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Drinking to Belong: The Effects of Friendship Interactions on College Student Drinking

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DRINKING TO BELONG:

THE EFFECTS OF FRIENDSHIP INTERACTIONS ON COLLEGE STUDENT

DRINKING

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ABSTRACT

Previous research shows that college students consume large quantities of alcohol

(Fillmore & Jude, 2011; Wechsler et al., 2002). One theory suggests that this may be a

means of regulating negative emotions (Cooper, Frone, Russell, & Mudar, 1995), which

may include unmet belongingness needs. However, implicit self-esteem has also been

found to affect how people respond to relationship interactions (Longua Peterson &

DeHart, 2013). Therefore, the current study examines the moderating influence of

implicit self-esteem on the relation between belongingness needs and alcohol

consumption among college students. A 2 (belongingness threat condition: threat or

control) by continuous (implicit self-esteem) between-participants design was used.

Participants ($N = 195$) were randomly assigned to either the threat or control condition.

Analyses revealed that, among students in the friendship threat condition, implicit self-

esteem was unrelated to the amount of time students spent drinking with friends or to

feelings of acceptance the following day. However, among participants who spent more

time drinking with friends, experiencing a friendship threat was related to increased

alcohol consumption among students with low implicit self-esteem. Therefore, it seems

that participants with low implicit self-esteem may not seek out interactions with friends

in response to a friendship threat, but when they do spend more time drinking with

friends, they may consume more alcohol.

CHAPTER ONE

INTRODUCTION

Frequent binge drinking is prevalent among college students and associated with many negative consequences, making it an important behavior to understand. 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 (NIAAA, n.d.a). Understanding the factors that may lead to binge drinking may help prevent these negative consequences or lessen their impact. The Harvard School of Public Health College Alcohol Study surveyed students at colleges across the United States and looked for trends in college student alcohol use (Wechsler et al., 2002). They found no evidence of a change in the proportion of binge drinkers between 1993 and 2001 (43.9% of participants were classified as binge drinkers in 1993 versus 44.4% in 2001). Similar drinking rates among college students have been reported in the following decade. In one study, 54% of participants were classified as binge drinkers according to the 5/4 definition (drinking more than five drinks for a male, four for a female, on a single occasion) and 33% according to the .08% definition (drinking enough alcohol to produce a blood alcohol concentration of .08%; Fillmore & Jude, 2011). Furthermore, 56% of college students scored above the cut-off score on the Alcohol Use Disorders Identification Test (AUDIT), a commonly used screening instrument for at-risk drinkers.

These high binge drinking rates show the continuing prevalence of heavy alcohol consumption among undergraduate students.

One of the factors leading to this high rate of binge drinking may be the need to belong and feel accepted (DeHart, Tennen, Armeli,Todd, & Mohr, 2009; Litt, Stock, & Lewis, 2012), which is one of the most fundamental of human motivations (Baumeister & Leary, 1995). The desire to form and maintain social bonds is central to human psychological functioning and the need to belong can affect a variety of behaviors. Researchers have shown that this need to belong can affect alcohol consumption such that the relation between perceptions of best friend alcohol use and willingness to consume alcohol is stronger among college students who are higher in the need to belong (Litt et al., 2012). Another way to look at belongingness needs is to see how people high vs. low in self-esteem behave differently in response to social threats and study these different reactions (Leary, Tambor, Terdal, & Downs, 1995). For emerging adults (ages 18-25) who are exploring their sense of self and seeking to find their social identity, the need to belong may be especially important (Arnett, 2000). During this developmental period, risk behaviors such as binge drinking are especially prevalent, due to emerging adults' desire for novel and intense experiences and their relative lack of constraint by authority figures and responsibility. If the need to belong does increase the motivation for students to seek out social connection, this may lead to increased binge drinking among the college student population, due to the prevalence of alcohol in many college social settings. However, little work has focused on how feelings of belonging and acceptance may influence college student alcohol consumption.

Interpersonal Interactions and Alcohol Consumption

One theory on drinking behavior suggests that people drink alcohol as a means of regulating both positive and negative emotion (Cooper, Frone, Russell, & Mudar, 1995). Drinking to enhance is defined as an appetitive process in which people drink alcohol to increase positive affective states and emotional experiences. On the other hand, drinking to cope is defined as a reactive process in which people drink alcohol to regulate negative emotions. Importantly, it is drinking to cope, not drinking to enhance, that is associated with increased alcohol-related problems. Therefore, factors that lead to drinking to cope are especially important for researchers to understand. This model of drinking behavior may explain why relationships and interpersonal interactions have been shown to play an important role in both forms of alcohol consumption. College students may drink in order to enhance their positive emotions, but they may also drink in response to negative interpersonal interactions due to the activation of negative emotions and belongingness needs. This concept of drinking to cope with activated belongingness needs is further examined in the current research study.

Support for the concept of drinking to cope with negative friendship interactions has been shown in past studies. One study (Hussong et al., 2001) involving college students who completed repeated assessments of mood, alcohol use, and other measures, found that only those students who perceived their friendships as less intimate and reported receiving less social support from their friends drank more heavily during weeks when they experienced greater hostility or sadness. In other words, the effect that hostility and sadness had on alcohol consumption was moderated by support from friends

among this sample of college students. These findings are consistent with the idea that the negative feelings associated with having unmet belongingness needs and feelings of being unaccepted by one's friends may lead to increased alcohol consumption. These results also suggest that social support may be able to act as a buffer for negative experiences or negative moods leading to drinking. Further examination of this effect and the role of belongingness needs in college student drinking may help to explain the relation between belongingness threat and binge drinking. Although previous work is consistent with this idea, the empirical support is correlational and open to alternative explanations. A laboratory experiment in which belongingness needs are manipulated allows for a test of the causal effect of belongingness threat on college student alcohol consumption.

This current study also extends previous work by examining whether drinking with others is actually effective in making people feel more accepted. The effectiveness of seeking out social interactions in restoring feelings of acceptance is called into question by evidence that alcohol actually exacerbates relationship conflict (MacDonald, Zanna, & Holmes, 2000). In this study, when thinking about a conflict with their romantic partner, participants with low self-esteem (versus high self-esteem) felt less secure in their partner's regard after consuming alcohol, but not in the control condition. Furthermore, alcohol consumption exacerbated negative emotions and negative perceptions of the partner that were created by this feeling of rejection. This suggests that despite seeking out positive interpersonal interactions following belonging threat, participants with low self-esteem may actually increase their own insecurities by

consuming alcohol while doing so. Therefore, consuming alcohol could lead to

decreased feelings of acceptance among low self-esteem participants despite them

interacting with others to reduce the belongingness threat.

Self-Esteem and Relationship Interactions

    While many researchers have examined the effects of explicit (consciously

considered and relatively controlled) self-esteem on how people respond to relationship

interactions (e.g., Murray, Derrick, Leder, & Holmes, 2008), recently researchers have

also begun to examine the effects of implicit (unconscious, over learned, and automatic)

self-esteem on how people respond to relationship interactions (Longua Peterson &

DeHart, 2013; Stieger, Preyss, & Voracek, 2012). Greenwald and Banaji (1995, p. 11)

defined implicit self-esteem as "the introspectively unidentified (or inaccurately

identified) effect of the self-attitude on evaluation of self-associated and self-dissociated

objects." Therefore, while explicit self-esteem is a conscious self-evaluative process,

implicit self-esteem is presumably an unconscious self-evaluative process reflecting

unconscious associations with the self which are measured through indirect measures as

opposed to self-report (Greenwald & Farnham, 2000). This effect can be seen through

the liking for one's initials or the letters in one's name as well as in self-serving biases

and other psychological mechanisms (Nuttin, 1987). Evidence indicates that implicit

self-esteem develops earlier and changes more slowly than explicit self-esteem (Hetts,

Sakuma, & Pelham, 1999). This was shown across three studies examining implicit and

explicit self-esteem in participants who had grown up in a collectivistic culture and then

immigrated to an individualistic culture in comparison to participants who had always

lived in either an individualistic or a collectivistic culture. Hetts, Sakuma, & Pelham

(1999) found that participants' explicit self-esteem reflected their current cultural context

(either individualistic or collectivistic). In contrast, participants' implicit self-esteem

continued to reflect the individualistic or collectivistic culture in which they were raised.

These results suggest that, although social experiences may impact people's explicit

evaluations of their selves, implicit beliefs may be more difficult to change.

Both explicit and implicit self-esteem are believed to develop from interactions

with significant others (Bowlby, 1982; DeHart, Pelham, & Tennen, 2006) and be related

to relationship functioning (Leary et al., 1995; Murray, Rose, Bellavia, Holmes, &

Kusche, 2002). For example, DeHart et al. (2006) found that early interactions between

children and their parents (based on both children's and mother's reports) were related to

implicit self-esteem levels among those children even when they had reached young

adulthood. Furthermore, they found that while nurturance was related to both implicit

and explicit self-esteem, overprotectiveness was related only to implicit, and

permissiveness only to explicit, self-esteem. Thus, while these two constructs share

similar origins, the exact natures of implicit and explicit self-esteem do differ.

Interestingly, while these two constructs have many similarities, including their origins,

the correlation between them is small (Bosson, Swann, & Pennebaker, 2000). Thus,

implicit and explicit self-esteem may lead to different predictions about behaviors in

response to relationship interactions.

Sociometer theory posits that self-esteem is a psychological system designed to

monitor one's relational value and provide warning when it detects cues that an

individual's relational value is low or declining (Leary et al., 1995; Leary, 2005).

Explicit self-esteem can be viewed as an indicator of social acceptance and may reflect

perceived social standing (Leary et al., 1995). However, implicit self-esteem may also be

an important part of this system, allowing people to preconsciously monitor social

acceptance and motivate self-regulation at this level (DeHart et al., 2009; DeHart,

Pelham, Fiedorowicz, Carvallo, & Gabriel, 2011; Weisbuch, Sinclair, Skorinko, &

Eccleston, 2009). Furthermore, when a person is rejected by a close other, it is not only

self-esteem, but also belongingness that is threatened, making the restoration of positive

feelings even more difficult and necessary. Whereas non-social threats to self-esteem can

be repaired through a variety of indirect self-enhancement strategies, after a threat to the

social self, participants are more likely to seek out direct affirmations (Knowles, Lucas,

Molden, Gardner, & Dean, 2010). This indicates that after belongingness needs are

activated, participants are likely to seek out positive social interactions to alleviate the

threat and restore their positive views of themselves. Other self-enhancement strategies

might be able to help reduce the negative effect of the threat on their self-esteem by

restoring their sense of self-worth, but since belongingness is a social threat, only

techniques that repair the damage within the social domain will alleviate its effects.

Research has also shown that people with high vs. low explicit self-esteem

respond differently to negative interpersonal interactions. The risk regulation model

posits that interpersonal risk automatically activates both connectedness and self-

protection goals, allowing an executive control system to resolve this conflict (Murray et

al., 2008; Murray, Griffin, Rose, & Bellavia, 2003). For people with high explicit self-

esteem, connectedness goals are prioritized; for people with low explicit self-esteem, self-protection goals are prioritized. In one study, individuals with high explicit self-esteem continued to feel loved and accepted after experiencing negative interactions with their romantic partners (Murray et al., 2003). These participants were able to compensate for doubts about themselves by activating thoughts of their partner's acceptance and care, thus negating the effects of the threat. However, for those with low explicit self-esteem, this compensatory method was unavailable and they felt less loved and accepted in response to negative interactions with their significant other. This was due to the fact that those with high explicit self-esteem, but not those with low explicit self-esteem, feel more positively regarded by their significant other on a day-to-day basis. Thus, despite experiencing a negative interaction, they are able to fall back on that regard to affirm and protect their self and the relationship. Unfortunately for those with low explicit self-esteem, instead of finding support in their perceptions of their partner's regard, they feel less loved and accepted after negative events. This leads to their partners reporting decreased satisfaction over time and actually increases their chances of being rejected. This shows the importance of explicit self-esteem in close relationships as a means of compensating for self-doubt after negative interactions, reducing feelings of rejection and the need to cope with them.

Implicit self-esteem is also important to relationship functioning and differences in level of implicit self-esteem have been shown to have an effect on behavior (Longua Peterson & DeHart, 2013, DeHart et al., 2011). Longua Peterson and DeHart (2013) showed that participants with high implicit self-esteem displayed more positive nonverbal

behavior in response to conflict with their romantic partners, if they considered their partners to be committed to the relationship. This shows how implicit self-esteem can influence the ways in which people regulate connection to a partner when they believe their partner is committed to their relationship. In this study, an important aspect to note is that when participants explicitly doubted their partner's commitment, this effect was not found. Thus, although implicit self-esteem did predict positive nonverbal behavior in response to a relationship threat, participants didn't use this compensatory method unless they also felt that there was reciprocal commitment. Unfortunately for those with low implicit self-esteem, they were not able to compensate for relationship threat.

Additionally, Vohs and Heatherton (2001) have shown that, after ego threat, participants with low explicit self-esteem favor interpersonal feedback and think of themselves as more interdependent while participants with high explicit self-esteem favor competence feedback and think of themselves as more independent. In other words, participants with low explicit self-esteem seek out acceptance from others in response to interpersonal rejection. This also leads to participants with low explicit self-esteem being rated as more likeable than those with high explicit self-esteem after the threat. It is important to note that this work demonstrated that people with low explicit self-esteem were more likely to seek out interpersonal acceptance from other people who were not the cause of the initial threat. Therefore, it is reasonable to expect people with low self-esteem to seek out interpersonal interactions with friends and acquaintances who are not the cause of the belongingness threat.

Self-Esteem, Interpersonal Interactions, and Alcohol Consumption

For college students experiencing a negative interpersonal interaction, their reactions to belongingness threat will likely differ based on their self-esteem. Participants with high self-esteem may be able to compensate for the threat and avoid having strong reactions to the belongingness threat. In contrast, participants with low self-esteem may react strongly to these belongingness needs and the threat of contemplating conflict in their relationship with their best friend. One way to repair the damage due to this threat which students may choose is to interact with others (potentially leading to alcohol consumption due its prevalence in college social environments).

Evidence for this effect can be seen in two daily diary studies examining how interpersonal interactions each day relate to nightly alcohol consumption (DeHart, Tennen, Armeli, Todd, & Affleck, 2008; DeHart et al., 2009). In the first of these diary studies, researchers collected data from a community sample of moderate (adult) drinkers who completed background questionnaires and then completed surveys each night for 30 nights including measures of alcohol consumption, daily events, and state self-esteem (DeHart et al., 2008). They found that participants with high explicit self-esteem did not drink more after experiencing more negative romantic relationship events, however participants with low explicit self-esteem did. This shows that in response to an explicit threat to their romantic relationship, participants with low explicit self-esteem were more likely to consume alcohol, potentially as a means of coping with that threat. However, this effect was not found in response to negative non-romantic relationship threats, which

may not have presented as explicit a belongingness threat to participants as one involving their highly interdependent significant other.

In another diary study, researchers recruited college students to complete a 30-day daily diary study (DeHart et al., 2009). These students first completed a background survey including measures such as implicit and explicit self-esteem and then completed a daily survey each day. This daily survey measured alcohol consumption the previous night, who they were with the previous night, interpersonal interactions during the day, and intent to drink alcohol that night. They found that participants with low implicit self-esteem were more likely to consume alcohol while interacting with others on evenings when they had experienced more negative interpersonal interactions throughout the day. In contrast, participant with high implicit self-esteem were more likely to consume alcohol while interacting with others on evenings when they had experience more positive interpersonal interactions throughout the day. This presents a different result from the previous diary study in which participants with low explicit self-esteem used alcohol as a means of coping with an explicit belonging threat. In this study, college students with low implicit self-esteem seem to have sought out interactions with others (likely not the perpetrator of the belonging threat) to deal with the belongingness needs arising from negative interactions.

In the current study, therefore, both implicit and explicit self-esteem were measured and their effects tested. However, in line with the findings of these two daily diary studies, I hypothesized that only implicit self-esteem would predict increased alcohol consumption after experiencing a belongingness threat. This prediction was

based on the assumption that the belongingness needs arising from the friendship manipulation in the current study were subtler than the explicit threat of a negative interaction with a romantic other. Thus, although belongingness needs were expected to be activated and low implicit self-esteem participants were expected to seek out social interactions to cope with these needs, low explicit self-esteem participants were not expected to feel the need to cope with an explicit conflict. This prediction and the previous findings are consistent with the idea that negative interpersonal events may lead college students with low implicit self-esteem to seeking out interactions with others as a way to feel accepted when facing unmet belongingness needs, thus leading to alcohol consumption due to the prevalence of alcohol consumption by college students in social situations.

Summary of Hypotheses

     In the current study, I examined how implicit self-esteem moderates the relation between feeling unaccepted by one's best friend and college binge drinking. I built upon past research by including a direct manipulation of belongingness needs via a subtle threat to participants' relationship with their best friend, allowing me to test the causal effect of belongingness needs on college students' time spent interacting with others (leading to alcohol consumption). Time spent with others and participants' alcohol consumption on the night of the manipulation were measured in a follow-up survey sent to participants the next day via email. This allowed me to measure the time participants chose to interact with others and their binge drinking behavior (in addition to the initial desire and intention to consume alcohol). Although I tested effects of the friendship

threat on desires and intentions immediately following the manipulation, I focus upon

that night's drinking as the main outcome measure. I also examined the amount of time

participants spend interacting with their best friend and other friends that night to see if

people with low implicit self-esteem would spend more time interacting with friends who

are not their best friend that evening. Finally, I measured feelings of acceptance the

following day and tested whether the expected interaction and alcohol consumption had

any effect on how accepted participants felt.

Based on the literature reviewed above, I tested the following three hypotheses in

the current study:

Hypothesis 1: Participants in the best friend belongingness threat condition will

report greater alcohol consumption when they have low (versus high) implicit self-

esteem. In the control condition, implicit self-esteem will be unrelated to alcohol

consumption.

I predict a spreading interaction such that, for those in the control condition,

implicit self-esteem will be unrelated to alcohol consumption while, for those in the

belongingness needs activation condition, low implicit self-esteem will be related to

increased alcohol consumption that night. I expect that belongingness needs activated via

the friendship threat will cause participants with low implicit self-esteem to increase their

alcohol consumption.

Hypothesis 2: Participants in the best friend belongingness threat condition will

spend more time interacting with friends other than their best friend that evening when

they have low (versus high) implicit self-esteem. In the control condition, implicit self-

esteem will be unrelated to time spent with friends other than their best friend that evening.

Similar to alcohol consumption, I expect that, for participants in the control condition, implicit self-esteem will be unrelated to time spent with others. For participants in the belongingness needs activation condition, I expect that participants with high implicit self-esteem will compensate for any self-doubt created by the friendship threat and show no effects while participants with low implicit self-esteem will seek out interpersonal interactions with friends other than their best friend and will spend more time interacting with these other friends following the friendship threat.

Hypothesis 3: Participants in the best friend belongingness threat condition will feel less accepted by their other friends when they have low (versus high) implicit self-esteem. In the control condition, implicit self-esteem will be unrelated to feelings of acceptance.

Although I expect participants in the belongingness threat condition who have low implicit self-esteem to spend more time interacting and drinking with friends, I do not expect this increased interaction and alcohol consumption to increase their feelings of acceptance the next day. Instead, I expect that, for participants in the belongingness needs activation condition, low implicit self-esteem will be related to decreased feelings of acceptance on the following day. I do not expect to find this result for participants in the control condition.

CHAPTER TWO

METHODS

Participants

A sample of 195 Loyola University Chicago students completed the lab session,

however only 163 began the follow-up survey and were included in the final analyses.

Participants were also excluded from analyses if they did not write about secrets that they

keep from their best friend or indicated in their responses that they have no secrets. A

total of 15 participants were excluded for failing to follow the secret selves manipulation

instructions in these ways.[1] One hundred twenty of these participants completed the

study for partial course credit and 28 received monetary compensation. In addition,

participants who completed the follow-up survey on time were entered into a lottery to

receive a monetary prize. To be eligible, participants had to have consumed alcohol

within the past two weeks. Since I am studying alcohol consumption among a population

that is largely underage, I obtained a Certificate of Confidentiality from the National

Institutes of Health to protect all participants. Participants were mostly female (72%) and

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[1] Participants who were excluded from analyses, due to failure to begin the follow-up survey or failure to follow manipulation instructions, 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, liking of best friend, relationship significance, experimental manipulation checks, or feelings of acceptance, all t's < 1.26, all p's > .21. However, participants were more likely to be included in analyses if they completed the initial lab session on a Thursday (93%) than if they completed it on a Friday (71%) or a Saturday (80%), $\chi^2(2) = 6.53$, $p = .04$. Females (81%) were also more likely to be included in analyses than males (66%), $\chi^2(1) = 5.50$, $p = .02$. All further analyses will control for day of participation and gender.

ages ranged from 18 years to 29 years ($M = 20.39$, $SD = 1.81$). Participants were predominantly White (60%) and in their first year of college (57%).

Design

This study used a 2 (belongingness threat manipulation: threat or control) x continuous (implicit self-esteem) between-participants design. Participants were randomly assigned to either the belongingness threat ($N = 85$) or control ($N = 78$) condition. The dependent variables were number of drinks consumed, time spent with friends, and Time 2 feelings of acceptance.

Overview of Procedure

The experimental portion of this study (Time 1 assessment) took place on a Thursday, Friday, or Saturday[2] while classes were in session for the Spring semester. Twenty-five participants completed the lab session on a Thursday, 81 on a Friday, and 24 on a Saturday. Upon arrival in the research lab, participants completed a computer-based survey including demographic questions, measures of implicit and explicit self-esteem, and questions about their best friend at Loyola. This was followed by the belongingness needs manipulation, measures of perceived acceptance and mood, measures of their desire and intention to drink alcohol that night, and a manipulation check.

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

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[2] These three days of the week have been shown to be more common drinking days for college students (Maggs, Williams, & Lee, 2011).

spent with their best friend at Loyola and with other friends the previous night, how accepted they currently feel by their best friend and other friends, and their current mood.

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 information. In this assessment of demographic information, factors that have been related to alcohol consumption by college students were measured. These included age, gender, ethnicity, year in school, Greek house membership, athletic involvement, academic involvement, religiosity, and housing environment (Ham & Hope, 2003).

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 ($r = .36$, $p < .001$). 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 (α = .90).

Questions about best friend. Participants were asked about their relationship with their best non-romantic friend at Loyola. Participants were asked to report how many hours a week they interact with this friend, how long they've known them (in months), and how long they've been considered their best friend (in months). The length of the time participants have known this friend and have considered them their best friend were combined to form a measure of relationship length (r = .56, p < .001). Next, participants were asked how much they like this friend, how close they feel to this friend, how much of an emotional bond there is between them, and how committed they believe their best friend is to the relationship on a 7-point scale (1=*very little*, 7=*very much*). Finally, participants completed the one-item Inclusion of Other in the Self (IOS) Scale (Aron, Aron, & Smollan, 1992). In this scale, participants were asked to select the image that best represents their relationship with their best friend at Loyola from seven Venn-diagrams with differing levels of overlap between "self" and "best friend." Closeness, emotional bond, commitment and inclusion of friend in self were combined to form a measure of the relationship significance (α = .85).

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 et al. (2002) to get participants to think about aspects

of themselves that they keep kidden from their best friends. 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 of 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 lead 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.

Feelings of acceptance. 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 by their best friend[3] and by other friends

on a 7-point scale (1=*not at all*, 7=*completely*). Participants completed the six

acceptance-related items from a measure of felt vulnerability (e.g. "hurt," "appreciated,"

"rejected"; α = .87; Murray et al., 2008).

Current mood. Participants were asked to indicate on a 9-point scale (1=*not at*

all, 9=*extremely*) how much four mood-items (e.g., "happy," "angry," "sad") described

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[3] No predictions are being made in regards to feelings of acceptance and time spent interacting with this best friend, only with other friends. However, to keep participants from becoming suspicious of the change in focus and to prevent participants from including the best friend in their responses about other friends, all items will ask about both the best friend and other friends.

their feelings at that moment. This was controlled for in analyses to ensure that effects

are due to belongingness needs and not negative affect (α = .75).

Desire and intention to consume alcohol that night. One item assessed

participants' desire to consume alcohol ("To what extent do you wish to consume alcohol

tonight?") on a 7-point scale (1=*not at all*, 7=*to a great extent*). A second item assessed

participants' intention to consume alcohol ("Do you intend to drink alcohol tonight?") on

a 7-point scale (1=*definitely no*, 7=*definitely yes*).

Article manipulation checks. In order to confirm that participants read and

understood the article, participants completed several manipulation checks (based on

Murray et al., 2002). First, participants rated on 9-point scales the chances of conflict

developing in their relationship and in relationships in general (1=*very unlikely*, 9=*very*

likely). These two items were combined to form a conflict expectation score (r = .40, p <

.001). Second, 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*). These three items

were reverse scored to make higher scores more negative and combined to form a

measure of expected reactions (α = .87). Third, participants rated how positive and

negative they perceive their secret selves to be on a 9-point scale (1=*not at all*,

9=*extremely*). The positivity measure was reverse scored and these two items aggregated

to form a measure of the severity of secret selves (r = .74, p < .001). And finally,

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 (α = .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 be given a visual aid illustrating these drink sizes (NIAAA, n.d.b). 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 interacting with others. Participants were asked to answer two questions about their interactions with friends the previous night (DeHart et al., 2009). These questions asked participants to report the number of hours they spent interacting with their best friend and with other friends on the previous night. This was assessed using a scale ranging from 0 to 12, and greater than 12 (coded as 13).

Current feelings of acceptance. In order to test the impact that drinking may have had on participants' feelings of belongingness the next day, feelings of acceptance were measured. Participants were asked to rate the extent to which they currently felt accepted by their best friend and by their other friends on a 7-point scale (1=*not at all*, 7=*completely*). Participants also completed the six acceptance-related items from a measure of felt vulnerability (e.g. "hurt," "appreciated," "rejected"; $\alpha = .89$; Murray et al., 2008).

Current mood. Participants were asked to indicate on a 9-point scale (1=*not at all*, 9=*extremely*) how much four mood-items (e.g., "happy," "angry," "sad") described their feelings at that moment. This was controlled for in analyses to ensure that effects are due to belongingness needs and not negative affect ($\alpha = .82$).

CHAPTER THREE

RESULTS

Descriptive Statistics

The reported length of best friend relationships ranged from 1 to 312 months with

an average of 38.95 months, which is just over three years. Therefore, the best friend

relationships that were being threatened were generally well-established. 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.

Random Assignment Checks

To ensure that random assignment was successful and that participants in the

control and relationship threat conditions did not significantly differ from one another, I

conducted independent samples t-tests across the control and relationship threat

conditions to compare group means on age, academic commitment, religiosity, implicit

self-esteem, and explicit self-esteem. This analysis revealed that participants in the

control condition ($M = 5.49$) reported marginally significantly higher explicit self-esteem

compared with participants in the relationship threat condition ($M = 5.16$), $t(132.26) =$

1.77, $p = .08$. None of the other analyses were significant, all t's < .91, all p's > .36. I

also conducted independent samples t-tests across the control and relationship threat

conditions to compare group means on reported amount of time participants spend with

their best friend, the aggregated relationship length measure, liking of best friend, and the

aggregated relationship significance measure. None of these analyses were significant, all t's < 1.04, all p's > .30. Next, I conducted two-way chi-square tests comparing participants in the control versus relationship threat conditions on day of completion, gender, ethnicity, year in school, Greek house membership, athletic involvement, and living arrangements. None of these tests revealed significant differences between participants in the control versus relationship threat conditions, all χ^2's < 7.58, all p's > .10, indicating that random assignment across conditions was successful, other than for explicit self-esteem.

Manipulation Checks

Secret selves. To test the effectiveness of the manipulation, independent samples t-tests were conducted comparing participants in the friendship threat and control conditions on their thoughts about secret selves and their effects (see Table 1). In order for the analyses to establish the success of the manipulation, participants in the friendship threat condition should have expected more negative effects from having secret selves and from having those secret selves discovered by their best friend, but they should not have differed in their perceptions of the bogus article.

Analyses revealed that participants in the friendship threat and control conditions did not significantly differ in how they expected their best friend to react to the discovery of their secret selves (although the means were in the expected direction). However, analyses did reveal that participants in the friendship threat condition reported that conflicts were more likely to arise as a result of people keeping sides of their selves hidden and that their secret selves were more severe. As hoped for, participants in the

friendship threat and control conditions did not differ in their perceptions of the

credibility of the bogus article.

Table 1. Secret selves manipulation checks as a function of manipulation condition.

	Control	*Threat*	*t*	*df*	*p*
Likelihood of Conflicts Arising	3.13	4.56	-5.07	146	<.001
Expected Reactions of Best Friend	4.77	5.09	-1.46	146	.15
Perceived Severity of Secret Selves	4.83	5.35	-1.71	146	.09
Article Credibility	6.54	6.33	.95	146	.34

Feelings of acceptance. Next, to examine the effectiveness of the belongingness

threat condition in affecting feelings of acceptance, multiple regression analyses were

conducted predicting feelings of acceptance by one's best friend from manipulation

condition (-1 = control, 1 = relationship threat) and implicit self-esteem (continuous).

The continuous predictor variable was centered, as are all continuous predictor variables

in future analyses. I predicted that there would be a significant Condition x Implicit Self-

Esteem interaction predicting feelings of acceptance. The regression analysis revealed no

significant main effect of experimental condition, no significant main effect of implicit

self-esteem, and no significant Condition x Implicit Self-Esteem interaction, all $t <$ 1.61,

all $p > $.11.

I next considered the possibility that this experimental manipulation was too

subtle to affect feelings of acceptance by a best friend that was particularly well liked by

participants. To test this, I conducted multiple regression analyses predicting feelings of

acceptance by one's best friend from manipulation condition, implicit self-esteem, best

friend liking (continuous), all two-way interactions, and the Condition x Implicit Self-Esteem x Best Friend Liking three-way interaction. In the analyses predicting perceived acceptance by the best friend, as summarized in Table 2, the main effects of condition and implicit self-esteem were not significant. However, there was a significant main effect of best friend liking, such that participants who liked their best friend more reported higher perceived acceptance by their best friend. This suggests that students who like their best friend more also feel more accepted by that best friend. There was also a significant Condition x Implicit Self-Esteem x Best Friend Liking three-way interaction. [1]

Table 2. Perceived acceptance of best friend as a function of condition, implicit self-esteem, and best friend liking.

	B	β	t	p
Experimental Condition	-.05	-.03	-.45	.66
Implicit Self-Esteem	.05	.05	.68	.50
Best Friend Liking	.56	.37	4.87	<.001
Condition x Implicit Self-Esteem	.10	.11	1.49	.14
Condition x Best Friend Liking	.30	.20	2.66	.01
Implicit Self-Esteem x Best Friend Liking	-.28	-.32	-3.90	<.001
Condition x Implicit Self-Esteem x Best Friend Liking	-.20	-.23	-2.76	.01

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[1] Manipulation check data presented excludes participants who did not start the follow-up survey as these participants did not provide responses to dependent variables and could not be included in hypothesis testing analyses. However, when participants who did not start the follow-up survey were included in this manipulation check, this three-way interaction was not significant, $B = -.06$, $\beta = -.07$, $t(175) = -.91$, $p = .37$.

To determine the nature of this significant Condition x Implicit Self-Esteem x Best Friend Liking three-way interaction, I used the procedures outlined by Aiken and West (1991) for testing interactions in multiple regression analyses. These procedures were also used in all further analyses. I first calculated two variables to represent participants one standard deviation above (i.e., high best friend liking) and below (i.e., low best friend liking) the mean on best friend liking. Then, I ran analyses in which I entered the newly computed high and low liking variables separately into the regression equation replacing the original best friend liking variable. The Condition x Implicit Self-Esteem interaction was not significant among those high in best friend liking (see Figure 1A), $B = -.09$, $\beta = -.09$, $t(147) = -.84$, $p = .41$. However, among those low in best friend liking (see Figure 1B), there was a significant Condition x Implicit Self-Esteem interaction, $B = .29$, $\beta = .32$, $t(147) = 3.12$, $p < .001$.

Figure 1A. Perceived acceptance of best friend as a function of condition and implicit self-esteem among participants high in best friend liking.
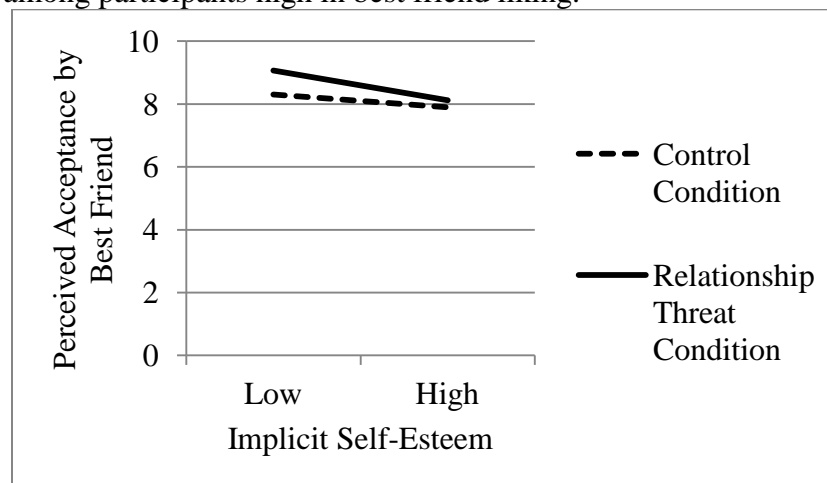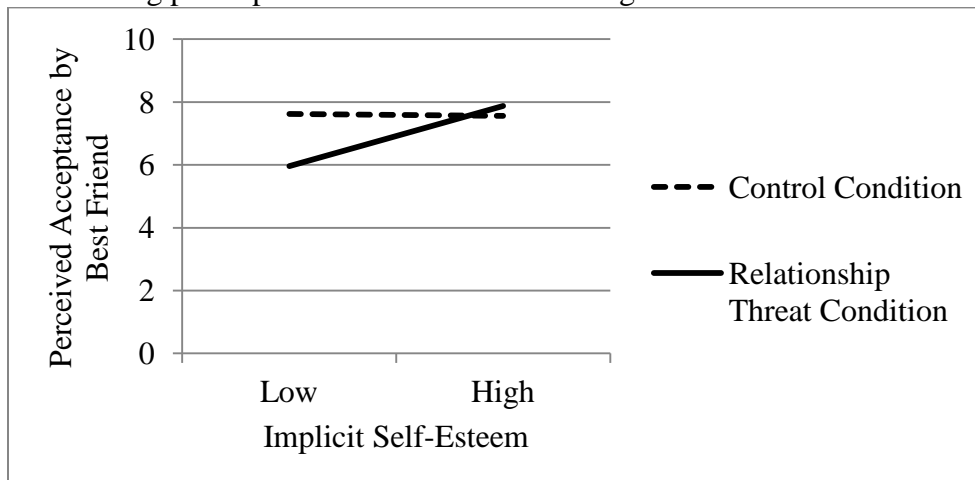
Figure 1B: Perceived acceptance of best friend as a function of condition and implicit self-esteem among participants low in best friend liking.

I next examined the simple slopes of implicit self-esteem predicting feelings of acceptance by one's best friend separately for those in the control and relationship threat conditions among those low in best friend liking (see Figure 1B). Among those low in best friend liking, analysis of participants in the control condition revealed no significant effect of implicit self-esteem on feelings of acceptance by one's best friend, $B = .02$, $\beta = .02$, $t(147) = .21$, $p = .83$. However, among those low in best friend liking, analysis of participants in the relationship threat condition revealed that participants with low implicit self-esteem reported significantly lower perceived acceptance by their best friend than those with high implicit self-esteem, $B = .61$, $\beta = .66$, $t(147) = 3.82$, $p < .001$. This suggests that, among participants low in best friend liking, participants with lower implicit self-esteem felt less accepted by their best friend after experiencing the relationship threat.

I also tested for effects on mood, but did not expect a significant effect. To test this, I first conducted multiple regression analysis predicting mood at Time 1 from

experimental condition and implicit self-esteem. This analysis revealed a significant

main effect of condition on mood, $B = -.24$, $\beta = -.17$, $t(147) = -2.05$, $p = .04$. This

suggests that participants in the relationship threat condition were in a more negative

mood than participants in the control condition. However, there was no main effect of

implicit self-esteem, $B = .08$, $\beta = 08$, $t(147) = 1.03$, $p = .30$. This suggests that people

with low versus high implicit self-esteem did not differ in their mood at Time 1.

Furthermore, there was not a significant Condition x Implicit Self-Esteem interaction, $B =$

$.00$, $\beta = .00$, $t(147) = .02$, $p = .99$.

Table 3. Time 1 mood as a function of condition, implicit self-esteem, and best friend
liking.

	B	β	t	p
Experimental Condition	-.22	-.15	-1.83	.07
Implicit Self-Esteem	.05	.05	.62	.54
Best Friend Liking	.13	.09	.99	.33
Condition x Implicit Self-Esteem	.02	.02	.20	.84
Condition x Best Friend Liking	.13	.09	1.01	.32
Implicit Self-Esteem x Best Friend Liking	-.15	-.18	-1.88	.06
Condition x Implicit Self-Esteem x Best Friend Liking	-.08	-.09	-.94	.35

I next conducted multiple regression analyses predicting mood at Time 1 from

experimental condition, implicit self-esteem, best friend liking (continuous), all two-way

interactions, and the Condition x Implicit Self-Esteem x Best Friend Liking three-way

interaction (see Table 3). There was a marginally significant main effect of experimental

condition, suggesting that participants in the relationship threat were in a more negative

mood. However, there was no main effect of implicit self-esteem or best friend liking.

The three-way Condition x Implicit Self-Esteem x Best Friend Liking interaction was

also not significant. Taken together, the above results suggest that the manipulation

influenced perceived accepted for people with low implicit self-esteem who were lower

in best friend liking in the relationship threat condition and these effects cannot be

explained by mood.

Hypothesis 1: Drinking Behavior

Because the number of drinks consumed is a count variable, it is not normally

distributed and predictions using ordinary least squares regressions will be skewed.

Therefore, when examining effects predicting drinks consumed, I conducted standard

Poisson regressions instead of ordinary least squares regressions (see Coxe, West, &

Aiken, 2009). In order to test my primary hypothesis, I examined the joint effects of

belongingness threat condition and implicit self-esteem predicting the number of

alcoholic drinks consumed. There was no significant main effect of condition, $B = -.07$,

$Exp(B) = .93$, $\chi^2(1) = 1.72$, $p = .19$. This suggests that participants in the control and

relationship threat conditions did not differ in the number of drinks they consumed. The

main effect of implicit self-esteem was also non-significant, $B = -.04$, $Exp(B) = .96$, $\chi^2(1)$

$= 1.43$, $p = .23$. This suggests that implicit self-esteem was unrelated to alcohol

consumption. However, there was a significant Condition x Implicit Self-Esteem

interaction, $B = .11$, $Exp(B) = 1.12$, $\chi^2(1) = 9.62$, $p < .001$, predicting alcohol

consumption (see Figure 2).

To determine the nature of this significant interaction, I examined the simple slope of implicit self-esteem predicting the number of alcoholic drinks consumed separately in the belongingness threat condition and the control condition (see Figure 2). Contrary to hypotheses, among those in the relationship threat condition, there was no effect of implicit self-esteem on number of drinks consumed, $B = .07$, $Exp(B) = 1.07$, $\chi^2(1) = 1.65$, $p = .20$. Furthermore, among those in the control condition, participants with low implicit self-esteem reported consuming significantly more alcoholic drinks than those with high implicit self-esteem, $B = -.16$, $Exp(B) = .86$, $\chi^2(1) = 9.71$, $p < .001$.

Figure 2. Number of alcoholic drinks consumed as a function of condition and implicit self-esteem.
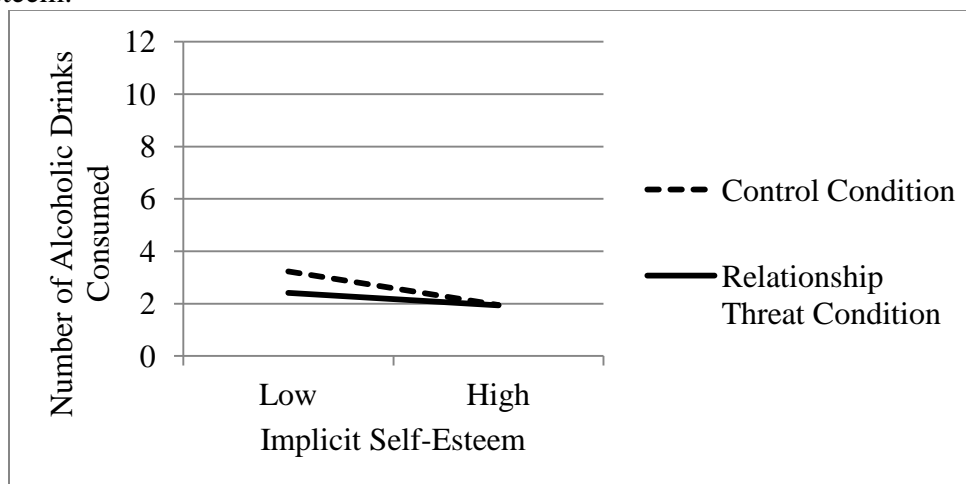
Using ordinary least squares regression, I also tested the effects of condition and implicit self-esteem predicting desire to consume alcohol. There was no significant main effect of relationship threat condition, no significant main effect of implicit self-esteem, and no significant Condition x Implicit Self-Esteem interaction, all B's $< .27$, all β's $<$ .14, all t's < 1.59, all p's $> .11$, predicting desire to consume alcohol.

Finally, I tested the effects of condition and implicit self-esteem predicting intentions to consume alcohol. There was no significant main effect of condition, $B = .12$, $\beta = .06$, $t(147) = .72$, $p = .47$, which suggests that participants in the control and relationship threat conditions did not differ in their intentions to consume alcohol. There was a marginally significant main effect of implicit self-esteem, $B = -.19$, $\beta = -.14$, $t(147) = -1.70$, $p = .09$, which suggests that participants with low implicit self-esteem indicated greater intentions to consume alcohol than those with high implicit self-esteem. There was also a significant Condition x Implicit Self-Esteem interaction predicting drinking intentions, $B = .22$, $\beta = .16$, $t(147) = 1.98$, $p = .05$. Similarly to the pattern of actual alcohol consumption, there was not a significant effect of implicit self-esteem on drinking intentions within the threat condition, $B = .03$, $\beta = .02$, $t(147) = .18$, $p = .86$. Similarly, however, for those in the control condition, participants with low implicit self-esteem reported significantly higher intentions to consume alcohol than those with high implicit self-esteem, $B = -.41$, $\beta = -.30$, $t(147) = -2.53$, $p = .01$.

Therefore, it seems that, contrary to predictions, participants in the relationship threat condition did not show an effect of implicit self-esteem on intentions to consume alcohol or on actual drinking behavior. Instead, among those in the control condition, low implicit self-esteem was associated with increased drinking intentions and with increased alcohol consumption.

Finally, I performed these same analyses with explicit self-esteem replacing implicit self-esteem. Consistent with predictions and previous findings, the two-way interaction between condition and explicit self-esteem did not predict alcohol

consumption, $B = .03$, $Exp(B) = .98$, $\chi^2(1) = .21$, $p = .65$. Furthermore, there were no significant main effects of interaction effects predicting either desire or intention to consume alcohol, B's $< .26$, all β's $< .13$, all t's < 1.45, all p's $> .14$.

Additional analyses. Given the unexpected findings of the tests predicting alcohol consumption, I performed additional analyses to determine whether or not the previously identified effects were moderated by a third variable. Due to the previously described finding that best-friend liking moderated the effectiveness of the relationship threat manipulation on feelings of acceptance, I included best-friend liking as a moderator of the relationship between implicit self-esteem and experimental condition on alcohol consumption. Conducting a standard Poisson regression analysis including relationship threat condition, implicit self-esteem, best friend liking, all two-way interactions, and the three-way Condition x Implicit Self-Esteem x Best Friend Liking interaction did not yield a significant three-way interaction predicting the number of alcoholic drinks participants consumed, $B = -.03$, $Exp(B) = .97$, $\chi^2(1) = .51$, $p = .48$.

Since the hypothesized increase in alcohol consumption among participants with low implicit self-esteem was expected to occur due to participants in the relationship threat condition seeking out interactions with others and drinking as a result of this increased interaction, I next tested the amount of time participants spent drinking with friends as a moderating variable.

Conducting a standard Poisson regression analysis including relationship threat condition, implicit self-esteem, time drinking with friends, all two-way interactions, and the three-way Condition x Implicit Self-Esteem x Time Drinking With Friends (other

than their best friend) interaction and controlling for time drinking with one's best friend,

yielded significant results predicting the number of alcoholic drinks participants

consumed (see Table 4). In order to determine the nature of this significant three-way

interaction, I first examined the effects of condition and implicit self-esteem predicting

the number of alcoholic drinks consumed separately for participants who spent one

standard deviation above (high time drinking with friends) and below (low time drinking

with friends) the average amount of time drinking with friends.

Table 4. Number of alcoholic drinks consumed as a function of condition, implicit self-esteem, and time spent drinking with friends (other than one's best friend).

	B	Exp(B)	$\chi^2(1)$	p
Experimental Condition	.01	1.01	.04	.84
Implicit Self-Esteem	-.15	.86	12.72	<.001
Time Drinking With Friends	.27	1.31	70.28	<.001
Condition x Implicit Self-Esteem	.13	1.13	8.94	<.001
Condition x Time Drinking With Friends	.13	1.14	27.30	<.001
Implicit Self-Esteem x Time Drinking With Friends	-.02	.99	.61	.43
Condition x Implicit Self-Esteem x Time Drinking With Friends	-.10	.90	25.32	<.001

Among those who spent less time drinking with friends, there was a significant

Condition x Implicit Self-Esteem interaction, $B = .39$, $Exp(B) = 1.48$, $\chi^2(1) = 24.64$, $p <$

.001 (see Figure 3A). Among those in the control condition, participants with low

implicit self-esteem reported consuming significantly more drinks than those with high

implicit self-esteem, $B = -.51$, $Exp(B) = .60$, $\chi^2(1) = 24.39$, $p = .01$ while among those in

the relationship threat condition, participants with low implicit self-esteem reported

consuming significantly fewer drinks than those with high implicit self-esteem, $B = .28$,

$Exp(B) = 1.32$, $\chi^2(1) = 5.54$, $p = .02$. Thus, among those who spent less time drinking

with friends, the control condition once again shows a pattern of increased alcohol

consumption for those with low implicit self-esteem. However, among these participants,

the relationship threat condition shows the opposite effect. Specifically, among those

who spent less time drinking with friends, the relationship threat condition shows a

pattern of decreased alcohol consumption for those with low implicit self-esteem.

Figure 3A. Number of alcoholic drinks consumed as a function of condition and implicit self-esteem among those who spent less time drinking with friends.
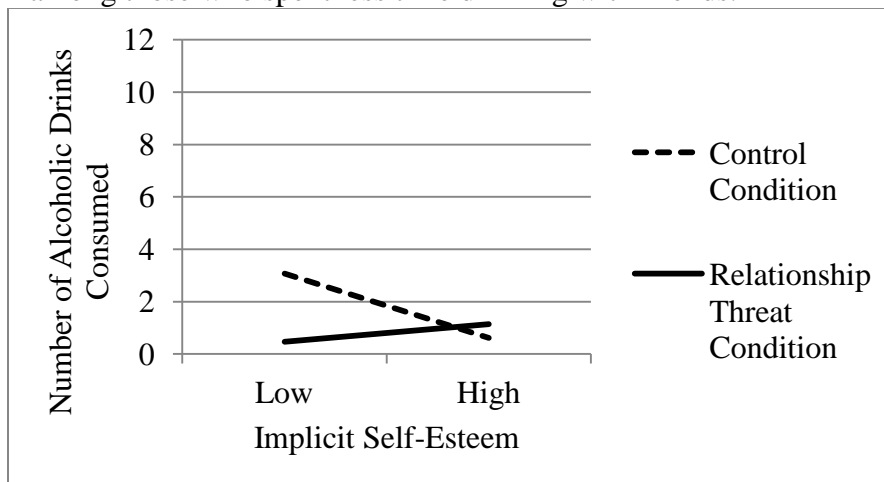
Among those who spent more time drinking with friends, there was a significant

Condition x Implicit Self-Esteem interaction, $B = -.14$, $Exp(B) = .87$, $\chi^2(1) = 6.81$, $p = .01$

(see Figure 3B). Among those in the relationship threat condition, participants with low

implicit self-esteem reported consuming significantly more drinks than those with high

implicit self-esteem, $B = -.33$, $Exp(B) = .72$, $\chi^2(1) = 15.09$, $p < .001$. However, among

those in the control condition, there was no significant effect of implicit self-esteem on alcohol consumption, $B = -.05$, $Exp(B) = .95$, $\chi^2(1) = .70$, $p = .40$. Thus, among those who spent greater than average amounts of time drinking with friends, implicit self-esteem was unrelated to alcohol consumption in the control condition and negatively related to alcohol consumption for participants in the relationship threat condition.
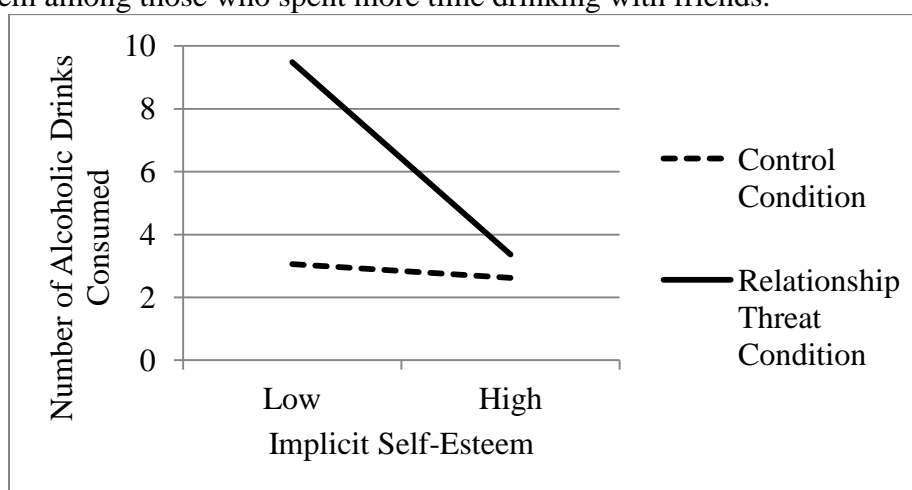
Figure 3B. Number of alcoholic drinks consumed as a function of condition and implicit self-esteem among those who spent more time drinking with friends.

Therefore, although my primary hypothesis was not supported among all participants, among those who spent greater than average amounts of time drinking with friends, the hypothesized pattern of condition and implicit self-esteem predicting alcohol consumption was found.

Finally, I performed these same analyses with explicit self-esteem replacing implicit self-esteem. Although this did reveal a significant Condition x Explicit Self-Esteem x Time Drinking With Friends interaction, $B = -.04$, $Exp(B) = .96$, $\chi^2(1) = 4.60$, $p = .03$, further examination revealed no significant Condition x Explicit Self-Esteem

interactions when testing these effects separately for those who spent more time drinking with friends, $B = -.07$, $Exp(B) = .93$, $\chi^2(1) = 1.54$, $p = .22$, or among those who spent less time drinking with friends, $B = .13$, $Exp(B) = 1.14$, $\chi^2(1) = 1.62$, $p = .20$.

Hypothesis 2: Interactions With Others

In order to test my second hypothesis, I first examined whether the interaction between implicit self-esteem and condition predicts the amount of time participants spent with friends other than their best friend, controlling for time participants spent with their best friend. Poisson regressions revealed no significant main effect of condition, main effect of implicit self-esteem, or Condition x Implicit Self-Esteem interaction, all B's < .04, all $\chi^2(1)$'s < 1.23, all p's > .26, predicting time spent with friends other than one's best friend.

I next conducted multiple regression analyses to examine the effects of condition and implicit self-esteem on the amount of time participants spent drinking with friends other than their best friend, controlling for time spent drinking with one's best friend. These analyses revealed no significant main effect of condition, $B = -.07$, $Exp(B) = .94$, $\chi^2(1) = .87$, $p = .35$ and no significant main effect of implicit self-esteem, $B = -.02$, $Exp(B) = .98$, $\chi^2(1) = .20$, $p = .66$. However the Condition x Implicit Self-Esteem interaction was significant, $B = .12$, $Exp(B) = 1.12$, $\chi^2(1) = 6.46$, $p = .01$. There was no significant effect of implicit self-esteem on the amount of time participants spent drinking with their other friend in the relationship threat condition, $B = .10$, $Exp(B) = 1.10$, $\chi^2(1) = 1.83$, $p = .18$. However, among participants in the control condition, those with lower

implicit self-esteem reported spending significantly more time drinking with their other

friends, $B = -.14$, $Exp(B) = .87$, $\chi^2(1) = 5.48$, $p = .02$.

Therefore, it seems that the friendship threat manipulation did not affect the

amount of time participants spent with their friends in general. Furthermore, and

contrary to my hypothesis, it was actually those in the control condition who spent more

time drinking with their friends to the extent that they were low in implicit self-esteem.

Thus, any effects of implicit self-esteem and experimental condition on alcohol

consumption are a result of increased alcohol consumption rates and not a result of

spending increased time consuming alcohol with friends.

Additional analyses. I next examined each of these two analyses with best friend

liking included as a moderator. Conducting a standard Poisson regression analysis

including experimental condition, implicit self-esteem, best friend liking, all two-way

interactions, and the three-way Condition x Implicit Self-Esteem x Best Friend Liking

interaction predicting time spent with friends other than one's best friend did yield a

significant three-way interaction, $B = -.09$, $Exp(B) = .92$, $\chi^2(1) = 6.87$, $p = .01$.

Among those high in best friend liking, there was not a significant Condition x

Implicit Self-Esteem interaction, $B = -.07$, $Exp(B) = .94$, $\chi^2(1) = 2.22$, $p = .14$ (see Figure

4A), predicting time spent with friends other than one's best friend. Among those low in

best friend liking, there was a significant Condition x Implicit Self-Esteem interaction, B

$= .11$, $Exp(B) = 1.11$, $\chi^2(1) = 5.31$, $p = .02$ (see Figure 4B), predicting time spent with

friends other than one's best friend.

Figure 4A. Time spent with friends other than one's best friend as a function of condition and implicit self-esteem among those high in best friend liking.
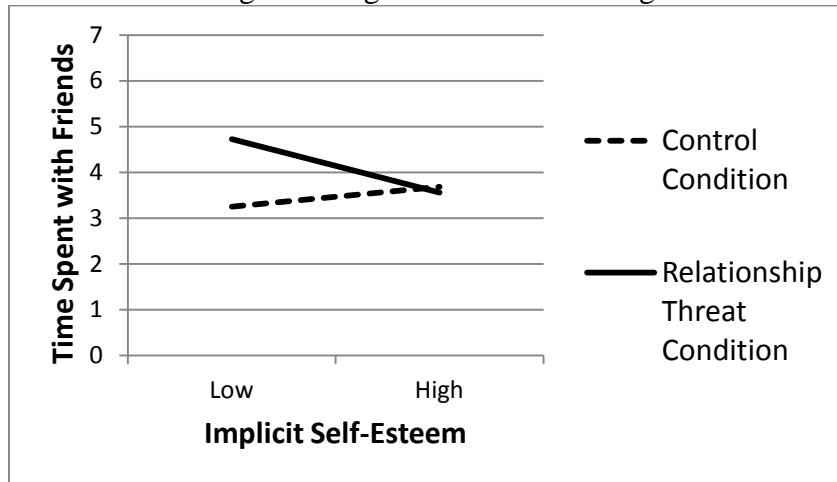
Figure 4B. Time spent with friends other than one's best friend as a function of condition and implicit self-esteem among those low in best friend liking.
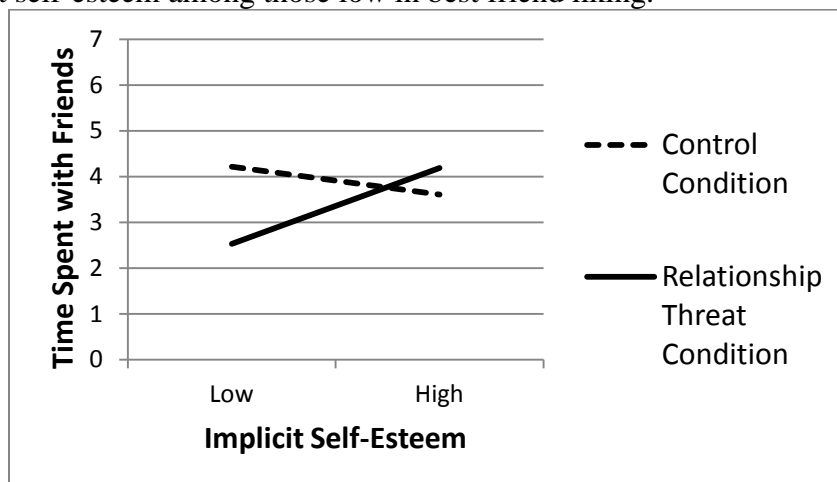
For participants low in best friend liking, among those in the control condition, there was no effect of implicit self-esteem on time spent with friends other than one's best friend, $B = -.05$, $Exp(B) = .95$, $\chi^2(1) = 1.40$, $p = .24$. However, among participants in the relationship threat condition, participants with low implicit self-esteem reported spending significantly less time with friends other than their best friend, $B = .16$, $Exp(B)$

= 1.18, $\chi^2(1) = 3.96$, $p = .05$. Thus, among those who liked their best friend less, there

was no effect of implicit self-esteem on time spent with one's friend in the control

condition, while participants with low implicit self-esteem who experienced the

relationship threat actually spent less time interacting with friends other than their best

friend.

Conducting a standard Poisson regression analysis including experimental

condition, implicit self-esteem, best friend liking, all two-way interactions, and the three-

way Condition x Implicit Self-Esteem x Best Friend Liking interaction predicting time

spent drinking with friends other than one's best friend did not yield a significant three-

way interaction, $B = -.09$, $Exp(B) = .92$, $\chi^2(1) = 2.35$, $p = .13$.

Overall, it seems that participants with low implicit self-esteem who experience a

relationship threat decreased the amount of time they spent interacting with friends other

than their best friend, although they did not decrease the amount of time they spent

drinking with these friends. This contradicts the hypothesis that participants with low

implicit self-esteem who experienced a relationship threat would seek out time with

friends other than their best friend.

Hypothesis 3: Feelings of Acceptance

In order to test my final prediction, I examined whether the interaction between

implicit self-esteem and condition predicts feelings of acceptance by friends other than

one's best friend at Time 2 (controlling for Time 2 mood) using ordinary least squares

regression. Additionally, I controlled for Time 1 feelings of acceptance by friends other

than one's best friend. There was a marginally significant main effect of condition

predicting Time 2 feelings of acceptance by friends, $B = .18$, $\beta = .15$, $t(146) = 1.93$, $p = .06$. This suggests that participants in the relationship threat condition felt marginally less accepted by their friends at Time 2. There was not a significant main effect of implicit self-esteem, $B = .04$, $\beta = .05$, $t(146) = .57$, $p = .57$. This suggests that implicit self-esteem was unrelated to Time 2 feelings of acceptance by one's friends. Finally, there was not a significant Condition x Implicit Self-Esteem interaction, $B = .02$, $\beta = .02$, $t(146) = .23$, $p = .82$.

Therefore, it seems that, contrary to predictions, the friendship threat was not related to decreased feelings of acceptance at Time 2 by one's friends, regardless of implicit self-esteem.

Additional analyses. I next examined this analysis with best friend liking included as a moderator. The three-way Condition x Implicit Self-Esteem x Best Friend Liking interaction predicting Time 2 feelings of acceptance by friends other than one's best friend was not significant, $B = .06$, $\beta = .08$, $t(146) = .86$, $p = .39$.

I next examined this analysis with time spent drinking with friends other than best friend as a moderator. The three-way Condition x Implicit Self-Esteem x Time Spent Drinking with Other Friends interaction predicting Time 2 feelings of acceptance by friends other than one's best friend was not significant, $B = -.02$, $\beta = -.05$, $t(145) = -.57$, $p = .57$.

CHAPTER FOUR

DISCUSSION

The first hypothesis was that participants in the best friend belongingness threat condition would report greater alcohol consumption when they had low (versus high) implicit self-esteem. Contrary to this hypothesis, implicit self-esteem was found to be unrelated to alcohol consumption among participants in the relationship threat condition. Instead, participants in the control condition reported greater alcohol consumption when they had low implicit self-esteem. The second hypothesis was that participants in the best friend belongingness threat condition would spend more time interacting with friends other than their best friend that evening when they had low (versus high) implicit self-esteem. Contrary to this second hypothesis, there was no effect of implicit self-esteem on time spent with friends or time spent drinking with friends among participants in the relationship threat condition. Instead, participants in the control condition reported spending more time drinking with friends other than their best friend when they had low implicit self-esteem. Finally, the third hypothesis was that participants in the best friend belongingness threat condition would feel less accepted by their other friends on the following day when they had low (versus high) implicit self-esteem. Contrary to this final hypothesis, there was no effect of implicit self-esteem on Time 2 feelings of acceptance by friends among participants who received a friendship threat.

Because the friendship threat was subtle and therefore may not have had an effect on participants with a stronger relationship with their best friend, the degree to which participants reported liking their best friend was included as a moderator. This is in line with previous research which found that students who have less intimate friendships consumed more alcohol after experiencing increased negative affect (Hussong et al., 2001). It was found that best friend liking did significantly moderate the effect of the experimental manipulation on feelings of acceptance, so it was included as a moderator in hypothesis testing as well. However, inconsistent with the previous results, best friend liking did not moderate the condition by implicit self-esteem interaction effect on alcohol consumption or on time spent drinking with friends other than their best friend. Instead, it was a significant moderator of this effect on the amount of time participants spent with their friends in general. Among participants who liked their best friend more, there was no condition by implicit self-esteem interaction effect. However, among those who liked their best friend less, participants with low implicit self-esteem who experienced a relationship threat decreased the amount of time they spent interacting with friends other than their best friend. This is contrary to predictions and to previous research, which found that students with low implicit self-esteem spent more time interacting with friends on evenings after they had experienced negative interpersonal interactions (DeHart et al., 2009).

The amount of time participants spent drinking with their friends was also included as a potential moderator due to previous findings that the amount of time college students spend with others who are drinking is related to their own alcohol consumption

in reaction to negative interpersonal events (DeHart et al., 2009). Inclusion of this moderator did find conditional support for the primary hypothesis. Among participants who spent more time drinking with their friends, the expected negative relation between implicit self-esteem and alcohol consumption was found for participants in the relationship threat condition. In other words, among participants who spent more time drinking with their friends, participants who experienced the belongingness threat consumed more alcohol to the extent that they were low in implicit self-esteem. This effect was not observed in the control condition. Thus, the analyses did support the primary hypothesis for participants who spent greater amounts of time drinking with friends. Inclusion of this moderator when predicting feelings of acceptance at Time 2 showed no significant results.

Overall, analyses revealed that, while participants with low implicit self-esteem who had experienced a relationship threat didn't seek friends out and may have spent less time interacting with their friends in non-drinking settings, when these participants did spend more time with their friends in a situation in which drinking occurred, they tended to consume greater amounts of alcohol. This is consistent with previous findings that college students with low implicit self-esteem may unintentionally consume alcohol as a result of experiencing a negative interpersonal interaction due to being around others who are consuming alcohol (DeHart et al., 2009), although no increased amount of time spent with friends was found in the current study. Future research should further examine predictors of time spent drinking with friends, as opposed to time with friends in which alcohol is not consumed. It may be that this is due to whether or not students are friends

with others who drink alcohol often, events that are occurring that evening on- or off-campus, or some other reason.

The unexpected finding that participants with implicit self-esteem reported increased alcohol consumption in the control condition (overall and among participants who liked their best friend less) is not consistent with previous findings that implicit self-esteem alone does not predict alcohol consumption among college students (DeHart et al., 2009). Furthermore, among participants in the control condition, low self-esteem was related to increased intentions to consume alcohol and increased time drinking with friends. It may be that the control condition unintentionally led to a very subtle manipulation of belongingness needs for participants with low implicit self-esteem. Participants in the control condition did complete the secret selves manipulation in the same manner as those in the experimental condition, so it may be that they were implicitly affected by this manipulation. In this case, it may be that the bogus articles acted to manipulate explicit belongingness needs but did not fully address implicit needs such that an implicit threat remained for those in the control, but not the belongingness threat, condition. Future research is needed to explore these possibilities and to further examine the effects of implicit self-esteem and belongingness needs on college student drinking.

Strengths and Limitations

The primary strength of this study is the fact that a measure of actual drinking behavior was obtained in addition to measures of desire and intentions to consume alcohol. The fact that predictors did differ between these different dependent variables

shows how important it is get beyond measures of intention and to consider actual behavior. An additional strength is the fact that this study experimentally manipulated belongingness threats. Since most of the previous research on college student drinking has been cross-sectional, the current study provides further insight into factors that may influence college student drinking.

One limitation of the current study is that, when measuring alcohol consumption for a single night, there are many potential external factors that may influence a student's behavior such as their academic commitments (i.e. having a test or an assignment due the following day), pre-existing plans with friends or family, or even an inability to access alcohol due to their age. A daily diary study in which students report their feelings of acceptance and nightly alcohol consumption might find a different pattern of results given that it would include more days in which students were able to consume alcohol instead of relying upon consumption reports from a single night.

Another limitation is that this study used a self-report measure of how accepted students felt. Future studies may want to include a more implicit or indirect measure of perceived best friend acceptance. It may be that this distinction between implicit and explicit feelings of acceptance led to the finding that best friend liking moderated the effects of the experimental manipulation on feelings of acceptance but not on drinking behavior. More specifically, it may be that the experimental manipulation did affect implicit feelings of acceptance for students with low implicit self-esteem, but only students low in best friend liking were willing to report this. The inclusion of an implicit measure of felt acceptance would allow researchers to test this possibility.

Future Directions

Future research should examine these same effects using a stronger manipulation of relationship threat. For example, it may be that having participants interact with their best friend in the lab would lead to stronger effects on feelings of acceptance and have a greater impact on students' behaviors that night. Having participants come into the lab with their best friends and discuss an unresolved conflict in their friendship (adapted from Simpson, Rholes, & Phillips, 1996) might affect feelings of acceptance in a way that has a greater impact on drinking that evening as well as lasting effects on next day feelings of acceptance.

In addition, although previous theories suggest that alcohol consumption may be used as a means of coping with positive or negative emotions (Cooper et al., 1995), this study did not include students' reported reasons for drinking. Future studies could examine whether students report consuming alcohol as a means of coping with a felt lack of acceptance and whether other drinking motives or expectations might mediate the effects found here.

Conclusion

Binge drinking among American undergraduate students remains prevalent and it seems unlikely that this is going to change. The specific results of this study and future studies in the same program of research could lead to interventions targeted at those individuals who are at greatest risk of drinking to cope. These findings could also shed light on the types of interventions most likely to help students avoid negative alcohol-related consequences. One possible approach, given the results of this study, would be to

include a self or friendship affirmation within interventions that would be designed to

increase individual's self-esteem and/or feelings of acceptance by their friends. Future

research would be needed to test this approach, but the literature does support the

predicted power of self-affirmations (Sherman & Cohen, 2006) and the current findings

will help to show the potential need for and usefulness of such interventions.

APPENDIX A

FRIENDSHIP AND COLLEGE DRINKING QUESTIONNAIRE

1. In order to connect your answers on this survey with your answers on tomorrow's follow-up survey, we need you to provide us with your email address. Below, please enter the email address at which you wish to receive tomorrow's survey.

   - Response options: Text entry

2. What is your date of birth?

   - Response options: Numerical entry of date

3. What is your gender?

   - Response options: Male/Female

4. What is your ethnicity?

   - Response options: African American, Black, African, Caribbean/Asian American, Asian, Pacific Islander/European American, Anglo, Caucasian/Hispanic American, Latino, Chicano/Native American, American Indian/Bi-Racial, Multi-Racial

5. How spiritual/religious are you?

   - Response options: 9-point scale from not at all to extremely

6. What is your year in school?

   - Response options: Freshman/Sophomore/Junior/Senior

7. Are you a member of a fraternity or sorority?

   - Response options: Yes/No

8. Are you involved in an athletic group?

   - Response options: Yes, I play a varsity sport/Yes, I play a club or intramural sport/No, I am not on an athletic team.

9. How important are academics to you?

- Response options: 9-point scale from not at all to extremely

10. What are your current living arrangements?

- Response options: Live on campus in a dormitory - live alone/Live on campus in a dormitory - live with roommates/Live off campus in an apartment or house - live alone/Live off campus in an apartment or house - live with roommates/Live off campus in an apartment or house - live with family/Other – text entry option

11. Please use the following scale to report how much you like each letter that appears in the set below. Simply trust your intuitions, work quickly, and report your gut impressions.

- Response options: 9-point scale from dislike extremely to like extremely

1. Q

2. A

3. Z

4. P

5. L

6. W

7. S

8. O

9. X

10. K

11. M

12. E

13. D

14. I

15. C

16. J

17. N

18. R

19. F

20. V

21. U

22. H

23. B

24. Y

25. T

26. G

12. The next measure is a global measure of your feelings about yourself.

- Response options: 7-point scale from strongly disagree to strongly agree

1. I feel that I am a person of worth, at least on an equal basis with others.

*2.* I feel that I have a number of good qualities.

3. All in all, I am inclined to feel that I am a failure.

4. I am able to do things as well as most other people.

5. I feel I do not have much to be proud of.

6. I take a positive attitude toward myself.

7. On the whole, I am satisfied with myself.

8. I wish I could have more respect for myself.

9. At times I feel that I am useless.

10. At times I think I am no good at all.

13. The next few items concern your relationship with your best non-romantic best friend at Loyola. Please think of the best friend that you have who is also a Loyola University Chicago student whom you are not romantically interested in (i.e. someone that you are not, have never, and do not wish to date or become romantically involved with).

1. Please report this person's first and last name initials

- Response options: Text entry

Please keep thinking about this person in answering the next questions.

2. Is your best friend at Loyola male or female?

- Response options: Male/Female

3. Approximately how old is your best friend at Loyola? Please round to the nearest whole number.

- Response options: Numerical entry

4. About how many hours a week do you spend interacting with your best friend at Loyola? Please round to the nearest whole number

- Response options: Numerical entry

5. How long have you known your best friend at Loyola?

- Response options: Drop down from 1-48 months/More than 48 months

6. How long has this person been your best friend at Loyola?

- Response options: Drop down from 1-48 months/More than 48 months

7. How much would you say that you like your best friend?

- Response options: 7-point scale from very little to very much

8. How much closeness do you feel toward your best friend at Loyola?

- Response options: 7-point scale from very little to very much

9. How much of an emotional bond do you feel toward your best friend at Loyola?

- Response options: 7-point scale from very little to very much

10. How committed do you believe your best friend at Loyola is to their relationship with you?

- Response options: 7-point scale from very little to very much

11. Please select the image below which best describes your relationship with this friend.

- Response options:
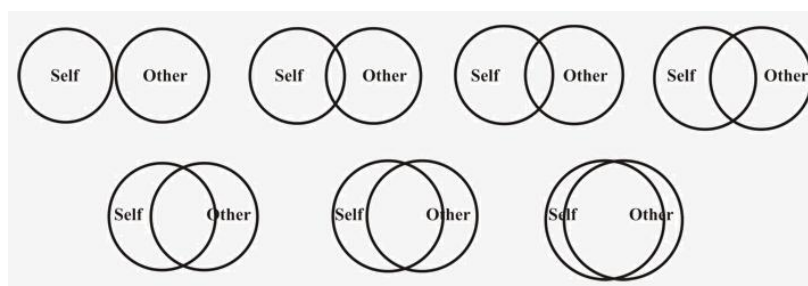
14. Sometimes people have sides to themselves that they would rather their best friend not see. The next items ask you to think about those aspects of yourself that you keep

hidden from your best friend at Loyola (whom you thought of before). Please select three of the statement stems below and type your completed statements.

- Response options: Text entry

1. In terms of my personal habits of behaviors, I try to keep my best friend from seeing…

2. In terms of my personal preferences of opinions, I try to keep my best friend from seeing…

3. In terms of my personality characteristics, I try to keep my best friend from seeing…

4. In terms of my private thoughts, I try to keep my best friend from seeing…

5. In terms of my past, I try to keep my best friend from seeing…

15. We are also interested in learning more about how students evaluate a popular media article on friendships. Please read the following article carefully as you will be asked to evaluate it on several dimensions.

1. Participants are given a bogus article entitled "How well do you know your friends?" Participants will be randomly assigned to either the experimental or control version of this article. In the experimental condition, the article states that these secrets eventually come out and cause conflict with the best friend. In the control condition, the article states that these secrets pose no threat to the friendship. For the text of the articles, please see appendix C.

16. To what extent do you currently feel accepted by the following people?

- Response options: 7-point scale from not at all to completely

1. Your best friend at Loyola (whom you thought about earlier)

2. Your other friends

17. Please indicate how you feel right now.

- Response options: 9-point scale from not at all to extremely

1. Hurt

2. Appreciated

3. Rejected

4. Accepted

5. Loved

6. Included

18. Please indicate how you feel right now.

- Response options: 9-point scale from not at all to extremely

1. Happy

2. Angry

3. Sad

4. Annoyed

19. To what extent do you wish to drink alcohol tonight?

- Response options: 7-point scale from not at all to a great extent

20. Do you intend to drink alcohol tonight?

- Response options: 7-point scale from definitely no to definitely yes

21. Manipulation checks

1. Please describe the effects of trying to keep sides of yourself hidden from your

   best friend at Loyola (whom you thought about earlier).

- Response options: 9-point scale from very bad to very good

2. Please describe the likelihood of conflicts arising in your relationship with your

   best friend at Loyola (whom you thought about earlier) as a result of keeping

   sides of yourself hidden.

- Response options: 9-point scale from very unlikely to very likely

3. Please describe the likelihood of conflicts arising in most best friend

   relationships as a result of people keeping sides of their selves hidden.

- Response options: 9-point scale from very unlikely to very likely

4. Please imagine how your best friend at Loyola (whom you thought about earlier)

   would react to discovering your secret sides.

- Response options: 9-point scale from very upset to very pleased

5. What do you think would be the effect of this discovery on your best friend at

   Loyola's (whom you thought about earlier) perceptions of you?

- Response options: 9-point scale from very negative to very positive

6. What do you think would be the effect of this discovery on the relationship?

- Response options: 9-point scale from very harmful to very beneficial

7. How positive do you think your secret selves are?

- Response options: 9-point scale from not at all to extremely

8. How negative do you think your secret selves are?

- Response options: 9-point scale from not at all to extremely

9. Please rate the article that you read on the following dimensions.

- Response options: 9-point scale from not at all to extremely

     21.1.1.1.   Intuitiveness

     21.1.1.2.   Reasonableness

     21.1.1.3.   Believability

     21.1.1.4.   Persuasiveness

     21.1.1.5.   Significance

22. Please report your own FIRST INITIAL and LAST INITIAL below.

- Response options: Text entry of initials

This concludes today's survey. Tomorrow, you will receive a link to a short follow-up survey that should take no more than 15 minutes. We ask that you complete tomorrow's survey by 9pm to receive credit.

APPENDIX B

FRIENDSHIP AND DRINKING FOLLOW-UP SURVEY

Thank you for your participation in this survey. We greatly appreciate your time and

cooperation. Please answer all questions as honestly as possible. All of your responses

and information will be held in the strictest of confidence. The data collected in this study

will be handled as a group. Your individual responses will not be tied to you personally

in any way.

This survey will take up to 15 minutes. Click the "Next" button at the bottom of the

screen to continue.

1. In order for us to connect your responses on this survey with the responses you made

    yesterday, we need you to enter the same email address you provided us with

    yesterday. Please provide your email address below.

    • Response options: Text entry

2. How many alcoholic drinks did you consume last night? [One drink equals one 12-

    oz. can or bottle of beer, one 12-oz. wine cooler, one 4-oz. glass of wine, or one 1-oz.

    of liquor straight or in a mixed drink. See image below from the NIAAA]. Round up

    to the nearest whole number. Type in "0" if you did not have any alcoholic beverages

    last night.
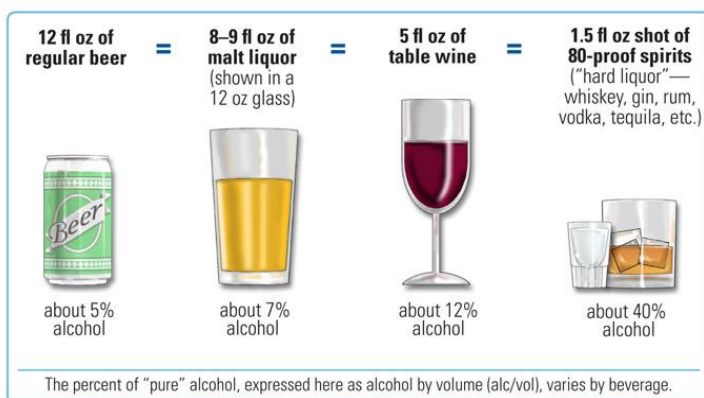
    • Response options: Numerical entry

3. Please indicate the amount of time you spent with the following people last night between 6pm and when you went to sleep. Please indicate the number of hours you spent with each person or group. Round up to the nearest whole number. Type in "0" if you did not have contact with that person or group.

- Response options: Numerical entry

1.   Time with best friend at Loyola (whom you thought about yesterday)

2.   Time with other friends

4. To what extent do you currently feel accepted by the following people?

- Response options: 7-point scale from not at all to completely

1.   Your best friend at Loyola (whom you thought about yesterday)

2.   Your other friends

5. Please indicate how you feel right now.

- Response options: 9-point scale from not at all to extremely

1.   Hurt

2.   Appreciated

3.   Rejected

4.   Accepted

5.   Loved

6.   Included

6. Please indicate how you feel right now.

- Response options: 9-point scale from not at all to extremely

1.   Happy

2. Angry

3. Sad

4. Annoyed

7. For the next items, please think about your best friend at Loyola (whom you thought about yesterday).

   1. Please report this person's first and last name initials

   - Response options: Text entry

   2. Is this best friend at Loyola someone that you are currently dating?

   - Response options: Yes/No

   3. Is this best friend someone that you have dated in the past?

   - Response options: Yes/No

   4. Is this best friend someone for whom you have romantic feelings or wish to date?

   - Response options: Yes/No

8. What do you think this study was about? What do you think the study's hypotheses were?

   - Response options: Text entry

This concludes today's survey. Thank you again for your participation.

APPENDIX C

BOGUS ARTICLES

Experimental Article:

How well do you know your friends?

By B.D. Goldberg

Associated Press

In his 1890 book, <u>The Principles of Psychology</u>, William James set forth the idea that human beings show different sides of themselves to different groups of people. Today, this can be seen in a best friend keeping embarrassing childhood stories from everyone but their family. It can be seen in a loving child who tells their parents everything about school, yet hides their sexual activity. It can even be seen in the different behaviors a person exhibits when practicing for soccer versus going out with their friends. Truly we can all think of that one secret that we're keeping from someone close to us.

And is there anything wrong with this? After all, aren't some things best kept among family? Aren't there things that only a best friend, someone who has experienced the same victories and defeats, can truly understand? Is there anything wrong with keeping the past hidden if it doesn't affect the current relationship? Is there anything wrong with a secret whispered to a friend in the middle of the night?

Recently, psychologists have begun to study these hidden aspects of a person's character and the effects that this can have on friendships. Their results may surprise you. It turns

out that these truths about our characters that we keep hidden from friends are very likely

to come out…and to cause some major conflict when they do.

Data collected in 2011 by the Survey Research Institute at Yale University revealed some

astonishing results. In a study of hidden selves, researchers surveyed 5,000 current

undergraduates and 5,000 community members. They found that 87% of people had

specific aspects of their characters that they had tried to keep from their best friend. Of

these, 82% revealed that their secrets had eventually been revealed, often leading to

conflict in the relationship. In fact, 75% revealed that when aspects of their identity that

they had kept from their best friend were revealed, the friendship was negatively

impacted. Researchers also reported that these conflicts were especially severe among

the undergraduate participants. For many undergraduates, this negative event was never

overcome and they reported that their relationship with their best friend was no longer as

close as it had been before.

Furthermore, many of the participants reported that their friends had been less

understanding than expected when these secrets were revealed. For some, secrets were

revealed by choice and for others out of bad luck, but the overall the result was the same:

friends were upset and the friendship suffered.

Researchers continue to pursue this line of research, testing to see whether certain types

of hidden selves may cause more strain on a relationship, whether or not certain modes of

discovery lead to the most conflict, and why undergraduates had such a strong reaction to this discovery. For now, all they know is that secrets can't stay hidden forever and when they are discovered, friends may be less understanding than you might expect.

Control Article:

How well do you know your friends?

By B.D. Goldberg

Associated Press

In his 1890 book, <u>The Principles of Psychology</u>, William James set forth the idea that human beings show different sides of themselves to different groups of people. Today, this can be seen in a best friend keeping embarrassing childhood stories from everyone but their family. It can be seen in a loving child who tells their parents everything about school, yet hides their sexual activity. It can even be seen in the different behaviors a person exhibits when practicing for soccer versus going out with their friends. Truly we can all think of that one secret that we're keeping from someone close to us.

And is there anything wrong with this? After all, aren't some things best kept among family? Aren't there things that only a best friend, someone who has experienced the same victories and defeats, can truly understand? Is there anything wrong with keeping the past hidden if it doesn't affect the current relationship? Is there anything wrong with a secret whispered to a friend in the middle of the night?

Recently, psychologists have begun to study these hidden aspects of a person's character and the effects that this can have on friendships. Their results may surprise you. It turns out that these truths about our characters that we keep hidden from friends may eventually come out, but this often has no effect on close friendships.

Data collected in 2011 by the Survey Research Institute at Yale University revealed these astonishing results. In a study of hidden selves, researchers surveyed 5,000 current undergraduates and 5,000 community members. They found that 87% of people had specific aspects of their characters that they had tried to keep from their best friend. Many of these secret sides had eventually been discovered, however only 12% indicated that this discovery led to any conflict in their relationship. In fact, researchers have found no indication that these secrets were detrimental to the friendship in the long run, whether they were discovered or not.

Furthermore, many people (especially among the undergraduate participants) reported that their best friends had been more understanding than expected when these secrets were revealed. For some, secrets were revealed by choice and for others out of bad luck, but the overall the result was the same: friendships continued despite the revelations and no long term consequences were noticed.

Further researcher into this matter is still being conducted. Researchers suggest that, although these secret selves have no effect on relationships with best friends, they may be an important key to understanding how people think of themselves. For now, all they know is that secrets tend to exist and whether we choose to share them or not, our best friends will be there for us.

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