

Drinking to belong: The effect of a friendship threat and self-esteem on college student drinking

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ABSTRACT

The current study examined how implicit and explicit self-esteem and time spent drinking with friends influence college student drinking after a friendship threat manipulation. Poisson regression analyses revealed that students with low implicit self-esteem showed a greater increase in alcohol consumption when drinking with friends after experiencing a friendship threat than in the control condition. These effects were not found among students with high implicit self-esteem. A similar, but weaker, pattern emerged when testing the independent effects of explicit self-esteem. We suggest that low self-esteem students are drinking because they lack the self-resources to deal with unmet belongingness needs. These findings suggest that low implicit self-esteem may be a risk factor for college student drinking.

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Excessive alcohol consumption is prevalent among college students and associated with many negative consequences (NIAAA, 2015). According to the National Institute on Alcohol Abuse and Alcoholism, almost all college students in some way experience the negative results of excessive drinking such as assault, injury, unsafe sex, academic problems, and interpersonal problems. We suggest that the need to belong and self-esteem may both be related to college student drinking. The need to belong has been defined as a fundamental need that people possess to feel accepted and fit in with those around them (Baumeister & Leary, 1995). Individuals who are not able to satisfy this need experience a variety of negative consequences (Leary, 2010). Therefore, much of human behavior is motivated by a desire to satisfy belongingness needs. In support of our claim that college students may consume alcohol to fit in with others, previous research has shown that college students who are high in the need to belong report greater willingness to consume alcohol, but only when their best friend also drinks (Litt, Stock, & Lewis, 2012). Other research has also suggested that there may be both social and conformity motives for drinking (Cooper, 1994). Furthermore, self-esteem may influence how individuals satisfy their connectedness goals within specific relationships after a threat (Murray, 2008).

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Interpersonal interactions and alcohol consumption

Theories on the motivations to consume alcohol suggest that drinking motives can be categorized based on their source (internal or external) and valence (positive or negative; Cooper, 1994; Cox & Klinger, 1988). This creates four drinking motives (enhancement, coping, social, and conformity) which are differentially related to alcohol use and alcohol-related consequences. Importantly, research suggests that drinking to regulate negative affect (both through coping and conformity motives) is directly related to increased alcohol-related problems when controlling for alcohol use in a way that drinking to enhance positive affect (both through enhancement and social motives) is not (Cooper, 1994; Cooper, Frone, Russell, & Mudar, 1995). Therefore, factors that lead to drinking after negative experiences may be especially important for researchers to understand.

One type of negative experience that appears to play an important role in alcohol consumption is negative interpersonal interactions (Hussong, Hicks, Levy, & Curran, 2001; Mohr et al., 2005). Negative interactions with close relationship partners play an especially important role in people's lives because of the high degree of interdependence and the importance these relationships have to people's sense of self (Aron, Aron, Tudor, & Nelson, 1991). According to the motivational model of alcohol consumption, negative experiences may lead to increased drinking as a way to cope with negative emotions (Cooper et al., 1995). However, negative interpersonal interactions can make people feel less accepted and activate belongingness needs and conformity drinking motives (Cooper, 1994). Therefore, we argue that college students may drink in response to negative interpersonal interactions to alleviate activated belongingness needs and social rejection. This concept of drinking to alleviate activated belongingness needs is further examined in the current research study.

Self-esteem and interpersonal interactions

Although there is mixed evidence regarding the relation between self-esteem and alcohol use (for a review, see Baumeister, Campbell, Krueger, & Vohs, 2003), self-esteem may play a role in how college students react to a threat to their belongingness. While explicit self-esteem is presumed to be conscious and controlled, implicit self-esteem refers to more automatic and unconscious evaluations of oneself (Greenwald & Banaji, 1995; Koole, Dijksterhuis, & van Knippenberg, 2001). Sociometer theory proposes that self-esteem acts as a gauge of one's relational value (Leary, 2005). Extending this idea, Murray, Derrick, Leder, and Holmes (2008) suggest that explicit self-esteem influences how individuals respond to a potentially threatening interaction with a relationship partner. Specifically, individuals with high explicit self-esteem are able to compensate for self-doubts by becoming more secure in their perceptions of their partner's regard. However, individuals with low explicit self-esteem are more sensitive to potential rejection from their partner and are unable to compensate with thoughts about their partner's acceptance. Thus, college students with low explicit self-esteem may be especially sensitive to a potential threat to a significant relationship.

Furthermore, belongingness threats are unique in that such threats must be repaired directly, by reaffirming a sense of acceptance (Knowles, Lucas, Molden, Gardner, & Dean, 2010). Therefore, while individuals with high explicit self-esteem may be able to compensate for self-doubts via their belief in their partner's continued acceptance (see Murray et al., 2008), individuals with low explicit self-esteem (who presumably have more doubts about

their partner's acceptance) are expected to need positive social interactions in order to repair threats to belongingness. This has been shown in previous research showing that, in response to belongingness threats, people with low explicit self-esteem become more interdependent (Vohs & Heatherton, 2001) and are motivated to seek out social interactions with others (Maner, DeWall, Baumeister, & Schaller, 2007). However, such social reconnection goals are aimed at those who did not initially reject them. Thus, college students with low explicit self-esteem who experience a threat to one relationship may be motivated to spend time interacting with other friends and find themselves in situations in which alcohol is being consumed. For this reason, we are interested in examining the amount of time students spend drinking with friends and the effects that this has on their own alcohol consumption.

Self-esteem, interpersonal interaction, and alcohol consumption

Support for the suggestion that both belongingness needs and self-esteem may impact alcohol consumption can be seen in the results of two daily diary studies examining drinking in response to interpersonal interactions (DeHart, Tennen, Armeli, Todd, & Affleck, 2008; DeHart, Tennen, Armeli, Todd, & Mohr, 2009). In a study of romantic interactions and alcohol consumption, one daily diary study found that individuals with low explicit self-esteem consumed more alcohol on days in which they had more negative interactions with their romantic partner (DeHart et al., 2008). This suggests that individuals with high explicit self-esteem may be better able to compensate for self-doubts that arise from relationship threats. Furthermore, a daily diary study examining more general interpersonal interactions found that students who were low in implicit self-esteem reported increased alcohol consumption and were more likely to drink with friends on nights when they had experienced more negative interpersonal interactions during the day (DeHart et al., 2009). This suggests that college students who feel less accepted may be more likely to seek out positive interactions with others and, due to the prevalence of alcohol use within the college environment, may be more likely to consume alcohol. Further, these results suggest that spending time drinking with friends may be an important moderator of the effects of belongingness needs on alcohol consumption. The results of this study also suggest that it is important to consider the effects of implicit, as well as explicit, self-esteem on alcohol consumption. However, this association between self-esteem (implicit and explicit), belongingness needs, time spent drinking with friends, and alcohol consumption has not yet been experimentally tested.

The current study

The current study seeks to further our understanding of how self-esteem (both implicit and explicit), belongingness needs, and time spent drinking with friends influence college student drinking through a friendship threat manipulation. This adds to the previous research by experimentally manipulating belongingness needs and measuring effects on actual consumption. We hypothesize that, among students with low self-esteem, there will be a significant interaction between belongingness needs and time spent drinking with friends. Among these students, a friendship threat should lead to increased drinking when students spend more time around others who are drinking. This should not occur in the control

condition. However, we do not expect to find this significant interaction among students with high self-esteem who can buffer themselves against a friendship threat.

We will test both implicit and explicit self-esteem as moderators of the effects of belongingness needs and time spent drinking with friends on alcohol consumption within the same model. This will allow us to test for effects of these two forms of self-esteem independent of one another and increase our knowledge of how each form of self-esteem independently predicts actual drinking behavior.

Method

Participants

A sample of 195 Loyola University Chicago students who had consumed alcohol within the past two weeks participated in this study. Participants were mostly female (67%) and ages ranged from 18 to 29 years ($M = 20.42$, $SD = 1.87$). Participants were predominantly White (59%) and in their first year of college (55%). Nineteen students were excluded from analyses because they did not follow the manipulation instructions and 28 students because they did not report the number of drinks that they consumed.¹

Overview of procedure

The experimental portion of this study (Time 1 assessment) took place on a Thursday, Friday, or Saturday² while classes were in session for the Spring semester. Upon arrival in the research lab, participants completed a computer-based survey including demographic questions and measures of implicit and explicit self-esteem. This was followed by the belongingness needs manipulation and manipulation check items. As compensation for this assessment, participants received either class credit or \$10.

The follow-up survey (Time 2) was emailed to participants the following day at noon and participants were given until 9pm to complete the survey. This survey measured alcohol consumption from the previous night and asked how much time they spent drinking with friends other than their best friend the previous night. Participants who completed this survey received either additional class credit or \$5. All participants who completed the follow-up survey on time were also entered into a \$50 lottery. Debriefing information was sent to all participants, regardless of whether or not they had completed the follow-up survey, the following morning at 8am.

Experimental Time 1 measures

Demographic and friendship information

Participants were asked to report their birthday. This was used to calculate their age at the time of data collection. In addition, participants were asked to indicate their gender, ethnicity, and year in school. Finally, participants were asked to think about their best non-romantic friend at Loyola and indicate how long they had been best friends with this person.

Implicit self-esteem

The name-letter test was used to assess participants' levels of implicit self-esteem (Kitayama & Karasawa, 1997; Nuttin, 1987). Participants were asked to rate how much they like each of the 26 letters of the alphabet on a 7-point scale (1 = *dislike very much*, 7 = *like very much*). A mean liking score was computed for each letter using scores from participants whose initials do not include those letters. Next, participants' preference for their first and last initials was computed by subtracting that letter's mean liking score from their rating of their initials. Participants' name-letter preference was computed by taking the average of their difference scores for their first and last name initials ($r = .42, p < .001$).³ Higher values indicate greater preference for their own initials and higher implicit self-esteem.

Explicit self-esteem

Explicit self-esteem was assessed through the Rosenberg (1965) 10-item measure (e.g., "I feel that I am a person of worth, at least on an equal basis with others" and "All in all, I am inclined to feel that I am a failure"). Participants indicated the extent to which they agree with each item on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). After reverse coding the necessary items, explicit self-esteem was calculated by averaging the participant's scores for these 10 items. Higher values represent higher levels of explicit self-esteem ($\alpha = .90$).

Belongingness needs activation manipulation

Upon entering the lab, participants were randomly assigned to either the belongingness needs activation condition or the control condition. All participants then completed the secret selves manipulation adapted from Murray, Rose, Bellavia, Holmes, and Kusche (2002) to get participants to think about aspects of themselves that they keep hidden from their best non-romantic friend at Loyola. Participants were asked to spend four minutes per item completing three of five statement stems about their hidden sides (i.e., "In terms of my personal habits/personal preferences or opinions/personality characteristics/private thoughts/past, I try to keep my best friend from seeing..."). Next, participants spent one minute reading a bogus article about the effects of having these secret aspects of their characters. Based on the original manipulation, the article read in the experimental condition led participants to believe that best friends eventually discover these secret aspects and conflict can develop as a result. In the control condition, participants read a bogus article indicating that researchers are interested in these hidden aspects of selves, but that they have no effect on friendships.

Manipulation checks

In order to confirm that the manipulation had an effect on belongingness, feelings of acceptance were measured. Participants were asked to rate the extent to which they currently feel accepted on a 7-point scale (1 = *not at all*, 7 = *completely*). In order to confirm that participants read and understood the article, participants completed two manipulation checks. First, participants were asked to rate how their best friend would react to discovering these secrets (1 = *very upset*, 9 = *very pleased*), how this discovery would affect their friend's perceptions of them (1 = *very negative*, 9 = *very positive*), and what effect this would have on the friendship (1 = *very harmful*, 9 = *very beneficial*; based on Murray et al., 2002). These three items were reverse scored to make higher scores more negative and were combined to form a measure

of expected reactions ($\alpha = .84$). Next, participants rated the content of the article on five dimensions (intuitiveness, reasonableness, believability, persuasiveness, and significance) on a 9-point scale (1 = *not at all*, 9 = *extremely*; Murray & Holmes, 1993). These items were combined to form a measure of article credibility ($\alpha = .86$).

Follow-up Time 2 measures

Alcohol consumption

The previous night's alcohol consumption was assessed by having participants report the number of standard alcoholic drinks they consumed over the course of the previous evening. Participants were instructed that one standard alcoholic drink is equal to one 12-oz. beer (usually about 5% alcohol content), one 8-oz. glass of malt liquor (usually about 7% alcohol content), one 5-oz. glass of wine (usually about 12% alcohol content), or 1.5-oz. of liquor either straight or in a mixed drink (usually about 40% alcohol content) and were given a visual aid illustrating these drink sizes (NIAAA, n.d.). College students have been shown to provide reasonably accurate self-reports of their alcohol use as compared to friends' reports of their alcohol use (Hagman, Cohn, Noel, & Clifford, 2010) and providing participants with information on what constitutes a standard drink has been shown to lessen the chances of underreporting (Bergen-Cico & Kilmer, 2010).

Time spent drinking with friends

Participants were asked to report the number of hours they spent drinking with friends other than their best friend on the previous night (DeHart et al., 2009). Participants could respond in integers from 0 to 24.

Results

The reported length of best friend relationships was an average of 3.11 years ($SD = 4.05$), indicating that these were generally well-established friendships. The number of drinks consumed ranged from 0 to 20 ($M = 2.31$, $SD = 3.53$) with 70 participants indicating that they consumed at least one drink. The number of hours participants spent drinking with friends other than their best friend ranged from 0 to 20 ($M = 1.59$, $SD = 2.59$). In addition, implicit and explicit self-esteem were not significantly correlated in the current sample, $r(176) = .08$, $p = .28$.

Analyses testing the effectiveness of the manipulation revealed that participants in the friendship threat condition ($M = 6.30$) reported feeling less accepted than participants in the control condition ($M = 6.96$), $t(174) = 2.38$, $p = .02$. The Condition \times Explicit Self-Esteem interaction predicting acceptance was not significant, $B = -.06$, $\beta = -.03$, $t(175) = -.50$, $p = .63$, nor was the Condition \times Implicit Self-Esteem interact, $B = -.01$, $\beta = -.01$, $t(175) = -.50$, $p = .95$. This indicates that, regardless of participants' level of implicit or explicit self-esteem, experiencing the friendship threat (vs. being in the control condition) was related to lower feelings of acceptance. In addition, a marginally significant effect suggests that participants in the friendship threat condition ($M = 5.13$) reported that conflicts were more likely to arise as a result of people keeping sides of their selves hidden than participants in the control condition ($M = 4.76$), $t(174) = -1.88$, $p = .06$. Finally, as expected, participants in the friendship threat

Table 1. Number of alcoholic drinks consumed as a function of condition, implicit self-esteem, explicit self-esteem, and time spent drinking with friends.

	<i>B</i>	Exp(<i>B</i>)	$\chi^2(1)$	<i>p</i>
Condition	.08	1.08	1.33	.25
Implicit self-esteem	-.11	.90	7.34	.01
Explicit self-esteem	.10	1.11	2.50	.11
Time drinking with friends	.31	1.36	159.34	<.001
Condition \times implicit self-esteem	.05	1.05	1.58	.21
Condition \times explicit self-esteem	.04	1.04	.30	.58
Condition \times time drinking with friends	.11	1.11	18.39	<.001
Implicit self-esteem \times time drinking with friends	-.06	.94	7.89	.01
Explicit self-esteem \times time drinking with friends	.01	1.01	.06	.80
Condition \times implicit self-esteem \times time drinking with friends	-.07	.93	12.58	<.001
Condition \times explicit self-esteem \times time drinking with friends	-.08	.93	14.81	<.001

($M = 6.30$) and control ($M = 6.58$) conditions did not differ in their perceptions of the credibility of the bogus article, $t(174) = 1.41, p = .16$.

Because the number of drinks consumed is a count variable, we conducted standard Poisson regressions instead of ordinary least squares regressions (see Cox, West, & Aiken, 2009).⁴ In order to test our hypothesis, we conducted a standard Poisson regression analysis including relationship threat condition (1 = belongingness needs activation condition, -1 = control condition), implicit self-esteem, explicit self-esteem, time drinking with friends, all relevant two-way interactions, and the two three-way interactions of Condition \times Implicit Self-Esteem \times Time Drinking With Friends and Condition \times Explicit Self-Esteem \times Time Drinking With Friends predicting the number of alcoholic drinks participants consumed. The results of this analysis are presented in Table 1. Condition and explicit self-esteem were unrelated to alcohol consumption. Low implicit self-esteem was related to greater alcohol consumption as was greater time spent drinking with friends. Only the implicit self-esteem by time drinking with friends two-way interaction was significant. However, both of the three-way interactions between condition, self-esteem, and time drinking with friends were significant predicting alcohol consumption.⁵

Moderation by implicit self-esteem

In order to determine the nature of the significant implicit self-esteem three-way interaction, we examined the effects of belongingness threat condition and time spent drinking with friends predicting the number of alcoholic drinks consumed separately for participants one standard deviation above (high implicit self-esteem) and below (low implicit self-esteem) average implicit self-esteem controlling for the effects of explicit self-esteem (Aiken & West, 1991). Among those with high implicit self-esteem, there was not a significant Belongingness Threat Condition \times Time Drinking With Friends interaction, $B = -.01, \text{Exp}(B) = .99, \chi^2(1) = .19, p = .66$ (see Figure 1(a)). For these students, there was only a significant simple main effect of time spent drinking with friends predicting increased alcohol consumption, $B = .22, \text{Exp}(B) = 1.24, \chi^2(1) = 52.48, p < .001$.

In contrast, among those with low implicit self-esteem, there was a significant Belongingness Threat Condition \times Time Drinking With Friends interaction, $B = .22, \text{Exp}(B) = 1.25, \chi^2(1) = 19.68, p < .001$ (see Figure 1(b)). Among those in the control condition, spending time drinking with friends was related to increased alcohol consumption, $B = .18,$

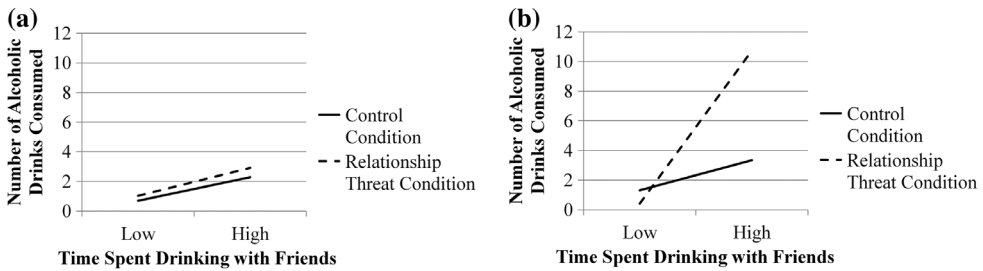


Figure 1. Number of alcoholic drinks consumed as a function of condition and time spent drinking with friends among students with (a) high implicit self-esteem and (b) low implicit self-esteem.

$\text{Exp}(B) = 1.20$, $\chi^2(1) = 16.44$, $p < .001$. Among those in the threat condition, this relation between time drinking with friends and alcohol consumption was significantly stronger, $B = .63$, $\text{Exp}(B) = 1.87$, $\chi^2(1) = 48.03$, $p < .001$.⁶

These effects show that, among students with low implicit self-esteem, spending time with others who were drinking was related to a greater increase in the number of alcoholic drinks consumed among those who had experienced a friendship threat than among those in the control condition. These effects were not found for students with high implicit self-esteem.

Moderation by explicit self-esteem

Simple slope analyses revealed that, among those with high explicit self-esteem, there was not a significant Belongingness Threat Condition \times Time Drinking With Friends interaction, $B = .02$, $\text{Exp}(B) = 1.02$, $\chi^2(1) = .41$, $p = .52$ (see Figure 2(a)). For these students, there was only a significant simple main effect of time spent drinking with friends predicting increased alcohol consumption, $B = .32$, $\text{Exp}(B) = 1.37$, $\chi^2(1) = 79.99$, $p < .001$.

In contrast, among those with low explicit self-esteem, there was a significant Belongingness Threat Condition \times Time Drinking With Friends interaction, $B = .19$, $\text{Exp}(B) = 1.21$, $\chi^2(1) = 39.81$, $p < .001$ (see Figure 2(b)). Among those in the control condition, spending time drinking with friends was related to increased alcohol consumption, $B = .12$, $\text{Exp}(B) = 1.12$, $\chi^2(1) = 41.50$, $p < .001$. Among those in the threat condition, this relation between time drinking with friends and alcohol consumption was significantly stronger, $B = .49$, $\text{Exp}(B) = 1.64$, $\chi^2(1) = 75.21$, $p < .001$.

These effects show that, among students with low explicit self-esteem, spending time with others who were drinking was related to a greater increase in the number of alcoholic drinks consumed among those who had experienced a friendship threat than among those in the control condition. These effects were not found for students with high explicit self-esteem.

Spending time with friends who are drinking

Finally, we predicted how much time people spent drinking with their friends (other than their best friend) that evening from condition, implicit self-esteem, explicit

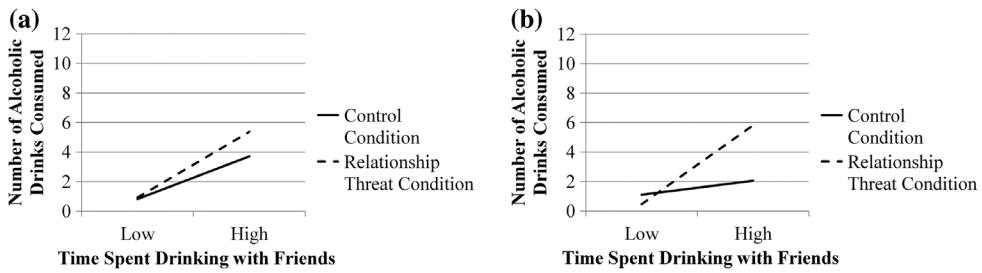


Figure 2. Number of alcoholic drinks consumed as a function of condition and time spent drinking with friends among students with (a) high explicit self-esteem and (b) low explicit self-esteem.

self-esteem, the Implicit Self-esteem \times Condition interaction, and the Explicit Self-esteem \times Condition interaction. This analysis revealed no significant main effects of condition ($B = -.34$, $\beta = -.13$, $t(146) = -1.55$, $p = .12$), implicit self-esteem ($B = -.07$, $\beta = -.04$, $t(146) = -.47$, $p = .64$), or explicit self-esteem ($B = .22$, $\beta = .10$, $t(146) = 1.08$, $p = .28$). Furthermore, neither the Implicit Self-esteem \times Condition interaction ($B = .16$, $\beta = .10$, $t(146) = 1.19$, $p = .24$) nor the Explicit Self-esteem \times Condition interaction ($B = -.08$, $\beta = -.03$, $t(146) = -.36$, $p = .72$) was significant. This suggests that people with high and low self-esteem (both implicit and explicit) did not differ in how much time they spent drinking with their friends as a function of the friendship threat manipulation. In other words, although people with low implicit and low explicit self-esteem did consume more alcohol after the belongingness threat, it does not appear to be because they spent more time around friends who were drinking.

Discussion

Our results show that everyone reports drinking more when they spend more time with others who are drinking. However, consistent with our predictions, this effect is significantly stronger for people with low self-esteem who have experienced a belongingness threat. Specifically, among students with low implicit self-esteem, spending time with others who were drinking was related to a greater increase in alcohol consumption for students who had experienced a friendship threat than students in the control condition. Similarly, among students with low explicit self-esteem, spending time with others who were drinking was related to a greater increase in alcohol consumption for students who had experienced a friendship threat than students in the control condition. However, this increase did not appear to be as strong as among students with low implicit self-esteem. In addition, this increased drinking did not appear to be driven by them spending more time with friends who were drinking. Therefore, our results seem to support the idea that low implicit self-esteem may be a stronger risk factor for college student drinking.

Among all students, spending time with others who were drinking was related to greater alcohol consumption. While unpredicted, this effect is not surprising. Participants who spent more time with others who were drinking were likely drinking as well, so it makes sense that spending more time doing so would be related to increased consumption. However, among

students with low implicit self-esteem, being around others who are drinking is related to greatly increased alcohol consumption after experiencing a friendship threat. This is consistent with previous research showing that college students with low implicit self-esteem report greater alcohol consumption on evenings when they had experienced more negative interpersonal interactions (DeHart et al., 2009). We suggest that this occurs because students with low implicit self-esteem (vs. those with high implicit self-esteem) are less able to compensate for self-doubts. Because individuals with low implicit self-esteem have fewer self-resources to draw on, they may regulate threats to their belongingness differently and potentially experience a greater desire to fit in with others. In contrast, students with high implicit self-esteem have more self-esteem resources to draw on and are able to use these self-resources to compensate for the threat to their belongingness. Because of this, the friendship threat did not moderate the effect of being around others on alcohol consumption for students with high implicit self-esteem.

In contrast, we see a similar (but arguably weaker) pattern among students with low explicit self-esteem. Although being around others who are drinking is related to greater alcohol consumption in both conditions, the effect of time spent drinking with friends on alcohol consumption for students in the friendship threat condition for students with low explicit self-esteem appears to be weaker than it is among students with low implicit self-esteem. While low implicit self-esteem students who had experienced the friendship threat consumed nearly 11 drinks in one evening if they spent a greater than average amount of time interacting with friends that night, students with low explicit self-esteem drank just under 6 drinks. Thus, our results appear to suggest that low explicit self-esteem and low implicit self-esteem may have different implications for alcohol consumption (see Baumeister et al., 2003).

The current research has several strengths. First, we extend previous research by manipulating the experience of friendship threat and measuring actual alcohol consumption as a consequence of belongingness threat. Although our research design was only quasi-experimental in nature, we can suggest some degree of causal interpretation for our results due to this study's use of an experimental manipulation of friendship threat. In addition, by measuring actual alcohol consumption by students following this manipulation, we increase the external validity of our study as well as its ability to predict an important health behavior. Furthermore, the fact that these results are seen in behaviors which occurred the evening after the friendship threat and in a completely different setting than the lab session adds to the robustness of these results. This study also furthers understanding of implicit self-esteem by exploring an instance in which implicit and explicit self-esteem have similar, but independent and conceptually different, effects on actual behavior. It is interesting that these two independent effects each exist when controlling for the other, suggesting that both implicit and explicit self-esteem are important unique factors in understanding how college students react to a belongingness threat. However, it does appear that having low implicit self-esteem, not low explicit self-esteem, may be the greater risk factor for increased college student drinking in response to a relationship threat.

Despite these intriguing findings, the current study does have some limitations. First, a limitation of the current research was that our sample was relatively homogeneous in terms of age and ethnicity. Specifically, our participants were mostly Caucasian and mostly freshmen or sophomores in college. While it is unlikely that external factors such as ability to

obtain alcohol led to the current results, such factors likely influence when students drink. This may have contributed to the high number of participants who did not consume any alcohol in our study. Future research should determine whether our findings extend to more advanced college students and students from diverse backgrounds. In addition, because college provides an environment in which a lot of socializing includes drinking, we may not see these same dynamics beyond a college setting. Further studies should examine factors leading students to be around others who are drinking such as social drinking motives (Cooper, 1994) or expectations regarding the effects of alcohol consumption on social pleasure and social expressiveness (Brown, Goldman, Inn, & Anderson, 1980).

Second, our study only used one measure of implicit self-esteem. Because there is often only a weak correlation between different measures of implicit self-esteem (Bosson, Swann, & Pennebaker, 2000; Koole et al., 2001), the current findings may not extend to other measures of implicit self-esteem. However, there is evidence to suggest that similar effects may be found from measures of implicit self-esteem that are uncorrelated with one another (Pelham et al., 2005). In addition, critics have argued that the name letter test used in the current study is not a valid measure of implicit self-esteem (Buhrmester, Blanton, & Swann, 2011). We believe that the current study adds to this debate by providing evidence of the validity of implicit self-esteem. Due to the similar pattern of effects for implicit and explicit self-esteem in the current study, we suggest that the current results support the validity of the name letter test as a measure of implicit self-esteem.

Lastly, the current study did not test potential mechanisms of the effects on alcohol consumption. One potential mediator of these effects that was previously mentioned (but is as yet untested) is conformity motives (Cooper, 1994). While we tested alcohol consumption in response to a belongingness threat, the current study did not test whether specific drinking motives mediated our results. Future research should test whether the increased alcohol consumption found in the current study is a due to conformity motives.

Another potential mechanism for these effects may be nonconscious mimicry, in which an individual unintentionally mimics the behaviors of others potentially without being aware of doing so (Chartrand & Bargh, 1999). Research has shown that nonconscious mimicry increases in response to social exclusion (Lakin, Chartrand, & Arkin, 2008) and that it can increase liking (Chartrand & Bargh, 1999) and closeness (Ashton-James, van Baaren, Chartrand, Decety, & Karremans, 2007). If nonconscious mimicry is the mechanism for the effects of the current study, this would suggest that students with low self-esteem are engaging in nonconscious mimicry in reaction to the threat. Thus, when they are around others who are consuming alcohol, they may consume greater quantities of alcohol without necessarily intending to do so. If this is the mechanism behind the current results, it may also explain why implicit self-esteem led to a stronger pattern of effects than explicit self-esteem. This may be due to the fact that implicit self-esteem is a stronger predictor of automatic behaviors than explicit self-esteem (Conner & Barrett, 2005; Rudolph, Schroder-Abe, Riketta, & Schutz, 2010; Spalding & Hardin, 1999).

Finally, an alternative explanation for the current results is that students are drinking to drown out their sorrows. However, we do not believe that this drinking motive fully explains the current results. Mohr et al. (2001) found that negative interpersonal experiences are associated with solitary drinking while positive interpersonal experiences are associated with social drinking. Therefore, if students were drinking solely due to negative affect potentially caused by the threat manipulation, we would expect to see more solitary drinking

among students with low self-esteem who had experienced a friendship threat. Since we only find an increase in drinking among these students when they were with others who were drinking, the current results suggest that alcohol is not being used for self-medication purposes. Instead alcohol consumption seems to be increasing due to students' social environment and their attempts to regulate their belongingness needs.

In conclusion, the present study suggests that some college students may increase their alcohol consumption in response to feeling that their belongingness needs are unmet. Given the many negative consequences associated with heavy alcohol consumption, future research should further explore this effect and potential interventions that might help low implicit self-esteem students feel more accepted or restore belongingness needs through another route (other than increased drinking). For example, incoming students could be educated about these effects and encouraged to engage in periodic self-affirmations (see Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009). Although there is some evidence suggesting that positive self-statements may backfire for people with low explicit self-esteem (Wood, Perunovic, & Lee, 2009), a self-affirmation task has been effective in reducing negative responses by individuals with low explicit self-esteem to a relationship threat (Jaremka, Bunyan, Collins, & Sherman, 2011). To our knowledge, there is no research looking at the effects of self-affirmations on people with low implicit self-esteem. Further research would be needed to explore this possibility.

Although additional research is needed to fully understand the processes behind these effects, the current study does provide us with increased insight into factors related to college student drinking. As suggested by previous research (DeHart et al., 2009), our results seem to indicate that implicit self-esteem serves as a risk factor for increased consumption in response to a belongingness threat. Moreover, such alcohol consumption is social in nature as this increased alcohol consumption is influenced by the amount of time spent drinking with friends. Thus, effects of belongingness needs and self-esteem on alcohol consumption are dependent upon students' social context and the behaviors occurring around them.

Notes

1. Participants who were excluded from analyses due to failure to follow manipulation instructions or failure to report the number of drinks they consumed did not differ from those who were included in which experimental condition they were assigned to, $\chi^2(1) = .02, p = .90$. Participants who were excluded from analyses also did not differ from those who were included in age, implicit self-esteem, explicit self-esteem, relationship length, experimental manipulation checks, or feelings of acceptance, all t 's < 1.25 , all p 's $> .21$. However, females were more likely to be included in analyses than males, $\chi^2(1) = 5.50, p = .02$.
2. These three days of the week have been shown to be more common drinking days for college students (Maggs, Williams, & Lee, 2011).
3. Although some researchers have suggested the use of an ipsatized scoring algorithm for the name letter test (see LeBel & Gawronski, 2009), others have suggested that the baseline-corrected scoring technique used here may have better validity (see Hoorens, 2014). In order to test whether using a different scoring technique would result in different effects within the current study, we calculated the name letter measure using the ipsatized algorithm advocated by LeBel and Gawronski (2009). There was a strong correlation between the two name letter scores, $r(176) = .86, p < .001$. As would be expected from this strong correlation, there were no meaningful differences in results when using the ipsatized scoring algorithm.
4. Although the number of drinks variable did include many zeros, we chose to conduct standard Poisson regression as opposed to zero-inflated Poisson regression because we did not have

structural zeros in our study (see Coxe et al., 2009). Specifically, our recruitment criteria specified that participants must have consumed alcohol within the previous two weeks, therefore, we did not have participants who will always produce a zero response on this measure.

5. It would be theoretically interesting to see if people with insecure self-esteem (i.e., high explicit and low implicit self-esteem; see Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003) drink more in response to the friendship threat. We ran this 4-way analysis and found that it was significant, $B = .09$, $\text{Exp}(B) = 1.09$, $\chi^2(1) = 17.14$, $p < .001$. Keep in mind that this analysis is likely to be underpowered. Interestingly, there was no evidence that people with insecure self-esteem drink more in response to a friendship threat. Instead, it appears that it is having both low implicit and low explicit self-esteem that leads to increased drinking when drinking with others after a threat.
6. Readers may note the unusually high cell in Figure 1(b). In order to check for outliers, we looked for data points in the number of drinks consumed variable that were three standard deviations or more away from the mean, not including zeros. Only two participants (one in each condition, with the highest drinking reported in the control condition) were above this number and removing them from analyses did not change the significant three-way interaction with implicit self-esteem. Therefore, we do not think that the results presented in Figure 1(b) are driven by outliers.

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