors				
Time spent studying							
Jocks' behavior	3.30	1.11	23	SR vs. I-G	3.25	22	0.68
In-group perception	2.61	0.94	23	SR vs. O-G	3.28	163	0.74
Out-group perception	2.48	1.09	142	I-G vs. O-G	0.70	163	0.16
Populars' behavior	3.00	1.56	10	SR vs. I-G	0.13	9	0.06
In-group perception	2.80	0.79	10	SR vs. O-G	0.77	162	0.25
Out-group perception	2.62	1.11	154	I-G vs. O-G	0.68	162	0.22
Burnouts' behavior	2.18	1.25	11	SR vs. I-G	3.06	10	1.09
In-group perception	1.18	0.40	11	SR vs. O-G	3.78*	163	1.18
Out-group perception	1.34	0.62	154	I-G vs. O-G	0.80	163	0.25
Brains' behavior	2.90	1.42	45	SR vs. I-G	9.19*	44	1.49
In-group perception	5.04	0.95	45	SR vs. O-G	12.89*	162	2.26
Out-group perception	5.23	0.85	119	I-G vs. O-G	1.21	162	0.21
Average teens' behavior	3.01	1.19	76				
Time spent exercising							
Jocks' behavior	4.43	0.99	23	SR vs. I-G	1.46	22	0.33
In-group perception	4.65	0.71	23	SR vs. O-G	0.61	161	0.14
Out-group perception	4.62	1.10	140	I-G vs. O-G	0.32	161	0.07
Populars' behavior	2.70	1.16	10	SR vs. I-G	0.46	9	0.15
In-group perception	2.80	0.63	10	SR vs. O-G	0.66	161	0.22
Out-group perception	2.94	1.10	153	I-G vs. O-G	0.17	161	0.06
Burnouts' behavior	2.73	1.85	11	SR vs. I-G	3.21	10	1.18
In-group perception	1.09	0.30	11	SR vs. O-G	4.08*	161	1.27
Out-group perception	1.43	0.87	152	I-G vs. O-G	2.73	19.78	0.85
Brains' behavior	3.20	1.46	44	SR vs. I-G	6.88*	42	1.08
In-group perception	1.72	0.83	43	SR vs. O-G	8.09*	161	1.43
Out-group perception	1.67	0.85	120	I-G vs. O-G	0.44	161	0.08
Average teens' behavior	3.36	1.28	76				

Note. SR = Self-reported behavior; I-G = In-group perceptions of crowds' behaviors; O-G = Out-group perceptions of crowds' behaviors. For ease of interpretability, means and standard deviations are reported using nontransformed data. However, pairwise comparisons and effect sizes are reported based on a square root transformation. Pairwise t-test comparisons reflect a sequentially rejective test correction to maintain a family-wise Type I error rate of $p < .05$ across all comparisons, with significant findings denoted with an asterisk (*).

Importantly, this study revealed that (a) adolescents erroneously estimate crowd members' engagement in health risk, deviant, and adaptive behaviors, compared to crowd members' own self-reported behavior; and (b) a unique pattern of effects emerged for perceptions of high-status crowds. With regard to the former point, note that adolescents dramatically overestimated their peers' engagement in health risk and deviant behavior, while in some cases simultaneously underestimating peers' engagement in adaptive behaviors. Of particular note was not only this specific combination of erroneous social norms (i.e., misperceiving both risk and adaptive behaviors), but also the magnitude of these misperceptions—yielding notably large effect sizes. For example, jocks reported virtually no cigarette smoking and literally no instances of marijuana use in the prior month. Popular teens engaged in slightly higher frequencies of each of these behaviors, yet still did not, on average, reach the level of one cigarette per day or one instance of marijuana use in the past month (i.e., the lowest behavioral thresholds provided on the response anchors). Yet peers described these teens as smoking between one and three cigarettes per day and smoking marijuana between one and nine times per month. Similar findings were observed with binge drinking for jocks, sexual partners for jocks and populars, property damage for jocks and populars, and theft for jocks. Large effect sizes were noted for each of these comparisons.

Adolescents also consistently misperceived other (non-high-status) crowd members' behaviors. However, the pattern of misperceptions of high-status crowd members' behavior was especially intriguing, relative to their actual reported behavior, as compared with the pattern of misperceptions of lower status crowds' behavior. Specifically, out-group members overestimated burnouts' risk behaviors, in addition to jocks' and populars'. However, the actual levels of risk behaviors reported among these groups are critical to note when considering possible implications of the current findings. Consistent with hypotheses, current findings indicated that peer crowds *do* differ to some extent in their actual self-reported risk behaviors (e.g., burnouts reported signif-

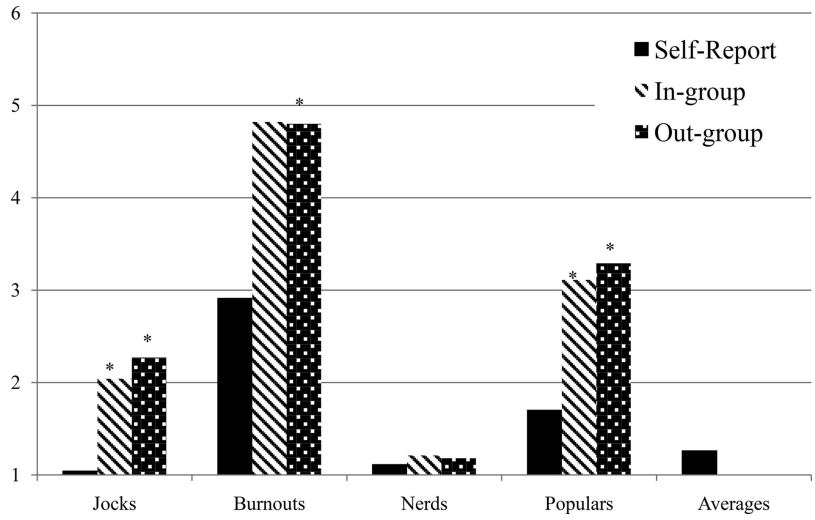

Figure 1. Self-reported cigarette use and in- and out-group perceptions of cigarette use across different peer crowds and "average" adolescents. Note. Significant *t* test findings are denoted with an asterisk (*). Item response options ranged from 1 = *0 cigarettes per day* to 6 = *more than a pack per day*.

icantly higher levels of substance use, sexual risk, and deviant behaviors than other adolescents); however, importantly, adolescents in the crowds of the highest status and potential influence (i.e., jocks and populars) reported levels of risk behaviors that were *not* significantly higher than those self-reported by other teens. Indeed, with the single exception of higher numbers of oral sex partners reported by populars in comparison to brains, the high-status crowds did *not* differ from their peers on *any* risk or deviant behavior examined. In other words, for the jocks and populars, other teens erroneously may be attributing high levels of risk behaviors to high-status teens who are *not* actually behaving any more riskily than the majority of their peers. By contrast, overestimation by peers also occurs for burnouts' behaviors, yet these overestimations occur within the context of elevated *actual* reported risk behaviors. Thus, whereas adolescents may be overestimating the behaviors of many youth within the peer context, two distinct processes may be occurring. For lower-status burnouts, peers may be accurately perceiving elevated levels of risk behaviors relative to peers, yet erroneously overestimating the magnitude of those elevations. In contrast, for higher status jocks and populars, peers appear to be detecting high levels of risk among a group of youth who do not actually engage in risk behaviors at all or who do so infrequently.

Importantly, overestimation of high-status crowds' risk behaviors may have critical implications for understanding peer influence effects. In particular, given prior research demonstrating that adolescents may be willing to engage in behaviors that match their perceptions of favorable prototypes (Gibbons & Gerrard, 1995; Gibbons et al., 1998) and may be especially likely to conform to social norms believed to be endorsed by high-status peers (Cohen & Prinstein, 2006), it is concerning that adolescents strongly overestimate the high-status crowds' risky behaviors.

However, the data presented above are not sufficient to demonstrate that adolescents may be influenced by their (mis)perceptions of high-status peers' behavior. Longitudinal data are needed, as is research that addresses several limitations of Study 1. First, although Study 1 offered an opportunity to examine social norms associated with distinct peer crowds, this study conceptualized the level of popularity of an entire group (i.e., crowd) of peers rather than the popularity of a specific individual. It is possible that crowds exert influence due to group level phenomena not currently examined or based on the power of crowds' individual members to influence others. Additionally, there is evidence to suggest that the peer crowd system is especially relevant in North American school settings (Brown, 1990; Brown & Klute, 2003; Eder, 1985) and in the early to midadolescent period (Brown et al., 1986; Coleman, 1974; Doornwaard et al., 2012) but perhaps does not generalize well to other geographic locations or developmental stages. Moreover, the data from Study 1 were collected in a somewhat ethnically homogenous sample; it is unclear whether findings might be equally relevant in more diverse contexts (e.g., Brown, Herman, Hamm, & Heck, 2008).

It also should be noted that two high-status peer crowds were identified in Study 1 (i.e., jocks and populars); however, no theory is available to understand differences that may be important to consider between these two distinct groups. Furthermore, a general limitation of research on peer crowds pertains to the definitional construct of "pure" crowd types; for research purposes, participants must be classified based on strict definitions of crowd boundaries or cutoff scores, yet in reality, crowd membership is likely more amorphous. Within this research framework, individuals who are perceived as being somewhat affiliated with multiple crowds, such as youth who receive high nominations as both jocks and populars, cannot be effectively represented in "pure" crowd groupings. Yet, given their high status within the peer social ecology, these very youth ironically may represent some of the most salient sources of peer influence.

Study 2 addresses several of these limitations, and allows for a longitudinal examination of the association between adolescents' perceptions of high-status peers' behavior and adolescents' own behavior. Study 2 used a different approach to understand estimations and influence of high-status peers' behavior. In Study 2,

"high-status" peers were conceptualized as adolescents high on the more contemporary construct of "popularity" (i.e., peer-perceived popularity); thus, Study 2 examined the potential influence of popular individuals rather than popular groups. Peer popularity is defined within the developmental literature as a construct distinct from peer acceptance/rejection (e.g., Parkhurst & Hopmeyer, 1998). Like the construct of peer crowds, peer popularity is a reputation-based construct (i.e., in contrast with peer acceptance/rejection, a preference-based construct), which is measured using peer-reported sociometric nominations and reflects adolescents' overall status in the broader peer-group. The construct of "popularity" exists as a distinct conceptual and methodological construct from the peer crowd framework, wherein youth are assigned to specific groupings or "crowds" that may vary in social status. Specifically, this construct allows for examination of all youth who are regarded as "high-status" individuals within the peer hierarchy, regardless of their membership within specific crowds such as the jocks and/or populars. Given the results of Study 1 indicating high status among populars, jocks, and especially among popular-jocks, the use of the broader peer popularity construct offers an opportunity to understand peer status more holistically and to better represent the group of high-status peers within a social context. Thus, Study 2 was designed not to replicate Study 1 findings on peer crowds, but to test a similar set of hypotheses in a new way.

Two hypotheses were examined in Study 2. First, as in Study 1, it was expected that adolescents would significantly misperceive the behavior of their high-status (i.e., highly popular) peers. Again, it was expected that both out-group (i.e., average to low popular) and in-group (i.e., high popular) adolescents would overreport highly popular adolescents' engagement in risk behavior.

Second, longitudinal data were used to examine the prospective association between adolescents' perceptions of highly popular adolescents' behavior and trajectories of adolescents' own behavior. Note that peer influence studies typically examine adolescents' perceptions of peers' behavior at a single time point as a prospective predictor of adolescents' own behavior at one or more follow-up time points (after controlling for adolescents' behavior at baseline). While adequate, this approach fails to account for the tendency for adolescents' perceptions of their peers' behavior also to change over time, and to be influenced by their own behavior. Indeed, substantial research demonstrates that individuals who engage in a behavior tend to overestimate the extent to which others engage in the same behavior (Prinstein & Wang, 2005). Therefore, it is critical to account for changes in adolescents' perceptions as well as adolescents' own behavior, and to examine reciprocal associations for a stringent examination of peer influence. Parallel process latent growth modeling allowed for such a test of hypotheses in Study 2. In light of the pattern of significant results presented in Study 1, and based on data available for Study 2, this hypothesis was examined specifically with regard to adolescents' engagement in substance use. In comparison to other risk behaviors (e.g., vandalism), adolescents' engagement in substance use is more developmentally normative, yielding higher base rates for study. It will be important for future work to also examine similar influence processes with respect to deviant, sexual, and adaptive behaviors.

Study 2

Method

Study 2 participants were 166 adolescents (56% girls; 43.7% Caucasian, 29.3% African American, 18.6% Hispanic, 1.2% Asian American, 7.2% Mixed Race or Other; M_{age} = 15.08, SD_{age} = 0.49) in ninth grade at study onset, at a rural, low-income high school in the southeastern United States. All students in ninth grade were recruited for participation (N = 296), with the exception of students in self-contained special education classes. 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 consent 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). Youth provided assent to participate, and all study procedures were approved by the university human subjects committee. Data were unavailable for 14 participants due to school withdrawal, and data were missing for six additional participants, yielding a Time 1 sample of 166 adolescents, representing 56% of the eligible population. Due to limited resources, follow-up data were collected from a randomly selected (i.e., random number generator) subsample of 118 participants at four additional time points scheduled every 6 months after baseline. School-based data collection therefore spanned a total period of 2.5 years, yielding a total of five time points. Among these 118 participants, attrition was low (ns = 111, 105, 95, 94 for Times 2 through 5, respectively). Analyses indicated that from the original sample of 166 participants, data were missing completely at random, Little's (1988) Missing Completely at Random (MCAR) test, $\chi^2(74) = 64.98$, $p = .76$. Thus, all analyses were computed using the initial sample of 166 participants; missing data were handled in M-plus 6.0 (Muthén & Muthén, 1998–2010) using full information maximum likelihood estimation (FIML), which is considered a preferable approach for handling MCAR data than more traditional techniques (i.e., listwise deletion; see Jelicić, Phelps, & Lerner, 2009).

Measures.

Popularity. Popularity was assessed using sociometric peer nomination methods. In Study 2, all 166 participants at Time 1 were asked to nominate peers who were "most popular" and "least popular" (e.g., Parkhurst & Hopmeyer, 1998). Popularity was computed as a standardized difference score between standardized "most" and "least popular" scores, with higher "social reputation" scores reflecting higher levels of popularity relative to peers (e.g., Prinstein & Cillessen, 2003). Adolescents with social reputation scores $\geq$ .75 (n = 27) were classified as "popular" for analyses conducted to replicate Study 1 results.

Adolescents' substance use and perceptions of popular peers' substance use. As in Study 1, all participants responded to four items assessing the frequency of engagement in substance use behaviors using items adapted from existing instruments (e.g., CDC, 1998; Dishion et al., 1991; La Greca et al., 2001). At all five time points, adolescents responded to each item using a 5-point Likert-scale response set corresponding to the expected range of behavior frequency commonly reported within this age group. Items assessed alcohol use, heavy episodic drinking, cigarette use, and marijuana use (Cronbach's alphas ranged between .77 and .84

across all five time points). Due to positive skewness, a log-transformed mean score was computed at each time point reflecting adolescents' reported substance use.

At each time point, adolescents also were asked to report how frequently the "typical popular boy in your grade" and the "typical popular girl in your grade" engaged in each behavior. Adolescents' perceptions of popular boys' and popular girls' behavior were remarkably similar for all behaviors (Median r = .90 at each time point); thus, perceptions of popular boys and popular girls were averaged for each behavior, and a mean score across all behaviors was computed at each time point, reflecting adolescents' perceptions of popular peers' substance use (Cronbach's alphas ranged between .87 and .94 across all five time points).

As a measure of out-group perceived norms, a mean score was computed across all nonpopular adolescents' (i.e., participants with social reputation scores $<$ .75) reports of the perceived frequency of popular peers' substance use. As a measure of in-group perceived norms, a mean score was computed across all popular adolescents' reports of the frequency of popular peers' substance use.

Data analyses. Three sets of analyses were conducted. First, descriptive statistics were computed to examine frequencies and correlations among adolescents' reported substance use, and perceptions of popular peers' substance use at each time point. Second, to replicate Study 1 findings, out-group and in-group perceptions of popular peers' substance use were compared with popular peers' actual reported substance use. Data from Time 1 were examined for this hypothesis. Last, to examine longitudinal associations between adolescents' perceptions of popular peers' substance use and adolescents' own reported substance use, multivariate parallel process latent growth analyses were examined.

Results and Discussion

Descriptive statistics. Between 32.8% and 56.4% of adolescents reported substance use at each time point; rates of substance use increased over time (see Table 4). Associations between adolescents' own reported substance use and their perceptions of popular peers' substance use were significant within each time point, rs between .21 and .36, all ps $<$ .0001.

Table 4
Frequencies of Adolescents' Self-Reported Substance Use and Perceptions of Popular Peers' Substance Use

	Mean (*SD*)
Adolescents' self-reported substance use	
Time 1 (Grade 9)	1.19 (.49)
Time 2	1.22 (.49)
Time 3	1.33 (.64)
Time 4	1.30 (.57)
Time 5 (Grade 11)	1.38 (.61)
Adolescents' perceptions of popular peers' substance use	
Time 1	1.59 (.82)
Time 2	1.75 (.88)
Time 3	1.89 (.77)
Time 4	1.99 (.79)
Time 5	2.13 (.72)

Note. Values for adolescents' self-reported substance use above are for untransformed data.

Discrepancies among adolescents' perceptions of popular peers' substance use and popular peers' reported substance use. Three findings similar to findings in Study 1 were revealed. First, both out-group perceptions (M = 1.59, SD = 0.85, n = 141), and in-group perceptions (M = 1.62, SD = 0.66, n = 27) of popular peers' substance use were significantly different from popular peers' reported substance use (M = 1.17, SD = 0.34, n = 27), $t(166) = 2.52$, p = .01; d = 0.53, and $t(25) = 3.53$, p = .002; d = 0.86, respectively. As in Study 1, differences reflected medium to large effect sizes. Second, results revealed that out- and in-group perceptions of popular peers' behavior did not significantly differ, $t(166) = 0.17$, p = .86. Third, results indicated that popular peers' reported substance use actually is not significantly different from other (i.e., nonpopular) peers' reported substance use (M = 1.20, SD = 0.51, n = 141), $t(166) = 0.32$, p = .75, d = 0.06. Thus, as in Study 1, results suggested that adolescents tend to overestimate the substance use behavior of high-status peers, at least as compared to high-status peers' own reports of behavior. Yet, high-status peers do not engage in substance use significantly more frequently than do other adolescents. Notably, these findings, using the broader construct of peer popularity, were highly similar to findings in Study 1 that examined specific peer crowds varying in levels of peer status.

Prospective associations among perceptions of popular peers' substance use and adolescents' own reported substance use. To examine the relationship among adolescents' perceptions of popular peers' substance use and their own substance use, a series of latent growth models (LGMs) were estimated in M-plus 6.0 (Muthén & Muthén, 1998–2010). All models were examined using maximum likelihood estimation with robust standard errors (MLR) to account for non-normality in outcome distributions (see Satorra & Bentler, 1994). Model fit was evaluated using the chi-square test (acceptable if $\chi^2/df < 2$), the comparative fit index (CFI; critical value $\geq$ .90), the Tucker–Lewis index (TLI; critical value $\geq$ .90) and the root-mean square error of approximation (RMSEA; critical value $\leq$ .08; see Kline, 2005).

First, unconditional LGMs were estimated separately for adolescents' substance use and adolescents' perception of popular peers' substance use to examine changes between Times 1 and 5 (i.e., from Grade 9 to 11). Each model included an intercept factor (centered at Time 1) and a linear slope (rates of change over time). The initial LGM for adolescents' substance use had an acceptable fit to the data, $\chi^2(10) = 17.85$, p = .06, CFI = .96, TLI = .96 and RMSEA = .07. A more parsimonious model also was estimated in which residual variances were constrained to be equal across time. These model constraints were justified by a nonsignificant Satorra-Bentler chi-square difference test, $\Delta\chi^2(4) = 1.03$, p = .91, and yielded a better fit to the data, $\chi^2(14) = 18.50$, p = .18 CFI = .98, TLI = .98 and RMSEA = .04. This final model included a significant, positive slope mean (b = .02, SE = .004, p $<$ .001), indicating an average increase in adolescents' substance use from Grade 9 to Grade 11. Significant variance was observed for both the intercept (b = .02, SE = .004, p $<$ .01) and the slope (b = .001, SE = .000, p $<$ .01), indicating interindividual heterogeneity in

initial levels of substance use (i.e., Grade 9) and in the growth of substance use from Grade 9 to 11, respectively. Finally, the covariance between the intercept and the slope was nonsignificant ($b = .001$, $SE = .001$, $p = .12$), indicating that adolescents' changes in substance use over time occurred similarly among adolescents with different initial levels of substance use.

The unconditional LGM for adolescents' perceptions of popular peers' substance use showed an excellent fit to the data, $\chi^2(10) = 6.28$, $p = .79$, CFI = 1.00, TLI = 1.03 and RMSEA = .00. Similar to the LGM of adolescents' substance use, there was a significant positive slope mean ($b = .21$, $SE = .02$, $p < .001$), suggesting that adolescents perceived popular peers to increasingly engage in substance use from Grade 9 to 11. Significant variance was revealed for the intercept ($b = .48$, $SE = .12$, $p < .001$); yet, the slope variance and the covariance between the intercept and the slope did not reach significance ($b = .02$, $SE = .01$, $p = .10$ and $b = .02$, $SE = .03$, $p = .62$, respectively).

Second, the two unconditional LGMs were combined in a parallel process LGM (i.e., multivariate LGM) to test the main study hypothesis. In this model, to examine whether adolescents' perceptions of popular peers' substance use in Grade 9 predicted the development of their own substance use from Grade 9 to 11, the slope of adolescents' substance use was regressed on the intercept of adolescents' perceptions of popular peers' substance use while accounting for the reverse path (i.e., slope of adolescents' perception of popular peers' substance use regressed on the intercept of adolescents' substance use). Moreover, covariances between the intercepts and between the slopes of adolescents' substance use and their perceptions of popular peers' substance use were estimated, as well as the residual covariances between the two constructs within-grade (e.g., the residual of adolescents' substance use at Grade 9 was correlated with the residual of adolescents' perceptions of popular peers' substance use at Grade 9). This model is depicted in Figure 2.

The parallel process LGM fit the data well, $\chi^2(40) = 52.44$, $p = .09$, CFI = .97, TLI = .97 and RMSEA = .04. As displayed in Figure 2, a significant positive path was revealed from the intercept of adolescents' perceptions of popular peers' substance use to the slope of adolescents' substance use. This effect indicated that higher perceptions of popular peers' substance use in Grade 9 (i.e., Time 1) were associated significantly with steeper growth in substance use from Grade 9 to 11 (i.e., Times 1 through 5). However, no evidence for the reverse effect was found; that is, adolescents' substance use in Grade 9 was not associated with changes in perceptions of popular peers' substance use over time. A significant positive association was found between the intercepts, suggesting that initial levels of adolescents' substance use was associated with their perceptions of popular peers' substance use. The association between the slopes also was significant, indicating that changes in adolescents' substance use were positively correlated with changes in adolescents' perceptions of popular peers' substance use. Finally, as in the unconditional models, no significant associations were observed between the intercept and the slope of each construct.

Finally, a set of LGMs excluding popular participants (i.e., participants with social reputation scores $\geq .75$) also were performed ($N = 139$) to rule out the possibility that effects observed in the full sample were due to unique associations between in-group perceptions and subsequent increases in risk behavior for popular youth. The LGM for adolescents' substance use had an excellent fit to the data, $\chi^2(14) = 12.63$, $p = .56$, CFI = 1.00, TLI = 1.01 and RMSEA = .00. The slope mean was positive and significant ($b = .02$, $SE = .004$, $p < .001$); significant variance was observed for both the intercept ($b = .02$, $SE = .004$, $p < .01$)

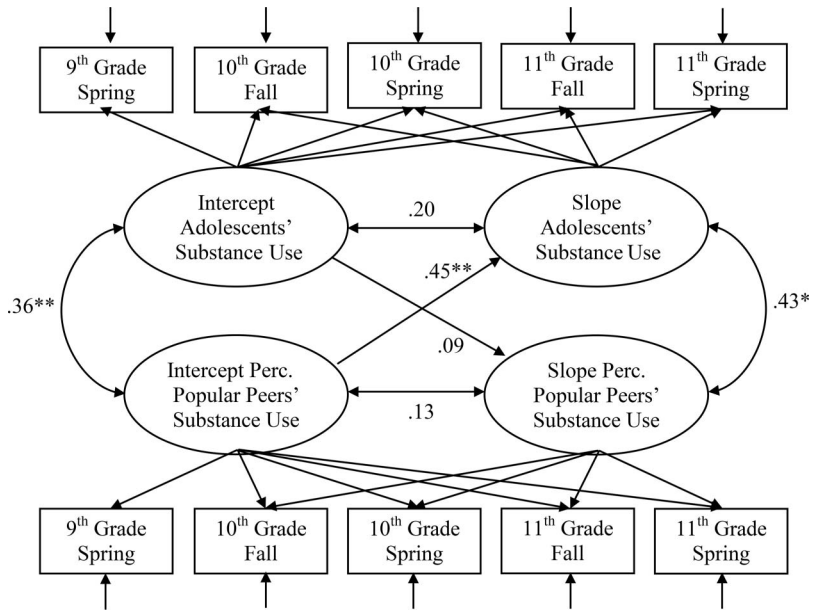

Figure 2. Parallel process latent growth model between adolescents' perceptions of popular peers' substance use and their own self-reported substance use from Grade 9 to 11 ($N = 166$). Note. Intercept = Factor loadings for slope factors were fixed at 0, 1, 2, 3, and 4. Residual covariances within-grade also were estimated but are not displayed for clarity of presentation. Standardized estimates are presented. * $p < .05$. ** $p < .01$.

and the slope ($b = .001$, $SE = .000$, $p < .05$) whereas the covariance between the intercept and the slope was only marginally significant ($b = .001$, $SE = .001$, $p = .06$). The unconditional LGM for adolescents' perception of popular peers' substance use also showed an excellent fit to the data, $\chi^2(10) = 5.38$, $p = .86$, CFI = 1.00, TLI = 1.05 and RMSEA = .00. A significant positive slope mean ($b = .19$, $SE = .02$, $p < .001$) was observed. Significant variance was revealed for the intercept ($b = .48$, $SE = .14$, $p < .001$) but not for the slope ($b = .02$, $SE = .01$, $p = .15$). The covariance between the intercept and the slope also was nonsignificant ($b = .02$, $SE = .03$, $p = .50$).

The final parallel process LGM combining adolescents' substance use and their perceptions of popular peers' substance use fit the data well, $\chi^2(40) = 46.35$, $p = .23$, CFI = .98, TLI = .98 and RMSEA = .03. Similar to the model including popular participants, the intercept of adolescents' perceptions of popular peers' substance use significantly predicted the slope of adolescents' substance use ($b = .49$, $SE = .24$, $p < .05$). Figure 3 displays all effects for this model, which also were highly similar to the model reported above with popular participants included.

In sum, results suggested that both adolescents' substance use and perceptions of popular peers' substance use increased significantly over time. Perceptions of popular peers' substance use was a significant predictor of adolescents' own rate of increase in substance use, suggesting that adolescents' own behavior may be influenced by their perceptions of popular peers' behavior.

General Discussion

An extensive body of research has established the contribution of peer socialization processes to the development of adolescents' health risk behaviors. However, less work has been devoted to answering the question of *how* or *why* peer influence is so powerful and pervasive, particularly within a developmental framework sensitive to the specific context of adolescence. Furthermore, whereas peer socialization often has been considered within the limited scope of dyadic social processes, such as adolescents' best friends' influence (e.g., Dishion et al., 1999; Dishion et al., 2004; Piehler & Dishion, 2007), relatively little attention has been dedicated to broader peer influence processes that may be especially relevant during this developmental period. Together, the presented studies addressed these important needs and expanded the literature by applying a social norms framework to these broader peer influence processes during adolescence.

Results from both Study 1 and Study 2 clearly indicated that adolescents believe that high-status peers within their school contexts are engaging in relatively high levels of deviant and health risk behaviors, as well as (in some cases) low levels of adaptive behaviors. Moreover, adolescents perceive that these high-status peers are engaging in behaviors at substantially higher rates than the high-status peers themselves report, perhaps suggesting that adolescents overestimate their peers' actual behavior. Interestingly, for many of these behaviors, there are in fact no significant differences between high-status adolescents' and other adolescents' self-reported engagement. Similar patterns of findings across both studies is especially noteworthy given that the two studies differed purposefully in both sampling (i.e., varying school contexts, geographic areas, ethnic and economic heterogeneity), and methodology (i.e., varying conceptualizations of "high status" within the peer context, capturing related, yet distinct constructs of peer crowds and peer-perceived popularity from the peer relations literature). As has been suggested in the study of college-aged students and within social psychology literatures more broadly,

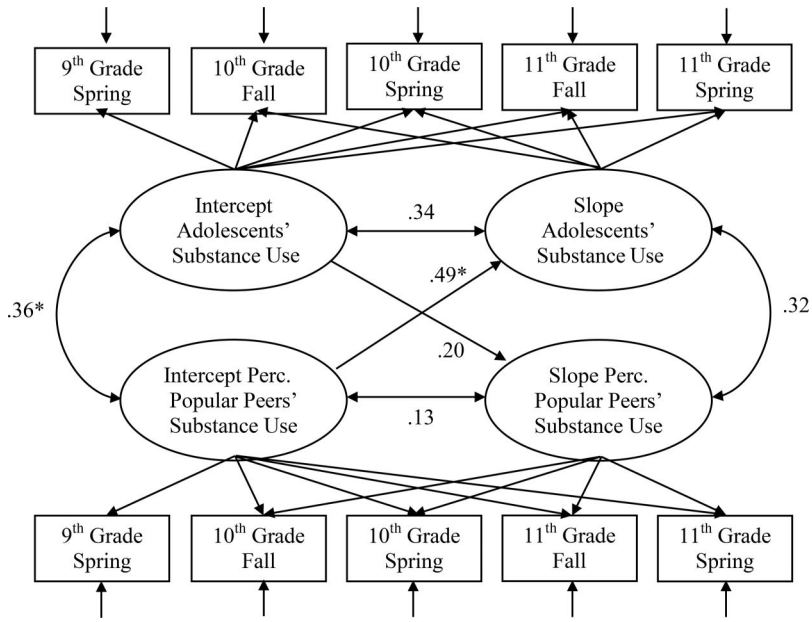

Figure 3. Parallel process latent growth model between adolescents' perception of popular peers' substance use and their own substance use from Grade 9 to 11 (excluding popular participants, $N = 139$). Note. Intercept = Factor loadings for slope factors were fixed at 0, 1, 2, 3, and 4. Residual covariances within-grade also were estimated but are not displayed for clarity of presentation. Standardized estimates are presented. * $p < .05$.

individuals tend to erroneously estimate the behavior of their peers (Marks & Miller, 1987; Prentice, 2008). In this study, however, it was demonstrated that the pattern of these misperceptions varies across different subgroups of peers. In particular, misperceptions of high-status peers' behavior may have special relevance during adolescence due to the heightened attention to social cues and sensitivity to social rewards characteristic of this developmental stage (Chein et al., 2011; Crone & Dahl, 2012) and the increased willingness to model one's own behavior based on perceptions of desirable peer prototypes (Gibbons & Gerrard, 1995; Gibbons et al., 1998).

Results from Study 2 relied upon a particularly stringent approach for understanding the association between adolescents' perceptions of high-status peers' substance use and adolescents' own substance use across a 2.5-year period. After accounting for developmental changes in both adolescents' own substance use, and in adolescents' perceptions over time, as well as in covariation between these two growth processes, results suggested that adolescents' initial perceptions of popular peers' substance use were significantly associated longitudinally with adolescents' own substance use trajectories.

Of course, untested in this study is whether initial perceptions of other, average or lower-status peers' substance use might similarly influence individuals' own substance use behaviors over time. Despite important theoretical underpinnings (e.g., prototype willingness model; Gibbons & Gerrard, 1995; Gibbons et al., 1998) and prior empirical work (e.g., Cohen & Prinstein, 2006) supporting the unique influence of high-status peers, the current work cannot establish the importance of adolescents' perceptions of popular peers *relative* to their perceptions of other peers (i.e., directly comparing multiple perceptions within a single model). Current findings provide an important first step toward future work in this regard, which might include assessing perceptions of various types of peers and examining the relative influence of these various perceptions over time. Specifically, such research might directly assess the *accuracy* of perceptions based on crowd-level prototypes versus individual-level popularity, as well as examining the *relative influence* of perceptions of various crowds and of individuals at various levels of peer-perceived popularity. Additional individual-level factors, such as one's desire to affiliate with a particular crowd or one's aspirations to attain higher levels of popularity or peer status, also may impact these longitudinal influence processes and should be examined in future work.

The implications of combined results from Study 1 and Study 2 are troubling. In short, results suggest that adolescents have a caricatured perception of their peers' behavior (perhaps especially so for high-status peers), and are influenced by these gross misperceptions. Results from Study 2 only examined this process for substance use; it is unknown whether similar processes may apply to the study of adolescents' deviant or adaptive behavior, or for other health risk behaviors (e.g., sexual behaviors). Nevertheless, results suggest a concerning tendency for adolescents to misconstrue the behavior of those whom they may most desire to emulate (Cohen & Prinstein, 2006; Gibbons & Gerrard, 1995; Gibbons et al., 1998). Results further suggested that being members of high-status crowds or holding reputations of high peer-perceived popularity offered little benefit; high-status youth also had caricatured perceptions of their high-status peers' behavior. Future work should examine whether there are unique mechanisms by which in-group members (i.e., popular youth) versus out-group members (i.e., the larger peer network) may be differentially impacted by or susceptible to these misperceptions.

Perhaps especially concerning, there is reason to suspect that the tendency to develop exaggerated perceptions of others may be a normative developmental process. In fact, Brown, Mory, and Kinney (1994) posit that caricatured depictions of peers can confer several developmental advantages. For instance, exaggerated portrayals of one another help adolescents to define their own place within the peer hierarchy and on continua of personal interests and values. The construction and propagation of caricatures also offers relational benefits, as the discussion of peer stereotypes provides fodder for interpersonal communication among adolescents regarding their peers, particularly among those who have recently entered a new peer milieu (Brown et al., 1994). Unfortunately, these advantages come with concomitant risks.

Thus, a critical issue for future research will be to determine how best to disrupt deleterious peer influence processes that seemingly are ubiquitous, and perhaps even normative. Results suggest that simple social norms education programs have limited utility (Prentice, 2008). Alternatively, it may be useful to address adolescents' desire to emulate high-status peers. Adolescents' misperceptions of high-status peers' behavior might have little impact on adolescents' own behavior if adolescents did not rely so heavily on social comparisons with this reference group as a basis for their own developing self-esteem. Future peer influence research informed by the prototype willingness model (Gibbons & Gerrard, 1995; Gibbons et al., 1998) should expand on the current findings, perhaps by examining mediating mechanisms by which perceptions influence behavior over time. For example, if self-worth, esteem, or positive self-appraisals accompany increased risk behaviors over time, finding potential avenues for prevention or intervention will be an important direction for future work.

Future research also would benefit by addressing the difficulty in determining how to "accurately" measure adolescents' own deviant, health risk, or adaptive behaviors. Of course, adolescents' own reports of their behavior are limited by imperfect validity (e.g., reporting biases, social desirability); thus, it is not possible to determine whether adolescents' perceptions of their peers' behavior are "accurate" per se. There is no way to determine how frequently adolescents truly engage in most of these deviant, health risk, and adaptive behaviors. Although limited, self-report currently is the best option for measuring these behaviors (Brener, Billy, & Grady, 2003); external informants likely have less access to information, and objective indices (e.g., biological indicators) simply are unavailable (or prohibitively impractical in a school data collection setting) for most behaviors. Additionally, adolescents' estimations of their peers' behaviors may be limited by those individuals' own intentional or unintentional misrepresentation within the peer milieu. For example, if substance use is highly valued within a peer subgroup, perhaps members of that subgroup intentionally exaggerate their self-reported substance use in conversations with peers in order to manage their own self-presentation or protect their status and reputation. Directly assessing these processes within research studies may be an important future direction, and findings from the current research must be interpreted in light of the inherent limitations of self-reported data.

It also will be critical for future research to further explore gender, and especially ethnic differences, in the estimation and impact of social norms. Study 2 offered an excellent opportunity to

replicate Study 1 findings in an ethnically heterogeneous sample; however, sample sizes still were too small to consider how processes may vary within and across ethnic groups. There is reason to suspect that popularity within the overall peer context may not be as relevant as popularity within subgroups of same-ethnic peers; this offers intriguing possibilities for considering the various sources of peer influence on ethnic minority youth.

Overall, this research offered an application of a social norms approach for understanding peer influence, with the potential for enhancing our understanding of how teens are influenced by high-status peers and why high-status teens may be especially influential in impacting adolescent behavior and social normative perceptions. Findings demonstrate that high-status adolescents may be influential in part because their peers know so little about what they actually do.

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