Peer Contagion of Aggression and Health Risk Behavior Among Adolescent Males: An Experimental Investigation of Effects on Public Conduct and Private Attitudes

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Peer contagion of adolescent males' aggressive/health risk behaviors was examined using a computerized "chat room" experimental paradigm. Forty-three 11th-grade White adolescents (16–17 years old) were led to believe that they were interacting with other students (i.e., "e-confederates"), who endorsed aggressive/health risk behaviors and whose ostensible peer status was experimentally manipulated. Adolescents displayed greater public conformity, more internalization of aggressive/health risk attitudes, and a higher frequency of actual exclusionary behavior when the e-confederates were high in peer status than low. Participants' level of social anxiety moderated peer contagion. Nonsocially anxious participants conformed only to high-status peers, whereas socially anxious participants were equally influenced by low- and high-status peers. The role of status-maintenance motivations in aggression and risk behavior, and implications for preventive intervention, are discussed.

For decades, substantial effort has been dedicated to the examination of the effects of peer relationships on psychological adjustment (Hartup, 1970; Rubin, Bukowski, & Parker, 1998). One of the most consistent and replicable findings from this research involves the contagion of attitudes and behaviors among adolescent peers. A large body of work suggests that adolescents affiliate with peers who are similar to themselves in attitudes, preferences, and behaviors (i.e., selection effects). More important, these affiliations prospectively predict increases in the levels of such attitudes, preferences, and behaviors (i.e., socialization effects; Kandel, 1978, 1996).

Peer contagion has substantial implications for adolescents' psychological adjustment. Socialization effects explain variability in adolescents' externalizing symptoms, such as aggressive (e.g., Vitaro, Tremblay, Kerr, Pagani, & Bukowski, 1997) and illegal behaviors (e.g., Paetsch & Bertrand, 1997); health risk behaviors, such as the use of alcohol (see Bosari & Carey, 2001; Hawkins, Catalano, & Miller, 1992, for reviews), nicotine (Alexander, Piazza, Mekos, & Valente, 2001; Conrad, Flay, & Hill, 1992; Kobus, 2003; Urberg, Degirmencioglu, & Pilgrim, 1997), and marijuana (e.g., Andrews, Tildesley, Hops, & Li, 2002; Wills & Cleary, 1999); engagement in sexual risk behaviors (Billy & Udry, 1985; Prinstein, Meade, & Cohen, 2003) and problematic weight-related behaviors (e.g., dieting, binge eating; Paxton, Schutz, Wertheim, & Muir, 1999); and internalizing symptoms, including depression (Hogue & Steinberg, 1995; Stevens & Prinstein, 2005) and even suicidality (Brent et al., 1993; Prinstein, Boergers, & Spirito, 2001). Similar contagion effects have been identified in other social sciences. For example, sociologists have documented the socialization of substance use among adolescents in peer networks (Bauman & Ennett, 1996), and economists have documented the socialization of felony behaviors among prison inmates (Bayer, Pintoff, & Pozen, 2004).

Despite consensus concerning these peer socialization effects, research rarely has examined peer socialization processes or moderators that might magnify or mitigate socialization effects (Dishion & Dodge, 2005; Hartup, 2005; Prinstein & Wang, 2005).

Research has been hindered by two sets of limitations, both of which are addressed in this investigation. Using a novel experimental paradigm, the present study examines one potential theoretical framework that may help to elucidate peer contagion effects. As a secondary objective, this study also tests theoretically specified moderators that may affect adolescents' socialization toward aggressive and health risk behaviors.

Although prior work has offered important evidence to suggest that peer affiliations are related to (or at least serve as a marker for) increased levels of deviant and health risk behavior, much of this work has been methodologically limited. Typical peer contagion studies rely on questionnaire-based methods, using adolescents' (or peers') reports of peer behavior as concurrent or prospective predictors of adolescents' own behavior. Despite the increased methodological and analytical sophistication of these investigations (e.g., examinations over multiple time points, use of growth trajectories), the ability to make causal conclusions is limited by an inherently correlational design. It is not yet possible to rule out alternative explanations. For example, the behavior of peers may serve as a marker of unmeasured third variables (e.g., quality of school climate, levels of neighborhood violence, absence of prosocial opportunities, parental monitoring practices) that exacerbate adolescents' and their peers' aggressive and risk behavior over time. An experimental design is needed to test causal models of peer contagion more stringently.

A second limitation of past research on peer contagion involves the small number of theoretical models addressing the social–psychological functions of conformity and the conditions under which it occurs. The model presented here posits that an important function of conformity is to signal one's social worth and thus promote one's status in the peer hierarchy. Several theories in social psychology are consistent with this claim and specify the conditions that should facilitate conformity. Research finds that conformity arises both from the perceived attitudes and behaviors of others (i.e., social norms) and from the social rewards perceived to follow from imitating those attitudes and behaviors (Bandura, 1973; Fishbein & Azjen, 1975; Fisher & Fisher, 1992). For instance, adolescents who believe that aggressive and risk behaviors will bring them higher status in the peer hierarchy may prove particularly likely to imitate those behaviors. Indeed, research on the prototype-willingness model finds that engagement in risk behavior increases with the perception that such behavior typifies members of a high-status group (Gerrard et al., 2002; Gibbons & Gerrard, 1997; Gibbons, Gerrard, Blanton, & Russell, 1998). More generally, people look to high-status members of a reference group to determine which beliefs and behaviors exemplify the kind of person they want to be (see Cohen, 2003; Turner, 1991). They also tend to reject beliefs and behaviors that exemplify the kind of person they do *not* want to be, such as those characteristic of low-status peers or members of outgroups (Fordham & Ogbu, 1986; Kinney, 1999; see also Fryer & Torelli, 2005).

Individuals who dissent from popular beliefs and behaviors risk not only social rejection (Schachter, 1951) but also the ensuing social and psychological costs that rejection may exact on self-esteem and well-being (Leary & Baumeister, 2000). Indeed, one study found that students who failed to conform to the perceived norms of their peers showed an increase in their feelings of social alienation (Prentice & Miller, 1993). Social comparison processes further exacerbate the psychological costs of dissent. A tenet of social comparison theory is that people compare themselves with socially significant others to determine the appropriateness of their beliefs (Goethals & Darley, 1977). When they discover a discrepancy between their own beliefs and those of their peers, they experience psychological tension (Schachter, 1951), which, if not resolved through attitude change, can undermine their sense of social appropriateness and even self-worth (see Leary & Baumeister, 2000). The costs of dissent may prove especially acute during adolescence, when reflected appraisal and social comparison processes predominate in the development of a stable self-concept (Harter, Stocker, & Robinson, 1996; Hergovich, Sirsch, & Felinger, 2002). Accordingly, it has been posited that, compared with children, adolescents are especially susceptible to peer contagion (Steinberg & Silverberg, 1986).

According to our framework, engagement in aggressive and risk behaviors issues, in part, from a desire to emulate behaviors that are associated with high status. Indeed, recent research differentiating between two types of peer status finds that adolescents associate aggressive and health risk behaviors with high levels of acceptance and popularity among peers. Initially, peer status was measured as a preference-based construct (often referred to as "sociometric status"), which represents youths' *likeability* among peers (i.e., based on like-most and like-least nominations) (Coie & Dodge, 1983). Although studies of preference-base status among adolescents are rare, some evidence suggests that high levels of such status correlate with engagement in risk behaviors,

such as the use of nicotine (Allen, Porter, McFarland, Marsh, & McElhaney, 2005). Later studies included assessments of reputation-based peer status (i.e., often referred to as ''peer-perceived'' popularity), which represents youths' reputations of *popularity* among their peers (Parkhurst & Hopmeyer, 1998). Reputation-based status is conceptually similar to measures of dominance, status in the social hierarchy, access to social resources, and positions of potential influence over others (Hawley, 1999; Prinstein & Cillessen, 2003). Research has found that although reputation-based status correlates moderately with preference-based status, it is uniquely associated with higher frequencies of substance use, engagement in sexual risk behaviors, and proactive (i.e., instrumental, goal-oriented) uses of aggressive behavior (Prinstein & Cillessen, 2003; Prinstein et al., 2003).

The current study was guided by the theoretical assumption that peer contagion arises, in part, from adolescents' belief that emulation of high-status peers will earn them status in the peer hierarchy and thus help them to acquire a positive identity, both in the eyes of other peers and perhaps in their own eyes as well (Bandura, 1973; Cohen, 2003; Prinstein et al., 2003; Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001; Urberg, Cheng, & Shyu, 1991; Urberg, Shyu, & Liang, 1990; see also Turner, 1991). Adolescents were asked to respond to various aggressive and risk behavior scenarios while ostensibly in the company of fellow peers—the status of whom was manipulated experimentally. On the basis of developmental literature, we defined adolescent peer status as encompassing both preference-based likeability and reputation-based popularity. We hypothesized that exposure to aggression/risk-taking norms endorsed by high-status peers would increase adolescents' own endorsement of such behavior, relative to exposure to identical norms endorsed by lower status peers. By including ''control'' measures (ones for which no social influence was applied), our design allowed us to assess both whether participants changed their responses to conform to high-status peers and whether they distanced themselves from low-status peers.

An important question investigated in this study concerns whether conformity to high-status peers reflects only a temporary impression management strategy or a deeper internalization of high-status norms. Accordingly, three measures of conformity were included in this study, including adolescents' (a) public conformity to aggressive/risk attitudes, (b) private acceptance of aggressive/risk attitudes, and (c) actual aggressive behavior. Because many aggressive and risk behaviors occur in a social (i.e., peer) context, public conformity is an important outcome to address processes of peer influence that occur when behavioral decisions are nonprivate (e.g., in the company of peers). As compared with public conformity, private acceptance of aggressive and risk attitudes represents a more chronic risk for engagement in maladaptive behavior across contexts and over time, including situations where adolescents no longer contend with the public scrutiny of their peers. If conformity reflects impression management, then significant effects should occur only for public measures of conformity, not for measures of private acceptance. However, recent research in social psychology suggests that when people are identified with a reference group, they internalize the norms of that group (see Cohen, 2003; Newcomb, Koenig, Flacks, & Warwick, 1967; Turner, 1991; Wood, 2000). Such internalization may occur automatically and even without individuals' conscious awareness that they are conforming (Chartrand & Bargh, 1999; Cohen, 2003; Griffin & Buehler, 1993). People appear to view important reference groups as psychological extensions of self (Cohen & Garcia, 2005) and, as a consequence, they may use the attitudes of such a group to infer their own.

With a few notable exceptions, the powerful demonstrations of social influence in social psychology assessed only public conformity and compliance, not private acceptance (e.g., Asch, 1952; Milgram, 1974; cf. Deutsch & Gerard, 1955; Wood, 2000). The inclusion of measures of private attitude thus constitutes a strength of the present investigation. Beyond public conformity and private acceptance, adolescents' *actual* engagement in aggressive behavior in a psychologically real situation was also examined. By using behavior as an outcome, this study improves upon past work on the socialization of aggression and health risk behavior that has relied largely on self-reported behavioral indices.

As a secondary goal, this study also sought to identify factors that moderate peer contagion effects. Although research on this issue is limited, two moderators were explored here on the basis of intuitive plausibility and previous research. Because adolescents with greater aggression and risk-taking proclivities might prove more susceptible to pro-aggression and pro-risk-taking sources of peer influence (Dishion, Capaldi, Spracklen, & Li, 1995; Dishion, Patterson, Stoolmiller, & Skinner, 1991), we tested peer-reported and self-reported levels of aggressive/risk behavior (assessed before the experimental manipulation) as a potential moderator. The main effect of preexisting levels of aggressive/risk

behavior also served as a benchmark for assessing the relative effect size of our experimental manipulation of peer status.

Second, we explored the role of dispositional levels of social anxiety in peer contagion. Because adolescents high in social anxiety are particularly fearful of negative evaluation by others (La Greca, 1999), they were expected to conform more than nonanxious adolescents. This should be especially true for public responses (where one is exposed to the potential judgments of others) rather than private responses. This greater susceptibility to conformity could take one of three forms. First, socially anxious adolescents might have a generalized oversensitivity to the judgments of others and thus be more susceptible to conformity regardless of the status of the students with whom they are interacting—leading to a main effect of social anxiety. Second, socially anxious adolescents might have a selective sensitivity to the judgments of *high-status* students (i.e., those with judgments of particular evaluative significance), and thus display greater conformity than nonanxious adolescents only when interacting with high-status peers. Third, socially anxious adolescents might be uniquely sensitive to the judgments of *low-status* peers, and thus display greater conformity than nonanxious adolescents primarily when interacting with low-status peers. This would be the case if social anxiety lowers people's threshold for perceiving a social situation as high in evaluative significance, and thus evokes concerns for social approval even in the company of peers who lack social status. The latter two possibilities would manifest in an interactive (i.e., moderating) role of social anxiety.

To examine these hypotheses, a novel and elaborate experimental paradigm was developed. As a first step, we tested our theoretical account among White male adolescents. We focused on boys rather than girls for various reasons. First, research suggests that the types of aggressive behavior examined in this study (i.e., predominantly overt aggression) occur more frequently among boys than girls (Crick, 1996). Second, there is some evidence to suggest that peer relationships at the group level (i.e., involving peer status/popularity in the overall hierarchy) may be particularly relevant for boys, whereas dyadic peer relationships (i.e., friendships) might be a more salient context for peer contagion among girls (Rose & Rudolph, 2006). An examination of possible gender difference was beyond the scope of this initial experimental study. Our reliance exclusively on White students was due mainly to pragmatic constraints of the participating school site (i.e., the stu-

dent body was predominantly White). Additionally, research suggests that students who are members of a numerical minority based on ethnicity form a unique peer group hierarchy distinct from the overall status hierarchy of the majority ethnic group (e.g., Hamm, Brown, Heck, 2005). Because such a phenomenon might obscure the effect of the experimental manipulation (which was based on the status hierarchy of the overall peer context), this was another reason to focus on members of the majority ethnic group in this study.

Method

Participants and Experimental Design

A first wave of data collection involved a sample of 273 adolescents (42% boys; 58% girls) in the 11th grade attending a suburban high school. The ethnic composition of the sample was 73% White/Caucasian, 18% African American, 3% Latino-American, and 6% Asian American or mixed/other ethnicity. According to school and county records, the sample was located in a city with a population in the middle-income socioeconomic status bracket (per capita income = $25,175; Connecticut State Department of Education, 2001). Records indicated that approximately 18% of students were eligible for free or reduced-fare lunch.

From this original sample, a total of 43 White adolescent males were selected for participation in the experimental paradigm. Experimental participants' peer status was controlled by recruiting only adolescents who had average levels of preference- and reputation-based status (as determined by the sociometric assessment described below). We initially identified 50 White male participants who received standardized peer-nominated social preference and social reputation scores between − 1.0 and +1.0. The final 43 participants were randomly selected from these 50 eligible adolescents.

Participants were randomly assigned to one of two experimental conditions. In the "high-status peers" condition, participants were led to believe that they were interacting (in the context of an electronic chat room) with three high-status peers from their school. In the "low-status peers" condition, the ostensible peers were low in peer status.

Procedure

In the first wave of data collection, all regular education students in the 11th grade were recruited for participation in a large-scale, baseline assessment examining peer relationships and psychological

adjustment ($n = 372$). Consent forms were returned by 85% of families ($n = 318$). Of these, 93% of parents gave consent for their child's participation ($n = 297$). Data were unavailable for 24 participants due either to student absenteeism on the days of testing or to missing data. The final sample encompassed 273 adolescents (74% of all eligible participants). We acquired sociometric data concerning students' peer status using a peer nomination procedure described below. Additionally, all participants completed several questionnaire instruments as part of the large-scale baseline assessment, including a measure of their previous engagement in aggression/risk behaviors and an inventory assessing their endorsement of aggression/risk behavior in hypothetical contexts (described below).

Sociometric assessment. A sociometric assessment was used to collect data concerning adolescents' (1) preference-based and reputation-based status among their peers, (2) engagement in overt aggression, and (3) friendship affiliations. Data from sociometric nominations are widely considered the most reliable and valid indices of youths' status and reputations among peers (Coie & Dodge, 1983). Using alphabetized rosters of all students in participants' grade level, adolescents nominated an unlimited number of peers whom they "liked to spend time with the most" and an unlimited number of peers whom they "liked to spend time with the least." The order of alphabetized names on this roster was counterbalanced (i.e., A–Z; Z–A) to control for possible order effects on nominee selection. A sum of the number of nominations each child received was computed and standardized. A difference score between standardized "liked most" and "liked least" nominations was then computed and re-standardized to obtain a measure of preference-based peer status (i.e., *social preference*), with higher scores indicating greater peer acceptance and lower scores indicating greater peer rejection (Coie & Dodge, 1983). Adolescents also nominated peers who were "most popular" and peers who were "least popular." Scores were standardized and a difference score was calculated and re-standardized to obtain a measure of reputation-based status (i.e., *social reputation*). Higher scores indicate greater peer-perceived popularity (LaFontana & Cillessen, 2002; Parkhurst & Hopmeyer, 1998; Prinstein & Cillessen, 2003; Prinstein et al., 2003).

Adolescents also nominated peers who were overtly aggressive ("Who says mean things, threatens, or physically hurts others—for instance, hitting, kicking or pushing others, teasing or calling names?") (De Los Reyes & Prinstein, 2004; Prinstein, in press; Prinstein & Cillessen, 2003). The number of nominations each child received was summed and then standardized for use as a measure of peer-reported *aggression*.

Adolescents also selected an unlimited number of students who they felt were their "closest friends" and then, from their selection, they further specified a "very best friend" and two additional "best friends." These friendship data were used in crafting the experimental manipulations (i.e., to determine clusters of low-status and high-status peers who plausibly affiliate together), as described later.

Aggressive and health risk behavior hypothetical scenario instrument. We assessed adolescents' endorsement of aggressive and health risk behaviors using a hypothetical scenario instrument. Two adolescent focus groups were conducted to develop this instrument. A first set of focus groups, comprised of high-school-aged students, was asked to generate examples of situations where adolescents might behave aggressively toward a peer or where they might engage in illegal and risk behavior, particularly when in a peer context. Participants in these focus groups also generated a set of plausible, age-appropriate responses to each scenario, encompassing a full range of prosocial/nonrisky and aggressive/risk responses. A second set of focus groups, comprised of recent high school graduates in the same geographic area, then provided feedback on the instrument. These suggestions were used to refine the instrument. Through this process, a total of 14 scenarios were constructed (addressing physical aggression, verbal teasing, vandalism, substance use), each one accompanied by 3–6 behavioral options hierarchically ordered in a Likert-scale format to reflect increasingly or decreasingly aggressive/risk behavior options. Adolescents were asked to indicate the response option that matched the way that they would behave in the presented situation. For example, one scenario posited, "You are at a concert with friends . . . . and are offered a marijuana cigarette," and then provided response options ranging from "Smoke the 'joint'" to "Take one 'drag' or puff only" to "Say 'No thanks'" to "Tell the others that they should not be smoking pot." The scenarios and accompanying response options encompassed various forms of overt aggression versus altruism, and risk behavior versus nonrisk behavior (e.g., teasing vs. helping a vulnerable student, damaging someone's property vs. not, drinking alcohol vs. returning it for soda).

The psychometric properties of this instrument were examined in two independent high school samples, each one including more than 250 students. Responses to the individual items were standardized

(after being reverse coded where appropriate) and then averaged into a composite. Internal consistency (α) ranged between .78 and .85, and the 18-month test–retest reliability proved satisfactory, $r = .75$, $p < .0001$. Supporting the construct validity of this instrument, the composite measure correlated significantly with self-report measures of peer aggression, rs between .21 and .31, ps $< .0001$, peer-reported aggressive behavior, rs between .13 and .20, ps $< .001$, self-report measures of both deviance, $r = .43$, $p < .0001$, and substance use, $r = .67$, $p < .0001$, and school record reports of disciplinary action taken with the student (e.g., number of detentions, suspensions), rs between .21 and .23, ps $< .0001$. (The complete instrument may be obtained from either of the authors.)

This instrument was used in three ways. First, it was administered during the initial grade-wide assessment. Data were analyzed to determine the normative (i.e., mean) response to each scenario among White male students at the school. We used this information to define a response, for each scenario, that was "above average" (i.e., +1 or −1 SD) in its level of aggression/risk endorsement. As described later, these deviant aggression/risk responses were later attributed to either low- or high-status peers in the context of the experimental paradigm. Second, each of the scenarios used in the instrument was again presented during the experiment; responses to the scenarios in this context were used as a dependent measure. Third, participants' preexperimental scores on this instrument were used as a covariate in analyses assessing the effects of the experimental manipulation.

Experimental paradigm. The experimental paradigm was constructed to simulate an Internet-like "chat room." Our adolescent male participants were told that they would have an opportunity to communicate electronically via an Internet chat room with three peers from their grade who were supposedly working on computers in other rooms throughout the school. In reality, the three grademates in each participant's chat room were preprogrammed, computer-generated electronic confederates (i.e., "e-confederates"). This electronic paradigm was created using the Direct RT computer program (Jarvis, 2004).

Participants were told that the purpose of the study focused on "how adolescents communicate over the Internet." It was explained that the chat room was designed to allow adolescents to communicate with one another in a specific order (Participant 1 responds first, Participant 2 responds second, and so on), in the context of answering a series of multiple-choice questions. Participants were told that the specific order in which they would respond to these questions had been randomly determined. In actuality, the order was predetermined to ensure that all participants responded to the presented questions last. In this way, the experiment ensured that participants were first exposed to the responses of the e-confederates in the chat room (i.e., "Participants" 1, 2, and 3) before providing their own responses.

After the participant was seated in front of the computer terminal, they were first presented with a fabricated (i.e., computer-generated) image of the Internet home page associated with the researchers' University. The experimenter pressed a key, and the web browser then directed the participant to the website information page associated with the chat room. (As noted, participants were interacting not with an actual web browser but with a simulated one.)

For the supposed purpose of acquainting members of the chat room with one another, participants were asked (via computer-generated instructions) to provide some personal background information before entering the chat room. At the background information "site," participants first entered the first name and last initial of each of their three best friends at school (from their grade) and their favorite activities. Additionally, participants were informed that they might have the opportunity to meet the other members of the chat room in person later. Participants then "logged on" to the chat room. As they did so, several windows on the computer screen flashed information designed to amplify the verisimilitude of the chat room (e.g., one screen displayed "Downloading Participant Information" followed by a gauge to indicate that this downloading was in progress).

When participants arrived in the virtual chat room, their personal background information was posted on screen, under a graphic response window associated with their identity. Because they had supposedly entered a virtual common area, participants believed that their response window and background information were visible to the three other chat-room members (i.e., the e-confederates). Participants could also see, on screen, the response windows associated with each of the three e-confederates. For each e-confederate, there was a response window, under which was posted the first names and last initials of the e-confederate's three best friends and a list of personal hobbies. All background information (for the participant and for the three e-confederates) remained on screen during participants' time in the chat room and was thus presumably visible to all chat-room members. However, both the background information

and the response windows associated with the e-confederates were removed during the "private sessions" described below.

Although no specific identity was provided for the three e-confederates, their perceived peer status was experimentally manipulated through the presented information concerning their best friends and hobbies. In the high-status peers condition, each of the three e-confederates had (posted under his response window) three best friends of high peer status at their school. In the low-status peers condition, the three best friends were of low peer status. Data from the sociometric assessment, described previously, allowed us to determine first names and last initials of grade-mates who had been rated by students in the school as either high or low in peer status. Data from friendship nominations allowed us to determine groups of high- and low-status friends for each e-confederate who actually inhabited the same peer cliques—a feature that buttressed the credibility of the experimental manipulation. For each e-confederate, at least one friend was listed who had obtained standardized social preference or social reputation scores greater than 1 (in the high-status peers condition) or less than -1 (in the low-status peers condition). It was not always possible to select two additional individuals meeting the same criteria who could plausibly be listed as friends (based on our friendship nomination data). In these cases, additional friend names were selected who had social preference and social reputation scores greater than zero in the high-status peers condition and lower than zero in the low-status peers condition. The average social preference and social reputation scores of the e-confederates' nine friends were significantly higher in the high-status peers condition (social preference $M = 0.84$, $SD = 1.11$; social reputation $M = 1.35$, $SD = 0.71$) than in the low-status peers condition (social preference $M = -0.89$, $SD = 0.88$; social reputation $M = -0.87$, $SD = 0.65$), $t(16) = 3.64$ and 6.89, $ps < .0001$, respectively.

The manipulation of peer status was buttressed by providing general information about e-confederates' favorite hobbies and activities. Next to their response window, the high-status e-confederates were listed as enjoying generic hobbies and activities characteristic of popular students (e.g., "playing/watching sports," "going to parties"). By contrast, the low-status e-confederates were listed as enjoying some generic hobbies and activities characteristic of unpopular students (e.g., "reading," "working with computers").

In the chat room, a series of questions was presented to participants and the e-confederates. Participants' responses to these questions were used to obtain three dependent measures: (1) public con-

formity to aggressive/health risk behavior attitudes, (2) private acceptance of aggressive/health risk behavior attitudes, and (3) actual aggressive behavior (i.e., exclusion).

Public conformity to aggressive/health risk behavior. After the orientation to the chat room and introduction to the three e-confederates, participants responded to the same set of aggression/risk hypothetical scenarios that they had completed during the earlier, large-scale baseline assessment (e.g., involving whether to help or tease a vulnerable peer, whether to accept or decline an opportunity to use illegal drugs). One scenario was presented for each response "trial." For each trial, participants once again selected, from a range of prosocial/nonrisk and aggressive/risk behaviors (labeled "a," "b," "c," etc.), the behavior that would best characterize their own response to the presented scenario. However, for each trial, participants responded only after they had seen the responses of each of the three e-confederates to that scenario. These responses, as noted previously, were generated by the computer program and presented sequentially. They appeared in each of the three e-confederate's response windows (displayed on the computer screen). The timing of these responses reinforced the verisimilitude of the e-confederates. That is, there was a pause before each e-confederate's response, such that it appeared that the e-confederate deliberated before answering. Through the computer program, we ensured that both the content and the timing of the e-confederates' responses remained constant across experimental conditions.

E-confederates gave two types of responses. On most trials (i.e., "conformity items"), e-confederates endorsed one of the aggressive/risky behavioral responses to the scenarios (i.e., their response was approximately one SD from the pretest sample mean for that item). In other words, on conformity items, e-confederates gave a response more aggressive/risky in nature than the response that participants were likely to have endorsed independently. For purposes of verisimilitude, the e-confederates sometimes gave slightly different answers to a given item (e.g., one e-confederate might answer with option "d," whereas the two other e-confederates might answer with option "e"), but all three answers always fell on the aggressive/risky side of the response scale. For conformity items, participants thus experienced social pressure to endorse aggression/risk behavior. For a minority of trials (i.e., "control items"), e-confederates endorsed the normative or average response (i.e., their response corresponded to the relevant mean

obtained in the pretest sample of White males). Because these responses did not differ from typical responses to the scenarios, participants experienced no social pressure to advocate aggression/risk behavior for these items. Thus, these items served as controls. To the extent that participants conformed to their peers, they should show greater endorsement of aggression/risk behavior for the conformity items than for the control items. The control items also served to reinforce the verisimilitude of the e-confederates (otherwise, they might have appeared implausibly consistent in their endorsements of aggression/risk behavior).

When participants selected their answer to a given item, that answer appeared in their response window on the computer screen for several seconds. This element of the procedure bolstered the message (conveyed earlier in the experimental instructions) that participants' responses were visible to the three e-confederates (and could thus affect their status in the eyes of these three ostensible peers). After reverse coding appropriate items, we standardized participants' responses to each scenario. Then, the standardized scores for the conformity items and for the control items were averaged into two separate composites. Higher scores represent greater endorsement of aggression/risk behavior.

Private acceptance of aggressive/health risk behavior. After participants responded to the set of hypothetical scenarios while "logged on" to the chat room, participants were notified that they would now "log off" and begin a "private session." This private session, participants were told, involved responding to the same scenarios while temporarily "logged off" the chat room. Participants were told that, in contrast to the previous session, neither their own responses nor those of the three other "participants" would be displayed publicly in the chat room for anyone else to see. To increase the plausibility of these instructions, the "private session" was preceded by several computer graphics typical of Internet-based applications, indicating that participants were "logging off" and being "redirected" to a different, secure page. In the private session, the response windows for each of the three e-confederates were removed from the display screen. Only participants' own response window was visible.

Participants again were presented with each of the hypothetical scenarios. They were told (via computer instructions) that they would now have the opportunity "to rethink your answers in case you weren't sure the first time." To lessen pressures for consistency, they were further instructed to "feel free to give a different response, or to give the same response, you gave before." Once again, participants' response to each of the presented scenarios was standardized (after being reverse coded where appropriate), and then the standardized scores for the conformity items and for the control items were averaged into two separate composites. Once again, higher scores represent greater endorsement of aggression/risk behavior.

Actual aggressive behavior: Social exclusion. At the conclusion of the "private session," participants were presented with instructions (displayed on the computer screen) informing them that they were now reconnecting to the chat room with the same e-confederates with whom they had interacted previously. The computer again presented several windows to bolster the plausibility of this information (e.g., one window flashed "please wait for the other participants to re-join the chat room," following by a several-second delay ascribed to the fact that all the e-confederates were "finishing" answering the same questions participants had answered).

In the chat room, the participant and three e-confederates were presented with a series of multiple-choice questions assessing their general interests and hobbies. These questions purportedly provided an opportunity for the chat-room members to become further acquainted. During this session, responses for one e-confederate (i.e., e-confederate #1) were programmed to convey unpopular or "uncool" preferences and hobbies (e.g., "enjoys spending time with parents"). This provided the basis for his potential social exclusion later from the chat room.

Next, participants were informed (via computer instructions) that ". . . as a group, you can decide to vote out one of the students who worked with you today in the chat room" for the next chat-room activity. They were specifically informed that "if you'd like to exclude anyone from your group," that person could now be voted out. It was emphasized that for someone to be voted out, that person had to be unanimously selected by all other chat-room members. It was also conveyed that each member of the group could refrain from excluding anyone if they so chose.

In both experimental conditions, e-confederate #1 voted to eliminate no one from the chat room. E-confederates #2 and #3 voted to eliminate e-confederate #1. The participant was thus required to cast the deciding vote. The critical outcome was whether participants chose to exclude e-confederate #1 (as the other two e-confederates had done) or

not (e.g., by electing to exclude no one). This decision was used as a dichotomous measure of participants' actual aggressive/exclusion behavior.

Manipulation check. Finally, participants were asked (after apparently logging off the chat room once more) to privately rate the peer status (i.e., popularity within their school) of each of the three e-confederates (1 = *extremely unpopular*, 7 = *extremely popular*). Responses served as a check on the experimental manipulation of peer status. (Due to an error in the computer program on the first of 2 days of testing, the last two response options for the manipulation check scrolled off the bottom of the screen and were thus obscured from view. This problem was remedied on the 2nd day of testing. This error placed an artificial ceiling on the manipulation check for approximately half the participants.)

After the study was complete, and all participants run, participants were debriefed. The experimenters explained the rationale for the cover story and the necessity for the deceptive elements of the procedure. The experimenters answered questions students had about the study, and they made sure that each participant departed with an understanding of the problem under investigation and the manner in which the experiment was designed to elucidate it.

Additional measures

Aggressive/health risk behaviors. At the original, large-scale assessment, adolescents reported the frequency of their actual engagement both in aggressive/deviant behavior and in health risk behavior using a series of items from established instruments (e.g., Youth Risk Behavioral Surveillance; Center for Disease Control, 1998; Dishion et al., 1991; La Greca, Prinstein, & Fetter, 2001). The measure of aggressive/deviant behavior, drawn from past work by Dishion et al. (1991), included five items (i.e., had ruined or damaged other people's property or possessions on purpose; stolen something, or tried to steal something, worth less than $5; stolen something, or tried to steal something, worth more than $50; broken into a car or building to steal something; been in a physical fight). The measure of health risk behavior assessed usage of several substances, including nicotine (i.e., number of cigarettes smoked per day), heavy episodic drinking of alcohol (i.e., frequency of drinking five or more drinks on a single occasion), and marijuana and "hard" drug use (i.e., frequency of use in the past month). Adolescents responded to each item using a 5-point Likert-scale response set, with each numerical value corre-

sponding to a range of behavioral frequency commonly reported among this age group. A mean score across all nine items was computed as a measure of reported engagement in aggressive/risk behaviors ($\alpha = .72$).

Social anxiety. The Social Anxiety Scale for Adolescents (SAS-A; La Greca & Lopez, 1998) contains 18 descriptive self-statements and four filler items. Respondents use separate 5-point scales to indicate how much each item "is true for you" (1 = *not at all*, 5 = *all the time*). Items tap fear of negative evaluation (e.g., "I worry about what other kids think of me"), social avoidance and distress due to new situations or unfamiliar peers (e.g., "I get nervous when I meet new kids"), and generalized social avoidance and distress (e.g., "I feel shy even with peers I know well"). A total score was computed. Higher scores represent more severe social anxiety. Psychometric support for the SAS-A has been obtained (see La Greca, 1999). Construct validity has been confirmed in the form of established relationships between higher levels of SAS-A and lower self-reported sociometric status (see La Greca, 1999). Studies have also found adequate test–retest reliability (rs = .70) over a 4-month period (La Greca, 1999). Internal consistency (α) in this sample was .90.

Results

Manipulation Check

As noted previously, participants estimated the popularity of the e-confederates in the chat room. An average score of the ratings of the three e-confederates was computed. A comparison of means confirmed that participants viewed the e-confederates as more popular in the high-status peers condition, $M = 4.76$, $SD = 1.00$, than in the low-status peers condition, $M = 3.98$, $SD = 0.97$, $t(40) = 2.55$, $p < .05$. (One participant declined to respond to the manipulation checks, resulting in one fewer degree of freedom for this analysis.)

Conformity to Aggressive/Health Risk Norms

A main hypothesis was that adolescents' conformity would differ across the two experimental conditions (i.e., high- and low-status e-confederates) on conformity items but not on control items (i.e., a between × within subjects interaction effect). Repeated measures analyses of covariance (ANCOVA) were therefore conducted, with standardized scores for conformity and control items entered as a

within-subjects variable and experimental condition entered as a between-subjects factor. To offer a stringent test of hypotheses, three covariates were entered into the model. Two of these covariates assessed participants' average pretest responses to the same scenarios used in the experimental paradigm (one for conformity items, the other for control items). A third covariate reflected participants' general tendencies toward aggressive/risk behavior (as assessed before their participation in the experiment). This composite measure was created by averaging the standardized scores for participants' peer-reported levels of aggression and their self-reported levels of actual aggressive/risk behavior ($r = .20$, $p < .001$). Exclusion of the covariates from analyses did not alter the statistical significance of any reported effect of experimental condition. Also, the effect of experimental condition did not vary as a function of whether the response item concerned aggression versus health risk behavior, all $Fs < 1$.

Public conformity. As predicted, analysis yielded a significant interaction effect for public conformity, Wilks's $\Lambda = .76$, $F(1, 38) = 12.11$, $p < .001$; partial $\eta^2 = .24$. Simple effects were analyzed in two separate ANCOVA analyses using conformity items and control items as dependent variables, respectively. In each analysis, the relevant pretest response index (for either conformity or control items) and the aggression/risk composite variable were retained as covariates. For conformity items, a significant effect for experimental condition was found, $F(1, 39) = 5.24$, $p < .05$, $d = .73$ (medium/large effect size; Cohen, 1988). Participants endorsed aggressive and risk behaviors more in the high-status peers condition, adjusted $M = .28$, $SE = .17$, than in the low-status peers condition, adjusted $M = -.29$, $SE = .18$. As expected, no significant condition effect was found for control items; high-status peers condition adjusted $M = -.22$, $SE = .19$, versus low-status peers condition adjusted $M = .23$, $SE = .19$; $F(1, 39) = 2.82$, *ns*.

Additional analyses were conducted to further explore the nature of this interaction effect and whether the direction of peer contagion varied with experimental condition. Repeated measures analyses were conducted within each condition (once again, controlling for premanipulation levels along conformity items, control items, and the aggression/risk composite). As expected, adolescents in the high-status peers condition endorsed aggressive/risk behavior more for conformity items than for control items, $F(1, 18) = 5.55$, $p < .05$. By contrast, adolescents in the low-status peers condition endorse aggressive/risk behavior *less* for conformity items than for control items, $F(1, 17) = 10.91$, $p < .01$. These findings indicate that in addition to conforming to the responses of high-status peers, participants also distanced themselves from the responses of low-status peers.

Private acceptance. An identical analytic strategy was used to examine participants' private acceptance of aggressive/health risk behavior attitudes. The repeated measures ANCOVA again revealed a significant interaction effect, Wilks's $\Lambda = .74$, $F(1, 38) = 13.53$, $p < .001$; partial $\eta^2 = .26$. For conformity items, participants privately endorsed aggressive and risk behaviors more in the high-status peers condition, adjusted $M = .25$, $SE = .16$, than in, the low-status peers condition, adjusted $M = -.26$, $SE = .17$, $F(1, 39) = 4.80$, $p < .05$, $d = .69$ (medium/large effect size; Cohen, 1988). For control items, the effect of condition did not reach significance, $F(1, 39) = 3.21$, $p = .08$, and if anything trended toward the opposite direction (high-status peers condition, adjusted $M = -.25$, $SE = .20$; low-status peers condition, adjusted $M = .26$, $SE = .20$).

Repeated measures analysis within each condition once again revealed that adolescents in the high peer status condition reported higher levels of aggressive/risk behavior for conformity items than for control items, $F(1, 18) = 6.86$, $p < .05$, while the reverse effect was true for adolescents in the low peer status condition, $F(1, 17) = 10.65$, $p < .01$. These results again indicate that adolescent males both conformed to the responses of high-status peers and distanced themselves from the responses of low-status peers.

Actual Aggressive Behavior: Social Exclusion

It was expected that participants would be more likely to exclude a member of their chat room when high-status as opposed to low-status e-confederates had excluded that person. This hypothesis was first examined by conducting a χ^2 analysis using experimental condition and participants' vote to exclude (yes/no) as two dichotomous indicators. A significant condition effect was again found, $\chi^2(1) = 5.88$, $p < .05$. Eighty-six percent of participants in the high-status peers condition voted to exclude the peer, compared with only 52% of participants in the low-status peers condition. This effect was also examined in a logistic regression using our aggression/risk composite variable as a covariate. The effect of experimental condition remained intact, $\Delta\chi^2(1) = 6.16$, Wald $= 5.34$, $p < .05$. In fact, the effect of condition on exclusion behavior surpassed the effect of the covariate composite index of participants' peer-reported aggression and self-reported aggressive/risk behavior, $\Delta\chi^2(1) = .01$; Wald $= .01$, *ns*.

Table 1

Examination of Aggressive/Risk Behavior and Social Anxiety Symptoms as Moderators of Adolescent Peer Contagion in Hierarchical Linear and Logistic Regression Analyses

	Public conformity			Private acceptance			Exclusion (1 = Yes)		
	R^2	β at step	Final β	R^2	β at step	Final β	χ^2	Wald step	Final Wald
Step 1: Covariate (R^2)	.33***			.40***			N/A		
Pretest responses to scenarios		.58***	.45**		.63***	.55***	—	—	—
Step 2: Main effects ($\Delta R^2/\chi^2$)	.11			.10			7.17†		
Experimental condition (1 = low-status peers)		− .31*	− .18		− .27*	− .21		6.02*	3.89*
Aggressive/risk behavior composite		.12	.34†		.15	.30		0.01	0.26
Social anxiety symptoms		.10	− .28		.07	− .08		0.03	0.04
Step 3: Interaction terms ($\Delta R^2/\Delta\chi^2$)	.13*			.03			0.65		
Social anxiety × condition			.49*			.17			0.34
Aggression/risk × condition			− .22			− .18			0.24
Total R^2/χ^2	.56***			.52***			7.82		

†$p = .07$; *$p < .05$; **$p < .01$; ***$p < .001$.

Examination of Moderators

Hierarchical linear and logistic regression analyses were conducted to examine two potential moderators of the effect of experimental condition on participants' public conformity, private acceptance, and actual exclusion behavior. The first potential moderator was participants' level of social anxiety; the second, their preexisting tendency to engage in aggressive/risk behaviors. Two interaction terms were computed using centered variables (i.e., social anxiety symptoms × condition; aggressive/risk composite variable × condition).

Using participants' public conformity as a dependent measure, we entered participants' pretest responses to the same scenarios as a covariate in an initial step. Main effects for experimental condition, prior level of social anxiety, and prior engagement in aggressive/risk behavior were entered in a second step. Both interaction terms were entered in a third step (see Table 1).

This analysis yielded three noteworthy findings. First, the main effect results (see "β at step" in Table 1) indicated a remarkably large effect for the experimental manipulation (β = − .31), as compared with the effect of participants' general pre-existing tendencies toward aggressive/risk behavior (β = .12). The marked difference in the magnitude of these effects remained unchanged even when we removed pretest responses to the scenarios as a covariate (and thus allowed our measure of prior aggressive/risk behavior to account for any explanatory power it may have shared with this covariate).

Second, social anxiety proved a significant moderator of the effect of the experimental manipulation

on public conformity. Holmbeck's (2002) most recent guidelines for post hoc probing of significant moderational effects were used to determine the nature of this interaction. These included (a) computation of reduced models examining each moderator term independently to minimize collinearity and suppressor effects, (b) computation of new product terms and simple slope estimates for different levels of the experimental condition variable, and (c) examination of the statistical significance of these slopes at low versus high levels of the moderator variable (i.e., − 1 vs. +1 standard deviations). Figure 1 displays the results of this analysis. Higher levels of social anxiety were associated with more public conformity in the low-status peers condition, slope B = .034; SE = .015, β = .342, p < .05. By contrast, higher levels of social anxiety were not associated with public conformity in the high-status
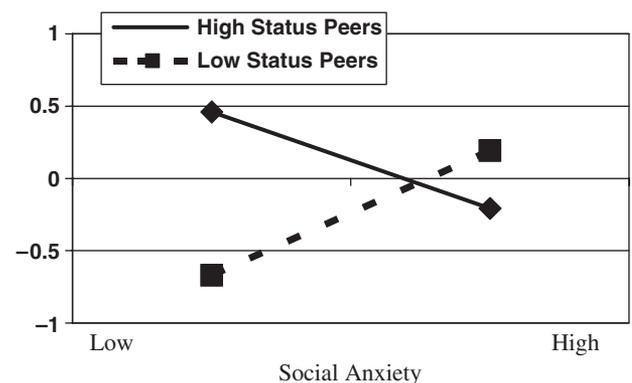

Figure 1. Social anxiety as a moderator of the effect of experimental condition (low-status vs. high-status peers) on public conformity.

peers condition (i.e., the slope did not differ significantly from zero, $B = -.028$; $SE = .018$, $\beta = -.285$, ns). This moderating effect of social anxiety occurred even though low- and high-social anxiety students were equally able to discern the e-confederates' status; there was no interaction involving social anxiety and condition along the manipulation check assessing perceptions of the peers' popularity, $\Delta R^2 < .01$, ns. Additionally, no significant moderating effects of social anxiety were found either for private acceptance or for exclusion behavior (see Table 1).

Third, participants' prior level of aggressive/risk behavior did not moderate the effect of the experimental manipulation on public conformity, private acceptance, or exclusion behavior. This result suggests that the experimental manipulation of peer status increased endorsement of aggression/risk behaviors, and engagement in social exclusion, regardless of participants' own predisposition toward such behavior.

One potential problem with analyses involving prior level of aggressive/risk behavior arises from the possibility that our sample (who, as previously noted, were all White males with average levels of preference- and reputation-based popularity) was unusually low in prior aggression/risk behavior or showed more restricted variance along this measure than the school sample as a whole. Such a pattern would have prevented this measure from operating as a credible moderator. Contrary to this speculation, however, the mean and variance for the aggression/risk behavior baseline composite did not differ significantly between the experimental sample and the full male sample featured in the large baseline assessment, $t(212) = .38$, ns; Levene's test for equality of variances, $F = .69$, ns. Additionally, all moderational analyses yielded the same results when we removed pretest responses to the scenarios as a covariate, and again allowed our measure of prior aggressive/risk behavior to account for any explanatory power it may have shared with this covariate. Finally, as expected, no analysis identified main or interactive effects for the control items, ΔR^2's $< .09$, ns.

Discussion

Although correlational research has suggested that adolescents' attitudes and behavior are socialized by their peers, few studies have examined this idea experimentally. Additionally, there has been a need to clarify the mechanisms underlying peer contagion and to identify conditions that moderate adolescents' susceptibility to peer influence. Using a novel ex-

perimental paradigm, this study offers at least three important contributions addressing each of these issues. Findings also offer implications for preventive intervention among adolescent males.

Results from this study of White adolescent males suggest that peers are indeed potent socialization agents. Participants confirmed their attitudes and behaviors to those of their peers in the context of this experiment. However, participants did not conform equally to all peers but were instead most influenced by peers of high peer acceptance and popularity. Participants exposed to aggressive/risk norms communicated by such high-status peers were more likely to publicly endorse and privately accept aggressive and risk behavior than were adolescents exposed to identical norms ostensibly endorsed by lower status peers. A similar pattern was revealed for adolescent males' engagement in one form of actual aggressive behavior (i.e., exclusion). Both the significance of this effect and its magnitude, as observed in an experimental study, offer an important contribution by demonstrating the potent causal effect of peer socialization. Although speculative, results suggest that the effect of peer status on endorsement of aggression and risk behavior may even surpass the effect of both individuals' self-reports of their past engagement in aggression and risk behavior and their reputations among peers as aggressive students (see Ross & Nisbett, 1991). Overall, findings offer strong support for the role of peer contagion in adolescents' aggressive/risk attitudes and behaviors.

Two symmetrical effects drove the impact of the experimental manipulation of peer status. Consistent with our theoretical analyses, adolescent males conformed to the attitudes of high-status peers. Additionally, they distanced themselves from the attitudes of low-status peers. The latter response is consistent with the phenomenon of "oppositional identity," wherein individuals define themselves in opposition to another group (Fordham & Ogbu, 1986; Kinney, 1999; see also Fryer & Torelli, 2005). In this context, adolescents were less likely to endorse responses that were associated with the norms of unpopular and rejected peers. One intriguing implication of these results is that the motivation to distance oneself from a negative identity may be as powerful as the motivation to ally oneself with a positive one.

A second important contribution of this study pertains to the breadth of peer contagion effects revealed. The present study extends previous research by demonstrating that a one-shot, experimental manipulation of peer status had as large an effect on adolescent males' private endorsements of aggres-

sive/risk behavior as it had on their public endorsements of these behaviors. Conformity thus seemed to involve more than a temporary impression-management strategy to promote a social image in the eyes of important peers. It also seemed to involve the internalization of peer norms. Because the groups with which individuals identify constitute an important source of self-definition (Cohen, 2003; Cohen & Garcia, 2005; Tajfel & Turner, 1986; Turner, 1991), and because the desire to achieve membership in a valued group can prove especially important among youth (Brown, 1990), adolescents learn from their peers those beliefs and behaviors that exemplify the identity they want to hold. Beyond affecting private and public attitudes, the experimental manipulation also affected participants' actual exclusionary behavior. An overwhelming majority of participants publicly elected to exclude a fellow student without any apparent personal benefit other than the opportunity to obtain the implicit approval of high-status peers. In contrast, only half the participants voted to exclude this student when they were in the company of low-status peers.

Our findings are consistent with several theoretical models. Like prior theory and research on social learning theory and on deviancy training, our findings suggest that adolescents' behavior may be largely motivated by behavioral reinforcement and perceived social rewards (Dishion, Spracklen, Andrews, & Patterson, 1996). For instance, adolescent males' exclusionary behavior was most likely to occur when modeled (and presumably witnessed) by high-status peers whose social approval perhaps represented a more potent social reward than approval from lower status peers. However, in our study the *mere* endorsement of deviant behavior by high-status peers—without direct or tangible reinforcement conferred either to the peers or to participants themselves, and without face-to-face contact between participants and peers—proved sufficient to cause internalization of aggression and risk-taking attitudes. Moreover, participants' behavioral conformity occurred at the expense of ostracizing an innocent fellow peer, which might have provoked moral conflict and dissonance. It seems likely that adolescents' conformity arose from powerful social-motivational needs such as the ones posited in our theoretical analysis—that is, motivations for status and for a positive social identity. Further examination of the micro-processes involved in such peer contagion effects constitutes an important direction for future research.

A third contribution of this study involves a preliminary examination of factors that might moderate peer contagion among White adolescent males. Two findings are noteworthy. First, participants' prior level of aggressive/risk behavior did *not* moderate the effects of peer status, despite adequate power to detect such effects. The effects of the experimental manipulation appeared to be consistent across adolescent males with high and low levels of prior aggressive behavior and peer reputations of aggression. This may be because conformity did not arise from the motivation to be aggressive or risk taking. Rather, it arose from the motivation to be socially appropriate—a goal apt to predominate in almost any group. In this manner, our study points to one pathway by which initially moral, prosocial youth may begin to engage in maladaptive behavior. Initial engagement in, and experimentation with, aggressive and risk behaviors may be driven by a motivation to conform to high-status peers. However, over time, through dissonance, self-perception, and social labeling processes, these behaviors may become more intrinsically motivated and rooted in personal identity.

Second, as hypothesized, social anxiety proved a significant moderator of peer contagion effects. Higher levels of social anxiety predicted more conformity to low-status peers, but not to high-status peers. One interpretation is that adolescent males high in social anxiety feel particularly insecure about their esteem in the eyes of others. Fearing negative evaluation, they may be susceptible to influence from low- and high-status peers alike. Reducing social anxiety may be a useful way to help adolescents withstand peer influence.

Our experimental investigation into peer contagion underscores the causal role of peer status and provides results consistent with our theoretical account of socialization effects. This account emphasizes the mediating role of motivations for status and a positive social identity in the peer hierarchy. These results have further implications for intervention. Rather than target adolescents' attitudes directly (e.g., with persuasion campaigns and fear appeals), an effective intervention to discourage adolescents from engaging in destructive behavior involves changing their perceptions of how much their peers actually endorse such behavior (see also Lewin, 1952; Prentice & Miller, 1993; Prinstein & Wang, 2005; Schroeder & Prentice, 1998; Stangor, Sechrist, & Jost, 2001).

This study offers an initial examination of a new experimental paradigm helpful for understanding adolescent peer contagion mechanisms and moderators. Future research should address limitations of this study. Although this study offered results

pertaining to both self-reported and actual (i.e., exclusion) behavior, our reliance on a hypothetical scenario measure of adolescents' aggressive and risk behavior attitudes/behavior is a limitation. Obvious ethical obligations precluded the possibility of assessing adolescents' actual aggressive or risk behaviors in a more direct fashion. Nevertheless, several factors bolster the credibility of our assessment approach, including adolescents' similar reports on both public conformity and private attitude (i.e., suggesting social desirability was not overly influential), and strong data (noted previously) supporting the validity of this instrument.

Future research would also benefit by examining the long-term consequences of experimentally manipulated peer contagion effects and the long-term behavioral correlates of susceptibility to such effects. Although the long-term effects of peer contagion have been examined in correlational research (e.g., Curran, 2000), the need for debriefing precluded the possibility of examining the longitudinal effects of our experimental manipulation. It would also be interesting to assess if long-term effects on prosocial behavior could be accomplished by using a similar experimental manipulation—for example, one in which students were led to believe that their peers endorsed prosocial rather than antisocial behavior.

To maintain the necessary methodological control to execute this experimental study, several potentially important variables were held constant (e.g., gender, ethnicity). However, these constructs offer important avenues for further exploration of peer contagion. Research examining effects among girls might include a focus specifically on relational forms of aggression or on contagion occurring in the context of close, dyadic friendships. Research using an ethnically diverse sample might benefit by clarifying the manner in which peers' ethnicity may be relevant for promoting or mitigating contagion effects. Future work might also examine peer contagion of internalizing symptoms (Rose, 2002; Stevens & Prinstein, 2005).

Additionally, studies could focus on adolescents' own peer status as a potential moderator of peer contagion. For example, some research suggests that low-status peers may react against the norms established by high-status peers (Eckert, 1989; cf. Kinney, 1999). Researchers might also attempt to disentangle the effects of peer status revealed in this study. To ensure that high-status e-confederates in this study exerted maximal influence (and served as a high-status prototype), these e-confederates were selected to be high in both peer likeability and peer-perceived popularity. However, it is important to note that some adolescents high in peer-perceived popularity are not well liked, but rather sociometrically controversial (Parkhurst & Hopmeyer, 1998). Such ''popular'' but somewhat disliked peers might exert a different, and perhaps less potent, influence among adolescents (see also Eder, 1985).

It should also be acknowledged that despite the careful use of sociometric data to construct our experimental manipulation of e-confederates' status, and despite the significant results along our manipulation check, some potential threats to internal validity remain. In addition to information regarding e-confederates' best friends, a list of preferred activities characteristic of either high- or low-status students was also presented for each e-confederate to increase experimental realism. Thus, it is conceivable that the listed activities affected participants' perceptions of the e-confederates along dimensions other than social status (e.g., perceived similarity to oneself). However, given that the activities listed were general in nature (e.g., ''hanging out with friends,'' ''listening to music''), and did not express specific preferences (e.g., types of activities or music, etc.), this possibility remains relatively small. It seems implausible that such generic information is the critical causal ingredient of the manipulation, given the relative salience and social significance of e-confederates' peer status. Indeed, in debriefing, participants indicated that the identity of e-confederates' best friends had been especially salient to them. To the extent, moreover, that peer status is naturally correlated with the presented activities and hobbies accompanying our manipulation, the issue may ultimately be of limited practical relevance. Nevertheless, an important objective of future research involves purifying the experimental manipulation to assess if an even more minimalist manipulation of peer status could exert similar effects.

It would also be useful to examine adolescents' public conformity and private acceptance of aggressive/risk behavior attitudes separately or in counterbalanced order. A limitation of this investigation involves the possibility that responses to the private attitude measure may have been affected by carry-over effects from the public conformity stage of our study. On the one hand, it would be informative to assess whether the effects of social influence can manifest on private attitude even without any intervening shift in public attitudes. If so, such a finding would dramatically broaden the potential scope of peer contagion effects, as all that would be required is the mere *observation* of aggression by high-status peers to produce internalization. On the other hand, we suspect that much real-world social

learning proceeds in the fashion captured in our experimental paradigm—that individuals begin with a sometimes small act of public conformity and then corresponding shifts in private attitudes follow. In this way, carry-over effects from the public domain to the private domain constitute part of the internalization process as it occurs in the real world. Ultimately, whether private acceptance occurs in the absence of a first act of public conformity is an interesting question for future research.

The study presented here is among the first experiments to link peer socialization processes to adolescent aggression and risk behavior. Adolescent boys behaved in accordance with pro-aggression, pro-risk norms when those norms were endorsed by high-status peers. They even came to internalize those norms into their own private attitudes. The motivation to be a socially appropriate person—to maintain a positive social identity—is beneficial in many contexts, but it proves costly when social norms encourage maladaptive rather than adaptive behavior.

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