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UNIVERSITY OF CALIFORNIA, SAN DIEGO
SAN DIEGO STATE UNIVERSITY

When environments collide: the role of social identity and drinking among working
students

A dissertation submitted in partial satisfaction of the requirements for the degree of

Doctor in Philosophy

in

Public Health (Health Behavior)

by

Jason D Daniel

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2011

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The Dissertation of Jason D Daniel is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

Chair

University of California, San Diego

San Diego State University

2011

DEDICATION

I would like to dedicate this dissertation to my soon-to-be wife, Barbara Baquero.
Without you, baby, I never would have made it.

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ABSTRACT OF THE DISSERTATION

When environments collide: the role of social identity and drinking among working
students

by

Jason Dwight Daniel

Doctor of Philosophy in Public Health (Health Behavior)

University of California, San Diego, 2011

San Diego State University, 2011

Professor James Lange, Chair

The normative environment, often represented by college peer and friend interactions, is a strong and consistent predictor of problem drinking in college. However, many students work in addition to attending college and the influence of this other peer group is not well studied. This study sought to address this gap using two objectives: 1) to test social identity as a moderator between descriptive drinking norms and problem drinking among students that work, and 2) to test the relationship between working in the hospitality industry among college students that work and

drinking, and to examine factors that might mediate that relationship. The study was implemented via a cross-sectional web-survey conducted in the Fall of 2009 (n=760). Of the 760 students, 330 students were employed and included in the study. Using structural equation modeling (SEM), a test for the moderating effect of social identity was non-significant (CMIN=2.26 [64], CFI=.97, RMSEA= .05). A post hoc analysis splitting the model into two groups (hospitality vs. non-hospitality) showed a significant moderating effect of social identity among non-hospitality workers, ($b=.14$, $p<.05$, CMIN=1.17 [128], CFI=.94 RMSEA=.05). For the second objective, working in hospitality was significantly associated with problem drinking ($b =.23$, $p<.001$, CMIN=1.72 [17], CFI=.99, RMSEA=.05) and the descriptive drinking norm was a partial mediator (indirect effect = .078, $p<.001$). This study showed that coworker-drinking norms influence student drinking and that social identity may be an important moderator between norms and behavior. Also, norms seem to account for some of the effect of working in hospitality on drinking. This study establishes coworkers as an important peer group for college student interventions and that working in hospitality should be viewed as a risk group for drinking among college populations. Future studies should further examine both what are the factors that predict students working in hospitality and how those factors moderate the work environment's effect on drinking as well as the factors that mediate the association between hospitality and drinking.

Introduction

Heavy drinking and problem drinking have long been recognized as a public health problem that contributes to death and disease worldwide¹. Both social and physical environments have a strong impact on drinking rates and include factors such as: access to alcohol (density of liquor stores, ability to get/buy alcohol)^{2,3}, policies regarding drinking and enforcement of those policies (i.e. social control)⁴⁻⁸, and social acceptability of drinking (e.g. social consequences or promotion of drinking and drinking related normative culture)^{4,9,10}. There are also developmental background factors that contribute to drinking. For example, a family history of drinking or drug use is associated with having drinking problems¹¹. Individually, the psychological and biological reactions to the environment influence the degree of heavy drinking as well. Biologically, genetics plays a role in alcohol abuse and alcoholism^{12,13}, by increasing susceptibility.

Among college students, research and prevention has largely focused on the social and policy environments on campus: physical access to alcohol, enforcement of drinking policies, and the degree of pro-drinking social environment¹⁴. In fact, the social environment has been the focus of many alcohol interventions on campuses¹⁵. One popular theoretical approach used to address the social environment is the Social Norms Approach¹⁶, which assumes that: 1) the perception of drinking norms influence

drinking by students, and 2) students often perceive higher norms than actually exist^{10,16 10,16}. The interventions proposed by the approach attempt to re-adjust students' perceptions and therefore reduce drinking through social marketing. This method is known as Social Norms Marketing, and has met with some success and some failure¹⁷. A related theory, known as Social Identity, may help to explain some reasons for these inconsistent results¹⁸⁻²⁰. According to research testing the social identity hypothesis, the strength of identification with a group moderates the association between a group's norms and an individual's behavior. To date, however, only three studies have been published that investigate the effect in populations outside of the lab regarding drinking²¹⁻²³. These studies demonstrate the effect of strength of identification on the relationship between drinking norms and drinking among student athletes, Greek members, and college friends and peers. Considering the wealth of evidence supporting the effect of drinking norms on student drinking, a moderating influence from social identity between norms and behavior is likely to have important implications for the prevention of alcohol abuse.

Currently much of the research and program development focuses on students that strongly identify with college peers. Programs focus on student Greeks, freshmen, campus residents, or students that are referred to student health services^{16,24-26}. Targeting these students, although important, may be missing sizable portions of the college student body. One important yet often overlooked group is students who have jobs.

College students are experiencing a time of transition, in which their social identity is in flux ²⁷. They need to find new groups to help define their social identities, and will look to the social environment to find group memberships in order to solidify one²⁰. The groups they choose will determine the normative environment that will influence their attitudes and beliefs, and ultimately their behavior. However working students live in two distinct social environments, work and school, either or both of which could provide the normative drinking environment. Although the influence of a student's school environment on alcohol consumption has been well researched, that of a student's work environment has not.

A great deal of research has been dedicated to the impact of work environments on drinking^{28,29}, yet little is known about the dual impact of working and attending college concurrently. Over the last few decades, research among workers from many different industries points to several factors that predict heavy drinking, problem drinking, drinking at, before or after work, and overall drinking^{4,28,30-33}. At work, the lack of alcohol policies or weak enforcement, easier physical accessibility of alcohol, and pro-drinking norms communicated by coworkers and supervisors all predict higher levels of drinking^{31,33,34}. In addition to the standard background factors related to alcohol consumption (e.g. age, ethnicity, gender, and SES), several other factors are related to drinking, such as lacking a social environment away from work, socializing in a male-oriented peer group, and associating with another peer group that supports heavy drinking^{28,31}. Aspects related to job satisfaction and supervision contributes to drinking as well³¹. These include job flexibility, visibility, and

variability. Finally, a social environment that includes generalized work abuse and sexual harassment can contribute to worker drinking, depending on coping styles and the success of coping strategies ^{35,36}. Not all industries are equal in the level or presence of these factors. Over the years many industries have been shown to be associated with heavy-drinking workers. Some of these include blue collar industries, those featuring a higher level of physical danger, the military, and the hospitality industry ^{37,38}. Students are likely drawn to hospitality jobs over most other jobs associated with higher levels of drinking, as hospitality jobs allow students to accommodate their course schedules by working at night and less than full time, while earning better than minimum wage.

Background

College and drinking have long been interconnected. From the 1973 hit movie “*Animal House*” to the more recent “*Van Wilder*” series, having fun in college and being a college student has been strongly associated with heavy drinking³⁹⁻⁴².

In reality, heavy drinking in college is a very serious issue. The drinker, other students (drinking or not), and members/residents of the surrounding community all feel the consequences of student drinking^{14,43-45}. For the drinker, these consequences range from the relatively benign to the potentially deadly. Benign issues include missing class, suffering a hangover (headaches and vomiting), and losing personal items (e.g. Cell phones, keys, wallets etc.), whereas more serious consequences may involve alcohol poisoning, drunk driving, and unplanned or unwanted sexual activity. At the far extreme, the life threatening consequences of heavy drinking include alcohol related accidents (vehicular and non-vehicular) and overdose resulting in death^{14,43,46-49}.

National studies of college student drinking

Several studies have been conducted that examine the drinking related consequences for drinkers. O'Malley and Johnston⁵⁰ identified five national studies that provide information about the epidemiology of college student drinking. These studies provide a good deal of what we know about college student drinking: The Harvard School of Public Health College Alcohol Study (CAS)^{51,52}, The Monitoring the Future study⁵³, The National Household Survey on Drug Abuse (NHSDA)^{54,55}, now known as the National Survey on Drug Use & Health (NSDUH), and the National

College Health Risk Behavior Survey (NCHRBS) as part of the Centers for Disease Control Youth Risk Behavior Surveillance System⁵⁶. The CAS survey was conducted four separate times from 1993 to 2001 from 120 universities, including approximately 50,000 students across the country¹⁴. The Monitoring the Future Study conducted by Lloyd Johnston and colleagues⁵⁷ is an annual national survey of high school seniors (starting in 1976), which began follow up interviews in 1980. This study, thus, had data on college students before and during college and included data on same age peers (non-student) drinking. Next the NCHRBS, was a one-time survey conducted in 1995 and included samples (n= 4,838 students) from 4 and 2-year colleges around the U.S. This survey was published in the Mortality and Morbidity Weekly Reports published by the Centers for Disease Control (Centers for Disease Control and Prevention 1995). The NSDUH contains data on college and non-college populations allowing for comparisons regarding drinking rates, however that was not the purpose of the survey^{50,54,55}. O'Malley et al⁵⁰ reported several estimates of student drinking based on the data and reports generated from these five surveys. Based mostly on data from the MTF an estimated 70% of college students have had at least one drink in the past 30 days, and 40% engaged in heavy or "binge" drinking (5 or more drinks in a row) at least once in the past 2 weeks⁵⁰. Furthermore, according to O'Malley (2002) the CAS, MTF, and the CORE found that approximately two out of every five college students meet the definition of binge drinking. This figure may have been even higher except that the NCHRBS used a more extreme measure of heavy

drinking (5 or more drinks on each of 5 days, in the past 30 days). Nonetheless, 12% of college students met this more stringent definition in 1991-93.

From the MTF and NHSDA studies, O'Malley (2002) reports that a higher proportion of college students drink compared to their same-age non-college student peers, with the exception that non-college students drink slightly more often. Further, the review showed that the drinking differences between these groups have been consistent from 1980 to 1999.

Perhaps the best source of data on student drinking over time is the CAS study, which contains data from a series of national samples of colleges (1993, 1997, 1999 & 2001)²⁶. According to this longitudinal study, the overall binge drinking rate has not changed. A small percentage of schools did show significant change, however. About 8% of 119 schools surveyed showed an increase in drinking and, 9% of schools measured showed a significant decrease in heavy drinking. For each of the four time periods the average binge rate (defined as 5/4 drinks in a row in the past two weeks) was found to be 43.9% in 1993, 43.2% in 1997, 44.5% in 1999, and in 2001 the binge rate was 44.4% ($p=.435$). There have been some positive changes however. There has been an increase in the percentage of students that report abstaining from drinking, from 16.4% in 1993 to 19.6% in 1994, 19.8% in 1999, and 19.3% in 2001 ($p<.0001$). Note that the biggest change was between 1993 and 1996, and that the rate remains fairly stable thru 2001. The news is not all good. Frequent binge drinkers (binge drank $> 3x$ in 2 weeks) increased over time as well: 19.7% in 1993, 21.0% in 1997, 22.6% in 1999, and 22.8% ($p<.0001$) in 2001²⁶. This indicates that although the overall rates are

not changing, those that do binge are bingeing more frequently. In a more recent study using data from the National Household Survey on Drug Use and Health, Hingson et al.⁴⁶ found that among 18 to 24 year old students, binge drinking increased from 41.7% in 1999 to 43.2% in 2002 and 44.7% in 2005 ($p < .001$), and that more college students binge drank than non-college same-aged peers (44.7% vs. 39.9%).

Binge Drinking vs. Heavy Drinking

The term binge drinking, to many, is a bit misleading. Previously, bingeing was associated with alcohol dependence^{58,59}; however, in a college sample students may drink at levels that would be indicative of alcohol dependence in other populations without showing other indicators of dependence. Also, in the college drinking literature, binge drinking often refers to 5 or more drinks for men and 4 or more drinks for women, a level that seems quite low considering the previous use of binge and dependence. Some feel that the term is misleading to students and researchers, implying more drinking than actually occurs. A study of young drinkers crossing the US/Mexican Border found that the 5/4 measure actually predicted fairly low blood alcohol content (BAC), the mean BAC for men was .048 and .072 for women. Thus, some have moved to the use of “heavy drinking” or “heavy episodic drinking”. On the other hand, in a review by Wechsler and Nelson (2008) a great number of studies with college students continue to use “binge”. There is also some evidence for the use of a 5/4 binge drinking definition. In studies that examined risky drinking levels, findings showed that: (1) students that drink at the 5/4 drinking level experience the largest proportion of alcohol related consequences⁶⁰ and (2) girls

experience similar rates of consequences as boys (at 5 drinks) when they consume 4 drinks in a row⁶¹. Using data from the CAS studies, Weitzman and Nelson (2004) found that 53% of the students reporting alcohol related consequences had drunk 5 or more drinks and 21% had 8 or more drinks in the previous 30 days. This underscores the need for a measure of drinking that captures the moderate drinker (5/4 drinks) and for interventions to target moderate drinkers in order to have the biggest impact on alcohol related consequences.

In contrast, DeJong⁵⁸ cites several reasons why the term “binge” is counterproductive: e.g. some students may perceive a mismatch between the term and the drinking level, the use of the 5/4 cutoff could lead people to believe that drinking below the threshold is safe, and focusing on 5/4 drinkers may limit targeting to higher level drinkers. However, DeJong does not suggest an alternative term. Thus for this paper the term “Heavy Drinking” or HED was used.

Drinking consequences for the drinker

Regardless of the controversy over terms, students can suffer alcohol related consequences at any level of drinking. These consequences can be experienced by drinkers, by students around drinkers (secondhand effects)⁶² and by the communities surrounding colleges, especially colleges with high binge drinking rate⁶².

Alcohol related consequences vary in seriousness from drunk driving and overdose to missing class and hangovers. In a study using data from National Highway safety, the CDC, and a meta-analysis of medical examiner studies, Hingson et al⁴⁶ estimated that 10.5% of college students are injured due to alcohol related

incidents, 4.9 per 100,000 are injured in non-traffic alcohol related accidents, 30,000 students require medical attention for alcohol overdoses, approximately 28.9% of college students drive after drinking each year, and that in 2005 1,553 students aged 18 to 20 and 2,581 aged 21 to 24 died as a result of alcohol consumption. In 2001, according to CAS data, college students experienced a variety of drinking related consequences: missed classes, fell behind in class work, regretted something they did, argued with friends, had unplanned sex, had unprotected sex, damaged property, got in trouble with police, injured themselves, overdosed, and had 5 or more alcohol related problems⁶³. Additionally, several studies document the increased risk of experiencing alcohol related consequences with increased drinking. Among drinkers at a large midwestern school, drinking levels were associated with an increased probability of experiencing problems and of experiencing more serious problems⁶⁴. From the BRFSS telephone survey, Naimi et al⁴⁹ found that people who drank heavily frequently were more likely to drive after heavy drinking than lighter drinkers. Using a sample of undergraduate psychology students, Park⁶⁵ found strong correlations between the number of negative alcohol consequences (i.e. fighting, sexual activity, hangover, accidents, blacking out, drinking and driving etc.) and the frequency of drinking, the amount of drinking, the frequency of heavy drinking, the frequency of being drunk, and the frequency of feeling lightheaded. Also, in a 1993 national sample⁵¹ of college undergraduates, frequent heavy drinkers were more likely than infrequent heavy drinkers—both more likely than non-heavy drinkers—to have missed classes, fallen behind in class work, regretted something they did, argued with friends, engaged in

unplanned sex, had unprotected sex, damaged property, gotten in trouble with police, injured themselves, overdosed, and experienced 5 or more alcohol related problems.

Clearly drinking is associated with greater risk of a host of alcohol related problems, and it seems that over time the rates of these problems have not declined. Rather, according to Wechsler et al's study (2002) from CAS problems seem to have increased from 1993 to 2001. These problems include: missing class, doing something regrettable, blacking out, arguing with friends, having unplanned sex, having unprotected sex, damaging property, getting in trouble with police, sustaining injury, overdosing, drinking and driving, and experiencing 5 or more alcohol related problems .

Secondhand effects of drinking: other students

Beyond the personal consequences suffered by the drinker, other students are affected as well (secondhand effects). Students living on campus, either in residence halls or fraternity/sorority houses, experience negative effects from their peers' drinking²⁶. Data from the CAS 2001 study indicated that 60% of students have had study or sleep interrupted by a drunk student, 48% had to care for a drunk peer, and 29% were humiliated or insulted by a drunk peer. A slight majority of students report two or more of these consequences. Among non-drinkers and non-binge drinkers, 29.2% reported being insulted, 19% had a serious argument, 8.7% had property damaged, 15.2% had to care for a drunken peer, 47.6% had studying/sleeping interrupted, 60% experienced an unwanted sexual advance, 1% experienced a sexual assault or rape (women only), and 55.2% experienced 2 or more secondhand

effects^{26,62}. Also, the level of heavy drinking at a college affects both non-drinkers and drinkers. Wechsler found that students in high-HED schools (>50% HED rate) are more likely to report being pushed, being targets of unwanted sexual advances, study or sleep interruptions, having a serious argument, “babysitting” a drinker, humiliation, and to report at least one of the effects than those in medium (33%-50% HED) or low-HED schools (< 33% HED). For non-heavy drinking students at Medium-HED schools, the probability was higher than for similar students at low-HED schools to report unwanted sexual advances, sleep/study interruptions, “babysitting” a drinker, being humiliated, and to report at least one of these by other drinking students⁶⁶. Finally, analyzing the CAS data across surveys, the trends in secondhand effects have not significantly changed since 1993²⁶.

Secondhand effects of drinking: community members

Fellow students are not the only ones to suffer from student drinking. College drinking rates also affect local community members. In a random digit dial study that compared residents living further than a mile from campus to those living within a mile of campus, differences in alcohol outlet density and frequency of problems attributed to drinking students is higher for those living within a mile. Further, residents living within a mile of a higher drinking campus experience more problems than those living near lower drinking colleges⁶².

People living within a mile of a campus are more likely to report noise disturbances, vandalism, drunks, vomiting or urination, and to experience 4 or more problems than people living more than a mile away. The residents are also more likely

to attribute litter, noise, drunks, vandalism, or any of these problems to local college students. Finally, residents that live near colleges with 50% or greater HED rates report more litter, noise or some other problem than residents of lower HED rate schools⁶².

Drinking before college

Obviously not all students drink or drink heavily, and a great deal of research has been conducted to explain the variability in student drinking. Briefly, there are a number of factors that occur before college that influence college student drinking. Parental drinking and parental monitoring have been shown to influence drinking⁶⁷. More specifically, parents that drink are more likely to have students that drink, and parental monitoring and talking about drinking will decrease the odds of student HED^{15,68}. Being male increases the odds of HED^{24,26,61}, and drinking heavily in high school is also related to heavy drinking in college⁵¹.

There are personality factors that may be related to drinking too. Students with higher scores on extraversion, low impulse control, and are higher sensation seeking tend to drink more than peers who don't share these traits^{69,70}. However, these factors are either not practically changed in college students or happen before college.

Psychosocial and environmental factors in drinking

Several fields of research are applicable to college student drinking and intervention. There are motivational factors related to drinking: Motivations and outcome expectations/expectancies^{48,71,72} of drinking. The social^{10,15,47,73,74} and physical environments⁷⁵⁻⁷⁷ have both been the subject of a great deal of research, and finally policies and regulations^{76,78,79} (e.g. keg registration laws, alcohol bans, etc.) have been studied most recently for predicting and altering college student drinking.

Motivation and expectation

Motivations and drinking expectancies are similar but have slightly different focus. Both deal with the expected consequences (positive or negative) fulfilled by drinking. With drinking motivations, people drink because it fulfills an emotional need. For students, researchers have focused on escape motivations and social motivations. Social motivations include drinking to make social interaction easier or dis-inhibit people in social situations. Socially motivated drinkers tend to experience fewer alcohol related problems than students who drink to reduce tension or anxiety^{72,80}. In a sample of 420 male drinkers, alcoholics endorsed stronger social motivation and tension reduction motivations compared to non-alcoholics, while problem and non-problem drinkers endorsed social motivation to drink more than tension reduction⁸¹.

Outcome expectancies are beliefs about the positive or negative consequences of drinking, essentially what one expects drinking to accomplish. Some drink because

they expect drinking to promote social interaction, whereas others drink for alcohol's perceived ability to reduce anxiety or tension. Again, drinkers that associate drinking with anxiety or tension reduction tend to drink more heavily. Also, beliefs about the coping effects of alcohol interact with negative affect to increase drinking (i.e. feeling depressed and feeling that drinking alleviates depression will result in more drinking^{80,82-84}).

Normative environment

The social environment has garnered perhaps the greatest attention in predicting student drinking. Essentially, the social environment is made up of the social rules of behavior, known as norms. There are two basic types of norms: injunctive and descriptive. Injunctive norms are what we believe we “ought” to be doing, based on our perception of what others approve or disapprove of. In other words, what we believe others expect us to do. For example, injunctive norms tend to be measured by asking participants about levels of approval or disapproval by members in important groups (family, friends, religious groups etc.). Descriptive norms are the perception of the prevalence of a particular behavior (e.g. drinking or smoking)^{9,85}. Furthermore, descriptive norms and injunctive norms can operate independently. In a series of studies by Cialdini et al (1990), the researchers found that descriptive or injunctive norms can be primed and produce opposing behavior. People shown a descriptive norm of littering acted against the injunctive norm not to litter when the descriptive norm was salient. In the same paper, the authors describe the

opposite as well, in which an activated injunctive norm overcomes a descriptive norm for littering. In a recent study of college students, Lee et al⁸⁶ found that descriptive and injunctive norms function differently and that injunctive norms might moderate the relationship between descriptive norms and drinking. More specifically, descriptive norms tend to be more strongly related to drinking intentions. However, strong perceived approval of heavy drinking by one's friends increases the strength of the relationship between descriptive norms and drinking. Further, drinking for social reasons moderates the injunctive norm's influence on descriptive norms and drinking. Specifically, injunctive norms only increase the strength of association between descriptive norms and drinking when student drinking is socially motivated.

In that both injunctive and descriptive norms are perceptions they can be misperceived, further complicating the role of drinking norms on behavior. In the field of college drinking misperceived drinking norms have received a great deal of attention^{9-11,16,17,21,87-91}. Several studies have documented the misperceptions of students in estimating their peers' approval of heavy drinking and their peers' rates or frequency of heavy drinking. Several studies have tested the efficacy of targeting misperception, also known as the Social Norms Approach (SNA)^{10,15-17,73,89,91,92} pioneered by Perkins and colleagues^{10,16}. In essence, a Social Norms Approach assumes that students have a misperception of peer drinking and approval and that reducing that perception to the "actual" norm will result in drinking reduction. The simplicity of the model has contributed to its widespread use, but its efficacy is in question. Although evidence that misperceptions of peer heavy drinking contributes to

individual drinking exists, attempts to correct the misperceptions have not consistently changed drinking behavior^{17,73,92,93}.

A study conducted with college dorm residents found that students living in dorms that were given a Social Norms Marketing campaign did significantly reduce their perception of peers' drinking, but students from both conditions increased drinking from baseline to follow-up, and the students in the intervention dorms actually increased the number of days they drank¹⁷. Wechsler et al⁷³ also conducted an evaluation of schools adopting the SNA compared to schools that had not. The study included schools from the CAS data (1997, 1999 and 2001). There were some differences between schools that had adopted the approach and those that had not; adopting schools tended to be larger and not to be religiously affiliated. When examining schools over time, SNA schools did not show a reduction in any drinking related outcomes compared to non-SNA schools. In fact SNA schools showed a percentage increase in several drinking behaviors compared to controls, including HED and drinking 20 or more drinks in the past 30 days. More recently, a large trial including 18 colleges spread around the country was conducted to test the efficacy of SNA. The authors concluded that the intervention was a success, but the conclusion may be overstated. The authors report a small reduction in student alcohol related consequences for intervention colleges compared to controls, but acknowledge that these are non-significant differences. Differences are reported in drinks consumed at one event, but after adjusting for covariates the difference approaches non-significance ($p=.055$). Reductions were reported in BAC between groups, but neither school

averaged below .08. There was no difference between groups in the frequency of drinking. Finally, differences between the schools were based on relative increase in risky behavior, but less so in the intervention schools.⁹² Clearly there is little evidence to conclude one way or another on the long-term effectiveness or efficacy of using SNA to change behavior as it is currently applied.

The Theory of Reasoned Action/Planned Behavior (TRA) may provide a key to the inconsistency in the effectiveness of SNA as applied to drinking students. A study comparing the Theory of Reasoned Action/Planned Behavior to the Social Norms Approach found that TRA was a better predictor of drinking intentions than SNA⁹⁴. The authors suggested that the more targeted subjective norms used in TRA may be better predictors of behavior than norms based on general college peers.

Perhaps the inconsistency in findings regarding SNA is partially explained by the misperception. A meta-analysis of 23 studies conducted by Borsari and Carey⁹ examined five important predictors of misperceptions of peer drinking norms: Injunctive norms, less familiar groups (peers vs. friends), women, general question items, and smaller campuses were all associated with greater misperception of drinking norms. In that injunctive norms deal with peer approval they may be more subject to error versus the more concrete perception of descriptive norms. The further the group is from everyday interactions the greater the misperception. This is particularly problematic with the SNA as marketing campaigns used to correct misperceptions tend to use college peers and not more proximal groups such as

fraternity members or coworkers. Women have the greatest level of misperception and yet routinely drink less than men. Possibly, one of the more interesting predictors of misperceptions is students at smaller colleges. In Wecshler et al's (2003) evaluation of SNA adopters, larger schools tended to adopt the program over smaller ones, a possible confounder of program efficacy. In sum, as simple as it sounds to readjust students' misperceptions, it does get complicated quickly.

Location and party characteristics

Several studies have been conducted that examine the role of party/event characteristics that are associated with increased rates of heavy drinking. The social context is essentially where drinking takes place and includes characteristics such as: party size, kegs, public vs. private settings etc. Clapp et al⁴⁷ conducted a phone survey with undergraduates at a large southwestern university to examine characteristics of the last drinking event attended that were associated with drinking related problems. Results indicated that males attend more drinking events and women were more likely to drink in public settings. Several characteristics were protective overall for alcohol related problems, such as food availability and the presence of friends and roommates, but the presence of illicit drugs was associated with increased risk of alcohol related problems. For males, playing drinking games and having food present significantly increased probability of experiencing a problem. For females, having college friends or roommates present reduced the likelihood of experiencing problems. The protective characteristics also change depending on setting, public or private. In public settings, food and the presence of a bartender protect against problems, and in private settings

the presence of illicit drugs increase risk of alcohol related problems. However, this study was conducted on a small sample of drinking college students (approx. 100). A follow-up study by Clapp and colleagues⁹⁵ supported the role of context in drinking and found other protective and promoting characteristics related to increased risk of heavy drinking. The number of intoxicated people at the event, drinking hard liquor, and drinking beer all increased risk, while being on a date reduced risk.

Alcohol outlet density, policy and enforcement

The alcohol environment, in and around colleges, has strong effects on college student drinking. The number of alcohol outlets, the price of alcohol in those outlets, marketing that targets college students, and students' perceptions of the ease of alcohol accessibility affect levels of heavy drinking, frequency of drinking, alcohol related problems and secondhand effects of drinking^{5,43,62,96-98}. The results regarding price show some differential effects, however. Price is a stronger predictor of drinking for older students and female students. This is likely related to women drinking⁴⁷ more in public settings (bars vs. house parties) and younger students⁹⁷ drinking in private settings (houses). A major limitation of this work, however, is that much of the work is cross-sectional, making it difficult to tell whether the environment caused the drinking or the drinking attracted the environment. Policy work related to controlling drinking involves the legal drinking age, drunk driving regulations, keg registration laws, and host laws^{5,99-101}.

Working students

Being a college student does indeed seem to increase risk of heavy drinking, but they are not, however, the only group for which this is true. A variety of job classifications have been shown to be related to increased risk of problem and heavy drinking^{33,34,102-105}. Yet students often also work, and they may work in environments that promote drinking.

There are several job characteristics that are related to problem or heavy drinking. Similar to college environments, physical accessibility, drinking norms from coworkers and supervisors, and alcohol policies and enforcement predict heavy and problem drinking^{31,33,34} influence on the job and overall drinking. Also, not having other peer groups away from work (if the work has a pro-drinking environment) and associating with another peer group that supports heavy drinking, like college students^{28,31}, are factors as well. It's possible that this will place students that work at increased risk for heavy drinking, if they perceive high levels of student and coworker drinking norms.

Drinking norms or pro-drinking environments are viewed slightly differently than college student drinking norms. The social environment in the work-drinking literature tends to be measured in three domains. First, drinking norms are usually measured as injunctive norms, generally how coworkers or supervisors would approve of drinking before, during or after work^{4,34,105}. Second, alcohol accessibility is viewed as ease of drinking at work, and third, alcohol policy is viewed as the drinking related policies, enforcement, and likelihood of getting in trouble for violating the policies⁴.

Job related stress or strain also contributes to drinking¹⁰⁶⁻¹⁰⁸. Job-strain tends to be measured as a combination of job demand and ability to control aspects of the job. High job-strain is characterized as high levels of demand and little input in how one can conduct the work¹⁰⁶⁻¹⁰⁸. Men seem to drink more in high job-strain situations than women do¹⁰⁷. For women, harassment is more predictive of drinking, depending on coping styles and the success of coping strategies^{35,36}. There are three main domains of harassment: verbal, physical and sexual^{36,109-111}. It is important to remember that harassment is a subjective experience and therefore requires that the victim view it as harassment³⁶. Further, coping strategies used in harassment situations can determine the psychological impact of the situation. An active coping style is a pro-social attempt to prevent or alleviate the harassing events. Men tend to use more active coping styles than women¹¹¹. Finally, alcohol expectations and motivation play a major role in this situation, moderating the relationship between stress, psychological distress and drinking. This means that having a job that puts the student in a stressful situation coupled with motives and expectations related to the perceived ability of alcohol to reduce stress^{82,112,113} increases the odds that the worker will drink more, drink more often, and be more likely to experience alcohol related problems.

Working in the hospitality industry (e.g. hotels, restaurants, bars etc.) has consistently been shown to be related to heavier and problem drinking^{104,114,115}. However, it is not clear if drinkers work in hospitality or if hospitality makes drinkers. It is important to note that many of the characteristics that make college a pro-drinking environment also exist in hospitality jobs. Hospitality workers have easy access to

alcohol, a higher density of coworker drinkers, and more social approval of drinking than workers in other industries. Additionally, hospitality jobs tend to have a high level of job-strain³⁵ and have a high probability for harassment or abuse by customers or supervisors. The stress levels and pro-drinking environment associated with hospitality jobs may therefore put students at unique and significant risk for heavy drinking, frequent drinking, and alcohol related problems.

There are additional differences between hospitality work and other jobs known for problem drinking. Perhaps the most prominent difference is the hours worked. Hospitality jobs are characterized by working non-traditional hours, working weekends and nights as well as working shifts shorter than 8 hours and working different hours each week^{116,117}. These hours make it difficult to interact with others that work more regular hours, 9am to 5pm etc. According to several studies by Ames et al^{28,31,32,34}, this separation from other people may strengthen the social environments' influence on drinking. In fact, in some areas there are "hospitality happy hours" which are happy hours held late at night on weekdays for industry workers to socialize with other hospitality workers¹. These social dynamics provide the basis for pro-alcohol norms and the cohesiveness of workers in hospitality, whether the person works in the bar directly handling alcohol or cleaning rooms in a large hotel.

¹ Based on experiences of the author as a bartender and food server in Pasadena in the early 1990's

Social identity

The evidence supporting drinking norms' influence on workers and students is well-established and strong^{9,23,33,88}. However, there are inconsistencies in the strength of the relationship. With Perkins' work on misperceptions of norms¹⁶ and Neighbors et al's¹¹⁸ work describing some predictors of those misperceptions, it seems that there are likely other factors that contribute to the strength of the relationship between norms and behavior. Research with the Theory of Reasoned Action and Planned Behavior, like Social Norms Approach, includes a normative measure thought to predict behavior. Also, like SNA, the TRA has shown some inconsistencies in the application of norms to behavior^{119,120}. The theory of social identity should be able to strengthen both theories and provide a more consistent link between norms and behavior.

Theoretical foundations for social identity

Social Identity Theory is a relatively new theory in social psychology. In its simplest form the theory provides an explanation for the lack of consistent evidence of the theorized relationship between social norms and behavior. Social Identity Theory (SIT) was initially a European reaction to what many believed was a too individualistic focus of American social psychology¹²¹. Research on social identity was an extension of research related to the minimum group paradigm¹²¹. The minimum group paradigm suggests that people tend to favor members of their own group and are biased against members of groups to which they do not belong. Thus began the work on social categorization^{122,123}. Briefly, social categorization states that

people view others via various groups to which they belong or do not belong. Further, the theory suggests that people rank these groups and view their own in a more favorable light^{121,122}. However, the early research focused on arbitrary group memberships (i.e. subjects were told that they were part of a group, not usually based on any characteristics)¹²¹⁻¹²³. This proves important, as members of arbitrary groups lack the strength of identification with naturally occurring memberships¹²². This in particular, points to why the use of groups that are not particularly important to all students, might help explain why social norms campaigns are not consistently effective.

In more recent work, groups were assigned based on some common ground. Similarities between people were thought to increase group cohesion and strength of identification. Indeed, greater group cohesion was shown to be related to the level of similarity between members, for example having a common fate, experiencing a shared threat, or being physically nearer to one another¹²⁴. In other words, these contexts help to bond groups together, making them more important to the individual.

Work by Tajfel, Turner & Oakes, separately and together^{121,123-126}, found that people tend to positively evaluate groups to which they belong and that self-esteem provides the motivation for the positivity. Furthermore, any characteristic that differentiates the group from others is also evaluated positively¹²⁷. For example, students involved in a fraternity or sorority may differentiate themselves from other students or organizations based on several categories, such as: heavier drinking, biggest parties, more sexually successful, or more social. Therefore, belonging to this

group encourages members to have favorable attitudes towards these behaviors. Another characteristic of group membership is the tendency to assign group positive characteristics to themselves and negative characteristics to other members¹²⁸. In essence, each person believes he or she is above average within the group in that they believe they exhibit more of the group prototypical or normative qualities of the group. For students that are members of some groups associated with heavy drinking, it is not enough to drink as much as everyone else, they need to drink more in order to be the best member of the group.

Strength of identification with the group

Social Identity theory suggests that salience of group identity affects the influence of norms on behaviors¹⁸. Essentially, the strength of the identity with a group will affect the probability of behavior congruent with group norms. The theory proposes two processes involved in developing in-group identity. The first is categorization, which involves defining characteristics that separate in and out-groups and maximizes similarities within group members. The second is self-enhancement, which is the process of favoring in groups over out groups.

The self-concept is believed to be the sum of the social and personal identity. The two work in unison to develop a self-concept, and one or the other may be dominant at any one time. The social identity as stated above is essentially the strength of identification with the group or groups to which an individual belongs. The personal identity is the personal tastes and attributes of the individual. Obviously one's likes and dislikes will influence group membership and being a member of a group

will, in turn, shape likes and dislikes. The same can be said for all personal characteristics. However, when social or self-identity is salient an individual's behaviors may be different. In relation to norms, for example, which group norms are relevant/salient to the action are relevant to the attitude towards the behavior. Making certain memberships salient may change the message that the individual receives by altering the context or stereotype that they are using. This is relevant to the Social Norms Approach; when using social marketing to change misperceptions of peer drinking norms, the message has to first activate the group identity and that identity has to be relevant before the message will have any effect on behavior.

Applying Social Identity to student drinking

To date, few studies have examined the role of social identity in studies of student drinking. Reed et al used a random sample of 2,336 undergraduates at a large southwestern university and found that strength of identification with college peers, friends and with greek organizations moderated the relationship between injunctive group norms and drinking behavior. Grossbard et al²¹ conducted a similar study using a slightly different measure of social identity with 1119 freshman from two large campuses. The main finding of the study was that strength of identity with other college athletes moderated the effect of perceived descriptive norms on drinking. These studies have examined the role of social identity alone, but another study conducted by Johnston et al²² incorporated social identity measures into the TRA and found that strength of identity moderated subjective norms and drinking intentions, but not drinking. These studies provide evidence of the relevance of social identity when

examining student drinking, but more evidence is needed, including examination of how other groups (e.g. coworkers) impact student behaviors.

Theory of Reasoned Action and Planned Behavior

The concept of social identity has not been applied often to student drinking. However, The Theory of Reasoned Action and Planned Behavior (TRA/TPB) has been applied to drinking and drinking among college students. Fishbein and Ajzen suggested the TRA first ^{18,129} and then added planned behavior in 1986¹³⁰. TRA suggests that behavior is a function of the intention to act, motivated by attitudes and subjective norms. An attitude is a negative or positive feeling towards a behavior. A subjective norm is the perception that important people (to the actor) want or do not want the actor to perform a particular behavior, weighted by their motivation to comply with those important people. The TPB adds perceived behavioral control to the model, which is the person's perception that the behavior is under volitional control.

Several studies have examined the ability to predict intentions to drink and drinking among college undergraduates. Norman et al¹³¹ used a sample of 398 psychology undergraduates at two time points to test the TRA model's predictive ability. Attitude towards binge drinking, self-efficacy and perceived control significantly predicted intentions to binge drink, but the subjective norm did not. At time two, binge drinking was predicted by time-1 attitude and intentions to drink and again not by subjective norms. In contrast, Johnston et al's²² examination of 289 Australian psychology students showed a significant contribution of subjective norms

in predicting intention but not behavior, which is predicted by the TRA. Much of the research using the TRA/TPB model has supported the relationship between attitudes, perceived behavioral control and intentions, but support for subjective norms is inconsistent¹¹⁹ across multiple behaviors. A meta-analysis of the TRA found that, overall, attitudes best predicted intentions compared to subjective norms and that fewer studies found the relationship between norms and intention as consistently as the attitude to intention link¹²⁰. According to Terry, Hogg and White¹⁸, the inconsistencies are due to the treatment of subjective norms as summative. In other words, in assessing the contribution of norms, it is common to refer to all people important to the participant.

Johnston et al²² tested the addition of social identity to the TRA among a sample of Australian undergraduates. Social Identity was measured using a 4-item scale measuring: identification with college peers, similarity of attitudes with college peers, strength of ties with peers, and feelings of fitting in with the group of peers. The TRA model explained 69% of the variance on intention to drink. Follow-up analysis showed that 50% of the variance in self-reported binge drinking was explained by the TRA model, not including strength of identity. However, the subjective norm did not contribute significantly to behavior. Inclusion of social identity into the statistical model showed that social identity moderated the relationship between subjective norms and drinking. For students that scored 1 SD above the mean for strength of identity, subjective norms significantly predicted intentions to binge, but students 1 SD below the mean were not affected by norms.

Social Norms Approach and Marketing

The Social Norms Approach, presented by Perkins et al^{10,16}, predicts that heavy drinking in college is the result of a misperception of the norms for drinking. In essence, students drink more because they think that other students drink more. The resulting media campaigns (known as Social Norms Marketing^{17,92,132}) focused on readjusting these norms. Initially the results for these interventions were promising. However, more rigorous research has not supported Perkins' work. In most cases, reported perceptions of drinking have changed, but the link with changing behaviors have not consistently changed with the shift in perception^{17,73,92,132}. The application of Social Identity Theory may help to provide insight into these inconsistencies. There are two related problems with the application of social norms. The application of SNA utilizes social marketing techniques to change misperceptions. These programs focus on broad peer groups that, according to social identity theory, may not be relevant to all students. Thus, the program can successfully change the misperception of college peer drinking norms, but may not change the behavior of students that do not conceptualize college peers as a group or as a relevant group. In Reed et al's²³ study, students more strongly identified with friends than with peers on average. The results also showed that for friends, at each level of identification (high, moderate and low), the relationship between friends' approval of drinking and behavior was significant as a result of a high average identification with friends. For peers, the strength of identification varied more and at the lowest level of identification peer approval was

not associated with behavior. This implies that targeting peers would miss a proportion of students that do not identify with peers. A second possible problem with social norms is that the Social Norms Approach assumes that heavy drinking is a result of a misperception of drinking norms, which for many students may be the case, but misperceptions occur less and are less severe for groups that are close or more salient to the individual⁹⁰, making it unclear what role exactly the perceptions of descriptive or injunctive norms of college peers really have on student behavior. It may be that Social Norms Approaches, especially those that use social norms marketing, may only be influential on campuses in which students have a strong identification with college peers, which may be explained by results that favor smaller more homogenous colleges.

Summary

Research with social identity shows an important link between strength of identification with the group, the perception of that group's drinking norms and the individual's drinking behavior. In other words, how strongly someone identifies with a particular group determines how strongly that group influences the individual's behavior. Reed et al²³ found that students who strongly identified with a group that had a pro-heavy drinking norm drank more heavily than students with a weaker identification with that group. Grossbard²¹ extended the study to college athletes and found similar results. Johnston and White's²² work also shows that social identity can be used to increase the predictive capability of the Theory of Reasoned Action and Planned Behavior. Taken together, these studies point to the importance of using

strength of identity to help determine which groups are important when using drinking norms to predict behavior. These results also point to reasons for the inconsistency of positive results for marketing programs using the Social Norms Approach. Social identity may help to explain why Social Norms Marketing works in some schools, but not all, depending on how strongly the student body identifies with the broad definitions that Perkins uses for peer groups (i.e. students vs. greeks, athletes, freshmen or coworkers). In addition, social identity constructs may help to examine which groups students do identify with and how strongly they identify with them, which should provide the Social Norms Approach and the Theory of Reasoned Action and Planned Behavior with stronger applicability.

There is limited but consistent research establishing the role of identity strength and group influence on drinking behavior. Several relevant groups have been examined in this context, including greek organizations, college friends, athletes and peers. However, working students may present another important group of college students. In addition to the campus environment, working students exist in a work environment that may also feature pro-drinking norms, especially students working in the hospitality industry. It is therefore important to examine student identity strength with coworkers and the subsequent influence of work environment on student drinking.

Study Objectives and Hypotheses

There are two main objectives to this study. The first examines the role of social identity in predicting how descriptive drinking norm will influence problem drinking. Previous research with social identity^{21-23,133} would indicate that having a stronger identification with a social group increases the influence of norms relevant to that group. Thus Objective 1, attempts to show this relationship among students that work and the strength of identity with their coworkers.

Working in Hospitality has long been recognized as increasing the risk of heavier drinking, alcohol abuse and dependence^{38,102,134-138}. Therefore a second objective was added to explore how working in hospitality is associated with problem drinking and also proposes several mediating factors that might account for the relationship between hospitality work and problem drinking.

Finally, in order to test the hypothesis in Objectives 1 and 2, we must first establish the reliability and validity of the measurement items used to test the hypotheses. Several of the scales used have been used before and reliability could be established by comparing a Cronbach's Alpha to observed statistics in previous studies (Social Identity, Perceived Access to Alcohol, Injunctive Drinking Norms). However, new items were also developed for this study and their reliability could not be established as these measures contained only a single item. Unfortunately the survey was not designed to test construct validity of these items, but there were items available that should theoretically be associated with the new variables as established

by previous literature. These will be used to build evidence of the validity of the new items.

Thus the objectives of this study are threefold:

Objective 1:

Test social identity as a moderator between descriptive drinking norms and problem drinking, among students that work (see Figure 1).

Hypothesis 1:

Descriptive drinking norms will be positively associated with problem drinking (Model 3).

Hypothesis 2:

The strength of coworker identification will moderate the relationship between coworker descriptive drinking norms and problem drinking. Specifically, stronger identification with coworkers strengthens the influence of drinking norms on problem drinking (Figure 1)

Objective 2:

To test the relationship between working in hospitality among college students that work and drinking, and to examine factors that might mediate that relationship. Specifically, do descriptive drinking norms, injunctive drinking norms, alcohol policies at work, perceived access to alcohol, distress resulting from abuse at work, job-strain and contact with customers mediate the relationship between working in hospitality and problem drinking (See Figure 2).

Hypothesis 3:

Working in hospitality (versus other jobs) is associated with higher scores on problem drinking.

Hypotheses 4:

The relationship between hospitality work and drinking is mediated by: (1) perceived access to alcohol at work, (2) Alcohol policies at work, (3) job-strain, (4) customer contact, (5) injunctive drinking norms, descriptive drinking norms and work related distress. Each model controlled for age, ethnicity and gender.

Objective 3:

Build evidence for the reliability and validity of study variables.

Hypothesis 5: Problem Drinking:

Hypothesis 5.1. The four items (maximum number of drinks, frequency of heavy drinking, days drank and usual number of drinks) that contribute the Problem Drinking variable, will load on one factor as assessed with a Confirmatory Factor Analysis procedure in SPSS.

Hypothesis 5.2. In a path analysis, problem drinking (latent variable) will be positively and significantly associated with Cage score, age and gender.

Hypothesis 6: Social Identity

The four items assessing social identity (SIMILAR, IDENTIFY, IMPORTANT, BOND) will have adequate reliability ($\geq .70$) as assessed by a

Cronbach's alpha reliability coefficient test. The Cronbach's alpha score for this study will be compared to the score observed in previous studies as well.

Hypothesis 7: Descriptive Drinking Norm (DDN)

A valid measure of the descriptive drinking norm should be related to the injunctive drinking norm. Therefore, the DDN will be positively associated with injunctive drinking norms of coworkers in a path analysis.

Hypothesis 8: Perceived Access to Alcohol at Work (PAA)

Hypothesis 8.1. The three items assessing perceived access to alcohol will have adequate reliability ($\geq .70$) as assessed by a Cronbach's alpha test (see Perceived Access to Alcohol at Work section for variable list).

Hypothesis 8.2. Using an ANOVA, there will be an increase in PAA as level of alcohol policy enforcement decreases.

Hypothesis 9: Work Type: Hospitality

Hypothesis 9.1. The single item used to measure validity will be positively, strongly and significantly correlated with multi-item index measuring hospitality, using a Kappa Coefficient as a test item agreement.

Hypothesis 9.2. A majority of students that chose a hospitality job (bar, restaurant, club, hotel or adult entertainer) from the multi-item index will also indicate yes to the single item hospitality measure.

Hypothesis 9.3. Hospitality workers will score higher on a scale of perceived access to alcohol.

Hypothesis 10: Alcohol Policy Enforcement

Using an ANOVA, there will be an increase in perceived access to alcohol as level of alcohol policy enforcement decreases.

Hypothesis 11: Work Distress

Strength of confidence to change or prevent a future distressing situation will moderate the relationship between work distress (general, sexual or verbal) and scores on the depression sub-domain of the POMS inventory and on scores for the BAI. Low levels of confidence will be associated with a significant relationship between distress and POMS and for BAI. A regression was used to test the interaction of confidence and distress.

Hypothesis 12: Job-strain/customer interaction

Hypothesis 12.1. Adequate resources to complete job tasks (job-strain) will be significantly and positively associated with depression (POMS), anxiety (BAI) and general work distress, using a Pearson's correlation.

Hypothesis 12.2. Contact with customers will be significantly and positively associated with general work abuse and job-strain.

Method

Overall study

The purpose of the source study used in this analysis was to identify factors related to drinking at San Diego State University. The main survey contains variables in several areas: demographics, mental health, alcohol use, consequences and benefits of alcohol use, other drug use, descriptive norms for alcohol use, drug use, group identification, natural drinking groups, sexual behavior, and student working variables.

The proposed cross-sectional study was based on a random sample of San Diego State University undergraduate students. The survey has been conducted every semester, beginning in the Fall of 2005. The web-based survey (The Health and Lifestyle Survey) was sent to a random sample (approximately 20%) of undergraduate students. During the Fall 2009 semester, 5250 students were randomly selected from the school's registrar. In the 1st week of November, each of the students received an invitation to participate by email, followed by one reminder email one week later. Students were prompted to follow a weblink to a survey hosted by DATSTAT. Of the 5250 invited, 821 responded and started the survey. In order to insure that the student invited was the student responding to the survey, they were asked to log on to the survey using their student ID. The registrar also provided the birthdates, ethnicity and gender of each student. The survey could be started any time after the invitations were sent and it did not have to be completed in one sitting. Finally, an additional two reminders were sent to students that started but did not complete the survey, 1 week

apart, two weeks after the initial invitation. The survey was expected to take between 30 to 40 minutes to complete.

Research with college students has often used web-based applications to collect data. Web-based surveys have been successfully used to collect drinking and drug use data among college students, both regionally at specific colleges and nationally across multiple colleges^{23,44,139-141,141,142}. A number of studies have been conducted to compare internet data collection to mail survey methods and to examine responders versus non-responders. McCabe and colleagues (2006) found no difference in alcohol responses between mail and web-survey respondents and did find that males, campus residents and students under 21 years old were more likely to respond to a web-survey than a mail survey. Kypri et al (2004) found high levels of satisfaction among students taking an Internet survey. Cranford et al (2008) compared students that completed a web-based survey to non-responders that were telephoned and surveyed. Cranford's (2008) study found lower rates of reported alcohol use for past year drinking and past 28 days of Heavy Episodic Drinking (HED), among non-responders. However, responders and non-responders had comparable reports for prevalence of lifetime, past year, and past 28 day alcohol consumption¹⁴¹.

Current Study

Working college students are the focus of this study. Employment has been asked in the survey since it began in 2005. A follow-up item asks student workers if they currently work in the hospitality industry. Only students who reported being employed were included in the study.

Participants

Each semester, since the Fall of 2005, 5250 students have been randomly selected from the registrars list of undergraduate students at San Diego State University (SDSU). The sample for this study was selected in the Fall Semester of 2009. Any student registered as an undergraduate that was 18 years old or older could have been selected as part of the 5250.

Variables

Demographics

Participant characteristics included: age, ethnicity, gender, relationship status, and fraternity/sorority status (Greek) were included in the demographic section. Age was determined by subtracting the birth date provided by the registrar from the date that the survey was started. Relationship status was assessed from 1 item: "What is your relationship status?" There were 4 response options: (1) single no serious relationship, (2) in a steady or committed relationship, not married, (3) married and (4) separated, divorced or widowed. Ethnicity was assigned based on designations by the university which was provided by the school registrar. The data provided by the university registrar included several ethnic and racial categories: white, African American, Filipino, Asian American, Native American, Hispanic (non-white) etc.. For the study, ethnicity was categorized as white and other. Gender was also provided by

the school's registrar. Being in a sorority or fraternity (Greek) was determined by a single dichotomous item, "Are you a member of a fraternity or sorority?"

Dependent Variable: Problem Drinking

Alcohol consumption among college students is a multi-faceted concept. Drinking frequency, maximum amount of alcohol consumed, heavy drinking frequency (5/4 or more drinks on one occasion) and typical consumption are all indicators of drinking for students. For this study, drinking was measured using four variables: (1) past 28 day heavy episodic drinking, (2) usual or typical amount of drinking in the past 28 days, (3) max number of drinks on one day in the past 28 days and (4) number of days drank in the past 28 days. These four measures were combined into a latent variable in the analysis to represent problem drinking.

Heavy episodic drinking (HED)

Heavy episodic drinking is defined as having 5 or more (4 or more for women) standard size drinks on one occasion. Wechsler initially introduced the idea for a gender specific measure of binge drinking⁶¹. Wechsler's study demonstrated that women exhibited similar rates of alcohol related consequences as men when they met the 4 drinks cutoff.

For this study men and women answer two separate items. For men, "How many times in the past 28 days did you have 5 or more drinks on one occasion?" For women, four is substituted for five. The item has been used in regional and national college samples^{2,5,52,61,143}.

Usual drinking (USUAL)

Higher levels of usual drinking have been linked to negative drinking consequences in college students ¹⁴⁴. In Weitzman et al's study ⁶⁰ with college students, binge drinking measures were compared to a usual drink measure. Usual drinking represented a broader range of lower risk (but still at risk) drinkers. Usual drinking was measured using one item: "Of the past 28 days, when you did drink an alcoholic beverage, how much did you usually have at any one time?"

Maximum Number of Drinks (MND)

A third dimension of drinking is measured by getting a count of the maximum number of drinks consumed in one day in the past 28 days. A multitude of studies have used MND with other drinking variables to estimate drinking behaviors ^{48,64,118}. This was measured via the item, "What is the most drinks you had on any one day in the past 28 days?"

Drinking Frequency (DAYS)

Finally, a measure of how many days the participant has had a drink is often included with other drinking variables to measure drinking behavior ^{17,60,92}. Drinking frequency was measured using the following item, "Thinking specifically now about the past 4 weeks, or 28 days, on how many days, if any, did you have at least one drink of beer wine or liquor?".

Independent Variables

Coworker social identity

Social identity was measured using 4 items: (1) “To what extent do you feel strong bonds with your coworkers?”, (2) “Think about who you are. How important, using the scale provided, are your coworkers to your sense of who you are (your self-identity)?”, (3), “How much do you feel that you identify with your coworkers?”, and (4) “How similar do you feel your attitudes and beliefs are to your coworkers?” Each of the items requires a response on a 7 point scale. For item 1 the scale was anchored by “1=No strong bonds” and “7=Very strong bonds”. Item 2 was anchored by “1=Not very important” and “7=Very important”. Item 3 was anchored by “1=Do not identify” and “7= Strongly identify.” Finally item 4, was anchored by “1=Very Dissimilar” and “7=Very Similar”. The scales are averaged to obtain an overall score between 1 and 7. Higher scores indicate stronger identification with the group. These items were adapted from the items used by Reed et al ²³, which measured strength of identification with other college students, college friends and Greek organizations. In the Reed et al study, the scale showed very good internal consistency ($\alpha = .80$ to $.87$). Reed’s scale was adapted from a previous study examining social identity’s role in moderating norms and intention to exercise and to adapt sun protection behaviors ¹⁴⁵. Although, there are other scales to measure social identity ²¹, Reed et al’s scale has two advantages: First, it uses 4 items, whereas others use 10 or more, and second, it uses a structure that is easy to adapt to multiple groups; whereas, others tend to be specific to an occupation or group (for an example see: Grossbard et al, ²¹). For this

study, social identity was analyzed as a latent variable represented by the four items used in the social identity scale.

Work type

Work type was used as a screening variable for study inclusion. The coworker items were all predicated on the positive response to this item, “Are you currently employed?” If the student was employed a skip pattern was triggered that opens the work related items: coworker social identity, job type, descriptive drinking norms of coworkers, workplace distress, and alcohol policies and perceived access to alcohol at work. Hospitality was measured in a single-item that asks: “Do you work in hospitality or entertainment (e.g. waiter/waitress, bartender, web-model, massage, dancer, etc.)?” In a separate index towards the end of the survey, the respondent was also asked to identify the type of job in which they are currently employed. The student was presented with a list of jobs that included several categories that cover hospitality type jobs: hotel, restaurant, bar or club, and adult entertainer. These categories were combined to represent a multi-index measure of work in hospitality.

Worker Descriptive Drinking Norms (DDN)

The descriptive norm is generally measured as the perceived proportion of peers, friends, classmates etc. that drink, ¹¹⁸. A single-item construct was used to measure the drinking norm, “What percentage of your coworkers would you estimate drank 5 or more drinks on at least one occasion during the past two weeks?” Specifically, this was a measure of the descriptive norms for binge or heavy episodic drinking.

Injunctive Drinking Norms

The 5-item scale used to measure injunctive drinking norms has been used previously to assess approval for drinking related behaviors by college peers, friends and GREEKS²³ and has previously showed strong reliability. The scale was adapted to coworkers for this study. The five items have the same root statement, “How would your coworkers respond if they knew?” This statement was followed by a list of behaviors: you drank at work, you drank alcohol within an hour before coming to work, you got a little drunk at work, and you drank 4 or more drinks within an hour of coming to work. The scale response

Perceived Access to Alcohol at Work

Perceived access to alcohol at work (PAA) was measured using three items³⁴, “How easy or difficult would it be to: (1) get a beer, liquor, wine or a wine cooler at work if you wanted one, (2) bring alcoholic beverages to work, (3) drink during breaks”. The respondent would answer each item on a 4-point scale (1=very easy to 4= very difficult). These items were used to represent the latent variable, PAA.

Alcohol policy and enforcement

Alcohol policy and enforcement is generally measured in 3 parts; policy existence, probability of punishment for violating policy and consistency of enforcement^{4,104}. These measures were adapted using the concepts for Ames et al (2000), but were developed specifically for this study. Policy enforcement was measured using two dichotomous variables: (1) “Are there policies where you work about drinking alcohol (before or during work)? and (2) “Are these policies strictly

enforced?” These two variables were combined into one 3-point scale (0=no policy, 1= non-strictly enforced policy and 2 = strictly enforced alcohol policy).

Work Related Distress

There are existing scales that measure harassment and abuse; unfortunately, these scales tend to be long (12 to 36 items over multiple dimensions)^{36,109,146,147}. This study seeks to use a shorter 3 question scale to measure each of 3 dimensions of work related abuse or harassment (general, verbal, and sexual). These items are based on domains from the Generalized Workplace Abuse scale^{111,148}.

General distress was measured using a series of three items. Frequency of abuse was asked first, “In a typical work week, how often do you experience any situation, conversation, or interaction that you feel is distressing?” The response scale ranged from never to everyday, with three levels in between: 1= never, 2=less than once per week, 3= once or twice a week, 4 = 3 to 4 times a week and 5= every day. If the response for the abuse item indicated any abuse, then the respondent was asked to report level of distress using the following item: “On a scale 1 to 5, how distressed did you feel because of this event”. The response ranged from 1 = not at all distress to 5= very distressed. Next the respondent was asked, “How confident are you that you can take some action to reduce the situation that caused you to feel distressed?” Verbal abuse was measured with a single dichotomous item, “In the past 3 months, while at work, have you experienced any situation which you felt verbally abused or harassed” Sexual abuse was asked using the same format. Distress level for verbal abuse and sexual abuse were measured with the same series of items as general distress and

confidence. In that some students will report not experiencing a particular distressing event and they would not be asked about level of distress and confidence, their response were recoded as “1” for distress level. The level of confidence was split into high and low levels of confidence, which was scored as above (“2”= high) or below the mean (“1” = low).

Job-strain

Job-strain is the degree to which a worker feels a high level of demand and low level of control to change the situation ^{106,149}. For this study, job-strain was measured using one item, “ How many days during the work week do you feel that you are not given the resources necessary to complete the tasks required for your job?”

Customer Contact

Another dimension of job demand is contact with customers: “Does your job require interacting, talking, or dealing with customers?” This item has not been used in previous studies, however, contact with customers has been linked to job related distress¹⁵⁰.

Profile of Mood States (POMS)

The POMS is a validated scale that has been in use for over 40 years¹⁵¹⁻¹⁵³. The sub-domain for depression was used in this analysis. The depression sub-domain consists of fifteen items. The scale is administered in a matrix and starts with the phrase. “Please carefully read each item in the list. Indicate how much you felt each of the following in the past month.” The list for depression includes: unhappy, sorry for things done, sad, blue, hopeless, unworthy, discouraged, lonely, miserable, gloomy,

desperate, helpless, worthless, terrified and guilty. Each adjective is rated on a 5-point scale (1=not at all, 2=a little, 3=moderately, 4=quite a bit, 5=extremely) The POMS score was calculated by adding the score for each adjective (Range 15-75). The adjectives were presented to each participants randomly in a matrix. The scale was used as a comparison with work related distress to attempt to build evidence of validity.

Beck's Anxiety Inventory (BAI)

The BAI has been used and validated in a variety of settings and populations including high school students¹⁵⁴⁻¹⁵⁸. The BAI is a 21-item self-report measure of anxiety severity and was administered similar to the POMS above. The same lead in was used for both the BAI and POMS. The items for BAI were: It has been numbness, feeling hot, wobbliness in legs, unable to relax, fear of the worst happening, dizzy or light headed, heart pounding/racing, unsteady, terrified or afraid, nervous, feeling of choking, hands trembling, indigestion, fear of losing control, difficulty in breathing, fear of dying, scared, discomfort, faint, face flushed and sweating. The root statement for BAI was "Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the last month, including today." The response scale was a 4-item scale (0=not at all, 1=mildly but it did not bother me much, 2=moderately-it wasn't pleasant at times, 3=Severely-it bothered me a lot). BAI score was calculated as a sum of the responses. The items were presented randomly to each participant in a matrix format. The scale was used as a comparison with work

related distress to attempt to build evidence of validity. The BAI was also used in a comparison with work related distress, to build evidence for item validity.

Data Analysis

Data management

The data was downloaded and converted to SPSS using the syntax generated by the DATSTAT software.

Data Cleaning

The participant entered data as they answered each item, therefore any errors in entry were a result of participant error. Skip patterns were all preprogrammed and were verified before survey launch. However, the data was examined to insure that all skip patterns worked as intended. The survey contained a skip pattern that screened out drinking items if the participant reported no past year drinking. Therefore, when using drinking variables, data from non-drinking participants needs to be recoded from missing to “0”. For this analysis, these are the only relevant changes necessary.

Outliers, illogical data patterns and non-normal distributions were distinct possibilities. This is particularly an issue for drinking data. For past month drinking, it is unlikely that students drank heavily more than once per day or drank more than 28 days. In this sample, however, none of the students reported more than 28 days of drinking in the past 28 days, or more drinks on a typical drinking day, than on a maximum drinking day. The most drinks reported in one day was 20.

The variables that contributed to the latent variable for problem drinking were not normally distributed, however, as they were part of a latent variable and the

distribution of the latent variable is assumed to be normal they were not transformed^{159,160}. Age was transformed (log10) to get a normal distribution of the data. The log10 transformation is recommended for variables that have substantial positive skewness¹⁶¹.

Missing Values

In order to conduct analyses in AMOS, missing values in the data need to be addressed. First, however, we must determine if the variables were missing systematically. A missing value analysis was conducted using SPSS 18. The analysis allows for the comparison of cases with missing values versus cases without missing values on one or more dependent variables. The dependent variables used were four dependent variables used in the analysis (MND, HED, USUAL and DAYS). Missing value analysis was conducted on each variable used in Objective 1 and 2. The missing analysis was conducted after cutting the data down to the cases that fit the inclusion criteria (n=330).

Most of the variables did not significantly differ by the four drinking variables. However, a few did. Cases with missing data for the DDN (17.9%) were reported significantly higher levels of MND drinking (1.9 versus 1.2, $p < .01$), but did not differ by remaining drinking variables. Cases with missing values for Alcohol Policy Enforcement (6.7%) reported higher levels of USUAL drinking (1.83 versus 1.14, $p < .05$). There were no other differences. Two variables had less than 3% missing cases and were not analyzed: costumer contact and the single item measure for

hospitality (See Table2). Based on these results, the data does not seem to be missing systematically.

Missing data can be handled one of two ways: remove cases or input data based on some estimation method. However, when you delete a case for missing data on one value, the rest of the data from that case is lost. For this study, a data imputation method was used to avoid losing data from cases that contained missing data on some variables but could provide data for other variables. A single imputation regression method was used to estimate data. All of the data being used in the models (See Variables section) were used to create the regression equation that would estimate the missing values.

Univariate and Bivariate Analyses

Descriptive analyses were conducted and presented in Table 1. Means and standard deviations were obtained for continuous variables. For categorical variables, percentages were reported. Comparisons were also conducted via Chi Square to assess differences in gender and ethnicity by employed versus non-employed students. T-tests were used to assess mean differences in age between employed and non-employed students.

The next step was scoring and assessing scales. Items were constructed as described in Variables section.

Structural Equation Models

The path analyses were tested using AMOS from SPSS. Seventeen models were developed (See Models section). Lagrange Multiplier Indices (M.I.) were used

to make determinations about parameters that could be added to increase the quality of the model fit. Paths were added one at a time, starting with the path that had the highest M.I. value, until the model showed an adequate fit. Model fit was determined using a CMIN (range 1-3), RMSEA ($<.08$) and CFI ($>.90$) scores.

Power and Sample Size in SEM

Power for SEM is a function of cases per observed variable and cases per estimated parameter¹⁶². The most complex model is the moderation analysis of social identity (Model 4). That model has 24 observed variables and 27 estimated pathways. That would require a sample of at least 270 cases. This sample includes 330 students. Therefore, the sample has adequate power to conduct the proposed analyses.

Objective 1: Social Identity and Descriptive norms (Hypothesis 1 and 2)

Hopwood¹⁶³ described a procedure to conduct moderation analysis in SPSS AMOS, which is a follow up to the Baron and Kenney (1986) article which initially described moderation and mediation analyses¹⁶⁴. The benefit to the newer Hopwood (2007) article is that it describes a method to test moderation using SEM if one variable is observable and the other is latent, which Baron and Kenney do not. The method requires obtaining a factor score from the variables used to construct the latent variable and centering the observable variable, using the mean, and then producing an interaction term from the multiplying the factor score and the centered observable scores.

First, however, the relationship between the descriptive norm and problem drinking must be tested. Assuming a significant relationship, then the moderator can be tested.

To test the moderator, factor scores for social identity were obtained using the four items (IMPORTANCE, SIMILARITY, BOND and IDENTIFY) that make up the construct. SPSS 18 was used to perform the factor analysis with a varimax rotation, saving the standardized factor scores. Next, the descriptive norm was centered (subtract the mean from each case). Finally, the interaction was computed as a product of the descriptive norm and social identity factor score. Next the model was input into AMOS (see Model 5) and included age, ethnicity and gender as covariates to control for demographics.

Objective 2: Testing hospitality and meditational factors that contribute to problem drinking (Hypothesis 3& 4)

In order to establish mediation, four criteria must be satisfied: (1) Hospitality must be significantly associated with problem drinking, (2) there needs to be a relationship between hospitality and the mediator, (3) the mediator must be related to problem drinking and (4) the association between hospitality and problem drinking must be reduced to non-significance (full mediation) or be statistically, significantly lower when the mediator is in the model.

First, a model was built to test work in hospitality as a significant predictor of Problem Drinking (see Model 7).

Next, each mediator was first compared to the dependent variable without testing the indirect effect. In other words, use a model that tests for a significant association between the mediator and problem drinking. If the mediator was not significantly associated with problem drinking, than further analysis was not conducted with that mediator. Mediators that met this criteria were put into a model (one mediator per model) that tested the indirect and direct effects of Hospitality. All models included age, gender, and ethnicity.

There are several ways to conduct mediation analyses ²³: (1) the causal steps approach outlined by Baron and Kenney, (2) the product-of-coefficients approach, (3) The distribution of the product strategy, and (4) Bootstrapping. Each of these strategies has their own assumptions, strengths and weaknesses. Testing mediation in AMOS is relatively straight forward. One model can be used to test for the significant association between: (1) the mediator and the dependent variable, (2) the independent variable and the dependent variables, and (3) the mediator and the independent variable. By selecting the following options in AMOS: (1) show total, direct and indirect effects, (2) perform bootstrap and (3) bias corrected confidence intervals, the output will provide the indirect effect, the significance level and 90% confidence interval for that effect. A significant indirect effect is evidence of mediation.

Objective 3: Reliability and Validity (Hypotheses 5-11)

Dependent Variable:

Problem drinking was conceptualized as a latent variable and consisted of: MND, HED, USUAL and DAYS. Although these variables are established and often

used in studies of drinking, they have not been used together in a path model. Therefore, a confirmatory factor analysis was used to confirm a one-factor structure of the four variables as one latent construct.

Validity of the problem drinking scale was tested by examining the strength and direction of associations with other variables correlated with problem drinking in a path model using AMOS. Problem drinking was compared to CAGE scores, being male, and age^{62,63}) See Model 1.

Social Identity

The scale used to measure social identity has been used previously with college students²³, but not for the work environment. Thus this scale was adapted for use with coworkers. To establish the reliability of this scale with this sample, a Cronbach's Alpha was calculated and compared to previously published results.

Work Type

Working in hospitality was assessed using two different methods. The first was a single item (described in the variables section) and the second was an index of several items (also described in the variables section). Although there were two measure of hospitality, they were not exactly correct, but using the test-retest logic seemed appropriate here. A comparison of between the two measures was conducted using a Kappa test for intra-rater agreement to establish a level of reliability between the two items. Also a validity check of the multi-item index for hospitality was conducted checking the percentage of student that indicated a specific hospitality job (from the index) that also endorsed the single hospitality item. This provided a way to

determine if the students defined hospitality similarly to the way it was defined in the study. A second validity hypothesis was tested using a T-test to compare mean levels of PAA by hospitality workers versus other workers.

Descriptive Drinking Norm (DDN)

Construct validity was assessed using AMOS, in a test of significant covariance between injunctive and descriptive drinking norms. Injunctive work drinking norms are measured with a five-item scale, commonly used to test that construct^{105,165}.

Perceived access to alcohol at work

Ames et al³³ used this scale in a study of workers and Moore et al⁴, used a slightly different version with a navy sample. A Cronbach's alpha was used to establish reliability of the scale in this sample.

Alcohol Policy Enforcement

The item used in this study was new and was a single item derived from a tier of 3 items (See Section Alcohol policy and enforcement under Independent Variables for description). An ANOVA was used to test the hypothesis that: (1) strictly enforced policies against alcohol at work should be associated with lower perceived access to alcohol at work than some enforcement and no enforcement.

Work Distress

Distress from abuse at work is divided into three main domains: general, sexual and verbal. Distress from sexual and verbal abuse occurred too infrequently to provide enough variability to be useful. Therefore, distress from general abuse was the

only domain analyzed. Previous research has showed that distress should result in increased levels of anxiety and depression, but only in conditions in which the person feels less confident that they can change or prevent the situation^{107,108}. In order to determine if the measure of distress used in this study measured a similar construct as described in previous studies, a linear regression procedure was conducted, as described in Baron and Kenny (1986) to test for a moderating effect of confidence on the relationship between distress and anxiety (BAI) and depression (POMS) scores. Confidence was coded '1' for low and '2' for high. In order to produce an interaction variable, the independent variable (distress) and the moderator (confidence) has to be centered. Centering a variable is done by subtracting the mean from each score. The interaction term was then computed as a product of the centered distress level and confidence. Finally, in a two-step regression analysis, BAI was regressed on distress and confidence in the first step and on the interaction term in the second step. The process was repeated with POMS as the dependent variable.

Job-strain

There are two items that measured aspects of job-strain. One item measures the perception of the student's ability to get the resources necessary to complete their work tasks. This item should be positively associated with anxiety scores and general work distress¹⁶⁶ and each relationship was assessed using a Pearson's correlation.

Customer Contact

The next item was "contact with customers". As this was a new construct there is little research on which to base construct validity. However, theoretically this type

of strain should be positively related to the previous job-strain variable as well as frequency of general work abuse. A T-test was run with customer contact (yes/no) as the grouping variable and levels of job-strain and general abuse as the dependent variable to assess mean differences between students that do versus students that do not interact with customers.

Results

Variables:

Univariate Analysis and Normality of Demographics Variables: Table 1.

Of the 5250 students that were invited to participate in the survey, 821 opened the survey and of those, 6 refused to consent. Of the remaining respondents, 384 answered that they had at least a part time job. Finally, 330 of the working students completed the survey through all of the items used in the analysis (approximately 80% of the survey items). Most of the working students were female (70%), 47% were white, 8% were in a fraternity or sorority, 55% were either in a committed relationship or married and 8% lived on campus. The average age was 23.7 (SD=6.4) years, and average GPA 3.10 (SD=.48). Age was positively skewed, 3.6, and had positive kurtosis as well, 15.6. Students that reported working, worked an average of 22 (SD=10.6) hours per week (range=2-50 hours). Fifty-five percent worked mornings, 65% worked afternoons, 55% worked evenings, 16% worked late night, 83% worked weekdays, and 59% worked weekends. Hospitality workers (n=74) worked an average of 22 hours (SD=8.0, range=5-42). Thirty-one percent of the hospitality workers worked mornings, 49% worked afternoons, 78% worked evenings, 30% worked late night, 72% worked weekdays, and 89% worked weekends.

Bivariate Analysis

Workers vs. Non-Workers

There was no gender difference between workers and non-workers ($X^2=.017$, [df=1] $p=.896$). The working students did not differ by Greek status ($X^2=.966$, [df=1]

$p=.326$). However, working students were almost 2 years older ($t=-4.00$, [688], $p<.001$).

Students also indicated in an open ended question their major, if they had declared one. There were a total of eleven hospitality and tourism majors in the study, only two of whom indicated that they worked in hospitality. Among those that were coded as hospitality workers, the most frequent major was psychology ($n=9$). There were five political science majors, five business majors, and five criminal justice majors. A wide range of majors were reported by 3 or fewer students, and these included: nursing ($n=3$), public health ($n=3$), accounting ($n=3$), international business ($n=3$), and marketing ($n=3$). Several other majors were mentioned as well as well by 2 or fewer students.

The university provides demographic statistics of the undergraduate students enrolled on campus. The total percentage of white undergraduate students enrolled on campus was 42%, slightly lower than the 47% observed in this study. Women make up 57% of the campus undergraduate population, which was lower than the 70% of working women students observed in this sample and the average age of undergraduates was 22.4 slightly younger than the observed sample of working students ($M=23.7$, $SD=6.4$).

Problem Drinking

Students that worked reported a mean of 1.8 ($SD=1.8$) usual number of drinks (USUAL), drank 4.3 ($SD=5.1$) days on average (DAYS), reported an average of 3.96 ($SD=3.8$) drinks on the heaviest drinking day (MND) and drank heavily (HED) on

average 1.5 (SD=2.7) times. Refer to Dependent Variable: Problem Drinking for full variable description.

Non-working students reported a mean of 1.66 (SD=1.99) usual number of drinks, drank 3.26 (SD=4.55) days on average, reported an average of 3.64 (SD=4.65) drinks on the heaviest drinking days and drank heavily an average of 1.33 (SD=2.63) times.

In a 3-way comparison of non-working students, non-hospitality working students and hospitality working students, there were several differences in drinking behaviors (see Table 6). Hospitality workers drank more days ($p<.05$), drank more when they usually drank ($p<.05$), drank more on their heaviest drinking day ($p<.05$) and drank heavily more frequently ($p<.05$) than non-hospitality workers and non-working students. There were no differences between non-hospitality working students and non-working students.

Table 7 shows the breakdown of hospitality by job-types included in the definition: bar, hotel, restaurant and barista. The numbers were too small for meaningful statistical comparisons however. Across bars ($n=11$) and restaurants ($n=44$) most workers were female, but hotel workers ($n=7$) were mostly male. Baristas were almost all female. Hotel employees worked the most ($m=29.1$, $SD=11.8$) and restaurant workers the least ($m=20.6$, $SD=7.1$). Bar workers were the oldest ($m=26.5$, $SD=6.4$) and baristas were the youngest ($m=21.5$, $SD=1.4$). Restaurant and hotel workers were the most frequent HED drinkers ($m=3.5$, $SD=3.7$ and $m=3.6$, $sd=5.0$ respectively). Hotel workers drank the most days ($m=7.5$, $SD=2.8$) and the most on

the heaviest drinking day ($m=7.7$, $sd=5.6$). Finally, restaurant workers drank more on a usual drinking day ($m=2.8$, $sd=2.5$). These are not statistically significant differences.

Descriptive Drinking Norm

In this sample, students reported that on average, 30% ($SD=27.9\%$) of their coworkers drank 4 or more drinks outside of work (DDN).

Injunctive Drinking Norm

The responses for this scale ranged from 1 (strong disapproval) to 7 (strong approval). The mean for injunctive drinking norms was 1.61 ($SD=1.20$). For the separate items, coworkers approval for drinking at work ($M=1.71$, $SD=1.4$), having 4 or more drinks at work ($M=1.55$, $SD=1.24$), being drunk at work ($M=1.58$, $SD=1.30$), having 1 or 2 drinks at work ($M=1.55$, $SD=1.24$), and drank an hour before work ($M=1.73$, $SD=1.34$). The Cronbach's alpha ($\alpha=.955$) observed in this sample was comparable to Reed et al's (2007) observations for college friends ($\alpha=.78$), college peers ($\alpha=.80$) and for student Greeks ($\alpha=.85$).

Perceived Access to Alcohol at Work

Refer to section Perceived Access to Alcohol at Work on page 45 for a detailed variable description. The respondent would answer each item on a 4-point scale (1=very easy to 4= very difficult). The mean value for "get a drink" was 2.8 ($SD=1.9$), for "bring alcohol" the mean was 2.56 ($SD=1.16$) and the mean for "drink on break" was 2.49 ($SD=1.17$).

Alcohol Policy Enforcement

Alcohol policy enforcement was measured using a single three category observed variable. Twenty four percent of the sample reported no enforcement of alcohol policies at work. Of the 76% that reported an alcohol policy, 32% reported that the policy was never or only occasionally enforced and 68% reported that alcohol policies were enforced most or all of the time.

Working in Hospitality

Seventy-four percent of the working students (of 330) worked in hotel, restaurants, bars or clubs.

Work Distress

General distress

The general distress variables were discussed in depth on page 46. Seventy-two percent of workers reported general abuse. Nine percent reported sexual abuse and 13% reported verbal abuse. For those that reported general abuse, the average level of distress was 2.18 (SD=1.12, range 1-5) and those students reported a high level of confidence to effectively deal with the situation (mean = 3.95, sd= 1.07, range 1-5). Of those that reported sexual abuse, their mean level of distress was 2.7 (SD=.82) and confidence was 3.22 (SD=1.01). Finally for those that reported verbal abuse, their mean level of distress level was 3.12 (SD=1.02), and they reported a mean confidence level of 2.97 (SD=1.4). Verbal and sexual harassment were removed from further analysis due to lack of variability. Nine students reported verbal or sexual abuse that did not report general distress. This may have been due to the differences in time

frame. For general distress, the time frame was “a typical week” and for verbal and sexual abuse it was “past 3-months.” Therefore these nine cases were not added to students experiencing general distress.

Job-strain

The average score on the job-strain item was 1.93 (SD=1.18).

Customer Contact

A majority of the workers had contact with customers (81%).

Social Identity

The four variables that contribute to social identity were: (1) bond, (2) similarity (3) identify and (4) important. The mean level of bond was 4.24 (SD=1.7, range 1-7), mean level of similarity was 3.81 (SD=1.6), mean level of identify was 3.94 (SD=1.6) and the mean level of important was 3.26 (SD=1.8). All of the variables were normally distributed. The scale mean was 3.8 (SD=1.5).

Objective 3: Reliability and Validity

Problem Drinking:

The 4-items used to represent problem drinking (see page 41 for detailed description of items), were tested as a single factor using a confirmatory factor analysis procedure. The 4 variables did load as one factor. For detailed results, see Table 3. Confirmatory Factor Analysis.

In the next step, construct validity was examined using AMOS to test several hypotheses. A model was fit that included age, CAGE, ethnicity and gender. The modification indices showed that the error terms from HED and DAYS (M.I. =

31.675) and DAYS and USUAL (M.I. =18.033) should be correlated. Also, ethnicity and CAGE score should also be correlated (M.I. =5.845). The overall fit was adequate (CMIN = 2.24 [df= 17, N=277], CFI=.965, RMSEA = .067). Problem drinking was associated with being female ($\beta = -.29$, $p < .001$), older ($\beta = -.14$, $p < .05$) and having a positive CAGE score (.25, $p < .001$). See Model 1 for diagram.

Social Identity

Social Identity is an established and tested scale that has been used with students before^{62,63}. For this sample, a Cronbach's Alpha score of .908 (Table 4. Scale Reliability and Validity) was found, well above the predicted .80, indicating strong reliability. The observed Cronbach's alpha for Social Identity in this sample compared favorably with alphas reported in Reed et al (2007), which examined social identification with college friends ($\alpha = .87$), college peers ($\alpha = .82$) and with student Greeks ($\alpha = .80$)

Work Type

Reliability between the single item and the multi item was strong. A Kappa score of .794 ($p < .001$) was observed, indicating a moderate to strong reliability. Hospitality workers (mean = 2.3) responses indicated that they perceived easier access to alcohol at work than other workers (mean = 2.7, $p = .007$). A lower score indicated easier access to alcohol. Of the students coded as hospitality workers by the multi-item index, 89% were also coded as hospitality via the single item index.

Perceived access to alcohol (PAA)

The Cronbach's alpha for PAA was .983. This indicates a strong level of inter-item reliability (Table 4.). The alpha score has not previously been reported.

Descriptive Drinking Norm (DDN)

Model 2 represented the model used to test the relationship between injunctive and descriptive drinking norms. The initial model resulted in a poor fit and the modification indices output was used to add paths to the model. According to the output, adding a pathway between the error terms for 1 or 2 drinks at work and drank 4 or more at work (M.I.= 3.914) should make for a better model fit. The resulting model showed good fit (CMIN = 1.471 [df=8], CFI= .998, RHMSEA = .038 [90% C.I. = .000-.081]). The descriptive norm was significantly correlated with the injunctive norm (.37, $p < .001$).

The model for the relationship between PAA and DDN was run next. The modification indices did not indicate any theoretically plausible pathways that could be added to increase the model fit. The model did not fit well (CMIN=5.8 [df=2], CFI= .979, RMSEA = .120).

Alcohol Policy Enforcement

Overall the ANOVA was significant (6.199 [df=284], $p = .002$). A Bonferoni test between each level showed a significant difference between “no enforcement” and “strict enforcement” ($p = .023$) and between “some enforcement” and strict enforcement ($p = .024$). The item was then dichotomized in the analysis, by combining “no enforcement” and “some enforcement” into a single category.

Job-strain

Job-strain was correlated with reported levels of distress ($r=.270$, $p<.01$), frequency of general work abuse ($r=.288$, $p<.01$) but not anxiety ($r=.013$, $p=.82$).

Customer Contact

Students that had contact with customers reported a higher mean level of distress (2.27, $sd=1.08$) than those that did not (1.62, $sd=.92$, $p<.001$). There was no association between customer contact and job-strain (1.96 vs 1.88, $p=.636$).

Work Distress and Confidence

Confidence was tested as a moderator of the relationship between level of distress and BAI (anxiety) scores. Level of distress ($\beta=.094$, $p=.155$) was not significantly related to anxiety but the interaction ($\beta =-.151$, $p<.05$) was. The same analysis was conducted with POMS (depression) scores as the dependent variable. Level of distress was associated with anxiety ($\beta =.300$, $p<.001$) as was the interaction ($\beta =-.141$, $p<.05$). See Table 5 for details of the regression.

Objective 1 Analysis: Social Identity

The first model (Model 3) tested the association between the descriptive norm for drinking and problem drinking. The initial model did not show adequate fit (CMIN=4.497 [df=20, n=330], CFI .915, RMSEA = .103). The modification indices indicated that the model would likely fit better with pathways between the error terms for days drinking and frequency of heavy drinking (M.I. = 28.307) and days drinking and usual drinking (M.I. = 18.078). The new model fit indices were better (CMIN=2.522 [df=18, n=330], CFI = .967, RMSEA= .068). The descriptive norm ($\beta=$

.31, $p < .001$), being older ($\beta = -.12$, $p < .05$), being female ($\beta = -.22$, $p < .001$) and being white ($\beta = .17$, $p < .001$) were all significantly related to problem drinking.

Next the moderating influence of Social Identity (Model 4) was tested. The initial model also had an adequate fit (CMIN= 2.256 [df=64 n=330], CFI = .952, RMSEA, .062). Although the descriptive norm was significantly associated with problem drinking ($\beta = .32$, $p < .001$), the interaction term was not ($\beta = .042$, $p = .423$). As in Model 3, being older ($\beta = -.11$, $p < .05$), being female ($\beta = -.20$, $p < .001$) and being white ($\beta = .17$, $p < .001$) were all significantly related to problem drinking. Social identity was also not significantly related to problem drinking ($\beta = .08$, $p = .130$).

Post Hoc Analyses

Post hoc analyses were conducted to determine if there were differences by job type for work identity. First a t-test was conducted to determine if there was a difference in work identity by work type (Other workers vs. hospitality). Although worker identity was not significantly higher for hospitality workers, it was higher (mean = 3.93, sd=1.3 vs. 3.78, sd=1.51). Levene's test for equality of variance was significant ($p < .05$), indicating that the variance between the two groups was different and more narrow for hospitality workers. Next separate t-tests were conducted with each variable in the work identity scale as a separate dependent variable. There was a significant difference between hospitality and other drinkers on bond with coworkers (5.15 sd=1.72 versus 4.53, sd=1.35, $p < .05$). The variance was narrower in the hospitality group as well. In the test for equality of variances, the difference in variance between the two groups was significant ($p < .05$).

In order to explore differences of the effect of social identity stratified by work types, Model 5 was split into hospitality workers and other workers (Model 5 & Model 6). The modification indices indicated that the interaction term and the norm (M.I. = 6.90) should be correlated. The model fit well (CMIN=1.74, [df=126], $p < .001$, CFI=.944, RMSEA = .047). In the model for other workers, DDN ($\beta = .250$, $p < .001$), the interaction term ($\beta = .140$, $p < .05$), being white $\beta = .170$, $p < .01$), and being female ($\beta = -.202$, $p < .005$) were all significantly associated with problem drinking. For hospitality workers, DDN ($b = .361$, $p < .005$), being older ($\beta = -.265$, $p < .05$) and being female ($\beta = -.202$, $p = .053$) were all significantly associated with problem drinking. The interaction term was nearly significantly related to problem drinking ($\beta = -.177$, $p = .089$). See Figure 4 (Other workers) and Figure 5 (hospitality workers) for a graphical representation of the interaction.

Objective 2 Analysis: Mediation

First we tested for a relationship between the hospitality and problem drinking (Model 7). The fit indices indicated that a better fitting model could be obtained by drawing pathways between the error terms for frequency of heavy drinking and days drinking (M.I.=33.521), days drinking and usual drinking (M.I. = 16.189) and hospitality and being white (M.I.= 10.64, $PC = .036$). The model showed an acceptable fit (CMIN= 1.723 [df=17] $n=330$], CFI = .985, RMSEA = .047). Hospitality was significantly associated with problem drinking ($\beta = .232$ $p < .001$), being older ($-.148$, $p < .01$), being male ($\beta = -.219$, $p < .001$), and being white ($\beta = .146$, $p < .01$) were significantly associated with problem drinking.

Perceived Access to Alcohol

Next the association between the mediator and problem drinking was tested. In Model 8, we tested the association between perceived access to alcohol and problem drinking. The modification indices indicated that a better fit would be achieved if pathways were drawn between the error terms for frequency of heavy drinking and days drinking (M.I. =33.483), white and hospitality (M.I.= 10.064) and the error terms between days drinking and usual drinking (M.I. =16.225), age and PAA (M.I.=10.322) . Model 8 showed an acceptable fit (CMIN=2.548 [df=39, n=330), CFI = .954, RMSEA = .069). PAA was not significantly associated with problem drinking (β =.006, p =.911). Hospitality (β =.24, p <.001), being older (β = -.13, p <.05), being female (β =-.22, p <.001) and being white (B = .15, p <.05) were associated with problem drinking. No further tests were run with perceived access to alcohol.

Post hoc analyses

Post hoc analyses were conducted to further explore the relationship between problem drinking and PAA, stratified by age. A t-test showed that PAA differed by age (under 21 vs 21& over). Older students reported less difficulty in obtaining alcohol at work (mean=2.53) than did younger students (2.90, p <.01).

Model 9 and Model 10 were used to test if the relationship between PAA and problem drinking was significantly different when stratified by age (under 21 vs. 21 and over). The modification indices show no reasonable correlations between variables that would increase model fit. The model fit was good (CMIN=2.303 [df=68], CFI= .928, RMSEA=.064, 90% C.I.=.051-.077). For student under 21, PAA

was not associated with problem drinking ($\beta = -.067$, $p = .517$). For 21 and over, the result was the same as for student 21 and older ($\beta = .045$, $p = .527$).

Alcohol Policy Enforcement

Model 11 tested the relationship between alcohol policy enforcement and problem drinking. The modification indices indicated that a better model fit could be achieved by adding pathways between the error terms for frequency of heavy drinking and days drinking (M.I. = 29.625) and days drinking and usual drinking (M.I. = 15.439). The model fit was adequate (CMIN = 1.608 [df=25, n=308], CFI = .979, RMSEA = .044). Alcohol policy enforcement was not associated ($\beta = -.05$, $p = .401$) with problem drinking. Working in hospitality ($\beta = .24$, $p < .001$), being older ($\beta = -.14$, $p < .01$), being female ($\beta = -.23$, $p < .001$) and being white ($\beta = .13$, $p < .05$) were significantly associated with problem drinking. Alcohol policy enforcement was not a likely mediator

Post hoc analysis

Alcohol policy enforcement may be more or less salient in hospitality jobs, considering that alcohol is often sold on the job site and there are laws specifically targeting use of alcohol at bars, restaurants and hotels. Work type may, therefore, be a possible confounder. A Chi-square was used to determine if there were any differences in alcohol policy by work type but there did not appear to be ($X^2 = 1.33$ [df=1], n=308). The majority of hospitality workers (74%) reported strict enforcement and 67% of the students in other jobs reported strict enforcement. The alcohol policy model was rerun,

separating the analysis into 2-groups, as was done for social identity (Model 12: Alcohol Policy Enforcement and Problem Drinking (non-hospitality) and Model 13). The error terms for heavy drinking and days drinking were correlated (M.I.=18.47). The model fit well (CMIN = 2.01, [df=40], CFI=.938, RMSEA=.058). For non-hospitality workers (Model 12), alcohol policy enforcement was still unrelated to drinking. However for hospitality workers (Model 13), alcohol policy enforcement was significantly and negatively related to problem drinking ($\beta = -.286$, $p < .05$). Thus although alcohol policy may be associated with problem drinking among students working in hospitality, it is not likely a mediator.

Job-strain

Model 14 tested the relationship between job-strain and problem drinking. Modification indices indicated that a better fit could be achieved if the error terms between days drinking and frequency of heavy drinking (M.I. = 33.581) and days drinking and usual drinking (M.I.=16.159), and being white and hospitality (M.I. = 10.064) were allowed to covary. The model fit was acceptable (CMIN=2.104 [df=24, n= 330], CFI = .968, RMSEA = .058). Job-strain ($\beta = .02$, $p = .648$) was not significantly related to problem drinking. Hospitality ($\beta = .23$, $p < .001$), being older ($\beta = -.14$, $p < .05$), being female ($\beta = -.22$, $p < .001$) and being white ($\beta = .15$, $p < .01$) were related to problem drinking.

Customer Contact

Model 15 tested the relationship between customer contact and problem drinking. The initial model fit was not adequate (CMIN=4.27, [df=27, n=330], CFI =

.893, RMSEA = .10). Modification indices indicated that by allowing: the error terms for heavy drinking and days drinking (M.I.=33.514), customer contact and hospitality (M.I.=18.945) and the error terms for days drinking and usual drinking (M.I.=16.168) to covary, a better fit would be achieved. The model fit was adequate (CMIN = 1.983, [df=24, n=330], CFI = .971, RMSEA = .055). Being male ($\beta = -.22$, $p < .001$), being older ($\beta = -.14$, $p < .010$), working in hospitality ($\beta = .25$, $p < .001$), being white ($\beta = .15$, $p < .01$) were all significantly associated with problem drinking. Contact with customers was not ($\beta = -.05$, $p = .407$).

Injunctive Drinking Norm

The injunctive drinking norm was tested in Model 16. The initial modification indices indicate that a better model fit could be achieved if hospitality and the injunctive norm would be allowed to covary (M.I. 48.651). Also, the error terms for days drinking and frequency of heavy drinking (M.I. = 33.619), the error term between days drinking and usual drinking (M.I.=16.151) and the error term between injunctive norm item for “drank at work” and injunctive norm item for “drank 4 or more at work” (M.I. 13.678) should be allowed to covary. The model fit was acceptable (CMIN=1.283 [df=60, n=330], CFI=.968, RMSEA=.062). The injunctive drinking norm was not related to problem drinking ($\beta = -.03$, $p = .581$). Hospitality ($\beta = .25$, $p < .001$), being older ($\beta = -.14$, $p < .01$), being female ($\beta = -.23$, $p < .001$) and being white ($\beta = .15$, $p < .01$) were all significantly related to problem drinking. The injunctive norm is therefore not likely to be a mediator for hospitality.

Descriptive Drinking Norm

The relationship between the DDN and problem drinking was tested in Hypothesis 1: Model 17 tested the mediation hypothesis.

Descriptive Drinking Norm: Mediation

The modification indices for Model 17 indicated that a better fit could be achieved if several pairs of variables were allowed to covary: error terms for days drinking and frequency of heavy drinking (M.I.=28.321), error terms for days drinking and usual drinking (M.I. =18.098) and working in hospitality and being white (M.I.=10.064). Once these variables were allowed to covary, the model fit was adequate (CMIN=2.012, [df=23, n=330], CFI = .973, RMSEA = .055). The DDN ($\beta = .26$, $p < .001$), being white ($\beta = .14$, $p < .01$), being female ($\beta = -.21$, $p < .001$), being older ($\beta = -.11$, $p < .05$), and working in hospitality ($\beta = .17$, $p < .005$) were all significantly associated with problem drinking. The DDN was also significantly associated with working in hospitality ($\beta = .28$, $p < .001$). The standardized total effect of working in hospitality on problem drinking was .277 (90% C.I. = .114-.355, $p < .01$), the standardized direct effect was .169 (90% C.I. = .052-.286, $p < .01$), and the standardized indirect effect was .073 (90% C.I.=.037, .129, $p < .001$).

General Distress: Stratified by Low and High Confidence

The last test is actually a test of moderated mediation. Distress by itself does not generally predict drinking, but as discussed on page 21 under the heading working students it might be moderated by another variable in this case, confidence to prevent or limit future occurrences of distress. The final proposed analysis splits distress into

low confidence and high confidence strata and analyses each. If the hypothesis was correct then in the low confidence strata, level of general distress would be associated with drinking.

In the last two models, Model 18 (low confidence) and Model 19 (high confidence), distress was tested as a mediator between working in hospitality and problem drinking. The model was stratified to test for a moderating effect of confidence (low versus high). The modification indices showed that a better fit could be achieved by allowing the error for days drinking and usual drinking to covary (M.I. = 5.349). The model fit was adequate (CMIN= 2.013, [df=52, n=327], CFI = .934, RMSEA = .056. In the low confidence strata (n=115), level of distress was not associated with problem drinking ($\beta = .00$, $p=.957$). working in hospitality was associated with problem drinking ($\beta = .29$, $p<.005$) and being female was marginally so ($\beta = -.18$, $p=.058$). Being older ($\beta = -.13$, $p=.173$) and being white ($\beta = .02$, $p=.871$) were not related to problem drinking. For high confidence (n=212), level of distress ($\beta = -.04$, $p=.629$) and being older ($\beta = -.13$, $p=.097$) were not related to problem drinking. Being white ($\beta = .17$, $p<.005$), being female ($\beta = -.27$, $p<.05$) and working in hospitality ($\beta = .18$, $p<.005$) were associated with problem drinking. Level of distress moderated by confidence was not likely to mediate the relationship between hospitality and problem drinking.

Discussion

Overall Summary

There were three main objectives and twelve hypotheses for this study. The purpose of Objective 1: was to test if a descriptive drinking norm from coworkers would be associated with problem drinking and if that relationship was moderated by the strength of identification with coworkers. The purpose of Objective 2: was to test if working in hospitality was associated with problem drinking for students and to test several factors that might mediate the relationship between hospitality work and problem drinking. Because many of the variables in this study are newly developed (job-strain, customer contact, hospitality work and general work distress) or have not previously been used in combination (problem drinking), a third objective (Objective 3:) was developed, which would test several hypotheses in an effort to build evidence of validity and reliability for these variables. Thus objective 3 will be discussed first to set the context for Objectives 1 and 2.

Objective 3: Summary

The purpose of objective 3 was to provide evidence of the validity and reliability for the items used in this study. Several hypotheses were proposed to meet the objective (Hypotheses 5-12). For scales that had been used previously, reliability was tested using a Cronbach's Alpha. These were scales for Social Identity, Perceived Access to Alcohol and Injunctive Drinking Norms, all of which showed high alpha scores indicating that they were reliable in this sample. Problem drinking was used as a latent variable that combined four drinking items (MND, DAYS, HED and USUAL). A confirmatory factor analysis was used to determine if the four variables would load on one factor, which they did, indicating that they together are measuring a single concept. For validity, problem drinking was significantly associated, as predicted, with age, gender and Cage scores.

Working in Hospitality was measured using a multi-item index (see Work Type section for results), which compared favorably with a single-item measure of the same concept. A great majority of the students that marked one of the hospitality fields from the index (worked in a bar, club, restaurant, hotel or exotic dance club) also indicated that they were working in hospitality by the single-item measure.

Finally there were several other single-item measures: descriptive drinking norms (DDN), alcohol policy enforcement, work related distress and confidence to contend with work abuse, job-strain and customer contact. Although the reliability for DDN or alcohol policy enforcement could not be assessed, evidence for validity was

found in the significant positive relationship between DDN and the injunctive drinking norm and the significant association between alcohol policy enforcement and PAA.

The last few single-item measures were all aspects of work related distress (work distress, confidence, job-strain and customer contact). Work related distress is an important and complex part of the work experience. Therefore, even though the parent study was not designed specifically to measure distress nor to assess the psychometric properties of a work related distress measure, an attempt was made to develop several items to assess the mediating relationship between distress from work and drinking. In order to build evidence for the validity of these new items a hypothesis was developed that utilized items already part of the original survey. POMS (depression) and BAI (anxiety) scales were selected to build some evidence that these items might actually measure aspects of distress at work. This hypothesis predicted that students with lower levels of confidence to prevent future occurrences of distressing events would have higher levels of depression and anxiety than students with higher levels of confidence. This hypothesis was confirmed. Reliability could not be tested for these variables.

Although there was evidence for the validity of the items meant to measure work related distress and confidence to prevent future distress, this does not prove validity of the measures. These are very complex constructs, and without strong evidence of psychometric properties conclusions based on these items should be viewed as exploratory.

Several of the items used in this study were new or were adapted from other studies. As stated previously, the items could not be fully explored psychometrically. Therefore the results based on these variables (job-strain, work related distress, and alcohol policy enforcement), especially the new single-item measures, should be viewed as exploratory. The Social Identity Scale, the PAA scale, the injunctive drinking norm scale, and problem drinking were adapted from other studies and should be reasonably valid and reliable. Finally, the single measure for DDN should also be viewed as reasonably valid and reliable based on the face validity of the item and the relationships with theoretically related variables.

Objective 1: Summary

In Hypothesis 1, we predicted a significant and positive association between DDN and problem drinking. This hypothesis was confirmed. In Hypothesis 2 we predicted that social identity would interact with DDN to influence problem drinking. That hypothesis was not supported.

A post-hoc analysis was conducted which stratified the original analysis into other workers and hospitality workers (Model 5 & Model 6). Social identification did appear to interact with drinking norms among other workers only.

The first hypothesis, testing whether higher DDN would be associated with higher levels of heavy drinking, was supported. Several studies have found the link between drinking norms and drinking behaviors²¹⁻²³, especially with this population. However, the hypothesis that social identity would be a moderator was not supported. This result runs counter to several other studies that have found a strong relationship

between drinking norms and drinking behavior^{20,133,145,167,168} and a strong body of research (both field tests and lab studies) indicating social identity as a moderator^{21-23,123,133,145,169} between norms and behavior.

There are several alternative hypotheses that can explain the pattern of results. Of course, coworker identification may not influence the association between norms and behavior for students that work. This seems unlikely, as several studies have found this relationship to be significant across several different group identifications: athletes, college peers, college friends, and fraternity/sorority. In Reed et al (2007), several identities were analyzed: Greek, college peers, and college friends. These do show a marked difference in moderating effect, depending on the proximity of the group. For example, in the relationship with college friends, higher identification resulted in an increase in the strength of association between the injunctive norm and drinking. However, for non-Greek students, low identification with Greeks show a slight negative association between injunctive norms for Greeks and student's drinking. Finally for identification with college peers, the relationships are significant but not as strong. An alternative hypothesis can be drawn from these results. It is possible that the sample of student workers is attenuated and only contains students that identify strongly enough with coworkers that there is no detectable difference in the relationship between DDN and problem drinking by strength of identity.

It is also possible that there is a difference in variance and level in DDN and Social identity between hospitality workers and other workers. Hospitality workers reported higher levels of descriptive and injunctive norms for drinking and higher

levels of problem drinking. It might then be possible that the strength of identity and level of descriptive norms among hospitality workers are high enough to mask the moderating effects of social identity among other workers. In a t-test of means between hospitality workers and other workers, there was a significant difference in strength of social bond, but not overall worker identity. Also, the variance observed in BOND, SIMILAR, IMPORTANT, AND IDENTIFY (items from the social identity scale) between hospitality and other workers was significantly different. It is possible that the more narrow range observed in overall work identity by hospitality workers coupled with stronger reported bonds may have created a ceiling effect for hospitality workers. Therefore, a post hoc hypothesis predicting that social identity would moderate DDN and problem drinking for other workers was tested. Based on this hypothesis, Model 4 was split into two groups (other vs. hospitality) and social identity was determined to be a significant moderator for other workers. Figure 3 is a graphical representation of the original Model 4. Figure 4 is a graph of the interaction for the other worker strata and would seem to show that there is no effect on problem drinking by DDN among low identifiers and a moderate effect for high identifiers. Figure 5 is a graph of the interaction for the hospitality worker strata and shows a non-significant, positive relationship between DDN and problem drinking for low identifiers. For the other worker strata, as identification with coworkers increases so does the relationship between DDN and drinking. At first glance this would seem to indicate that social identity may not affect coworkers in hospitality as it has for other populations. However, it is important to remember that what is defined as low

identifiers is relative to higher identifiers and does not necessarily indicate low identification. In fact the mean level of identification for hospitality workers is quite high. Further, as this is a strongly identifying group there is likely not enough variance in identification to find a difference in the effect of norms on behavior. Therefore, figures 4 & 5 would seem to support a ceiling effect. In other words, for high identifying hospitality workers the effect of social identity has reached its peak effect, but the range of lower identifiers indicates that they identify enough to show increased drinking as the descriptive norms increase. This would support the hypothesis that the drinking environment is strong enough to produce a ceiling effect.

Future studies should test the ceiling effect. This might be accomplished by adding items to the scale that would provide more variance in identification scores. Larger samples would also help expand the level of variance. Using more refined measures of the descriptive norm or including an injunctive norm with descriptive norms could also help to tease out the relationships. If it is true that social identity does have some cut-point beyond which it does not add more to the effect between norms and behavior, it may indicate that identity should be treated as a categorical variable.

Further studies of the social environment comparing students that work in hospitality compared to students working in other types of jobs should examine other characteristics of hospitality work that could be contributing to drinking. For example, Ames et al (1989) found that workers socializing outside of work tend to drink more, especially if coworker functions tend to include drinking. It is quite plausible that

workers in hospitality do socialize away from work more or socialize at work after hours.

As this is a cross-sectional study, we cannot rule out the possibility that the students that self-select into hospitality work do so for reasons related to hospitality and drinking. For example, hospitality work might attract people that are more outgoing. It is also possible that there are characteristics of hospitality workers that could have reduced the effect of social identity. Kjærheim et al (1996) found that workers that go into to hospitality work test higher on scales of neuroticism and extraversion. Other research has shown that students testing higher in extraversion drink more than students that tested lower^{69,70}. Thus, it is reasonable to conclude that higher drinking individuals might be drawn to hospitality work. How this effects the relationship between social identity and DDN or how it affects strength of identification with hospitality coworkers is unknown but should be explored in future research.

Economic forces may be at play here as well. It is possible that the extra money earned via tips might provide more money for drinking or that flexible hours provide more time for social activities. Leppel et al (2009)^{109,149,170} suggested that according to a Social Bond theory, commitment to a behavior influences behavior occurrence. Specifically, heavy drinking requires money and time. For students, time spent working and studying takes away from drinking or socializing, whereas having money from a job allows a person to pay for drinking. In that hospitality provides flexible hours and better than minimum wages, drinking may be more viable in this

industry, and it could be that students who want to drink more could be drawn to it because of these job attributes.

Finally, it is possible that students who report weak coworker identification drink for other reasons that are possibly related to being low-identified with coworkers, such as having stronger identification with other groups featuring drinking norm that override coworker influence by promoting or discouraging that behavior. Al

Objective 2: Summary

The first hypothesis of this objective (Hypothesis 3) predicted that hospitality and problem drinking would be positively associated, and this was confirmed in Model 7. These results agree with research conducted among hospitality workers all over the world^{109,149,170}.

In the second hypothesis for this objective (Hypothesis 4) several variables were predicted to mediate the association between hospitality work and problem drinking. However the only variable that met the criteria for mediation was DDN.

Although alcohol policy enforcement did not appear to be a mediator for the association between DDN and problem drinking, there is reason to believe that alcohol policies could be viewed differently by hospitality workers and other workers. There are two main ways that alcohol policy may be different: (1) most jobs do not have alcohol for sale on the premises and (2) alcohol enforcement agencies do not generally look for alcohol policy violations on jobs that do not serve alcohol. A post hoc hypothesis was developed that predicted that work type (hospitality work versus other work) would moderate the relationship between alcohol policy enforcement and

problem drinking (Model 12 and Model 13). The hypothesis was confirmed; for hospitality workers, alcohol policy was positively associated with problem drinking, while the association was non-significant for other workers.

Most of the proposed variables did not meet the criteria to be mediators. Other than DDN and Alcohol Policy Enforcement for hospitality workers, none of the other proposed mediators were significantly associated with problem drinking. These results do seem implausible when placed in the context of previous research with workers.

Ames et al. (2000) found that alcohol policies and perceived access to alcohol at work affected drinking. However, the study also reported that very heavy drinkers will also report stronger PAA than other drinkers. This finding combined with the observed high drinking level of hospitality workers might explain why problem drinking was not associated with PAA in this sample. Regarding Alcohol Policy enforcement, it would seem that for hospitality workers it was associated with problem drinking but not for other workers, possibly due to alcohol policy salience for hospitality workers. That does not explain why alcohol policy enforcement was not related to problem drinking for other workers. Two other studies have tested how alcohol policies effect drinking^{4,33}. These studies were conducted with populations that were known to drink at work, i.e. Navy personnel and factory workers. Thus it is plausible that the scale does not predict drinking among workers that traditionally do not drink at work, hence the contrasting results when the sample was stratified.

The hypothesis that work distress would mediate problem drinking was also rejected. Literature in this area contains several examples and papers suggesting the

difficulty of measuring such a complex experience as distress from work related abuse^{107,109,111,148,171-173}. In a longitudinal study with college students¹⁵⁰, work related distress levels were tracked over 14 consecutive days. Distress varied from day to day, which may explain inconsistent results in cross-sectional studies linking distress levels to drinking. In another study¹⁷⁴ examining the relationship between distress levels, drinking to cope, adaptive stress responses and problem drinking, results suggested that experiencing stress was only related to distress for individuals that had maladaptive reactions or lacked social resources, and that distress was only associated with problem drinking when workers held tension reduction beliefs about drinking. Together the two studies indicate that the relationship between distress and drinking is weak and likely only significant for individuals who believe that drinking reduces stress and lack more adaptive stress responses. Therefore, it is likely that distress levels were not associated with problem drinking because it should be moderated by worker expectations about alcohol's tension reducing capabilities. Equally plausible, though, is that distress was not adequately measured and/or the confidence to prevent stress does not moderate the association between work related distress and problem drinking.

The relationship between stressors, the experience of distress and problem drinking is complex. The experience of stress and distress is likely too complex for single-item measures to adequately assess. The day to day variance in stress and distress levels would seem to call for longitudinal studies, which can better account for it, rather than cross-sectional. In order to make this possible, it would therefore be

beneficial to develop shorter scales for these experiences. This study could not adequately assess the psychometric properties of the distress or confidence measures, but it highlights the fact that future studies designed specifically for this purpose could be very beneficial to the field.

Another variable related to distress was job-strain, which was also a single-item measure. The item for job-strain is likely double-barreled as it is an attempt to measure two concepts of job demand: (1) high job challenge and (2) low control over the resources necessary to meet that challenge. Previous research tends to find that feeling of being challenged at your job and not having the resources to meet that challenge is associated with distress and problem drinking^{9,10,21,23,87,118}. The best balance between demand and resources is having a challenging job and having the resources to meet the challenge. The worst case scenarios are: (1) having a job that presents little challenge or (2) having a job that presents a high challenge with little or no resources¹⁷⁰. However, due to the item wording students that have low levels of challenge in their job might indicate low strain because they do not need any resources, resulting in a misclassification error. Finally, job-strain may be better related to a source of stress and thus should be moderated by other variables in the pathway between job-strain and problem drinking.

Contact with customers was also not associated with problem drinking. In this study, hospitality was defined as working in hotels, restaurants, bars, or clubs. These job descriptions all come into contact with customers. All but one hospitality worker reported also working with customers and three quarters of the other workers reported

customer contact. The low variation in customer contact among student workers is likely the reason that no significant relation to problem drinking was observed. Contact with customers was associated with POMS depression and frequency of distressing events. It is therefore plausible that customer contact is also a stressor and requires a moderator, such as expectations of drinking to reduce stress or drinking to cope. Further studies should examine the role of customer contact as a possible stressor that might contribute to mental health and problem drinking.

Implications and Future Directions

College drinking has long been recognized as a problem, there exists a large base of empirical data on the environmental, psychosocial, and biological reasons for student drinking^{11,24,26,44,77,88,175-180}. One of the strongest predictors of drinking has been and continues to be the influence of friends and college peers^{9,11,21,179}. This study extends that body of knowledge by demonstrating that the drinking habits of college students' coworkers may also contribute to drinking. Further, students working in hospitality may be at higher risk for heavier drinking than students working in other jobs or non-working students. The US Dept. of Education estimates that about 45% of full-time students work at least part time and that 79% of part-time students work at least part time¹⁸¹. That means that a large proportion of college students are working, and if a large number of those are working in hospitality the impact to college drinking could be significant. The participants in this study were not a true random selection, but the proportion of hospitality workers observed in the survey over time remained fairly steady at about one third. The University used in the sample included

approximately 27,000 enrolled undergraduates; if half of those were working (13,500 students), then as many as 4,500 students could be working in the hospitality industry. Even using conservative estimates, the hospitality work environment may have a significant impact on overall student drinking. Therefore, interventions that seek to reduce drinking on college campuses should target students that work, especially students working in hospitality.

This was the first of what should be several studies that need to be undertaken to examine the role of work in students' overall health, not just drinking. For example, hospitality workers are also thought to have access to illicit drugs, and the work environment may promote the use of drugs¹⁸². Knowing how that influences young people that are in school would be essential to help students that need to work. Also, conflicts between the demands of school and work are likely to produce problems related to time for studying and increased stress^{150,183}, e.g. students report misuse of prescription drugs as a study aid due to lack of time^{184,185}. Working students may also be more likely to misuse prescription drugs in order to reduce tension or to increase energy to participate in social activities.

Since a large proportion of students work, understanding how working effects drinking is vital to support the goal of reducing the amount of drinking by college students. And yet there are only a few studies that have specifically examined how work, school and drinking interact^{150,183}. This is a problem because, while the flexibility in schedule and higher pay rate may be very attractive for college students, hospitality work unfortunately exposes students not only to the added stress of having

to work, but also to a pro-drinking environment that provides the funds and the social group to drink with.

Understanding what affects strength of identification with groups for college students will be also be important, since part of any intervention, especially health communication interventions, should account for which groups are important to college students and why. For example, what factors lead some students to identify strongly with campus groups that drink heavily while others gravitate towards non-drinking groups?

Research focused on individual and social environmental characteristics that influence job selection could further inform future studies with college student workers. Indeed some research has shown that people with particular personality traits are more likely to go into and be more satisfied in jobs that match their personality and value systems¹⁸⁶⁻¹⁹⁰. For example, workers that score high on extraversion are more likely to choose jobs in sales or management^{186,190}. Because, extraversion is also linked with heavier drinking and self-selection into hospitality work, this may be an important factor in job choice. Future research should also examine correlations between identity strength and extraversion. It is possible that more extraverted people may be more likely to form quick social bonds. Another factor in job choice is self-monitoring. High self-monitoring students are more affected by social cues and possibly by group norms. High self-monitors are also more influenced by the group norms about strategies used to pick jobs¹⁹¹. Students are also affected by their friends' choice of jobs¹⁹². Finally, measures of subjective job fit assess feelings that the job

organization meets and has similar values has the individual¹⁸⁷. Feeling that the organization has similar values may predict job choice and may also affect ratings of identification with coworkers. Considering perceptions of job culture, it would also be important to examine what are students' perceptions of certain types of jobs and how those perceptions are influenced by friends and peers. Also, how do perceptions of job type influence job choice? For example, perceptions that the job is fun and "I will meet new people" may influence more social or extraverted students.

It is important to point out, however, that not all students will choose a job based on a perceived fit or feeling. Many students work to meet the financial need that loans or parents cannot fulfill, and thus they may choose work based on flexibility of work hours and pay rates. Hospitality jobs offer flexible hours and better than minimum wage, which may attract students with more financial need. Studies that examine how reasons for job entry effect drinking behavior could produce findings that indicate reason for job choice into hospitality fields could buffer or strengthen norms effect on drinking. Among exotic dancer, women that choose the work to get thru school are buffered from some of the effects of risk behavior related norms¹⁹³. Another influence particularly relevant to college students is job availability¹⁸⁹, i.e. the number of jobs that the student qualifies for. This may explain why the bulk of students work for retail, hospitality or in campus jobs. Future studies should focus on factors that may influence the types of jobs that students take and how these factors influence identification with coworkers and the possible differential effects of the environment on health behaviors like drinking.

Social Norms Marketing has been a popular intervention tool used to reduce heavy drinking, but it has been inconsistent in effectiveness. Based on this study and those of Reed et al and Johnston, it is likely that some of this inconsistency may be a result of targeting social groups that students are not identifying strongly with. This study reinforces that hypothesis and adds to the field by targeting another important yet previously overlooked peer group, i.e. coworkers.

Although distress and work stressors (job-strain and customer contact) did not seem to be related to problem drinking, this may have been due to misclassification errors. More work should target how work related stressors and distress might be related to problem drinking and what factors might moderate those relationships. In addition, future research should be dedicated to understanding how conflicts between the demands of student, work and family roles interact and affect drinking, drug use, and health overall.

Strengths and Limitations

This study has several significant strengths. The use of SEM allows for a better estimation of the outcome variable and scale items, such as social identity. Furthermore, the use of SEM to test for moderators and mediators is a significant advancement over using linear regressions, especially in the case of mediation, since the test for mediation in SEM requires fewer cases to test for an indirect effect than does the traditional Baron and Kenney method^{163,166,194}.

This study was the first to use the social identity scale as a latent variable, which added to the utility and reliability estimates of the scales. The same can be said

for the measure of problem drinking; by adding a measure of heavy drinking, this measure of problem drinking captures a broader range of drinking behaviors than was true of previous research^{74,179,195}. The study also introduced several new variables (work related distress, job-strain, customer contact) that should provide a good starting point for the development of shorter scales that can be used in longitudinal and large cross-sectional studies, although further psychometric testing is required.

This study extends our knowledge of factors related to student drinking, including additional information to better predict the relationship between drinking norms and drinking and how work might influence student workers' drinking. Several findings in this study add to the field, e.g. students working in hospitality drink more than other working students and the descriptive drinking norms of all coworkers is relevant to total drinking, not just drinking at work. Coworkers' approval or disapproval, found to be important in predicting drinking at work⁴, does not seem to be as important in predicting total drinking. Finally, this study adds to what is known about how social identity affects behavior. Previously, social identity has consistently moderated drinking norms and drinking behavior, but this study indicates that if a group strongly identifies, especially feeling a strong bond within the group, the moderated relationship is not statistically observable.

Of course no study is without limitations. The sample size for this study was reduced by approximately 300 students (based on previous surveys) when a change in school policy reduced the number of reminders from 3 to 1. It is not known whether students that responded earlier differed from students that responded later. This would

only be a problem if the relationship between social identity and drinking for working students is found to be different for early versus late responders.

Perhaps the strongest limitation was the preponderance of new and/or single-item measures. Unfortunately the psychometric properties of the new variables could only be estimated based on relationships with variables from the parent study, not specific items used for the purpose of validity testing. Also, single-item measures could not be tested for reliability. This obviously reduces the confidence in conclusions based on these untested variables. However, we were able to establish some evidence that these variables were measuring what they were intended to. Specifically, job-strain, customer contact, and work distress seemed to be related to other variables as predicted from previous studies.

The cross-sectional nature of this study also presents methodological problems specifically related to mediation and moderation, as these concepts infer temporality, which is obviously not usually possible to test in this type of study design. In this study, pro-drinking descriptive norms were predicted to cause heavier drinking. There are several studies that have shown that college students tend to over-estimate the rates of drinking by peers^{87,90,196}. It is possible that students perceive more drinking by coworkers if they are heavier drinkers, and students often perceive a stronger descriptive norm than is actually the case. Further, part of identity strength is perceived similarity between oneself and others in the group. Therefore students that see themselves as drinkers might feel more identification with groups that drink, selecting themselves into groups with pro-drinking norms, like hospitality work. It is

possible that drinkers are attracted to the hospitality field because of a perceived similarity with hospitality workers, thus they may more easily begin to identify with heavy drinking coworkers. Therefore it may not be the drinking environment that causes students to drink more, but that the students and other employees make the environment friendlier to drinkers. To address this limitation, future studies should examine factors that might be related to why students would be attracted work in hospitality. Some research has shown that heavier drinkers self-selected jobs in alcohol manufacturing¹³⁶, and at least one study has shown that hospitality workers have higher scores on extraversion scales¹⁹⁷ which has been linked with heavier drinking in college students⁷⁰. Cross-sectional studies can control for the effects of prior drinking, extraversion, and norm misperceptions, but longitudinal studies should also include them to determine how much effect they have on drinking, social identity and problem drinking over time.

Despite the inherent limitations of new measures, the conclusions and findings of this study represent an advancement to the field. This was the first adaptation of the social identity scale to coworkers and it performed well, providing evidence of the utility of the scale. Although working in hospitality has consistently been found to be related to drinking, it has never before been linked specifically to descriptive drinking norms and social identity. Furthermore, knowing that students report a strong identity to hospitality work and feelings of bonding with coworkers represents an advancement in the study of worksite influence on health.

In conclusion, the key findings in this study highlight the need for an examination of the work environment relevant to college students. This study has demonstrated that working in hospitality very possibly represents a risk category for college students, and that factors relating to strengthening identification with groups that promote or discourage drinking are important in understanding how and why college students drink more than their non-college peers.

Tables

Table 1: Descriptive Analysis

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Variable	M(SD)	Skew	Kurtosis	Range	n
Age	23.68(6.4)	3.53	15.66	18-67	330
White	47%				330
GPA	3.10(.48)	-.755	1.39	1-4	316
Female	70%				330
Married	8%				329
Committed	10%				330
On Campus	46%				330
Tranferred from Other College	45%				327
Problem Drinking					
USUAL	1.79(1.79)	1.50	1.03	0-10	321
DAYS	4.25(53.06)	1.99	1.37	0-28	326
MND	3.96(3.80)	1.04	1.03	0-20	323
HEAVY	1.53(2.70)	2.37	1.03	0-14	321
DDN					
	30.46(27.91)	.766	-.427	0-100	328
Social Identity					
	3.8(1.46)	-.101	-.729	1-7	319
Similar	3.81(1.57)	.040	-.667		318
Bond	4.24(1.65)	-.343	-.633		318
Important	3.94(1.59)	.310	-.963		318
Identify	3.26	.310	-.986		319
Injunctive Drinking Norm					
	1.61(1.20)	2.45	5.99	1-7	304
Drank at work	1.71(1.40)	2.14	3.89		304
Drank an hour before work	1.73(1.34)	1.99	3.37		303
Drunk at work	1.58(1.30)	2.53	5.85		304
Drank 4 or more at work	1.55(1.24)	2.61	9.16		303
Had 1 or 2 drinks at work	1.55(1.24)	2.61	6.72		304
PAA					
	2.63(1.03)	-.054	1.28	1-4	311

Table Continued					
Variable	M(SD)	Skew	Kurtosis	Range	n
Get a drink	2.83(1.19)	-.358	1.45		311
Bring alcohol to work	2.49(1.17)	-.010	-1.46		311
Drink during breaks	2.49(1.32)	.117	-1.47		308
Alcohol Policy Enforcement					311
None	23.40%				74
Not enforced	6.60%				21
Strictly enforced	63.30%				200
Work Related Distress					
Frequency of General Abuse	2.20(1.07)	.758	.053	1-5	314
Work-related distress	2.18(1.12)	.663	-.281	1-5	314
Confidence	3.95(1.06)	-.922	.308	1-5	227
Job-strain	1.93(1.17)	1.09(.137)	.146(.273)	1-5	318
Customer Contact	81%				324

Table 2. Missing Value Analysis

Table 2. Missing Value Analysis

	DAYS	USUAL	MND	HED	N	% missing
Descriptive Drinking Norm (DDN)						
DDN					271	17.9
0		3.65	1.22	1.15		
1	4.12	4.01	1.9	1.6		
sig	-0.411	0.492	0.0	0.195		
Social Identity						
BOND					318	3.6
0	5.58	1.36	4.75	2.25		
1	4.19	1.8	3.93	1.5		
sig	0.499	0.296	0.545	0.481		
IMPORTANT					318	3.6
0	5.58	1.36	4.75	2.25		
1	4.19	1.8	3.93	1.5		
sig	0.499	0.296	0.545	0.481		
IDENTITY					319	3.3
0	6.09	1.5	5.18	2.45		
1	4.18	1.8	3.91	1.5		
sig	0.385	0.489	0.373	0.404		
SIMILAR					318	3.6
0	5.58	1.36	4.75	2.25		
1	4.19	1.8	3.93	1.5		
sig	0.499	0.296	0.545	0.481		
Injunctive norms						
Drank at Work					304	7.9
0	4.69	1.4	4.88	1.85		
1	4.21	1.82	3.88	1.5		
sig	0.643	0.149	0.287	0.558		
Drank before work					303	8.2
0	4.52	1.35	4.7	1.78		
1	4.22	1.83	3.89	1.51		
sig	0.771	0.149	0.381	0.635		
Got drunk at work					304	7.9
0	4.69	1.4	4.88	1.85		
1	4.21	1.82	3.88	1.5		
sig	0.643	0.149	0.287	0.558		
Drank 4 or more at work					303	8.2
0	4.52	1.35	4.7	1.78		
1	4.22	1.83	3.89	1.51		
sig	0.771	0.149	0.381	0.635		

Table Continued						
	DAYS	USUAL	MND	HED	N	% missing
Drank 1 or 2 at work					304	7.9
0	4.69	1.4	4.88	1.85		
1	4.21	1.82	3.88	1.5		
sig	0.643	0.149	0.287	0.558		
Perceived Access to Alcohol (PAA)						
Get a drink at work						
0	5.05	1.33	4	1.84	311	5.8
1	4.2	1.82	3.95	1.5		
sig	0.566	0.171	0.963	0.672		
Bring alcohol to work						
0	5.05	1.33	4	1.84	311	5.8
1	4.2	1.82	3.95	1.5		
sig	0.566	0.171	0.963	0.672		
Drink during breaks					308	6.7
0	4.82	1.24	3.82	1.63		
1	4.2	1.83	3.97	1.52		
sig	0.639	0.063	0.867	0.868		
Job-strain*					318	3.6
0	4.67	1.3	4.18	1.36		
1	4.23	1.8	3.95	1.54		
sig	0.778	0.245	0.842	0.752		
Customers*					324	1.8
0						
1						
sig						
General Abuse					314	4.8
0	5.19	1.64	4.53	2.27		
1	4.2	1.79	3.93	1.49		
sig	0.541	0.754	0.605	0.422		
Alcohol Policy Enforcement					308	6.7
0	4	1.14	3.23	1.09		
1	4.3	1.83	4.01	1.56		
sig	0.826	0.017	0.311	0.459		
Hospitality*					329	1
0						
1						
sig						
Employed*					330	0
0						
1						
sig						

* less than 3% missing cases

Table 3. Confirmatory Factor Analysis

Table 3. Confirmatory Factor Analysis

	Loadings	Eigenvalue	% Variance
Problem drinking		2.607	66.68
Max	.889		
Binge	.897		
Usual	.782		
Days drinking	.732		
Social Identity		3.146	78.65
Bond	.885		
Important	.843		
Identity	.936		
Similarity	.881		

Table 4. Scale Reliability and Validity

Table 4. Scale Reliability and Validity

	Cronbach's Alpha
Social Identity	.908
Perceived access to alcohol	.983
Injunctive drinking norm	.955

Table 5. Moderating Effect of Confidence between Distress and Depression

<i>Table 5. Moderating Effect of Confidence between Distress and Depression</i>		
	Beck's Anxiety	POMS (depression)
	β (p-value)	β (p-value)
Level of Distress	.094(.155)	.300(.000)
Level of Confidence	.023(.753)	-.032(.652)
Interaction	-.151(.041)	-.141(.046)

Table 6. Differences in drinking status by work status

Table 6. Differences in drinking by work status.

	Days	Usual	Max	HED
Non-workers	3.26(4.6)	1.66(2.0)	3.64(4.6)	1.33(2.6)
Other workers	3.52(4.3)	1.60(1.7)	3.45(3.6)	1.19(2.3)
Hospitality	6.35(6.4) ^{ab}	2.31(2.0) ^{ab}	5.28(4.1) ^{ab}	2.76(3.5) ^{ab}

^a=compared to non-workers ($p<.05$), ^b=compared to non-hospitality workers ($p<.05$)

Table 7. Demographics and drinking behavior by types of Hospitality work

Table 7. Demographics and drinking behavior by types if hospitality work

	N	Hrs/wk	age	% female
Bar	11	22.1(5.4)	26.5(6.4)	67%
Restaurant	44	20.6(7.1)	22.5(1.9)	64%
Hotel	7	29.1(11.8)	22.3(2.3)	29%
Barista	11	25.5(8.8)	21.5(1.4)	91%
	HED	Days	Max	Usual
Bar	1.7(2.2)	7.3(6.6)	4.6(2.3)	2.2(2.1)
Restaurant	3.5(3.7)	6.6(6.0)	6.4(4.7)	2.8(2.5)
Hotel	3.6(5.0)	7.5(2.8)	7.7(5.6)	2.3(1.6)
Barista	.5(.69)	2.7(2.7)	3.5(2.7)	2.1(1.5)

Figures

Figure 1. Worker Identification Moderates the influence of Descriptive Drinking Norms on Problem Drinking

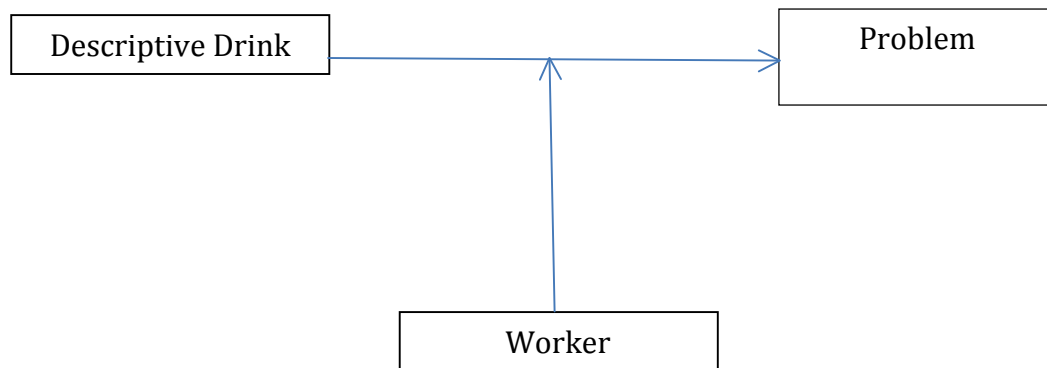


Figure 1: Worker Identification Moderates the influence of Descriptive Drinking Norms on Problem Drinking

Figure 2. Hospitality: Impact of Work on Student Problem Drinking

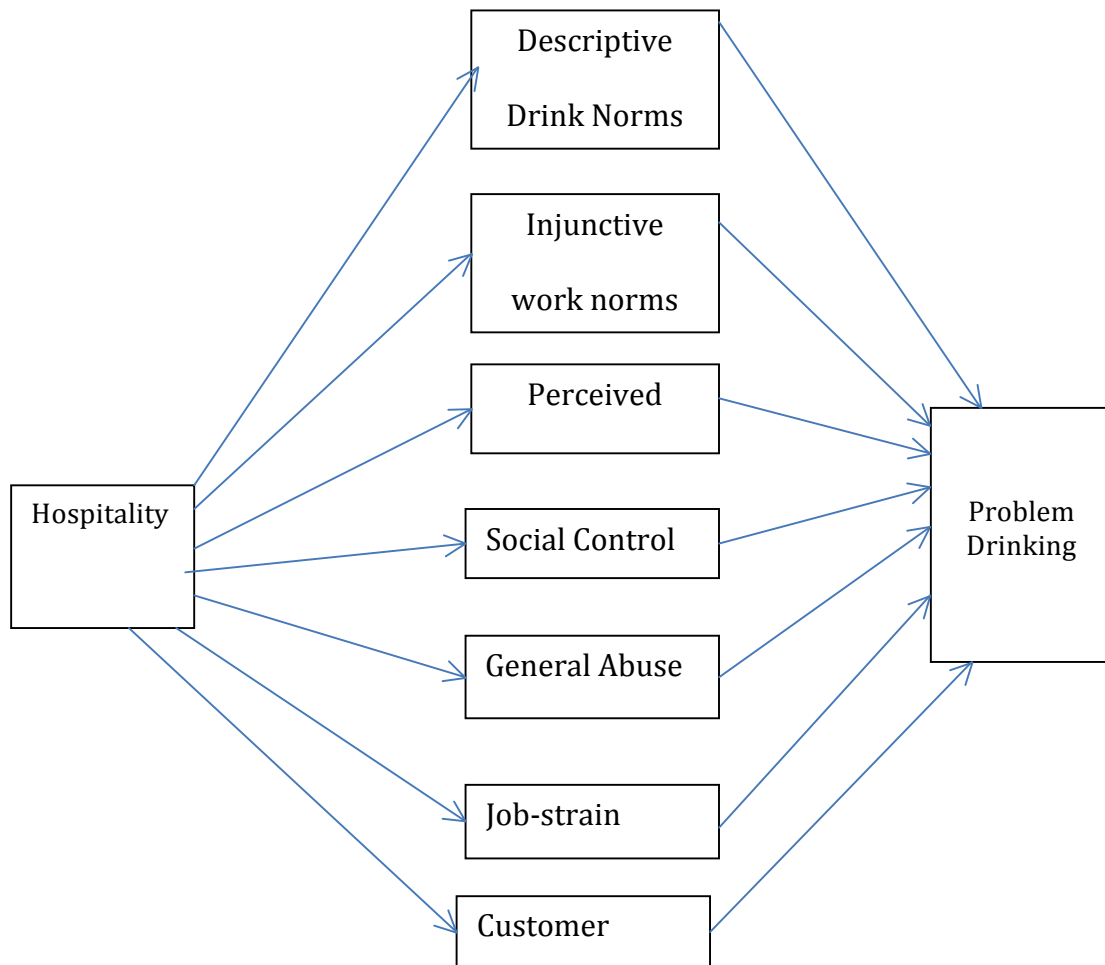


Figure 2: Hospitality: Impact of Work on Student Problem Drinking

Figure 3. Social Identity Interaction

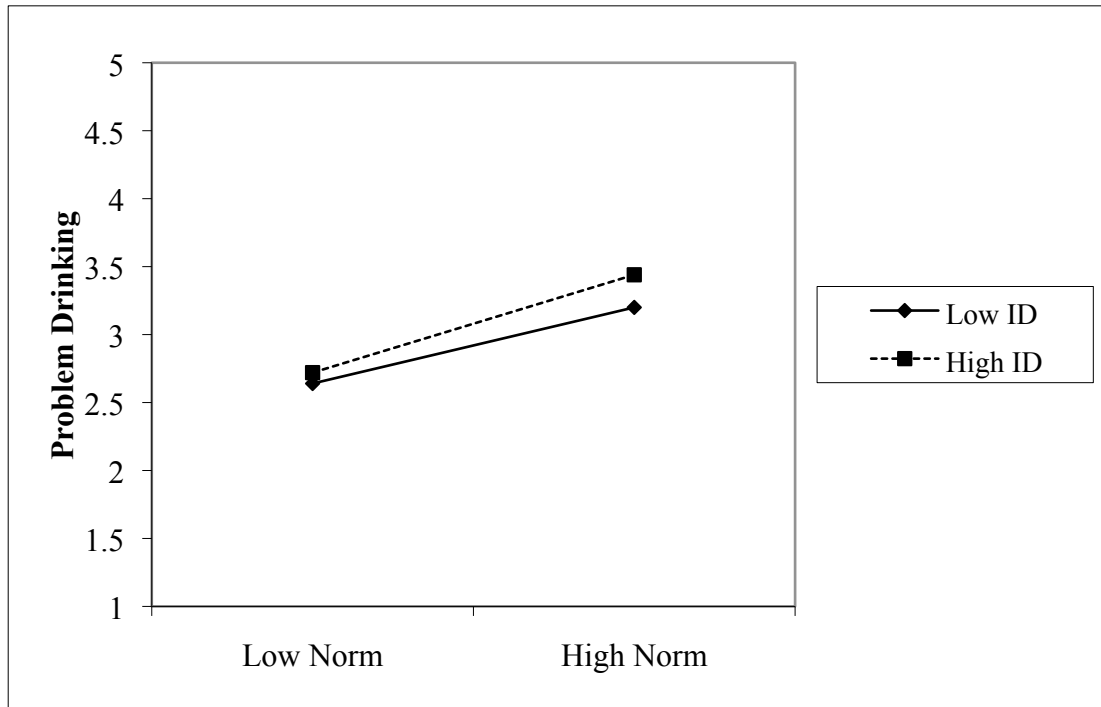


Figure 3. Social Identity Interaction

Figure 4. Social Identity Interaction among Other Workers

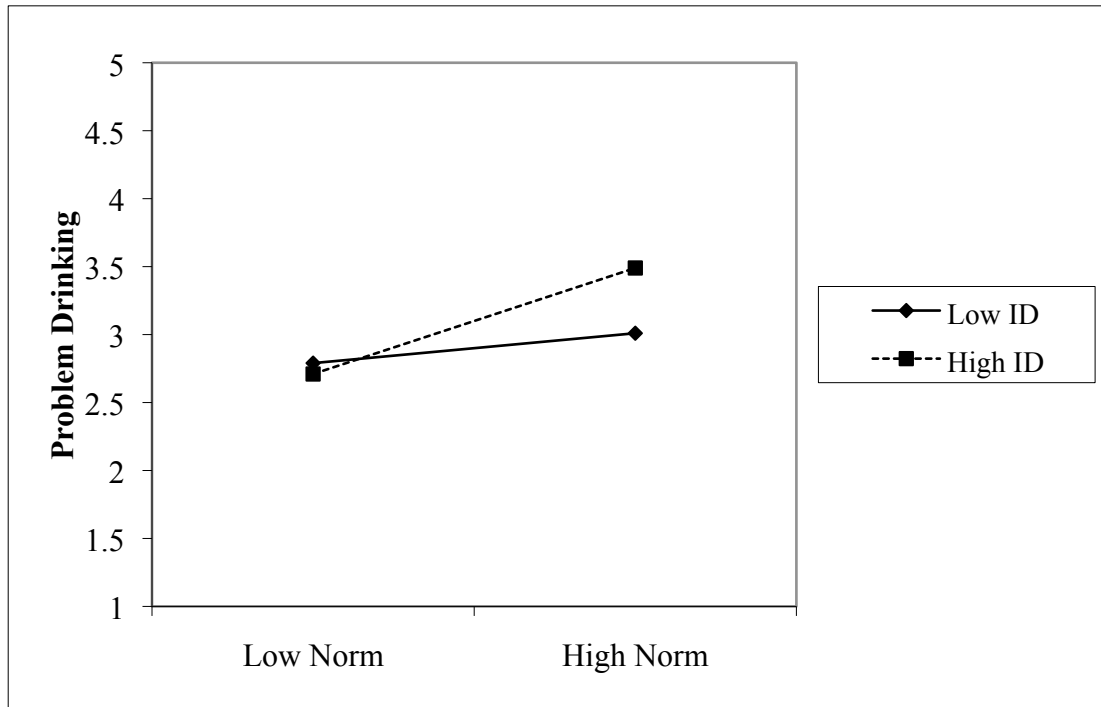


Figure 4. Social Identity Interaction among Other Workers

Figure 5. Social Identity Interaction among Hospitality Workers

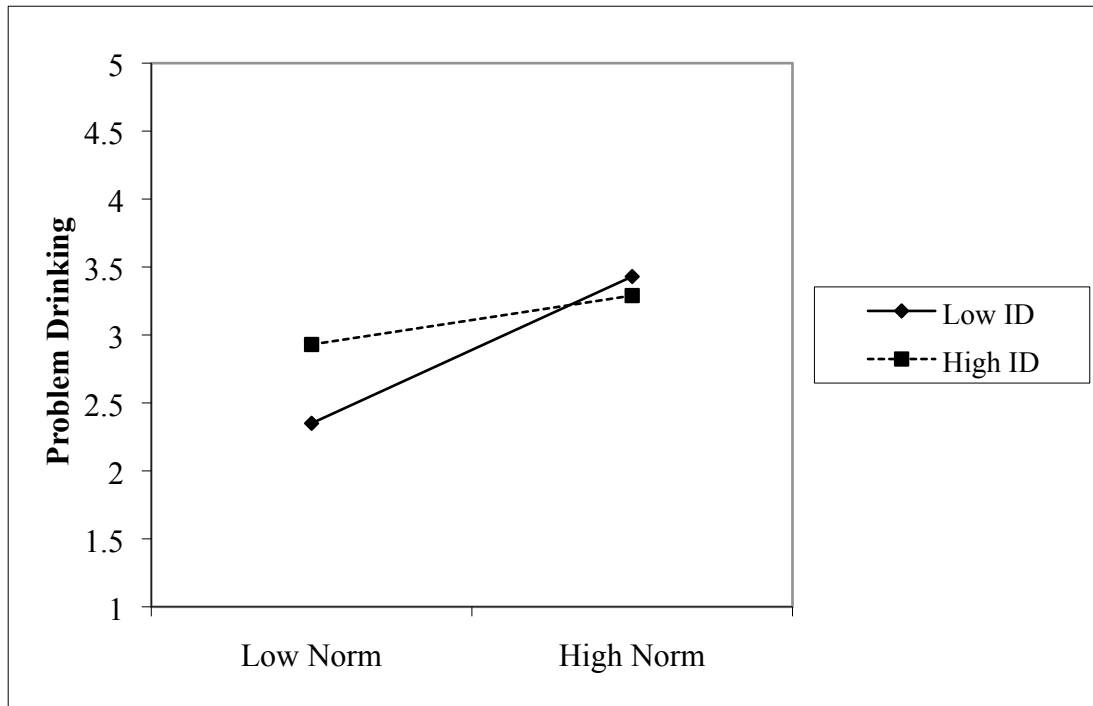
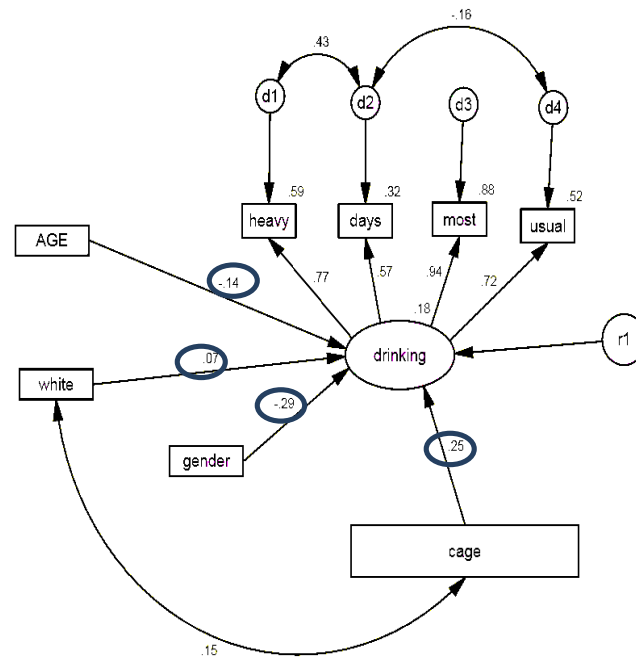


Figure 5. Social Identity Interaction among Hospitality Workers

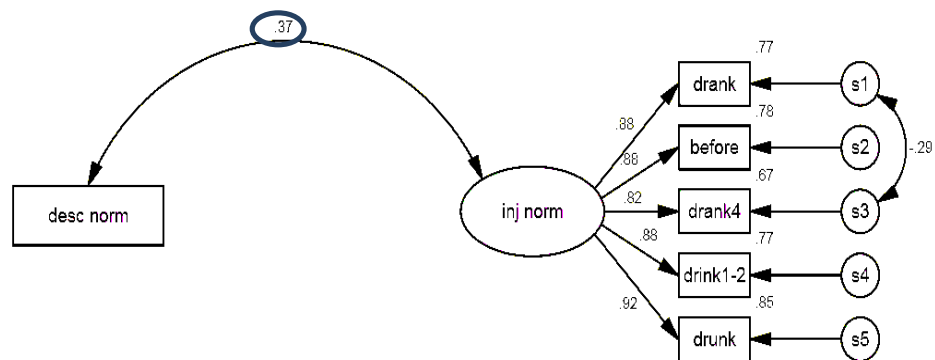
Models

Model 1. Association between CAGE and Problem Drinking



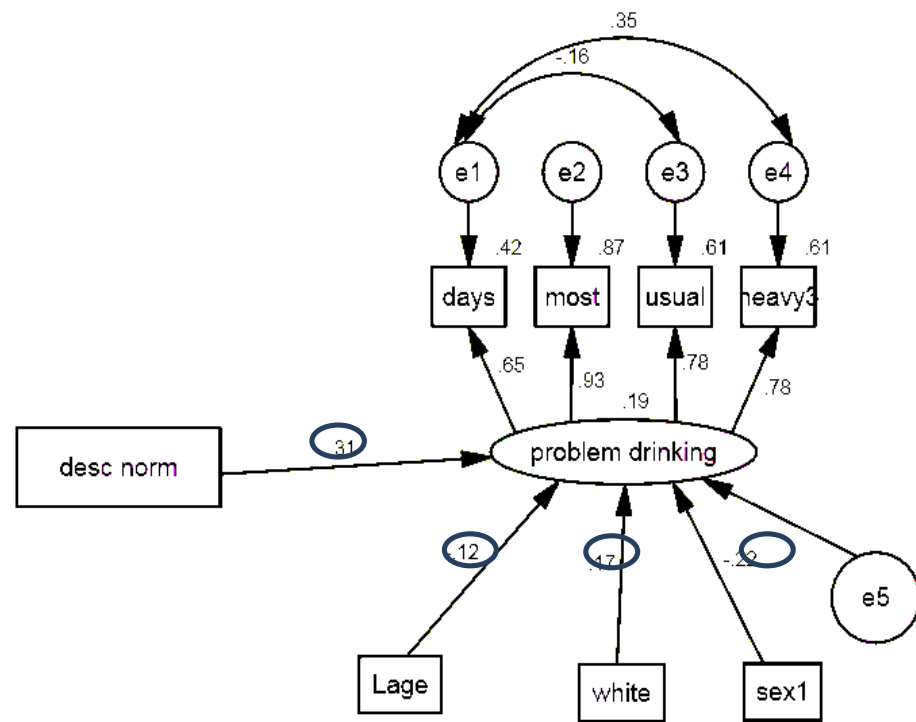
Model 1: Association between CAGE and Problem Drinking

Model 2. Relationship between DDN and Injunctive Drinking Norms



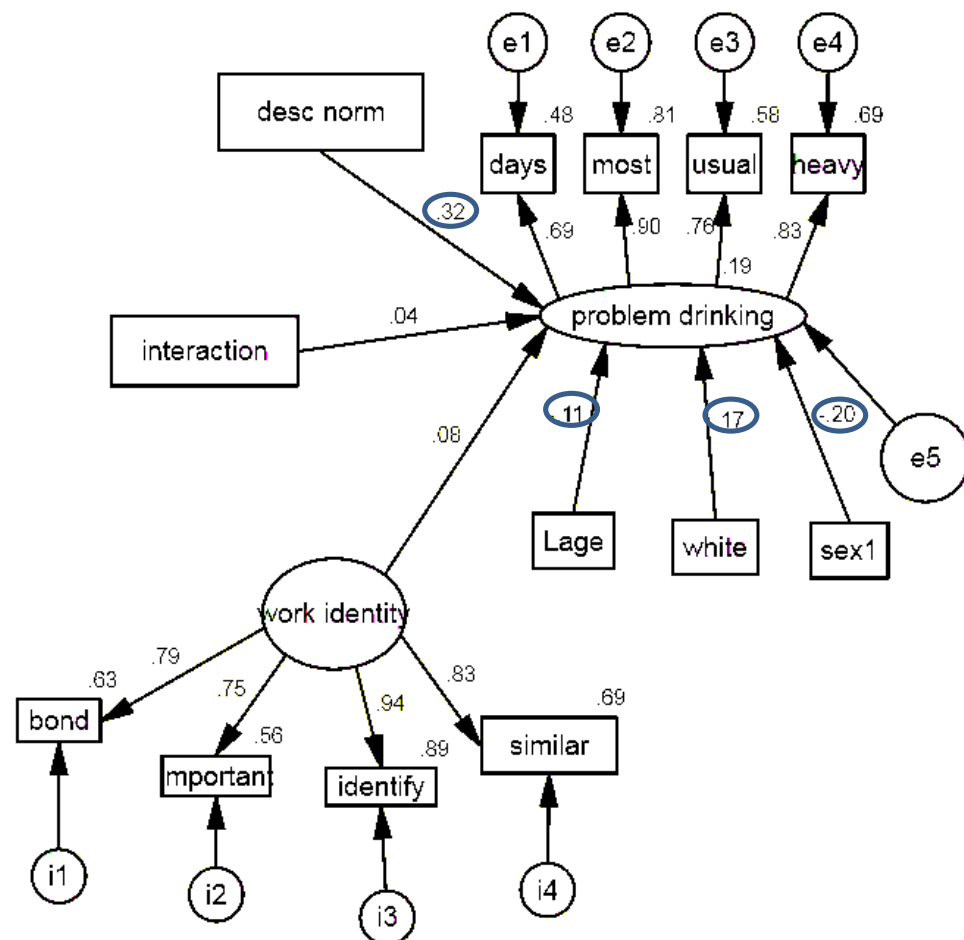
Model 2: Relationship between DDN and Injunctive Drinking Norms

Model 3. Descriptive Drinking Norm and Problem Drinking



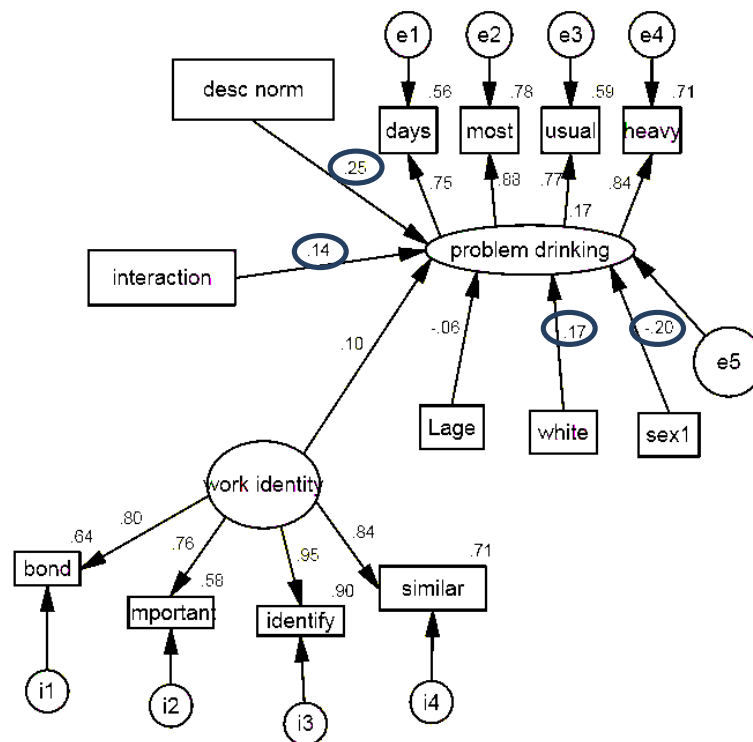
Model 3: Descriptive Drinking Norm and Problem Drinking

Model 4. Descriptive Drinking Norms influence on Problem Drinking, moderated by Worker Identity



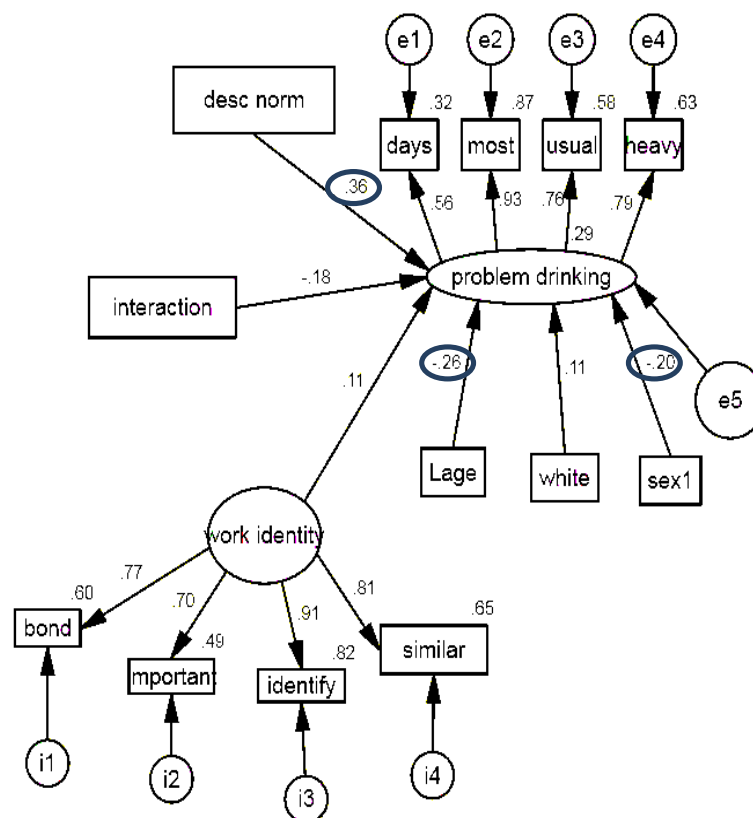
Model 4: Descriptive Drinking Norms influence on Problem Drinking, moderated by Worker Identity

Model 5. Descriptive Drinking Norms influence on Problem Drinking, moderated by Worker Identity (other workers)



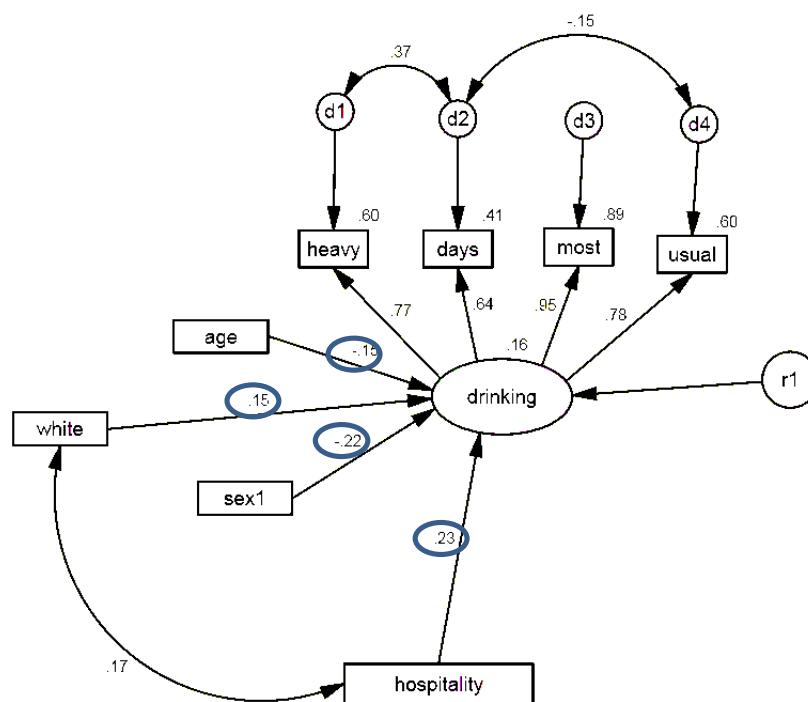
Model 5: Descriptive Drinking Norms influence on Problem Drinking, moderated by Worker Identity (other workers)

Model 6. Descriptive Drinking Norms influence on Problem Drinking, moderated by Worker Identity (hospitality)



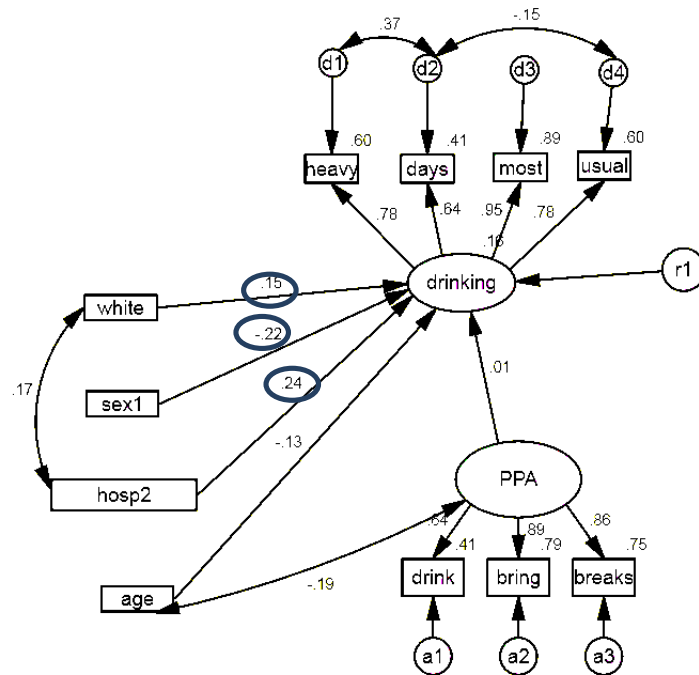
Model 6: Descriptive Drinking Norms influence on Problem Drinking, moderated by Worker Identity (hospitality)

Model 7. Hospitality and Problem Drinking



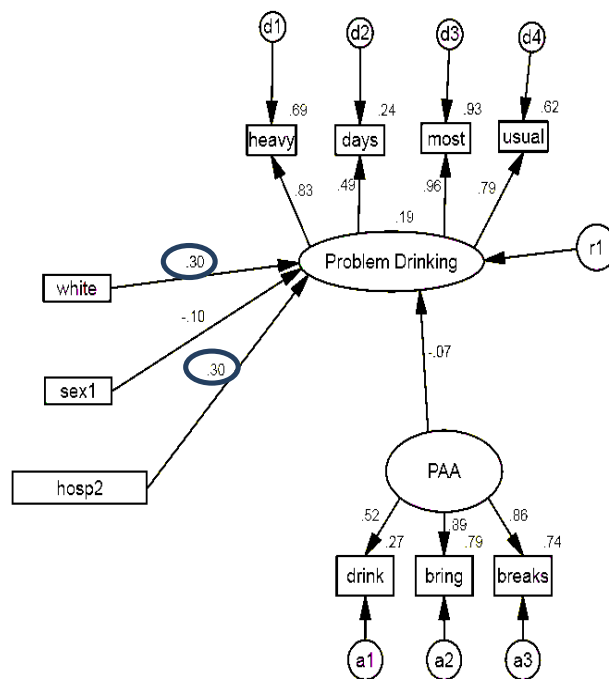
Model 7: Hospitality and Problem Drinking

Model 8. Perceived Access to Alcohol and Problem Drinking



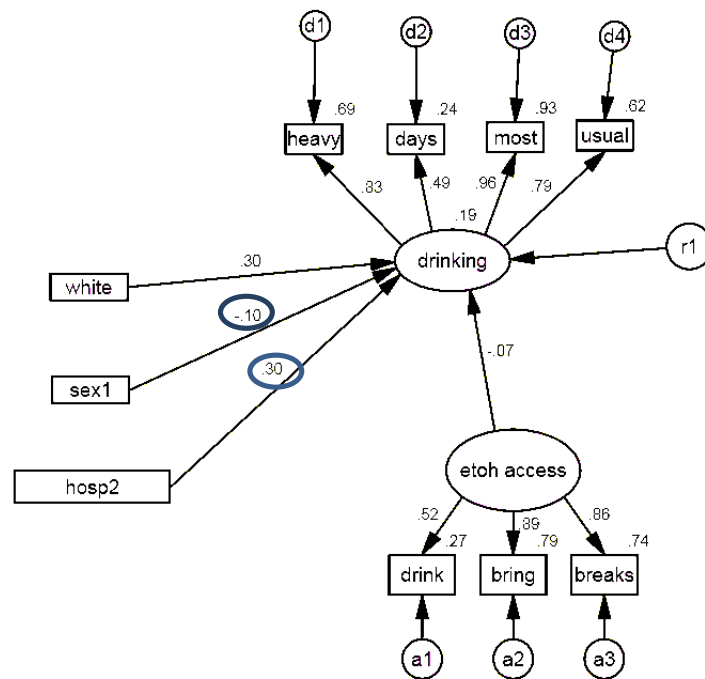
Model 8: Perceived Access to Alcohol and Problem Drinking

Model 9. Perceived Access to Alcohol and Descriptive Drinking Norms (under 21)



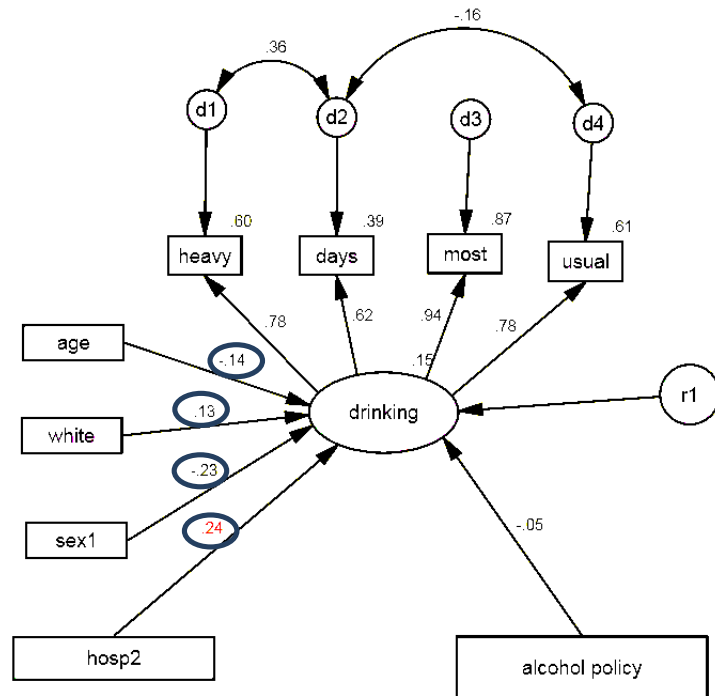
Model 9: Perceived Access to Alcohol and Problem Drinking (under 21)

Model 10. Perceived Access to Alcohol and Descriptive Norms (21 and over)



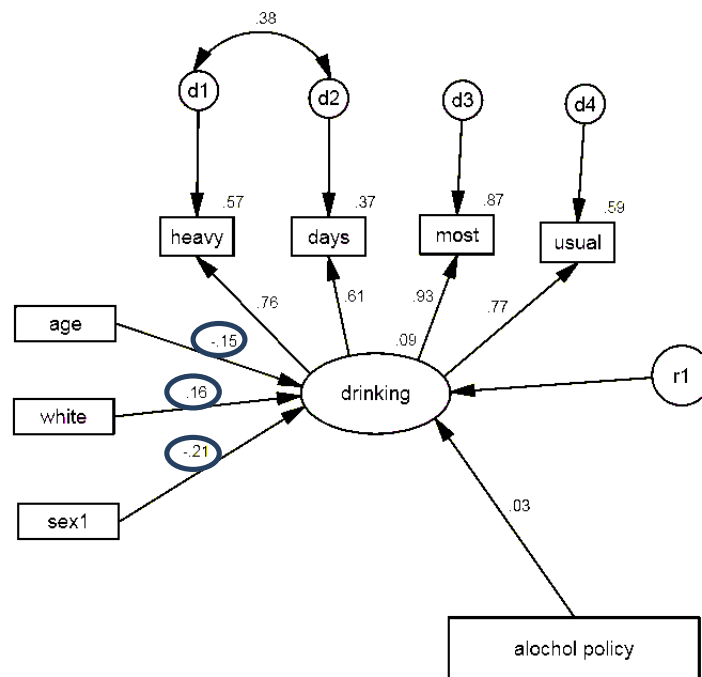
Model 10: Perceived Access to Alcohol and Descriptive Norms (21 and over)

Model 11. Alcohol Policy and Problem Drinking



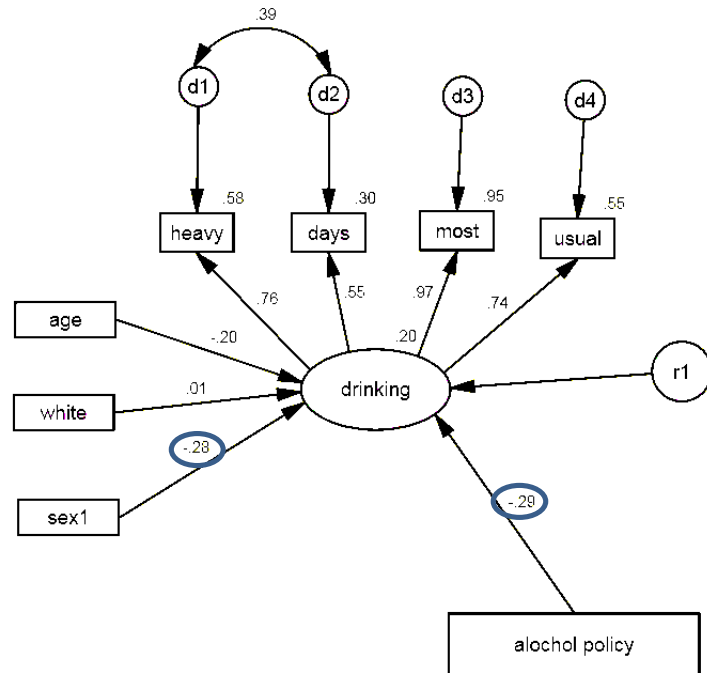
Model 11: Alcohol Policy and Problem Drinking

Model 12. Alcohol Policy Enforcement and Problem Drinking (non-hospitality)



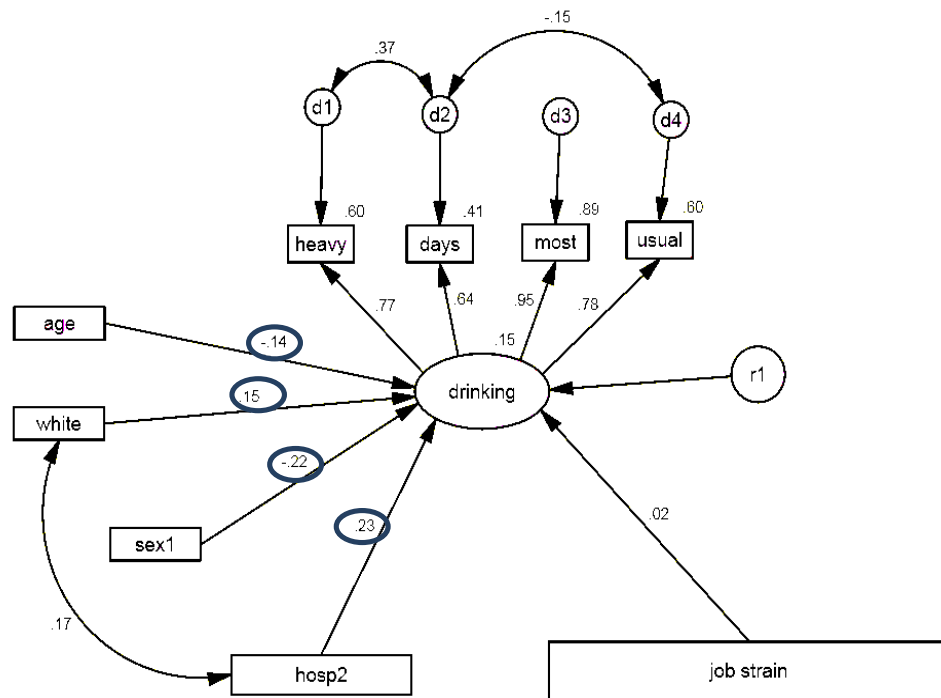
Model 12: Alcohol Policy Enforcement and Problem Drinking (non-hospitality)

Model 13. Alcohol Policy Enforcement and Problem Drinking (hospitality)



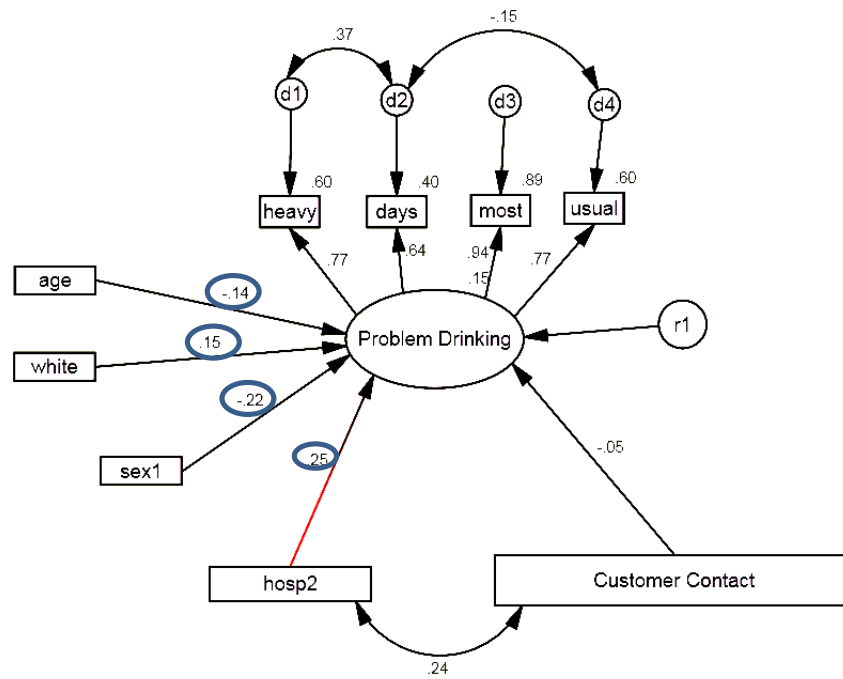
Model 13: Alcohol Policy Enforcement and Problem Drinking (hospitality)

Model 14. Job-strain and Problem Drinking



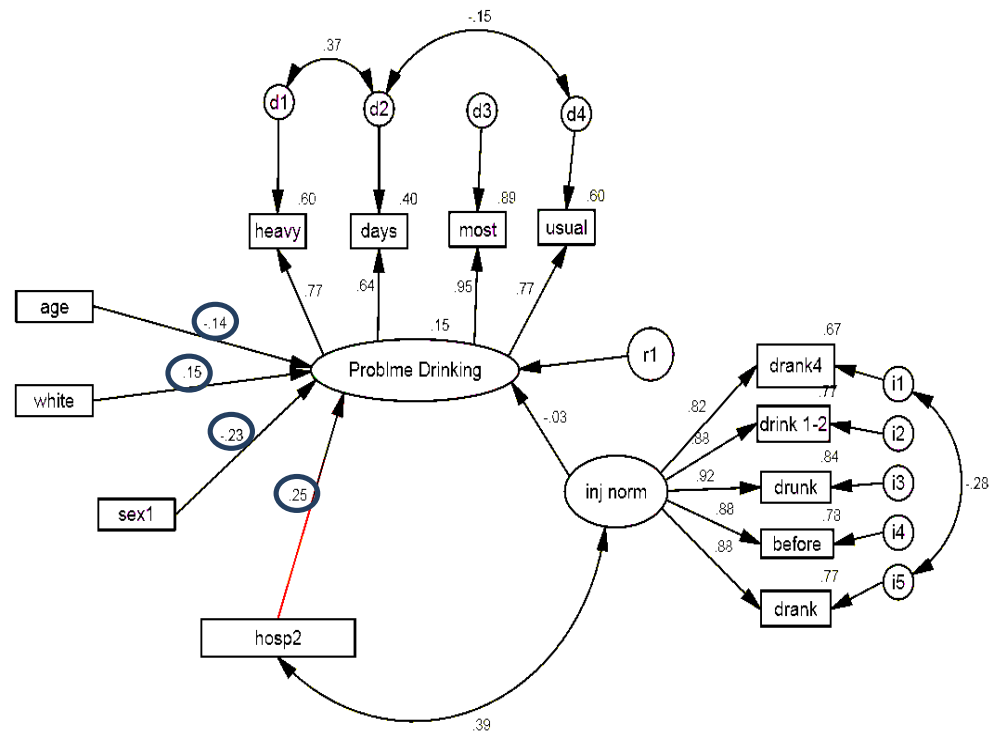
Model 14: Job-strain and Problem Drinking

Model 15. Customer Contact and Problem Drinking



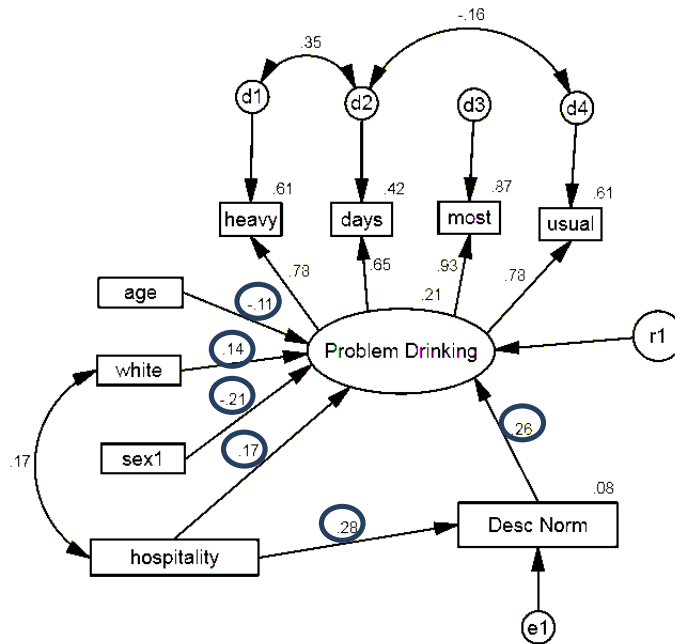
Model 15: Customer Contact and Problem Drinking

Model 16. Injunctive Norms and Problem Drinking



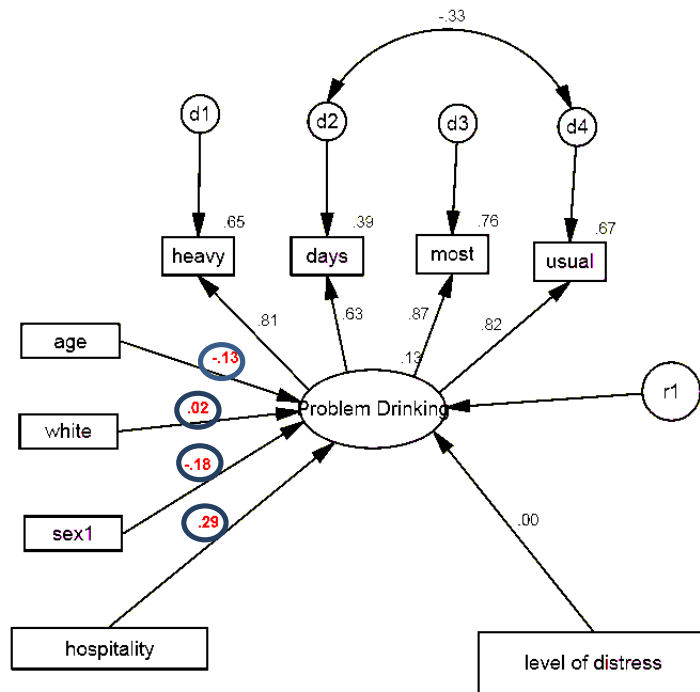
Model 16: Injunctive Norms and Problem Drinking

Model 17. Test of the Descriptive Norm as a Mediator



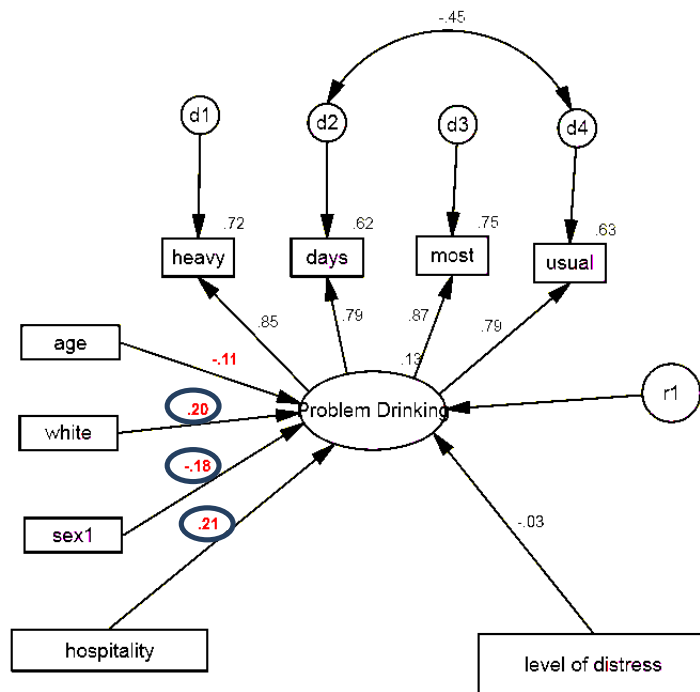
Model 17: Test of the Descriptive Norm as a Mediator

Model 18. Moderation of Hospitality to Problem Drinking by Distress Level (Low Confidence)



Model 18: Moderation of Hospitality to Problem Drinking by Distress Level (Low Confidence)

Model 19. Moderation of Hospitality to Problem Drinking by Distress Level (High Confidence)



Model 19: Moderation of Hospitality to Problem Drinking by Distress Level (High Confidence)

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