Social Identity as a Moderator of the Association Between Perceived Norms and Marijuana Use

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ABSTRACT. **Objective:** This study extends previous examinations of social influences and marijuana use in considering how heavy marijuana users view themselves relative to their peers. We were specifically interested in evaluating whether (a) heavy-using marijuana users would identify more strongly with other users than with typical students, (b) identification with other marijuana users would be more strongly associated with own use, and (c) the association between perceived norms and marijuana use would be moderated by identification with peers. **Method:** Participants were 107 heavy (five or more times per month) marijuana users who completed an online survey assessing perceived norms for marijuana use, identification with typical students and other marijuana-using students, and marijuana use (frequency of use, joints per week, and hours high). **Results:** Participants unexpectedly identified more strongly with typical students rather than with other marijuana-using students.

Identification with other marijuana users was, however, associated with more use. In addition, perceived norms were associated with more use but primarily among those who identified more with other users but not with typical students. **Conclusions:** Heavy marijuana users may be reluctant to identify themselves as users and may prefer to think of themselves as typical students. This may provide clinical opportunities to highlight discrepancies. In addition, identification with other users and lack of identification with typical students may be risk factors for heavier use and good indicators of candidacy for norms-based interventions. In sum, the present findings extend our understanding of the influence of social identity among young adult marijuana users and suggest novel directions for intervention strategies. (*J. Stud. Alcohol Drugs, 74,* 479–483, 2013)

THIS RESEARCH EXAMINES social influence and marijuana use among heavy marijuana-using college students (where heavy users were defined as those who used marijuana at least five times per month). We were interested in examining the extent to which these marijuana users identify with other college students in general and with other marijuana-using students more specifically. We were further interested in evaluating social identity as a moderator of the association of perceived norms and marijuana use.

In 2010, approximately one third (32.7%) of students in college reported using marijuana in the past year, 17.5% reported using marijuana in the past month, and 4.4% reported daily use over the past 30 days (Johnston et al., 2011). Marijuana-related adverse effects include problems with memory, attention, and learning (Budney et al., 2004; Joy et al., 1999; Kalant, 2004; Pope and Yurgelun-Todd, 1996). Studies have also linked marijuana use with specific health risk behaviors such as unsafe driving practices (Everett et al., 1999) and smoking tobacco (Hammersley and Leon, 2006). Although marijuana is frequently used by college students,

it is not used by the majority of the population, as is alcohol (which has a past-month prevalence of 65%; Johnston et al., 2011). Thus, regular marijuana users are in the minority because marijuana use is not the norm in this population.

A number of studies have examined how perceptions of prevalence of marijuana use, also known as descriptive norms (Cialdini et al., 1990), relate to one's own use of marijuana. For example, research has shown that estimates of marijuana use prevalence are higher among users than non-users (Arbour-Nicitopoulos et al., 2010; Wolfson, 2000). Kilmer et al. (2006) found that college students overestimate the prevalence of marijuana use among their peers and that perceptions of descriptive norms were positively associated with personal use and drug-related consequences. Similarly, the number of marijuana-using friends has been associated with increased marijuana use during the transition out of high school (White et al., 2006a). In sum, research suggests that social influences in general, and perceived norms in particular, are important factors in understanding marijuana use among college students. In extending this work, we reasoned that the degree to which students are influenced by their perceptions of peers' behavior should depend on who their peers are and how strongly they identify with them.

Social Identity Theory (Hogg et al., 2004, Terry and Hogg, 1996) and Self-Categorization Theory (Turner et al., 1987) suggest that identity is based largely on the groups with which we are affiliated and that our behavior is gov-

erned by the norms of the groups with which we identify. We would expect heavy marijuana-using students to identify more strongly with other marijuana users and that their degree of identification with other users would be positively associated with their own use. We would not expect these associations to be as relevant among non-users or occasional users and hence focused the present research on heavy users.

Although no studies have specifically examined perceived norms and marijuana use, some research has shown that associations between perceived norms and drinking are stronger among those who identify more closely with other friends, peers, and fraternity/sorority members (Reed et al., 2007) as well as same-sex students, same-race students, and students of the same fraternity/sorority status (Neighbors et al., 2010). Whether the same association holds for marijuana use is unclear, considering that marijuana users, who are engaging in non-normal behavior, may not have the same identification with typical students that alcohol users have. It is possible that marijuana users may not identify with the typical student but rather see themselves as distinct from typical students. The present research evaluated three related hypotheses. Our first hypothesis was that marijuana-using students would identify more strongly with other marijuana users than with typical students. Our second hypothesis was that identification with other marijuana users, relative to the typical student, would be associated with more use. Our third hypothesis was that the association between perceived norms and marijuana use would be stronger at higher levels of identification with other users and that this might vary according to their identification with typical students.

Method

Participants and procedures

Participants were 107 college students who were heavy marijuana users from two public colleges in the Pacific Northwest who reported using marijuana five or more times in the month before screening. Data for this research were taken from the baseline assessment of a larger trial (Lee et al., 2012), which included measures of perceived norms for regular marijuana use, identification with the typical marijuana user, identification with the typical student, and own marijuana use (i.e., frequency of use, joints per week, and hours high). All measures were completed online. The sample included 55% women, and the racial composition was 74% White, 10% multiracial, 8% Asian/Pacific Islander, and 8% other.

Measures

Marijuana use. To determine eligibility, potential participants were asked one open-ended frequency item assessing how many times they had used marijuana in the last 30

days. For evaluation purposes, marijuana use was assessed using a format modified from the Daily Drug Questionnaire (Parks, 2001). Students were asked to report the total number of joints they smoked on each day of a typical week during the last 60 days. Participants using marijuana in a form other than joints were asked to provide their best estimate of a comparable amount in joints. On days students reported using marijuana, questions were followed up with the number of hours they were typically high on each of those days. Two variables were created from this questionnaire: joints per week ($M = 9.43$, $SD = 10.22$, range: 0.20–56.00) and hours high per week ($M = 19.15$, $SD = 16.43$, range: 2.00–68.00). Marijuana use frequency was assessed using a measure created for a brief substance use intervention study of mandated students (see White et al., 2006b; H. White, personal communication, August 11, 2009). This measure assessed frequency across five representative contexts of use: in the morning after waking up, before classes, before exams, during the early part of the week, and before going to bed. Response options were 0 (*never*), 1 (*rarely*), 2 (*sometimes*), 3 (*usually*), and 4 (*always*). Frequency was scored as the sum of the five items (Cronbach's $\alpha = .79$; $M = 6.88$, $SD = 3.69$, range: 1.00–19.00). All three outcome variables had skewness values below 2 and kurtosis values below 5 and therefore did not appear to be problematic (Kline, 2011).

Perceived norms for marijuana use. Perceived descriptive norms were based on students' estimates of how often the typical student on campus used marijuana during the past year. Response options were: 0 (*never*), 1 (*once a year*), 2 (*two to three times a year*), 3 (*every other month*), 4 (*once a month*), 8 (*two to three times a month*), 9 (*weekly*), 7 (*more than once a week*), 8 (*every other day*), and 9 (*every day*). This measure has been found in previous research examining college marijuana use to be positively associated with marijuana use frequency and its consequences (Neighbors et al., 2008).

Identification. Participants were asked to indicate their level of identification with the typical student, as well as the typical student who uses marijuana, using the measure Inclusion of In-Group in the Self (Tropp and Wright, 2001). This scale ranges from 1 to 7, and a higher score represents greater identification. The question was asked twice, once for typical student and once for student who uses marijuana. In other work, this measure has been found to moderate the association between perceived norms and drinking among college students (Neighbors et al., 2010).

Results

Our first hypothesis was that participants would identify more strongly with other marijuana users than with the typical student. A paired-samples *t* test revealed that, contrary to expectations, participants identified significantly more
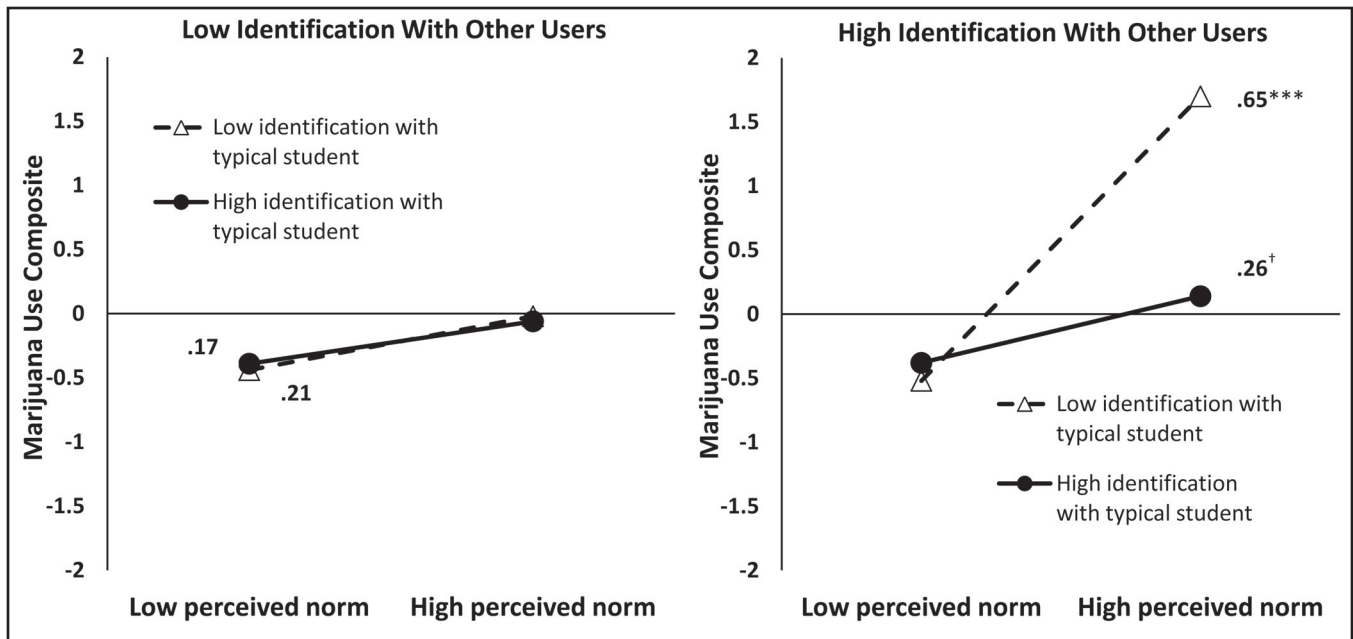
FIGURE 1. Three-way interaction with identification with the typical student, identification with other users, and perceived norms in predicting marijuana use. Data presented are βs.
†*p* < .10; ******p* < .001.

closely with typical students than with other marijuana-using students, *t*(110) = -9.18, *p* <.0001.

Hierarchical regression analysis was conducted to evaluate the second and third hypotheses. Joints per week, hours high, and frequency of marijuana use were highly correlated and shared between 40% and 59% of their variance. To reduce alpha inflation, a composite variable was created by taking the mean of standardized values of each outcome (α = .85). The composite was standardized; therefore, scores reflect the number of standard deviations from the mean. All predictors were mean centered. The analysis was conducted in four steps. Identification with typical marijuana users and identification with typical students were included in Step 1. Perceived norms were added at Step 2. Two-way product terms were added at Step 3 to evaluate interactions between identification and perceived norms. The three-way product term of identification with typical marijuana users, identification with typical students, and perceived norms was added at Step 4. Effect sizes were calculated using the formula *d* = 2*t* / sqrt(*df*). Effect sizes of *d* = .2, .5, and .8 are considered small, medium, and large, respectively (Cohen, 1992).

The results at Step 1 revealed a positive association between identification with marijuana users and marijuana use, *t*(104) = 2.39, *p* = .019, β = .25, *d* = .47. This was consistent with the second hypothesis. These results also revealed a negative association between identification with typical students and marijuana use, *t*(104) = -2.50, *p* = .014, β = -.26, *d* = .49. Step 2 revealed a unique association between

perceived norms and marijuana use, *t*(104) = 3.09, *p* = .003, β = .30, *d* = .61.

The analyses at Step 3 tested for two-way interactions between identification with the typical user and the typical student, *t*(100) = -1.45, *p* = .149, β = -.13, *d* = .29; between identification with the typical user and perceived norms, *t*(100) = 0.94, *p* = .347, β = .09, *d* = .19; and between identification with the typical student and perceived norms, *t*(100) = -2.32, *p* = .023, β = -.23, *d* = .46. The interaction between identification with the typical student and perceived norms suggested that the association between perceived norms and use was stronger among those who identified less closely with the typical student. However, this was qualified by the three-way interaction, which emerged at Step 4, *t*(99) = -2.12, *p* = .037, β = -.26, *d* = .43.

The three-way interaction was graphed (Figure 1) and interpreted using simple slopes and predicted values derived from the regression equation where high and low values of predictors were specified as 1 *SD* above and below their respective means (Cohen et al., 2003). Simple effects tests revealed an interaction between identification with typical students and perceived norms among those who identified more strongly with other users, *t*(99) = -3.13, *p* = .002, but not among those who identified less strongly with other users, *t*(99) = -0.16, *p* = .874. Moreover, perceived norms were strongly associated with use only among those who identified more with other users and less with typical students, *t*(99) = 3.80, *p* < .001, β = .65, *d* = .76.

Discussion

This research extends previous findings that students overestimate prevalence of marijuana use among other students and that the association with other users is related to one's own use (Kilmer et al., 2006; White et al., 2006a). As expected, identification with other users was positively associated with own use, and this was a medium effect size. In addition, there was a *negative* association, also of medium effect size, between identification with the typical student and own use. These associations not only suggest identification with other users as a potential indicator of heavy use, but also that identification with typical students may be protective. This theme was also evident when looking at identification as a moderator of the associations between perceived norms and use.

Consistent with previous research (Kilmer et al., 2006), perceived norms were positively associated with use, with medium effect size, after accounting for identification with other users and the typical student. The interaction results suggested that this association between perceived norms and marijuana use is largely driven by those who identify more with other users but not with typical students. Given that previous research has shown associations with other users to be positively associated with own use (White et al., 2006a), our findings may reflect a skewed sample of references on which heavy users base their prevalence estimates. Thus, not only may these students care more about what other users think, they may also spend more time around other users and less time around non-users and therefore have the impression that use is more prevalent than it actually is.

The unexpected finding that, on average, users identify more strongly with typical students than with other marijuana-using students deserves some reflection. Clinically, this strength might be capitalized on by drawing on the ways in which the person is interested in being more like a "typical student" than a "marijuana user," and the differences in values and behavior could be elicited. For example, if using Motivational Interviewing (Miller and Rollnick, 2002), "Your assessment data indicate you identify more with the 'typical college student' than with the 'college student who uses marijuana.' Tell me more about this." Strategies such as these may assist in developing discrepancy between their identification and their behavior. Moreover, identification with the typical college student appears to mitigate the impact of social norms on marijuana use. Thus, reinforcement of statements indicating stronger identification with typical students may have direct and indirect influences on reducing use. Future work investigating marijuana-related problems in this context might offer additional clinical applications. Another interpretation for marijuana users identifying more closely with typical students may be that it reflects awareness of negative stigma associated with marijuana use and a defensive unwillingness to be categorized as a marijuana user.

Additional examination of this interpretation may be fruitful in developing intervention strategies designed to highlight discrepancies between behavior and social categorization.

There are several notable limitations in this study. The sample was relatively small and consisted of only heavy marijuana users. A larger sample with greater variability in use would be more generalizable. Similarly, although we were specifically interested in college students, it would be interesting to consider same-aged young adults who are not in college and therefore unlikely to identify with students. In addition, measurement error was introduced by asking participants whose primary route of administration was not joints to estimate their quantity of use in joints. The cross-sectional nature of the data is also a limitation. We cannot distinguish causal direction, and there are likely bidirectional influences among identification, perceived norms, and use. Longitudinal examinations are needed to examine temporal precedence and relative strength of each of these variables on subsequent levels of each other. Another limitation was the use of single-item assessments of identification. In addition to more in-depth assessment of identification, future research might consider identification in relation to perceptions of friends' marijuana use, which has been previously shown to be more strongly associated with own use relative to perception of other students' marijuana use (Kilmer et al., 2006). Despite notable limitations, the present research provides a unique and novel contribution to the literature in considering how heavy-using students think about themselves relative to their peers and how their social identity influences the association between perceived norms and use.

References

Arbour-Nicitopoulos, K. P., Kwan, M. Y. W., Lowe, D., Taman, S., & Faulkner, G. E. J. (2010). Social norms of alcohol, smoking, and marijuana use within a Canadian university setting. *Journal of American College Health, 59,* 191–196.

Budney, A. J., Moore, B. A., & Vandrey, R. (2004). Health consequences of marijuana use. In J. Brick (Ed.), *Handbook of the medical consequences of alcohol and drug abuse* (pp. 171−217). New York, NY: Haworth.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58,* 1015–1026.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155–159.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Everett, S. A., Lowry, R., Cohen, L. R., & Dellinger, A. M. (1999). Unsafe motor vehicle practices among substance-using college students. *Accident Analysis and Prevention, 31,* 667–673.

Hammersley, R., & Leon, V. (2006). Patterns of cannabis use and positive and negative experiences of use amongst university students. *Addiction Research & Theory, 14,* 189–205.

Hogg, M. A., Abrams, D., Otten, S., & Hinkle, S. (2004). The social identity perspective: Intergroup relations, self-conception, and small groups. *Small Group Research, 35,* 246–276.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2011). *Monitoring the Future national survey results on drug use, 1975–2010. Volume II, College students and adults ages 19–50.* Ann Arbor, MI: Institute for Social Research, The University of Michigan.

Joy, J. E., Watson, S. J., & Benson, J. A. (1999). *Marijuana and medicine: Assessing the science base.* Washington, DC: National Academy Press.

Kalant, H. (2004). Adverse effects of cannabis on health: An update of the literature since 1996. *Progress in Neuro-Psychopharmacology & Biological Psychiatry, 28,* 849–863.

Kilmer, J. R., Walker, D. D., Lee, C. M., Palmer, R. S., Mallett, K. A., Fabiano, P., & Larimer, M. E. (2006). Misperceptions of college student marijuana use: Implications for prevention. *Journal of Studies on Alcohol, 67,* 277–281.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford Press.

Lee, C. M., Kilmer, J. R., Neighbors, C., Atkins, D. C., Zheng, C., Walker, D. D., & Larimer, M. E. (2012). *Indicated prevention for college student marijuana use: A randomized controlled trial.* Manuscript submitted for publication.

Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change* (2nd ed.) New York, NY: Guilford Press.

Neighbors, C., Geisner, I. M., & Lee, C. M. (2008). Perceived marijuana norms and social expectancies among entering college student marijuana users. *Psychology of Addictive Behaviors, 22,* 433–438.

Neighbors, C., LaBrie, J. W., Hummer, J. F., Lewis, M. A., Lee, C. M., Desai, S., . . . Larimer, M. E. (2010). Group identification as a moderator of the relationship between perceived social norms and alcohol consumption. *Psychology of Addictive Behaviors, 24,* 522–528.

Parks, G. A. (2001). *The Daily Drug-Taking Questionnaire (DDTQ)—Version 1: A measure of typical and peak drug use.* Unpublished manuscript, University of Washington. Seattle, Washginton.

Pope, H. G., Jr., & Yurgelun-Todd, D. (1996). The residual cognitive effects of heavy marijuana use in college students. *Journal of the American Medical Association, 275,* 521–527.

Reed, M. B., Lange, J. E., Ketchie, J. M., & Clapp, J. D. (2007). The relationship between social identity, normative information, and college student drinking. *Social Influence, 2,* 269–294.

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude-behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin, 22,* 776–793.

Tropp, L. R., & Wright, S. C. (2001). Ingroup identification as the inclusion of ingroup in the self. *Personality and Social Psychology Bulletin, 27,* 585–600.

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A Self-Categorization Theory.* Cambridge, MA: Basil Blackwell.

White, H. R., McMorris, B. J., Catalano, R. F., Fleming, C. B., Haggerty, K. P., & Abbott, R. D. (2006a). Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. *Journal of Studies on Alcohol, 67,* 810–822.

White, H. R., Morgan, T. J., Pugh, L. A., Celinska, K., Labouvie, E. W., & Pandina, R. J. (2006b). Evaluating two brief substance-use interventions for mandated college students. *Journal of Studies on Alcohol, 67,* 309–317.

Wolfson, S. (2000). Students' estimates of the prevalence of drug use: Evidence for a false consensus effect. *Psychology of Addictive Behaviors, 14,* 295–298.