Original article

Peer Influence on Marijuana Use in Different Types of Friendships

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ABSTRACT

Purpose: Although several social network studies have demonstrated peer influence effects on adolescent substance use, findings for marijuana use have been equivocal. This study examines whether structural features of friendships moderate friends' influence on adolescent marijuana use over time.

Methods: Using 1-year longitudinal data from the National Longitudinal Study of Adolescent Health, this article examines whether three structural features of friendships moderate friends' influence on adolescent marijuana use: whether the friendship is reciprocated, the popularity of the nominated friend, and the popularity/status difference between the nominated friend and the adolescent. The sample consists of students in grade 10/11 at wave I, who were in grade 11/12 at wave II, from two large schools with complete grade-based friendship network data (N = 1,612).

Results: In one school, friends' influence on marijuana use was more likely to occur within mutual, reciprocated friendships compared with nonreciprocated relationships. In the other school, friends' influence was stronger when the friends were relatively popular within the school setting or much more popular than the adolescents themselves.

Conclusions: Friends' influence on youth marijuana use may play out in different ways, depending on the school context. In one school, influence occurred predominantly within reciprocated relationships that are likely characterized by closeness and trust, whereas in the other school adopting friends' drug use behaviors appeared to be a strategy to attain social status. Further research is needed to better understand the conditions under which structural features of friendships moderate friends' influence on adolescent marijuana use.

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IMPLICATIONS AND CONTRIBUTION

Results suggest that friends' influence on marijuana use may play out differently depending on the school context. In some schools, peer influence on marijuana use may occur predominantly within closer (reciprocated) friendships, whereas in other schools adopting friends' drug use behaviors may be a strategy to attain social status.

Friend substance use is one of the most robust predictors of adolescent cigarette and alcohol use [1–4]; fewer studies have examined these socialization effects on marijuana use, and the evidence has been mixed [5–9]. The findings for marijuana use may be more inconsistent, in part, because this behavior is likely to be more covert and confidential and so may occur in particular social contexts. Opportunities for peer socialization processes may therefore be limited to specific types of friendships. This study examines whether structural features of friendships moderate friends' influence on adolescent marijuana use over time.

Although adolescents are sometimes motivated to adopt the behaviors of desired friends in order to establish or strengthen these relationships, this may not be true for marijuana use given its illicit nature. When a risk behavior is not generally visible within the peer group, close friendships might be even more important and salient than desired friendships for proliferation of the behavior [10,11]. Closer, more trusted friendships may be a main source of marijuana access for adolescents. Additionally, adolescents may be more likely to experiment with marijuana

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within these types of friendships because they feel safer and less concerned about getting caught. We examine whether friendship closeness moderates socialization effects on marijuana use, operationalizing "close friendships" as those that are mutual/reciprocated based on friendship nominations.

Socialization effects on adolescent marijuana use may also be moderated by the social status of drug-using friends. Popular adolescents are more likely to use marijuana and other substances [12,13] and to influence behavioral norms within their peer groups [2,14,15]. Thus, adolescents may be particularly susceptible to pro-drug influences from friends with relatively high social standing. Social learning theory and empirical evidence also suggest that adolescents adopt the behaviors of high-status peers as a strategy for improving their own social standing [16,17], indicating that status differences between adolescents and their friends are important to consider. Adolescents may be more likely to adopt the behaviors of friends who are more popular than themselves, compared with friends with comparable or lower popularity, because doing so has greater social benefits.

This article builds on our previous work examining friendship network influences on marijuana use in two large, demographically distinct high schools [8]. Adolescent marijuana initiation was significantly predicted by the frequency of friends' marijuana use in one school and marginally associated in the other school. Additionally, there were positive, albeit nonsignificant trends in both schools indicating that the frequency of adolescents' past month use was predicted by how frequently their friends used this drug. To investigate whether socialization effects may be stronger under certain social conditions, the present study examines three structural features of friendships as moderators of friends' influence on adolescent marijuana use: (1) whether the friendship is reciprocated, (2) the popularity of the nominated friend among their school peers, and (3) the relative popularity of the friend compared to the adolescent. Popularity in this study is derived from friendship nominations rather than based on perceived popularity, and thus reflects likeability rather than social visibility or dominance [18]. Given the illicit nature of marijuana use, we hypothesized that adolescents' marijuana use would be more strongly predicted by their friends' marijuana use when the friendship was closer (i.e., reciprocated; see [19]). Based on the idea that adolescents are motivated to adopt the substance use behaviors of their friends to attain greater social status, we hypothesized that adolescents' marijuana use would be more strongly predicted by their friends' marijuana use when the friends were popular within the broader peer group (i.e., friends had a higher number of school-based friendship nominations relative to their school peers) as well as when the friends were relatively more popular than the adolescent (i.e., friends had a higher number of school-based friendship nominations relative to the adolescent).

Methods

Sample

The National Longitudinal Study of Adolescent Health is a study of adolescent health conducted in the United States [20], with participants recruited from a school-based probability sample of adolescents in grades 7–12. Friendship nominations were collected at wave I (1995) and wave II (1996), providing longitudinal information on the friendship networks of participants. The current study uses data from two of the 16 schools in the "saturated school sample" that was developed by inviting *all* enrolled students in select schools to complete baseline in-home interviews (the remaining 14 schools were excluded because they were too small, had too much missing data, or had very low rates of marijuana use). These two schools were notably different: one has a large, ethnically heterogeneous student body and is located in a major metropolitan area (school 1); the other has a smaller student body that is predominantly white and is located in a mid-sized town (school 2). Information on adolescents' substance use and friendships in these saturated schools provide us with the rare opportunity to explore drug use in the context of *complete* school-based friendship networks over time.

We limited our analysis to grade-level cohorts captured at wave I and wave II in both of these schools: participants in grade 10/11 at wave I, who were in grade 11/12 at wave II (or participants who met these criteria at either wave, to retain the maximum amount of information on the social network structure). This resulted in a total sample of N = 1,612, nested in two schools (school 1: n = 1,193, mean age = 16.34; school 2: n = 419, mean age = 16.47). Retention rates at wave II were 88.1% in school 1 and 87.4% in school 2. New students were not added at wave II. Study procedures were approved by the institutions' Internal Review Boards.

Measures

Friendships. Respondents were asked to name five best male and five best female friends. School-based friends who also participated in the study were coded with their respective identification numbers (out-of-school nominations were given specific codes). Only friendship nominations among participants in the current sample were included in subsequent analyses (i.e., friends were also survey respondents) so that friends' self-reported marijuana use was available. Because of errors in wave I data collection, 5% of the current sample could only nominate one male and one female friend; students with "limited nominations" were dummy-coded and included as a control in all models.

Friend reciprocity, an attribute of friendship dyads, was defined as a mutual friendship in which both participants nominated each other as a friend at a given wave. *Friend popularity*, an attribute of participants' nominated friends, was defined based on the total number of friendship nominations received by a nominated friend at a given wave (i.e., friend indegree, with "indegree" referring to the number of friend nominations received by a respondent at a given wave). *Popularity difference*, an attribute of the respondent, was defined based on the difference in number of friend nominations received (i.e., indegrees) between adolescents and each of their nominated friends. Because we were interested in youth who nominated friends that were *more popular* than they were, we only summed indegree difference scores when the friend's indegree was *higher* than the respondent's indegree (all other indegree differences were treated as 0). We computed two variations of this measure: (1) the original continuous variable capturing summed indegree differences between respondents and their friends and (2) a dichotomous variable identifying respondents at the 75th percentile of this continuous scale (i.e., who nominated friends who were much more popular than they were).

Marijuana use. A continuous measure of past month marijuana use was based on respondents' report of the number of times