Influence of perceived peer behavior on engagement in self-damaging behaviors during the transition to university

Marlise K. Hofer, Christina L. Robillard, Nicole K. Legg, & Brianna J. Turner

2024

Original citation:

Hofer, M. K., Robillard, C. L., Legg, N. K., & Turner, B. J. (2024). Influence of perceived peer behavior on engagement in self-damaging behaviors during the transition to university. *Journal of Research on Adolescence*. https://doi.org/10.1111/jora.12933

Received: 29 March 2023 | Accepted: 29 February 2024

DOI: 10.1111/jora.12933

JOURNAL OF Research on Adolescence

EMPIRICAL ARTICLE

Influence of perceived peer behavior on engagement in self-damaging behaviors during the transition to university

Marlise K. Hofer | **Christina L. Robillard** | **Nicole K. Legg** | **Brianna J. Turner**

Department of Psychology, University of Victoria, Victoria, British Columbia, Canada

Correspondence
Marlise K. Hofer, Department of Psychology, University of Victoria, 3800 Finnerty Road, Victoria, BC V8P 5C2, Canada.
Email: hofer@uvic.ca

Funding information
Social Sciences and Humanities Research Council, Grant/Award Number: 430-2017-00025; Michael Smith Health Research BC, Grant/Award Number: 18240; Michael Smith Health Research BC trainee fellowship to the first author; Social Sciences and Humanities Research Council Postdoctoral fellowship to the first author; Social Sciences and Humanities Research Council doctoral awards to the second and third authors

Abstract

As students transition to university, they experience significant social changes that can affect their behaviors, including self-damaging behaviors like disordered eating, problematic alcohol/drug use, suicidal thoughts, and non-suicidal self-injury (NSSI). Building on prior work, we examined the associations between (1) perceptions of peers' engagement in self-damaging behaviors predicting one's own subsequent engagement in such behaviors (i.e., socialization) and (2) one's own engagement in self-damaging behaviors predicting perceptions of peers' subsequent engagement in such behaviors (i.e., selection). We also examined whether these associations were moderated by the source of influence (close peer/acquaintance) and degree of social disconnection experienced by the student. First-year university students ($N = 704$) were asked to complete seven monthly surveys. Multilevel models indicated that when students perceived their close peers had engaged in NSSI or suicidal thinking, they had seven times greater odds of future engagement in the same behavior, implying that socialization increases the risk of these behaviors among university students. Perception of acquaintances' NSSI also predicted greater odds of a student's own NSSI the following month. Social disconnection increased the likelihood of matching own behaviors to perceptions of acquaintances' alcohol abuse, highlighting the importance of fostering connections/mentors to reduce self-damaging behaviors on college campuses. Furthermore, when students engaged in alcohol abuse, they had almost four times greater odds of reporting that their acquaintances abused alcohol the following month, emphasizing the importance of the wider social network in alcohol use behaviors.

KEYWORDS
close relationships, friendship, peer relationships, self-damaging behaviors, social influences

INTRODUCTION

It is often noted that "birds of a feather flock together"—that members of a social group tend to be similar to one another. This can occur through two mechanisms: socialization, where individuals adopt behaviors they observe in their peers (Bandura, 1971), and selection, where they preferentially affiliate with others who resemble themselves (Kandel, 1978). Both mechanisms have been observed in a range of behaviors, including aggression and delinquency (Dishion et al., 1996; Dishion & Tipsord, 2011), tobacco use (Mercken, Steglich, Sinclair, et al., 2012), and sexual behavior (Ali et al., 2011).

While peer socialization and selection have been shown to predict various behaviors, few studies have compared their relative importance across self-damaging behaviors (i.e., behaviors with the potential for direct or accumulated physical harm; Evans & Lacey, 1992; Turner et al., 2013). Prior research in this area has primarily focused on alcohol use and, to a lesser extent, tobacco use; and findings generally support both peer socialization and selection of the use of these substances (Henneberger et al., 2021; Montgomery et al., 2020). However, findings are mixed with respect to other self-damaging behaviors (e.g., problematic drug use, disordered eating [e.g., binge eating, purging, and

restrictive eating], non-suicidal self-injury [NSSI], and suicidal thoughts). For example, over a 1-year period, adolescent girls tended to select friends who were similar to themselves in terms of binge eating and purging behaviors, but *dissimilar* in terms of restrictive eating (Rayner et al., 2013). Furthermore, while investigations support socialization of NSSI and suicidal thoughts in adolescent peer groups (Abrutyn & Mueller, 2014; Insel & Gould, 2008; You et al., 2013), inconsistent findings have emerged for peer selection. For example, one study found that adolescents preferentially consorted with peers who they perceived to be similar to themselves with respect to NSSI (Prinstein et al., 2010), while several other studies did not produce consistent results (Giletta et al., 2013; You et al., 2013).

The mixed findings on peer influence of self-damaging behaviors may be due to several methodological complexities. First, to optimally identify these effects, a period of social fluidity is needed, in which individuals have opportunities to form new friendships and be influenced by novel peers (Klaiber et al., 2018). Most of the research has been conducted on middle and high school students. Although middle and high school students' peer networks change considerably over the span of 1 year (Poulin & Chan, 2010), other developmental periods may have even more rapid or pronounced social fluidity, providing an ideal context to test for socialization and selection effects over short time periods (e.g., over 1 month). The transition to university is one such developmental period. In North America, where on-campus ("dorm") housing is common, many first-year students move away from home, lose contact with friends from high school, and establish new relationships in a novel environment (Benson, 2007; Oswald & Clark, 2003). Unlike the transition between middle and high school, which typically involves cohorts of students moving to a new school together based on zoning or districting, the transition to university offers greater student autonomy and choice, and many first-year students attend a different institution than their closest high school friends (Oswald & Clark, 2003). Yet, few studies have explored peer socialization or selection effects during the transition to university, indicating a need for further research.

Montgomery et al. (2020) highlighted a second methodological complexity in findings on peer influence of self-damaging behaviors. Many studies have focused on one, or at most two, self-damaging behaviors (DeLay et al., 2023; McMillan et al., 2018; Prinstein et al., 2010), which precludes the ability to compare susceptibility to socialization and/or selection across a variety of topographically distinct self-damaging behaviors. However, such a comparison is crucial as some behaviors may be more susceptible to social influence than others. For example, alcohol use among university students is often considered socially normative (Borsari & Carey, 2001) and often occurs in the context of social gatherings (e.g., parties) where it can be readily observed by others (Christiansen et al., 2002), whereas disordered eating and NSSI are highly stigmatized behaviors that typically occur in private (Klonsky & Olino, 2008; Lydecker & Grilo, 2019; Staniland et al., 2021). Additionally, self-damaging behaviors may be differentially influenced by strong social ties (i.e., close friends and romantic partners) versus weak social ties (i.e., classmates or casual acquaintances). While previous research has often focused on the influence of close peers (Prinstein & Giletta, 2021), acquaintances' behaviors can also be important for an individual's well-being (Sandstrom & Dunn, 2014). Indeed, research suggests that the impact of peer influence varies based on the type of social relationship (Giletta et al., 2012). Thus, it is valuable to compare multiple self-damaging behaviors and types of social ties to obtain a more comprehensive understanding of peer influence on self-damaging behaviors.

Finally, while previous research has examined some social network characteristics that moderate socialization effects, such as popularity and gender (Brechwald & Prinstein, 2011; Gaughan, 2006), less attention has been given to the role of transient, within-person moderators that may influence the socialization process, such as loneliness and social disconnection. Humans have an innate need to belong to a social group (Baumeister & Leary, 1995), and if this need is unfulfilled, they exhibit an increased interest in establishing new friendships (Baumeister et al., 2007; Maner et al., 2007). For example, lonely people tend to remember more personal information from a peer's diary compared to non-lonely people (Gardner et al., 2005), and excluded individuals show heightened attention to novel smiling faces and conform more to other people's opinions (DeWall et al., 2009; Williams et al., 2000). This research suggests that when students experience stress related to loneliness and social disconnection, they may be particularly motivated to pay close attention to their peers' behaviors and conform to these behaviors as a way to establish new friendships and improve their social status.

The current study

This study investigated the roles of peer socialization and selection on students' engagement in five self-damaging behaviors (i.e., problematic alcohol use, problematic drug use, disordered eating, NSSI, and suicidal thoughts) during their transition to university. Much of the reviewed literature on adolescent alcohol use examines any alcohol/drug use, as opposed to problematic alcohol use (as measured here). This is because most previous literature examines middle and high school samples and not university students. Since alcohol and drug use becomes more prevalent and socially acceptable among first-year university students (American College Health Association, 2019; Borsari & Carey, 2001; Park et al., 2009), problematic levels of use are the more relevant self-damaging behavior in this sample. We also aimed to explore the relative impact of strong versus weak social ties, and the moderating effect of experiencing social disconnection. Our pre-registered hypotheses fall into three categories: (1) examining the

JOURNAL OF Research on Adolescence

extent to which perceptions of peers' self-damaging behaviors predict the future likelihood of students' own engagement in these behaviors; (2) exploring whether this association is amplified during periods of social disconnection; and (3) investigating the influence of own engagement in self-damaging behaviors on students' perception of their peers' behaviors.

In the first category, we hypothesized that perceptions of close peers' engagement in all five self-damaging behaviors would predict students' own likelihood of engaging in the same behavior at the following time point, consistent with peer socialization. For acquaintances, we predicted that peer socialization would be observed for problematic alcohol and drug use, given their prevalence and social acceptability among first-year university students (American College Health Association, 2019; Borsari & Carey, 2001; Park et al., 2009). Additionally, we expected that perceptions of an acquaintance's suicidal thoughts would predict greater likelihood of a student experiencing suicidal thoughts at the following time point, given the robust evidence for socialization of suicidal thoughts from wide-ranging sources (e.g., media coverage of suicide; Insel & Gould, 2008).

In the second category, we hypothesized that socialization of problematic alcohol use, from both strong and weak ties, would be strongest during periods of elevated social disconnection. We did not pre-register moderation hypotheses for the other behaviors measured due to the paucity of previous studies to inform predictions.

In the third category, we predicted that students' own problematic substance use would predict their perceptions of their close peers' same behaviors at the subsequent time point, in line with peer selection. Notably, substance use is often associated with social events (e.g., parties; Christiansen et al., 2002), providing ample opportunities to observe and interact with others engaging in similar behaviors. This distinguishes substance use from the other behaviors we measured (disordered eating, NSSI, and suicidal thinking). Due to the observable nature of substance use, we expected that students' own problematic alcohol and drug use would predict future perceived abuse among acquaintances.

METHODS

Transparency and openness

Our hypotheses, analysis plan, and associated code were pre-registered prior to data examination, but *not* prior to data collection, and can be found here (https://osf.io/vpu2f). Measures are outlined in the documents "Many Minds Measures table 1" and "Many Minds Adapted and Created Measures" available here (https://osf.io/bqm4n). Data were screened to exclude response patterns at each time point that may indicate inattention or poor quality (detailed data processing information is available here: https://osf.io/fae79). Deidentified data (called "MM.reduced") and R code for this paper (called "Code Data Analysis") can be found here (https://osf.io/8qj6v). Slight alterations to the pre-registration were needed (e.g., correction of typos in the code); and are detailed in the Online Resource and the data scripts.

Participants

Eligible students were 17–25 years old, enrolled in a minimum of 3 credit hours of in-person university courses, and in their first semester of post-secondary study in Canada at the University of Victoria. 704 students participated as part of a larger study, and this sample represents all available data.

Participants (73% Female, 26% Male, $M_{age} = 17.97$, $SD = 0.74$) were from two consecutive academic years (2017–18, $N = 356$; 2018–19, $N = 348$). Participants were mainly 17, 18, or 19 years old, with under 3% (17 people) over 19 years of age. Participants were primarily White (71%) and Asian (15%). One-third (75%) of the participants reported living in an on-campus residence (i.e., dorm), and 14% indicated that they were international students. Since data collection took place during a participant's first semester of post-secondary study, the majority of our study population began participation in our study within a few weeks of moving into new housing, and many were also new to the country, indicating that our study population was in a highly transient stage of life.

Procedure

Participants were recruited via the university's psychology research participant system and through on-campus advertisements. All participants (even minors) were deemed competent adults able to provide consent based on the standard threshold set by the university's ethic board. After providing informed consent, participants completed an online screening survey and attended an in-person group testing session which took place within 3 weeks of their arrival on campus. Students provided demographic information (e.g., age and gender) and completed various computerized tasks/questionnaires. Thereafter, each month for 7 months (i.e., October through April), students were emailed a link to an online, self-report follow-up assessment taking approximately 25–60 min. They were compensated for each completed survey with their choice of partial course credit, online gift cards, or cash.

Measures

Additional information on all measures (e.g., endorsement rates, item level missingness, means, and standard deviations) can be found in Table 1 and in the Supporting Information (Tables S1 through S6).

TABLE 1 Number and percentage of participants who ever reported own, perceptions of close peer, or perceptions of acquaintance engagement in a self-damaging behavior, or endorsed social disconnection.

	Number of people	% Of total participants
Own self-damaging behaviors		
Alcohol misuse	396	63%
Alcohol abuse	349	55%
Drug misuse	192	30%
Drug abuse	223	35%
Disordered eating	346	55%
NSSI	71	11%
Suicidal thoughts	92	15%
Perceptions of close peers' self-damaging behaviors		
Alcohol abuse	91	14%
Drug abuse	83	13%
Disordered eating	98	15%
NSSI	99	16%
Suicidal thoughts	115	18%
Perceptions of acquaintances' self-damaging behaviors		
Alcohol abuse	80	13%
Drug abuse	62	10%
Disordered eating	42	7%
NSSI	41	6%
Suicidal thoughts	43	7%
Social disconnection	378	60%

Note: Percentages are computed by dividing the number of people endorsing a given behavior at least one time by the total number of participants who completed at least one of the seven follow-up surveys ($n = 633$). Frequency numbers represent the frequency of each behavior over the course of all seven surveys (e.g., 396 participants reported ever engaging in alcohol misuse over the course of the seven surveys).

Own self-damaging behaviors

During each follow up survey, students were asked about their own engagement in problematic alcohol use, problematic drug use, disordered eating, NSSI, and suicidal thoughts. If they indicated they preferred not to answer, this data was coded as missing.[1] There was no item level missingness on these scales.

Own problematic alcohol use

Participants were asked how often they had five or more drinks of alcohol in the past month (answer choices: 0 = never; 1 = once; 2 = a couple-a few days; 3 = four or more; 999 = prefer not to say). Across time points, prefer not to say was selected rarely, ranging from 0% to 0.18% of responses. Answers formed an *Own Alcohol Misuse* scale; the response "never" was coded as "0" and all other answers were coded as "1." This scale was created to match binary scales (described below) for disordered eating, NSSI and suicidal thoughts. A continuous measure, *Own Alcohol Abuse*, was created to assess symptoms consistent with the diagnostic criteria for substance abuse using five items from the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). Participants were asked how often, in the past 30 days, they had: (a) been unable to stop or control drinking after starting, (b) failed to do what was expected of them because of drinking, (c) needed alcohol first thing in the morning to get going after a night of heavy drinking, (d) felt guilt or remorse following a night of heavy drinking, and (e) been unable to remember what happened the night before because of heavy drinking (answer choices: 0 = never, 1 = once, 2 = a few times, 3 = four or more times, and 4 = almost every day). The *Own Alcohol Abuse* scale was created by computing the participant's mean response to these five items. Participants who indicated that they had not had alcohol in the past 30 days were assigned a score of "0." Across all time points, Cronbach's alphas ranged from .64 to .72.

Own problematic drug use

Participants were asked how often they had used the following drugs in the last 30 days: marijuana, prescription medication other than as medically intended, and other illicit drugs; and if they were heavily influenced by these drugs. We created an *Own Drug Misuse* scale with responses dichotomized (0 = no endorsement of drug use *or* never heavily influenced by drugs, and 1 = all other responses).

A second continuous drug scale, *Own Drug Abuse*, was created to assess symptoms consistent with the diagnostic criteria for substance abuse by taking the mean of seven items from the Drug Use Disorder Identification Test (DUDIT; Berman et al., 2005). Participants were asked how often, in the past 30 days, they had: (a) been unable to stop or control taking drugs after starting, (b) failed to do something they should have done because of drug use, (c) needed drugs first thing in the morning to get going after a night of heavy drug use, (d) felt guilty because of drug use, (e) felt a longing or craving for drugs, (f) used more than one type of drug on the same occasion, and (g) were heavily influenced by drugs (answer choices: 0 = never, 1 = once, 2 = a few times, 3 = four or more times, and 4 = daily or almost every day). Participants who indicated that they had not used drugs in the past 30 days were assigned a score of "0." Across all time points, Cronbach's alphas ranged from .81 to .86.

Own disordered eating

Three items were used to assess the frequency of participants' past month engagement in: binge eating (eating an

[1]This treatment is a departure from our preregistration, where we stated that "prefer not to say" would be interpreted to be engagement in the behavior (assuming that the participant had engaged in the behavior but was unwilling to report engagement in sensitive and potentially illegal behaviors), however reviewers of this manuscript felt this assumption was an overreach. Thus, results coding data in the preregistered manner are displayed in our supplementary materials and resulted in similar outcomes.

objectively large amount of food in a manner that felt out of control), fasting (periods of at least 8 waking hours without eating, severe caloric restriction [less than 1000 per day], or two or more skipped meals in a row with the goal of losing weight), and purging (vomiting, taking laxatives, or engaging in intense exercise to counteract the effects of eating; answer choices: 0 = never, 1 = only once, 2 = a couple/few days, 3 = four or more days, and 999 = prefer not to say). These items were modified from the Eating Disorder Diagnostic Scale, a tool used in clinical settings to make eating disorder diagnoses and/or inform diagnostic impressions (Stice et al., 2000). To assess *Own Disordered Eating*, responses were dichotomized (0 = "never" to all three items and 1 = any other response). Across time points and all three items, prefer not to say was rarely endorsed, ranging from 0% to 0.27% of responses.

Own NSSI

One item assessed the frequency of students' past month NSSI (physically hurting oneself [cutting, burning, or hitting] without wanting to die; answer choices: 0 = never, 1 = only once, 2 = a couple/few days, 3 = four or more days, and 999 = prefer not to say). To assess *Own NSSI,* responses of "never" were coded as "0" while all other responses were coded as "1." Across time points, prefer not to say was rarely endorsed ranging from 0% to 0.23% of responses.

Own suicidal thoughts

One item assessed the frequency of a student's past month suicidal thoughts (thoughts about killing oneself; answer choices: 0 = never, 1 = only once, 2 = a couple/few days, 3 = four or more days, and 999 = prefer not to say). To assess *Own Suicidal Thoughts*, responses of "never" were coded as "0" while all other responses were coded as "1." Across time points, prefer not to say was selected for 0.51%–1.37% of the responses.

Perceptions of peers' self-damaging behaviors

Perceptions of peers' alcohol abuse

In each follow-up survey, students were asked "In the last month has anyone you know had problems with alcohol (e.g., lost jobs or friends because of drinking, had problems at school because of drinking, etc.)?" Response options were: "Yes," "No," and "I'm not sure." If "Yes" was selected, participants were asked to categorize their relationship to this person/people by selecting one or more of the following categories: parent, sibling, other family member, romantic partner, friend(s), someone from their dorm/apartment, someone from school, or someone else. Item level missingness was minimal, ranging from 0% to 0.23% of responses. Two binary indices were created to measure the presence of alcohol abuse in students' close peers (romantic partners or friends) and acquaintances (someone from a dorm/apartment, from school, or someone else). *Perceptions of Close Peer Alcohol Abuse* was given a score of "1" if the student indicated their friend(s) or romantic partner had problems with alcohol and a score of "0" was assigned to all participants who reported being unsure or not knowing a close peer with alcohol problems. *Perceptions of Acquaintance Alcohol Abuse* was given a score of "1" if the student indicated that someone from their dorm/apartment, someone from school, or someone else had problems with alcohol, and "0" if the participant reported being unsure or not knowing an acquaintance with alcohol problems.

Perceptions of peers' drug abuse, disordered eating, NSSI, and suicidal thoughts

Participants responded to similar items regarding their perceptions of their peers' engagement in other self-damaging behaviors. In each follow-up survey, students were asked "In the last month has anyone you know …" with one item assessing drug abuse (… "had problems with drugs (e.g., lost jobs or friends because of drug use, had problems at school because of drug use, overdosed or gotten hurt or sick because of drug use, etc.?"), one item assessing disordered eating (… "had problems with disordered eating (diagnosed with or treated for an eating disorder, got sick because of disordered eating, had problems with friends, family or school because of disordered eating?"), one item assessing NSSI (… "engaged in nonsuicidal self-injury [physically hurting themselves without wanting to die, for instance by cutting or burning their skin]?") and two items assessing suicidal thoughts ("…told you they were thinking about killing themselves?" and "tried to kill themselves or made a suicide attempt?"). Response options were identical in all the cases, and the derivation of binary *close peer* and *acquaintance* scores followed the same logic as described above for peer alcohol use. Because we were interested in associations between knowledge of peers' suicidal thoughts *or* behaviors on students' own suicidal thoughts, we collapsed these two questions so that a positive response to either the item about suicidal thoughts *or* suicide attempts was scored as knowing someone with suicidal thoughts. Item level missingness on all Perceptions of Peers' Self-Damaging Behaviors scales were minimal, ranging from 0% to 0.23% of responses.

Social disconnection

In each follow-up survey, participants were asked if they had experienced stress related to various events using a modified College Chronic Life Stress Survey (Towbes & Cohen, 1996). Students were asked to "check off any items that made you feel stressed, upset, or worried two or three times a week for the past month" from a list of stressors including family conflict, financial or academic stress, and goal frustration. Two of these items were relevant to social disconnection: "not having friends" and "not fitting in." We created a binary *social disconnection* scale, and participants were given a "1" if they indicated experiencing stress related to either "not having friends" or "not fitting in," and a "0" if not. There was no item level missingness.

Strategy of analysis

Missing data

The data set comprised of 704 participants who completed the questionnaires at baseline. At each follow-up survey, between 60% and 87% of the total cohort provided valid responses. Between 85% and 97% of completed questionnaires passed our screening procedures at each measurement occasion (e.g., passed attention check questions). Additional details on attrition and missing data at each measurement point are available online (https://osf.io/xqc27; see table 3 in the "Descriptive Statistics for Many Minds" document). To handle missing data in our analyses, all models used restricted Maximum Likelihood (for linear models) or full Maximum Likelihood estimation (for logistic models), which produces unbiased results under conditions of modest levels of data missing at random (Baraldi & Enders, 2010).

Power analyses

A power analysis was not feasible because there was no pilot data or sufficiently similar studies (e.g., with a 1-month lag) from which to obtain reasonable predictions for parameters needed in a multilevel model (e.g., fixed and interaction effects, residuals, standard deviations, and intraclass correlation coefficients). However, this dataset has several hundred groups (people) with an average of 5.26 observations per person. Inferences about fixed effects from multilevel logistic regression models can generally be trusted if the data has 10 or more level two groups and five or more observations per group (Austin, 2010; Hoyle & Gottfredson, 2015), making this sample size appropriate for the analyses presented.

Significance testing

Because our pre-registered hypotheses were directional, we use a threshold of $p < .10$ (equivalent to $p < .05$ for a two-sided test) to determine statistical significance for pre-registered tests, and $p < .05$ otherwise (Cho & Abe, 2013; Greving & Richter, 2018). Results from two-sided tests are reported throughout, instead of reporting one-sided tests for pre-registered tests, to facilitate comparisons across findings. Because tests were pre-registered, rather than unplanned, we did not apply additional corrections for multiple testing (Armstrong, 2014).

Primary analysis plan

To test our hypotheses, we conducted a series of multilevel models with repeated self-report measures at each month (level 1) nested within persons (level 2). Since we were interested in within-person changes, the primary predictor variables (self-damaging behaviors—both own and other) were cluster centered within each participant. Additionally, each participant's mean engagement in the behaviors and their reports of others' behaviors across all time points was computed and centered to create level 2 variables. Time was controlled in all models using a 7-point variable "month" ranging from 0 (October) to 6 (April). Models predicted the outcome variable at time T + 1 and included three level 1 predictors: the outcome variable at time T, the predictor of interest at time T, and month at time T + 1, as well as the predictor of interest at level 2. All models predicting a continuous outcome used multilevel regression, and those predicting a binary outcome used multilevel logistic regression. All models had between 582 and 586 level two participants, and between 2430 and 2469 level one observations.

The first category of questions pertained to how peers' behaviors influence a student's own behavior. An example model is:

$$\text{Level 1: Own Alcohol Misuse at time } t+1_{ij} = b_{0j} + b_{1j}\left(\text{Perceptions of Close Peer Alcohol Abuse at time } t_{ij}\right) + b_{2j}\left(\text{Own Alcohol Misuse at time } t_{ij}\right) + b_{3j}\left(\text{Month at time } t+1_{ij}\right) + e_{ij}$$

$$\text{Level 2: } b_{0j} = \gamma_{00} + \gamma_{01}\left(\text{Perceptions of Close Peer Alcohol Abuse}_{j}\right) + u_{0j}$$
$$b_{1j} = \gamma_{10} \quad b_{2j} = \gamma_{20} \quad b_{3j} = \gamma_{30}$$

We ran separate models testing socialization of each outcome (alcohol [misuse and abuse], drug [misuse and abuse], disordered eating, NSSI, and suicidal thoughts) by perceived behavior of close peers (model a) or acquaintances (model b). Statistically significant outcomes are followed by an odds ratio, which serves as a measure of effect size. This odds ratio provides a comparative analysis of the likelihood of adopting a specific behavior (e.g., NSSI) following exposure to a certain risk factor (perception of NSSI among close peers) against the odds of engaging in the same behavior in the absence of the risk factor (no perception of NSSI among close peers).

RESULTS

Results (available in Table 2) indicated that two of our 12 pre-registered hypotheses were supported. When students perceived having close peers who had engaged in NSSI or were struggling with suicidal thoughts, they had over seven times greater odds of engaging in these behaviors themselves at the following timepoint. One non-pre-registered analysis resulted in a significant effect: when students perceived having acquaintances who had engaged in NSSI, they had over 13 times

JOURNAL OF Research on Adolescence

TABLE 2 Within-person changes in perceptions of peers' engagement in self-damaging behaviors predicting future own engagement in the same self-damaging behavior.

	Coefficient (SE)	95% CI	*p*-Value	Odds ratio [95% CI]	Interpretation
1a. Alcohol misuse (CP)	0.43 (0.31)	−0.18; 1.04	.167	–	–
1b. Alcohol misuse (Acq)	0.22 (0.33)	−0.44; 0.86	.518	–	–
1a. Alcohol abuse (CP)	−0.01 (0.02)	−0.05; 0.04	.828	–	–
1b. Alcohol abuse (Acq)	0.00 (0.03)	−0.05; 0.05	.944	–	–
2a. Drug misuse (CP)	−0.42 (0.48)	−1.38; 0.51	.382	–	–
2b. Drug misuse (Acq)	−0.35 (0.52)	−1.51; 0.63	.497	–	–
2a. Drug abuse (CP)	0.01 (0.03)	−0.04; 0.06	.692	–	–
2b. Drug abuse (Acq)	−0.02 (0.03)	−0.07; 0.03	.463	–	–
3a. Disordered eating (CP)	0.12 (0.36)	−0.55; 0.73	.742	–	–
3b. Disordered eating (Acq)	−0.56 (0.51)	1.68; 0.34	.272	–	–
4a. NSSI (CP)	**1.97 (0.65)**	**0.73; 3.32**	**.002**	**7.20 [2.08; 27.77]**	**Socialization**
4b. NSSI (Acq)	**2.61 (1.32)**	**−0.11; 5.46**	**.048**	**13.56 [1.12; 233.98]**	**Socialization**
5a. Suicidal thoughts (CP)	**1.95 (0.60)**	**0.46; 3.72**	**.001**	**7.05 [1.58; 41.26]**	**Socialization**
5b. Suicidal thoughts (Acq)	−0.43 (1.33)	−4.18; 2.19	.747	–	–

Note: Analyses control for time, previous own engagement in behavior, and between-person differences in the presence of the behavior in peers. Bold words in the left column represent a pre-registered prediction; Bold across a row indicates results with statistical significance. Model 5a & 5b failed to converge as pre-registered and the average (between-person) peer engagement control variable was removed to obtain convergence.

Abbreviations: Acq, acquaintance; CP, close peer.

greater odds of engaging in NSSI themselves at the following timepoint. Since within-person changes in peer behaviors occurred before changes in own behavior, these results support a socialization process in which students adjusted their behaviors to mirror their perceptions of their peers' behaviors.

The second category of questions concerned the interaction between social disconnection and perceptions of peers' alcohol abuse in predicting own future alcohol misuse or abuse. Separate models were again conducted examining the effect of strong (close peer) versus weak (acquaintance) ties. An example model is:

$$\text{Level 1: Own Alcohol Misuse at time } t+1_{ij} = b_{0j} + b_{1j}\left(\text{Perceptions of Close Peer Alcohol Abuse at time } t_{ij}\right) + b_{2j}\left(\text{Own Alcohol Misuse at time } t_{ij}\right) + b_{3j}\left(\text{Social Disconnection at time } t_{ij}\right) + b_{4j}\left(\text{Perceptions of Close Peer Alcohol Abuse at time } t \times \text{Social Disconnection at time } t_{ij}\right) + b_{5j}\left(\text{Month at time } t+1_{ij}\right) + e_{ij}$$

$$\text{Level 2: } b_{0j} = \gamma_{00} + \gamma_{01}\left(\text{Perceptions of Close Peer Alcohol Abuse}_{j}\right) + u_{0j}$$

$$b_{1j} = \gamma_{10} \quad b_{2j} = \gamma_{20} \quad b_{3j} = \gamma_{30} \quad b_{4j} = \gamma_{40} \quad b_{5j} = \gamma_{40}$$

Results indicated that one of our four pre-registered hypotheses was supported: the interaction between perceptions of acquaintances' alcohol abuse and social disconnection significantly predicted a student's own level of alcohol abuse (see Table 3 and Figure 1). As expected, simple slope analyses revealed that at times when a student reported no social disconnection, their perceptions of acquaintances' alcohol abuse did not predict their own levels of alcohol abuse the following time point ($b = -0.05$, $SE = 0.03$, 95% CI [−0.12; 0.01], $p = .11$). However, at times when a student experienced social disconnection, their perceptions of acquaintances' alcohol abuse predicted their own alcohol abuse the following timepoint ($b = 0.09$, $SE = 0.04$, 95% CI [0.01; 0.17], $p = .03$). These results are consistent with socialization effects but were localized to weak social ties. Interactions between social disconnection and the other four self-damaging behaviors were not pre-registered, but exploratory results can be seen in our Supporting Information (Table S1).

The third category of questions examined the effects of a students' own self-damaging behaviors on their perceptions of peers' later engagement in those behaviors. An example model is:

TABLE 3 Interaction between social disconnection and within-person changes in perceptions of peers' alcohol abuse predicting future own engagement in alcohol misuse and abuse.

	Coefficient (SE)	95% CI	*p*-Value
6a. Alcohol misuse (CP)	0.68 (0.66)	−0.62; 1.99	.303
6b. Alcohol misuse (Acq)	0.96 (0.70)	−0.37; 2.21	.170
6a. Alcohol abuse (CP)	0.04 (0.05)	−0.06; 0.15	.441
6b. Alcohol abuse (Acq)	**0.14 (0.05)**	**0.04; 0.25**	**.009**

Note: Analyses control for variables in the interaction, time, previous alcohol misuse, and between person differences in perceptions of peer's alcohol abuse. Bold words in the left column represent a pre-registered prediction; Bold across a row indicates results with statistical significance.

Abbreviations: Acq, acquaintance; CP, close peer.

$$\text{Level 1: Perceptions of Close Peer Alcohol Abuse at time } t+1_{ij} = b_{0j} + b_{1j}\left(\text{Own Alcohol Misuse at time } t_{ij}\right) + b_{2j}\left(\text{Perceptions of Close Peer Alcohol Abuse at time } t_{ij}\right) + b_{3j}\left(\text{Month at time } t+1_{ij}\right) + e_{ij}$$

$$\text{Level 2: } b_{0j} = \gamma_{00} + \gamma_{01}\left(\text{Own Alcohol Misuse}_j\right) + u_{0j}$$
$$b_{1j} = \gamma_{10} \quad b_{2j} = \gamma_{20} \quad b_{3j} = \gamma_{30}$$

We ran separate models predicting the perceived behavior of close peers (model a) or acquaintances (model b) for each of the five behaviors. Results (available in Table 4) indicated that one of our 11 pre-registered hypotheses was supported. In the timepoint following students' own engagement in alcohol misuse, they had almost four times greater odds of perceiving that their acquaintances abused alcohol. Since within-person changes in own drinking behavior preceded perceptions of acquaintances' drinking behaviors, this result is in line with peer selection (students selecting into social groups that abuse alcohol at times when they are abusing alcohol themselves).

DISCUSSION

This study examined the roles of peer socialization and selection in participants' risk of or level of engagement in five self-damaging behaviors (i.e., problematic alcohol use, problematic drug use, disordered eating, NSSI, and suicidal thinking) during the transition to university. This developmental period involves significant social fluidity, making it a critical time to examine peer influence. Results indicate that peer influence may have contributed to engagement in three of the five behaviors (excluding disordered eating and problematic drug use). Specifically, perceiving that close peers' or acquaintances engaged in NSSI, or that close peers engaged in suicidal ideation, predicted a student's own risk of engaging in the same behavior 1 month later. In addition, during periods of social disconnection, students were more likely to subsequently experience higher levels of alcohol abuse if they perceived that their acquaintances engaged in this behavior. The effect sizes for socialization into NSSI and suicidal thinking were pronounced: when a student perceived that their close peer engaged in NSSI or suicidal ideation, the odds of them engaging in the same behavior the following month were over seven times greater. Additionally, when someone had an acquaintance who engaged in NSSI, the odds of them reporting engagement in the same behavior the following month were over 13 times greater. This latter finding should be interpreted with caution as it was not pre-registered and had a large standard error, indicating that our model struggled to identify the precise effect size. Moreover, the majority of our pre-registered hypotheses were not supported, and replication of the effects we did identify is warranted. Overall, these results highlight a critical need for post-secondary support to be provided to peers of students who engage in NSSI and suicidal thinking.

Support for peer selection effects was limited to alcohol abuse; when students engaged in higher levels of alcohol abuse, the odds of them perceiving that their acquaintance abused alcohol the following month were almost four times greater. This result is in line with past research documenting both selection and socialization effects in adolescent alcohol use (Gremmen et al., 2019; McMillan et al., 2018). Although this effect was pre-registered as evidence of peer selection, it is also possible that this result occurred due to socialization of our participants' peers (i.e., when participants experienced higher-than-usual alcohol abuse, they influenced their acquaintances to abuse alcohol 1 month later). When interpreting this finding, it is also important to emphasize that we measured participants' *perceptions* of their peers' engagement in self-damaging behaviors, rather than *objective* engagement in those behaviors. Thus, another potential explanation for this finding is related to cognitive dissonance; when a student engages in more severe alcohol abuse, they may start to perceive that their peers engage in this behavior more often to reduce psychological discomfort related to their own alcohol use patterns. To tease apart these different

JOURNAL OF Research on Adolescence

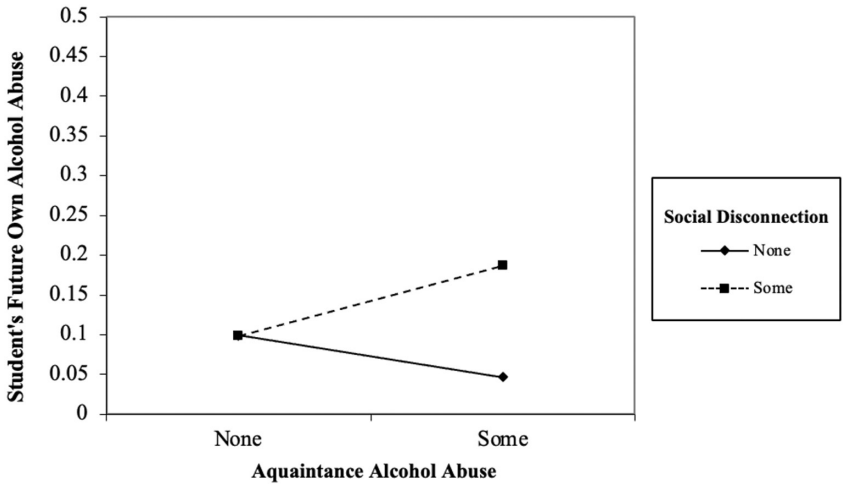

FIGURE 1 Students experiencing social disconnection who perceived that their acquaintances abused alcohol were more likely to match this alcohol abuse 1 month in the future. The variable on the *y*-axis (students' future own alcohol abuse) ranges from 0 to 2.2, but only 0 to 0.5 is displayed to improve graph legibility.

TABLE 4 Within-person changes in own engagement in self-damaging behaviors predicting future perceptions of peer engagement in self-damaging behaviors.

	Coefficient (SE)	95% CI	*p*-Value	Odds ratio [95% CI]	Interpretation
7a. Alcohol misuse (CP)	0.49 (0.53)	−0.54; 1.56	.356	–	–
7b. Alcohol misuse (Acq)	**1.38 (0.59)**	**0.53; 3.17**	**.018**	**3.98 [2.02; 24.13]**	**Peer Selection**
7a. Alcohol abuse (CP)	−1.21 (0.73)	−2.70; 0.18	.098	–	–
7b. Alcohol abuse (Acq)	0.32 (0.87)	−1.72; 2.55	.713	–	–
8a. Drug misuse (CP)	0.10 (0.57)	−1.39; 1.40	.860	–	–
8b. Drug misuse (Acq)	−1.07 (0.76)	−3.51; 0.11	.158	–	–
8a. Drug abuse (CP)	0.98 (0.73)	−1.34; 3.47	.179	–	–
8b. Drug abuse (Acq)	−0.94 (1.21)	−3.82; 1.13	.439	–	–
9a. Disordered eating (CP)	−0.09 (0.44)	−0.97; 0.78	.836	–	–
9b. Disordered eating (Acq)	−0.28 (0.64)	−1.82; 0.77	.655	–	–
10a. NSSI (CP)	−0.38 (0.59)	−2.36; 1.10	.517	–	–
10b. NSSI (Acq)	2.44 (1.35)	0.66; 6.12	.071	–	–
11a. Suicidal thoughts (CP)	0.07 (0.54)	−2.38; 1.66	.904	–	–
11b. Suicidal thoughts (Acq)	−1.74 (1.26)	−4.89; 0.03	.169	–	–

Note: Analyses control for time, previous engagement in the behavior by peers, and average (between-person) own engagement in behavior. Bold words in the left column represent a pre-registered prediction; Bold across a row indicates results with statistical significance. Models for alcohol abuse (Acq), drug abuse (CP), drug abuse (Acq) & suicidal thoughts (Acq) failed to converge as pre-registered and the average (between-person) own engagement in behavior control variable was removed to obtain convergence. The time variable was also removed to obtain convergence for the model predicting suicidal thoughts (Acq).

Abbreviations: Acq, acquaintance; CP, close peer.

possibilities, it would be valuable for future research to replicate these findings using multi-informant or sociometric methods, in which each individual student reports on their own social connections and self-damaging behaviors.

We did not find evidence of peer socialization or selection for two types of self-damaging behaviors investigated: disordered eating and drug misuse. One explanation for this is that additional, unobserved characteristics might be required to facilitate transmission of these behaviors. Engagement in disordered eating, for instance, appears to be primed by body dissatisfaction and inflexibility (Masuda et al., 2015) or need for social approval (Pedlow & Niemeier, 2013), which could moderate the association between peers' and own behavior. Likewise, peer transmission of drug abuse might occur only among students who score high on measures of sensation seeking and distress intolerance (Kaiser et al., 2012). Indeed, exploratory results (see Supporting Information) indicated that social disconnection may moderate a student's socialization into both their acquaintances' drug abuse and their close peers' disordered eating. A close examination of the confidence

intervals, however, suggests that the effects for drug abuse are consistently near 0, suggesting a null effect; for disordered eating, however, there is a wider range, suggesting these associations were not precisely estimated and may be subject to moderators we did not test. Given that power to detect small effects could not be ascertained a priori, these results should be interpreted cautiously pending replication in larger samples.

In the current examination, we made the analytic decision to combine close friends and romantic partners into a single "close peer" group. The rationale for this decision was both practical and theoretical. The practical consideration related to statistical power. Students often have multiple close friends, but less than half of our sample reported having a romantic partner at any time point. Thus, the sample size of individuals with a romantic partner engaging in self-damaging behaviors was too small to be examined separately. However, if romantic partners were excluded, and only close friendships were examined, this would remove an important peer attachment figure at times when students were in romantic relationships. Research indicates that best friends serve as the primary safe haven (i.e., source of support, comfort, and reassurance) for older adolescents and young adults; but those in romantic relationships use romantic partners as much as close friends for this attachment function (Markiewicz et al., 2006). Since older adolescents and young adults rely heavily on both close friends and romantic partners as peer attachment figures and theoretically both types of relationships serve an important and similar attachment function, we elected to combine close friendships and romantic relationships to include both of these peer relationships in our analyses.

A key contribution of the current study is the examination of a within-person moderator for socialization into self-damaging behaviors. When students experienced social disconnection, having acquaintances they perceived to be engaging in alcohol abuse predicted their own future engagement in alcohol abuse. This suggests that for university students, the experience of social disconnection leads them to be especially vulnerable to peer influence for alcohol abuse. Indeed, prior work indicates that friendships are particularly relevant to overall health, linking negative friendship interactions and/or lack of interactions (unwelcome solitude) to reduced life satisfaction, wellbeing, and physical health (Kent de Grey & Uchino, 2020; Tse et al., 2022; Wang et al., 2018). Mimicking self-damaging behaviors displayed by peers may represent an attempt to utilize tools learned from others with the goal of soothing difficult emotions, increasing attractiveness, or becoming more similar to potential friends. Our results highlight the importance of programs fostering adaptive student connection (e.g., matching new students to peer mentors) to relieve social disconnection and thereby reduce alcohol abuse on college campuses.

This research is unique in its examination of relatively short one-month intervals between measurement occasions. Past research has generally employed comparatively wider spaced follow-up periods; indeed, the shortest interval studied for socialization of NSSI was 3 months, and a recent review of alcohol and drug peer influence reviewed 40 studies and found that the interval between time points ranged from 6 to 30 months (Henneberger et al., 2021). In their article on the future of peer influence research, Prinstein and Giletta (2021) concluded that examining shorter periods should be one of the top priorities. Our study helps fill this research gap. Our results indicate that socialization occurs even over this relatively short time frame, revealing that the onset of peer influence can be concerningly rapid. Future research could use ecological momentary analyses to obtain more fine-grained results on when and how these associations unfold over weeks or even days.

The current project is limited by a reliance on participants' perceptions of peers' self-damaging behaviors. This is important, as prior research shows that people tend to misperceive peers' self-damaging behaviors, rating friends as engaging in self-damaging behaviors (e.g., alcohol use and NSSI) more frequently than they actually do (Baer et al., 1991; Min et al., 2021). As previously mentioned, this limitation renders it impossible to ascertain whether we observed true selection effects (i.e., students who engaged in self-damaging behaviors sought out relationships with people who also engaged in self-damaging behaviors), or whether students who engaged in self-damaging behaviors only perceived that their peers engaged in self-damaging behaviors, perhaps to reduce cognitive dissonance. Sociometric methods, which collect reports directly from members of a participant's social network, add precision by directly modeling socialization and selection effects. These approaches (e.g., stochastic actor-based modeling; Snijders et al., 2010) are some of the most suitable for inferring socialization and selection effects from observational data. Results from such models generally indicate socialization into behaviors engaged in by strong social ties (Mercken, Steglich, Knibbe, & de Vries, 2012; Schwartz-Mette & Lawrence, 2019; Wang et al., 2017). Our method is less precise but allowed for examination of socialization and selection into weak social ties, complementing and expanding on findings using sociometric methods. A second limitation relates to the generalizability of these findings, which may be restricted to post-secondary students, or periods of extreme social fluidity, such as the transition to college.

While this paper focuses on self-damaging behaviors, it is important to recognize that socialization and selection can also apply to positive behaviors, such as physical activity (Montgomery et al., 2020) and prosocial behaviors (Choukas-Bradley et al., 2015; Foulkes et al., 2018). Young people can even be influenced to avoid self-damaging behaviors if their friends discourage such behaviors (Maxwell, 2002) or if they are provided with corrective feedback on peer drinking norms (Lewis & Neighbors, 2004). Results from the present study not only suggest that peer engagement in self-damaging behaviors negatively predicts participants' own engagement in these behaviors, but also that not having peers who engage in self-damaging behaviors positively predicts participants' avoidance of these behaviors. That is, peer groups in

which self-damaging behaviors are not present are likely to remain so over time, offering protective effects to group members. This underscores the bidirectional nature of peer influence and the importance of positive social examples in promoting healthy and adaptive behaviors in adolescents and young adults.

ACKNOWLEDGMENTS

We thank Carolyn Helps and Si Ning Yeo for their help with recruitment and data collection.

FUNDING INFORMATION

This research was funded by an Insight Development Grant (430-2017-00025) from the Social Sciences and Humanities Research Council and was supported by Social Sciences and Humanities Research Council doctoral awards to the second and third authors and a Michael Smith Health Research BC award to the fourth author (18240).

CONFLICT OF INTEREST STATEMENT

The authors have no competing interests to declare that are relevant to the content of this article.

DATA AVAILABILITY STATEMENT

De-identified data, materials, and R code for this paper can be found here (http://osf.io/8qj6v) and the pre-registration can be found here (http://osf.io/vpu2f).

CONSENT

Informed consent was obtained at the outset of each monthly survey.

UNIQUENESS OF PUBLICATION

Four previous papers have been published using this dataset; however, the present paper is unique in its consideration of peer influence on self-damaging behaviors. No previous papers have examined or reported on peer engagement in SDB, nor its influence on respondents' own SDB, in this sample. Previous publications have reported on: rates and correlates of alcohol-impaired driving reported in this cohort (Robillard et al., 2023, *Journal of Studies on Alcohol and Drugs*); prevalence, frequency and trajectories of substance use and disordered eating among sexual minority respondents (Prud'homme et al., 2022, *Journal of American College Health*); associations between self-criticism, stressors, and internalizing problems (Robillard et al., 2021; *Journal of American College Health*); and, self-reported behavioral motives of disordered eating, binge drinking and nonsuicidal self-injury (Robillard et al., 2022, *Behavior Therapy*).

ORCID

Marlise K. Hofer https://orcid.org/0000-0002-3758-1756
Christina L. Robillard https://orcid.org/0000-0003-2275-7891
Nicole K. Legg https://orcid.org/0000-0002-6520-2100
Brianna J. Turner https://orcid.org/0000-0001-6143-0619

REFERENCES

Abrutyn, S., & Mueller, A. S. (2014). Are suicidal behaviors contagious in adolescence? Using longitudinal data to examine suicide suggestion. *American Sociological Review*, *79*(2), 211–227. https://doi.org/10.1177/0003122413519445

Ali, M. M., Amialchuk, A., & Dwyer, D. S. (2011). The social contagion effect of marijuana use among adolescents. *PLoS One*, *6*(1), e16183. https://doi.org/10.1371/journal.pone.0016183

American College Health Association. (2019). *American College Health Association-National College Health Assessment II: Canadian Consortium Executive Summary Spring 2019. Spring*, 16.

Armstrong, R. A. (2014). When to use the Bonferroni correction. *Ophthalmic and Physiological Optics*, *34*(5), 502–508.

Austin, P. C. (2010). Estimating multilevel logistic regression models when the number of clusters is low: A comparison of different statistical software procedures. *International Journal of Biostatistics*, *6*(1), 16. https://doi.org/10.2202/1557-4679.1195

Baer, J. S., Stacy, A., & Larimer, M. (1991). Biases in the perception of drinking norms among college students. *Journal of Studies on Alcohol*, *52*(6), 580–586. https://doi.org/10.15288/jsa.1991.52.580

Bandura, A. (1971). Vicarious and self-reinforcement processes. In R. Glaser (Ed.), *The nature of reinforcement* (pp. 228–278). Academic Press.

Baraldi, A. N., & Enders, C. K. (2010). An introduction to modern missing data analysis. *Journal of School Psychology*, *48*, 5–37.

Baumeister, R. F., Brewer, L. E., Tice, D. M., & Twenge, J. M. (2007). Thwarting the need to belong: Understanding the interpersonal and inner effects of social exclusion: Belonging and rejection. *Social and Personality Psychology Compass*, *1*(1), 506–520. https://doi.org/10.1111/j.1751-9004.2007.00020.x

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Benson, J. E. (2007). Make new friends but keep the old: Peers and the transition to college. *Advances in Life Course Research*, *12*, 309–334. https://doi.org/10.1016/S1040-2608(07)12011-6

Berman, A. H., Bergman, H., Palmstierna, T., & Schlyter, F. (2005). Evaluation of the drug use disorders identification test (DUDIT) in criminal justice and detoxification settings and in a Swedish population sample. *European Addiction Research*, *11*(1), 22–31. https://doi.org/10.1159/000081413

Borsari, B., & Carey, K. B. (2001). Peer influences on college drinking: A review of the research. *Journal of Substance Abuse*, *13*(4), 391–424. https://doi.org/10.1016/S0899-3289(01)00098-0

Brechwald, W. A., & Prinstein, M. J. (2011). Beyond homophily: A decade of advances in understanding peer influence processes. *Journal of Research on Adolescence*, *21*(1), 166–179. https://doi.org/10.1111/j.1532-7795.2010.00721.x

Cho, H. C., & Abe, S. (2013). Is two-tailed testing for directional research hypotheses tests legitimate? *Journal of Business Research*, *66*(9), 1261–1266. https://doi.org/10.1016/j.jbusres.2012.02.023

Choukas-Bradley, S., Giletta, M., Cohen, G. L., & Prinstein, M. J. (2015). Peer influence, peer status, and prosocial behavior: An experimental investigation of peer socialization of adolescents' intentions to volunteer. *Journal of Youth and Adolescence*, *44*(12), 2197–2210. https://doi.org/10.1007/s10964-015-0373-2

Christiansen, M., Vik, P. W., & Jarchow, A. (2002). College student heavy drinking in social contexts versus alone. *Addictive Behaviors*, *27*(3), 393–404. https://doi.org/10.1016/S0306-4603(01)00180-0

DeLay, D., Shen, M., Cook, R. E., Zhao, S., Logis, H., & French, D. C. (2023). Peers influence the tobacco and alcohol use of Chinese adolescents. *Journal of Research on Adolescence*, *33*, 591–602. https://doi.org/10.1111/jora.12828

DeWall, C. N., Maner, J. K., & Rouby, D. A. (2009). Social exclusion and early-stage interpersonal perception: Selective attention to signs of acceptance. *Journal of Personality and Social Psychology*, *96*(4), 729–741. https://doi.org/10.1037/a0014634

Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescent friendships. *Behavior Therapy*, *27*(3), 373–390. https://doi.org/10.1016/S0005-7894(96)80023-2

Dishion, T. J., & Tipsord, J. M. (2011). Peer contagion in child and adolescent social and emotional development. *Annual Review of Psychology*, *62*(1), 189–214. https://doi.org/10.1146/annurev.psych.093008.100412

Evans, C., & Lacey, J. H. (1992). Multiple self-damaging behaviour among alcoholic women: A prevalence study. *British Journal of Psychiatry*, *161*(5), 643–646. https://doi.org/10.1192/bjp.161.5.643

Foulkes, L., Leung, J. T., Fuhrmann, D., Knoll, L. J., & Blakemore, S. J. (2018). Age differences in the prosocial influence effect. *Developmental Science*, *21*(6), 1–9. https://doi.org/10.1111/desc.12666

Gardner, W. L., Pickett, C. L., Jefferis, V., & Knowles, M. (2005). On the outside looking in: Loneliness and social monitoring. *Personality and Social Psychology Bulletin*, *31*(11), 1549–1560. https://doi.org/10.1177/0146167205277208

Gaughan, M. (2006). The gender structure of adolescent peer influence on drinking. *Journal of Health and Social Behavior*, *47*(1), 47–61. https://doi.org/10.1177/002214650604700104

Giletta, M., Burk, W. J., Scholte, R. H. J., Engels, R. C. M. E., & Prinstein, M. J. (2013). Direct and indirect peer socialization of adolescent nonsuicidal self-injury. *Journal of Research on Adolescence*, *23*(3), 450–463. https://doi.org/10.1111/jora.12036

Giletta, M., Scholte, R. H., Prinstein, M. J., Engels, R. C., Rabaglietti, E., & Burk, W. J. (2012). Friendship context matters: Examining the domain specificity of alcohol and depression socialization among adolescents. *Journal of Abnormal Child Psychology*, *40*, 1027–1043.

Gremmen, M. C., Berger, C., Ryan, A. M., Steglich, C. E. G., Veenstra, R., & Dijkstra, J. K. (2019). Adolescents' friendships, academic achievement, and risk behaviors: Same-behavior and cross-behavior selection and influence processes. *Child Development*, *90*(2), e192–e211. https://doi.org/10.1111/cdev.13045

Greving, S., & Richter, T. (2018). Examining the testing effect in university teaching: Retrievability and question format matter. *Frontiers in Psychology*, *9*(Dec), 1–10. https://doi.org/10.3389/fpsyg.2018.02412

Henneberger, A. K., Mushonga, D. R., & Preston, A. M. (2021). Peer influence and adolescent substance use: A systematic review of dynamic social network research. *Adolescent Research Review*, *6*(1), 57–73. https://doi.org/10.1007/s40894-019-00130-0

Hoyle, R. H., & Gottfredson, N. C. (2015). Sample size considerations in prevention research applications of multilevel modeling and structural equation modeling. *Prevention Science*, *16*(7), 987–996. https://doi.org/10.1007/s11121-014-0489-8

Insel, B., & Gould, M. (2008). Impact of modelling on adolescent suicidal behavior. *The Psychiatric Clinics of North America*, *31*(2), 293–316.

Kaiser, A. J., Milich, R., Lynam, D. R., & Charnigo, R. J. (2012). Negative urgency, distress tolerance, and substance abuse among college students. *Addictive Behaviors*, *37*(10), 1075–1083. https://doi.org/10.1016/j.addbeh.2012.04.017

Kandel, D. B. (1978). Adolescent friendships. *The American Journal of Sociology*, *84*(2), 427–436. https://doi.org/10.2307/j.ctt2005v5h.18

Kent de Grey, R. G., & Uchino, B. N. (2020). The health correlates and consequences of friendship. In K. Sweeny, M. L. Robbins, & L. M. Cohen (Eds.), *Wiley encyclopedia of health psychology* (pp. 239–245). Wiley. https://doi.org/10.1002/9781119057840.ch72

Klaiber, P., Whillans, A. V., & Chen, F. S. (2018). Long-term health implications of students' friendship formation during the transition to university. *Applied Psychology. Health and Well-Being*, *10*(2), 290–308. https://doi.org/10.1111/aphw.12131

Klonsky, E. D., & Olino, T. M. (2008). Identifying clinically distinct subgroups of self-injurers among young adults: A latent class analysis. *Journal of Consulting and Clinical Psychology*, *76*(1), 22–27. https://doi.org/10.1037/0022-006X.76.1.22

Lewis, M. A., & Neighbors, C. (2004). Gender-specific misperceptions of college student drinking norms. *Psychology of Addictive Behaviors*, *18*(4), 334–339. https://doi.org/10.1037/0893-164X.18.4.334

Lydecker, J. A., & Grilo, C. M. (2019). I didn't want them to see: Secretive eating among adults with binge-eating disorder. *International Journal of Eating Disorders*, *52*(2), 153–158. https://doi.org/10.1002/eat.23002

Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the "porcupine problem". *Journal of Personality and Social Psychology*, *92*(1), 42–55. https://doi.org/10.1037/0022-3514.92.1.42

Markiewicz, D., Lawford, H., Doyle, A. B., & Haggart, N. (2006). Developmental differences in adolescents' and young adults' use of mothers, fathers, best friends, and romantic partners to fulfill attachment needs. *Journal of Youth and Adolescence*, *35*(1), 121–134. https://doi.org/10.1007/s10964-005-9014-5

Masuda, A., Hill, M. L., Tully, E. C., & Garcia, S. E. (2015). The role of disordered eating cognition and body image flexibility in disordered eating behavior in college men. *Journal of Contextual Behavioral Science*, *4*(1), 12–20. https://doi.org/10.1016/j.jcbs.2015.01.001

Maxwell, K. A. (2002). Friends: The role of peer influence across adolescent risk behaviors. *Journal of Youth and Adolescence*, *31*(4), 267–277. https://doi.org/10.1023/A:1015493316865

McMillan, C., Felmlee, D., & Osgood, D. W. (2018). Peer influence, friend selection, and gender: How network processes shape adolescent smoking, drinking, and delinquency. *Social Networks*, *55*, 86–96. https://doi.org/10.1016/j.socnet.2018.05.008

Mercken, L., Steglich, C., Knibbe, R., & de Vries, H. (2012). Dynamics of friendship networks and alcohol use in early and mid-adolescence. *Journal of Studies on Alcohol and Drugs*, *73*(1), 99–110. https://doi.org/10.15288/jsad.2012.73.99

Mercken, L., Steglich, C., Sinclair, P., Holliday, J., & Moore, L. (2012). A longitudinal social network analysis of peer influence, peer selection, and smoking behavior among adolescents in British schools. *Health Psychology*, *31*(4), 450–459. https://doi.org/10.1037/a0026876

Min, J., Lopez, S. V., Dunn, D. S., Leffingwell, T. R., & Mullins-Sweatt, S. N. (2021). Understanding perceptions of nonsuicidal self-injury: Descriptive and injunctive norms. *Psychiatric Quarterly*, *92*(4), 1657–1671. https://doi.org/10.1007/s11126-021-09933-8

Montgomery, S. C., Donnelly, M., Bhatnagar, P., Carlin, A., Kee, F., & Hunter, R. F. (2020). Peer social network processes and adolescent health behaviors: A systematic review. *Preventive Medicine*, *130*(May 2019), 105900. https://doi.org/10.1016/j.ypmed.2019.105900

Oswald, D. L., & Clark, E. M. (2003). Best friends forever?: High school best friendships and the transition to college. *Personal Relationships*, *10*(2), 187–196. https://doi.org/10.1111/1475-6811.00045

Park, A., Sher, K. J., Wood, P. K., & Krull, J. L. (2009). Dual mechanisms underlying accentuation of risky drinking via fraternity/sorority affiliation: The role of personality, peer norms, and alcohol availability. *Journal of Abnormal Psychology*, *118*(2), 241–255. https://doi.org/10.1037/a0015126

Pedlow, C. T., & Niemeier, H. M. (2013). Sociotropic cognition and eating disordered attitudes and behavior in young adults. *Eating Behaviors*, *14*(2), 95–101. https://doi.org/10.1016/j.eatbeh.2012.10.001

Poulin, F., & Chan, A. (2010). Friendship stability and change in childhood and adolescence. *Developmental Review*, *30*(3), 257–272. https://doi.org/10.1016/j.dr.2009.01.001

Prinstein, M. J., & Giletta, M. (2021). Five priorities for future research on child and adolescent peer influence. *Merrill-Palmer Quarterly*, *67*(4), 367–389. https://doi.org/10.1353/mpq.2021.0019

Prinstein, M. J., Heilbron, N., Guerry, J. D., Franklin, J. C., Rancourt, D., Simon, V., & Spirito, A. (2010). Peer influence and nonsuicidal self injury: Longitudinal results in community and clinically-referred adolescent samples. *Journal of Abnormal Child Psychology*, *38*(5), 669–682. https://doi.org/10.1007/s10802-010-9423-0

Prud'homme, J., Hofer, M. K., Ames, M. E., & Turner, B. J. (2022). Disparities in the prevalence, frequency and trajectories of substance use and disordered eating across first-year University in sexual minority undergraduates. *Journal of American College Health*, *1–13*. https://doi.org/10.1080/07448481.2022.2103373

Rayner, K. E., Schniering, C. A., Rapee, R. M., Taylor, A., & Hutchinson, D. M. (2013). Adolescent girls' friendship networks, body dissatisfaction,

and disordered eating: Examining selection and socialization processes. *Journal of Abnormal Psychology*, *122*(1), 93–104. https://doi.org/10.1037/a0029304

Robillard, C. L., Legg, N. K., Ames, M. E., & Turner, B. J. (2022). Support for a transdiagnostic motivational model of self-damaging behaviors: Comparing the salience of motives for binge drinking, disordered eating, and nonsuicidal self-injury. *Behavior Therapy*, *53*(6), 1219–1232. https://doi.org/10.1016/j.beth.2022.06.005

Robillard, C. L., Legg, N. K., & Turner, B. J. (2023). Between- and within-person correlates of alcohol-impaired driving in first-year university students: The roles of impulsivity, binge drinking, depression, and anxiety. *Journal of Studies on Alcohol and Drugs*, *84*(1), 147–157. https://doi.org/10.15288/jsad.21-00406

Robillard, C. L., Turner, B. J., & Helps, C. E. (2021). Testing a diathesis-stress model during the transition to university: Associations between self-criticism, stress, and internalizing problems. *Journal of American College Health*, *71*(6), 1834–1844. https://doi.org/10.1080/07448481.2021.1947837

Sandstrom, G. M., & Dunn, E. W. (2014). Social interactions and well-being: The surprising power of weak ties. *Personality and Social Psychology Bulletin*, *40*(7), 910–922. https://doi.org/10.1177/0146167214529799

Saunders, J. B., Aasland, O. G., Babor, T. F., De la Fuente, J. R., & Grant, M. (1993). Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. *Addiction*, *88*(6), 791–804.

Schwartz-Mette, R. A., & Lawrence, H. R. (2019). Peer socialization of non-suicidal self-injury in adolescents' close friendships. *Journal of Abnormal Child Psychology*, *47*(11), 1851–1862. https://doi.org/10.1007/s10802-019-00569-8

Snijders, T. A., Van de Bunt, G. G., & Steglich, C. E. (2010). Introduction to stochastic actor-based models for network dynamics. *Social Networks*, *32*(1), 44–60. https://doi.org/10.1016/j.socnet.2009.02.004

Staniland, L., Hasking, P., Boyes, M., & Lewis, S. (2021). Stigma and non-suicidal self-injury: Application of a conceptual framework. *Stigma and Health*, *6*(3), 312–323. https://doi.org/10.1037/sah0000257

Stice, E., Telch, C. F., & Rizvi, S. L. (2000). Development and validation of the eating disorder diagnostic scale: A brief self-report measure of anorexia, bulimia, and binge-eating disorder. *Psychological Assessment*, *12*(2), 123–131.

Towbes, L. C., & Cohen, L. H. (1996). Chronic stress in the lives of college students: Scale development and prospective prediction of distress. *Journal of Youth and Adolescence*, *25*(2), 199–217.

Tse, D. C. K., Lay, J. C., & Nakamura, J. (2022). Autonomy matters: Experiential and individual differences in chosen and unchosen solitary activities from three experience sampling studies. *Social Psychological and Personality Science*, *13*(5), 946–956. https://doi.org/10.1177/19485506211048066

Turner, B. J., Layden, B. K., Butler, S. M., & Chapman, A. L. (2013). How often, or how many ways: Clarifying the relationship between non-suicidal self-injury and suicidality. *Archives of Suicide Research*, *17*(4), 397–415. https://doi.org/10.1080/13811118.2013.802660

Wang, C., Hipp, J. R., Butts, C. T., Jose, R., & Lakon, C. M. (2017). Peer influence, peer selection and adolescent alcohol use: A simulation study using a dynamic network model of friendship ties and alcohol use. *Prevention Science*, *18*(4), 382–393. https://doi.org/10.1007/s11121-017-0773-5

Wang, J., Mann, F., Lloyd-Evans, B., Ma, R., & Johnson, S. (2018). Associations between loneliness and perceived social support and outcomes of mental health problems: A systematic review. *BMC Psychiatry*, *18*(1), 1–16. https://doi.org/10.1186/s12888-018-1736-5

Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the internet. *Journal of Personality and Social Psychology*, *79*(5), 748–762. https://doi.org/10.1037/0022-3514.79.5.748

You, J., Lin, M. P., Fu, K., & Leung, F. (2013). The best friend and friendship group influence on adolescent nonsuicidal self-injury. *Journal of Abnormal Child Psychology*, *41*(6), 993–1004. https://doi.org/10.1007/s10802-013-9734-z

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Hofer, M. K., Robillard, C. L., Legg, N. K., & Turner, B. J. (2024). Influence of perceived peer behavior on engagement in self-damaging behaviors during the transition to university. *Journal of Research on Adolescence*, *00*, 1–13. https://doi.org/10.1111/jora.12933