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To the Graduate Council:

I am submitting herewith a dissertation written by Jason Thomas Black entitled "Measuring Drinking Peer Caretaking: Toward Informing Peer-Based Alcohol Interventions." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Educational Psychology and Research.

Jennifer A. Morrow, Major Professor

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Measuring Drinking Peer Caretaking: Toward Informing Peer-Based Alcohol Interventions

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Jason Thomas Black
August 2012

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Dedication

To Gram - Thank you for steadfastly shining your loving light on my path, especially through some poorly chosen twists and turns. Your strength and grace in life were awe inspiring, and your capacity for unconditional love seemingly endless. Thanks for always believing in me, and for saying the things I needed to hear whether I liked them or not. Wherever you are watching from, I hope there is plenty of fresh coffee and a busy bingo hall.

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Special thanks to my advisor and chair, Dr. Jennifer Ann Morrow. Thank you for your guidance, patience and encouragement through this process. I'm well aware that I don't always make things easy. Thanks for sticking with me. To my committee members, Dr. Gary Skolits, Dr. Shawn Surgeon, and Dr. Victor Barr, many thanks to each of you for your time, expertise, support, and enthusiasm. I consider myself extremely fortunate that all of you agreed to come together on my behalf.

Thanks also to Drs. Morrow and Skolits for taking a chance on me and allowing me the opportunity to join the ESM program. Some of the most amazing experiences in life come from completely unexpected opportunities. The training, skills, experiences, colleagues and friends I've gained along this journey have absolutely changed my life for the better. I will always be thankful to you both for the many doors you have opened for me.

To my ESM/EPC family – There are very few things I know for sure. I do know for certain that I could not have done this without you. I can't find the words to express my gratitude for the countless ways you have all touched my life with kindness, care, and support. You know who you are. You will likely never fully know just how much you each mean to me.

Abstract

The purpose of the study was to pilot test a measure of a construct defined as Drinking Peer Caretaking (DPC). Most alcohol use among college students occurs in social situations among peer groups (Baer, 2002; Perkins, 2002b). However, understanding the dynamics of peer groups needs more attention since empirical information in this area is currently lacking. A broader understanding of caretaking behaviors within college student drinking peer groups could serve as a basis for developing peer-facilitated interventions. Principal Components Analysis (PCA) suggested a two factor solution (proactive and reactive caretaking). Following PCA, tests of internal consistency reliability (Cronbach's alpha), and validity (convergent, concurrent, predictive, and discriminant) were conducted, and group differences were assessed based on gender, class standing, place of residence, and race/ethnicity. The measure showed high reliability and modest validity. Gender differences were found on proactive and reactive caretaking, such that women were higher than men on both. First year students scored higher on proactive caretaking than seniors did. No other group differences emerged. DPC appears to be a viable construct with useful implications for researchers and prevention professionals. Further study is needed to confirm the factor structure and continue validation of the measure.

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Chapter 1

Introduction and General Information

This chapter describes the purpose of the study, the problem being investigated and the significance of the current study. College student alcohol use is a major area of research in a variety of domains. Much of the current research addresses rates of alcohol consumption, prevalence of negative consequences associated with drinking, examining the various contexts in which students drink (Perkins, 2002b), or the development and testing of intervention strategies aimed at promoting reductions in alcohol consumption and associated negative consequences (Dejong & Langford, 2002; Larimer & Cronce, 2002; 2007). Much work has been done in these areas, and the research base is continually expanding. Many studies have been undertaken to better understand problematic drinking and its associated consequences (Baer, 2002; Perkins, 2002). Measures such as the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985), measures of heavy episodic or "binge" drinking, the College Alcohol Problems Scale (CAPS; O'Hare, 1997), the Young Adult Alcohol Problems Screening Tool (YAAPST; Hurlbut & Sher, 1992), and others were devised to measure high risk drinking and associated problems or consequences. At present, it appears that caretaking within drinking peer groups has yet to be specifically considered. This study seeks to develop and test a measure of drinking peer caretaking, in hopes to better understand individuals who exhibit these behaviors. This information could be useful for devising peer-facilitated alcohol interventions utilizing these individuals as formal or informal facilitators.

Statement of the Problem

Other than a single study by Boekeloo and Griffin (2009), nothing in the literature was found that appeared to investigate anything related to drinking peer caretaking specifically. Boekeloo and Griffin (2009) used a sample of college freshmen to develop a brief scale intended to measure the types of intervening behaviors students were willing to engage in if they noticed a friend or acquaintance had become intoxicated. Likelihood of intervention varied based on whether the intoxicated student was a roommate, friend, or stranger, and how confident students would be in intervening if the intoxicated student was a dorm roommate/suitemate. The measure created for the study was not explicitly provided, but findings suggested that students were confident in their ability to intervene in another's drinking, and that likelihood of intervention was positively related to level of relationship with the intoxicated student. Further, participants were more likely to engage in caretaking behaviors such as driving or walking someone home, or getting water for the intoxicated student than they were to actually attempt to stop the student from drinking through actions such as taking drinks away.

The idea for the present survey is based primarily on conversational evidence from several years of conducting individualized motivational interventions with adjudicated college students, referred for violating campus alcohol policies. The researcher was a facilitator for these interventions for approximately two years. Through discussions with these adjudicated students, it became evident that there was often at least one individual within a drinking peer group who drinks considerably less than the others,

and stays aware of the condition of others in the group out of concern for their safety and well-being. These individuals would often report being “the one who takes care of others when we’re drinking” or ”the one who makes sure that nobody gets too messed up or does anything stupid.” Based on these repeated reports from students, an interest in studying drinking peer group caretakers emerged. For the purposes of the proposed project, drinking peer group caretakers have been defined as follows:

> Drinking peer caretakers are individuals who tend to concern themselves with the safety and well-being of other members of their close peer group in drinking situations. These individuals tend to drink less than their drinking peers, be attentive to the amount their peers are drinking in drinking situations, and try to prevent or minimize the likelihood of their drinking peers experiencing negative consequences in drinking situations. When they notice that a friend has become overly intoxicated in a drinking situation, the drinking peer caretaker takes action to help their friends stay out of trouble, remain safe, and/or prevent them from drinking more.

The construct definition was developed by the researcher. Prior to this study, only the construct definition and items attempting to measure the construct had been created.

Purpose of the Study

The purpose of the current study was to develop and pilot test a scale intended to measure caretaking behaviors within drinking peer groups. This included examining the scale for reliability and validity, with the ultimate goal of informing the development of

peer facilitated interventions for college student alcohol use using high-scoring students on the measure as facilitators.

Significance of the Study

Currently there is no measure in the literature to directly assess caretaking behaviors within drinking peer groups. The current study sought to assess the viability of the new construct and measurement tool as a useful contribution to the field of alcohol prevention with college student populations. Assessing group differences and relationships with background measures in the pilot study will help to provide preliminary data about the construct and the measure. By extension, this process should provide some evidence for or against the ultimate utility of both for use in the prevention field.

Objective

The development and testing of the Drinking Peer Caretaking Scale was guided by the following hypothesis and research questions.

Hypothesis

1) The Drinking Peer Caretaking Measure would demonstrate high (>70) internal consistency reliability (Cronbach's alpha) and validity (convergent, concurrent, predictive and discriminant).

Research Questions

1) Are there specific demographic differences on drinking peer caretaking?
    a. Gender – Do women or men score higher on drinking peer caretaking?

b. Class status – Are there differences by year in college on drinking peer caretaking scores?

c. Residence (on/off campus) – Are there differences on drinking peer caretaking scores between students who reside on or off campus?

d. Race/ethnicity – Are there differences on drinking peer caretaking scores based on race/ethnicity?

Chapter 2

Literature Review

The focus of the current study was to develop and assess the initial reliability and validity of a measure of caretaking behaviors within college-age peer drinking groups. No such measure exists at present, and investigation of the construct may have utility for alcohol researchers and prevention professionals, specifically to inform peer-facilitated interventions. What follows is a review of the literature on factors associated with college student alcohol use, and intervention strategies devised to attempt to address this pressing problem. Further, the discussion will include the potential efficacy of drinking peer caretaking as a relevant construct, and its connection to the body of existing literature.

Frequency of College Student Alcohol Use

College student alcohol misuse is widely recognized by university officials as a major problem on and around campuses. In response to this realization, a great deal of research has been conducted in effort to further understand contributing factors to problematic drinking among college students. Some researchers have taken specific interests in identifying and understanding groups of students who tend to drink significantly more alcohol compared to the drinking rates of typical students. As drinking increases, so too does the likelihood of negative consequences resulting from alcohol use. Students who are involved in their schools' Greek systems (Borsari & Carey, 1999; Fairlie, Dejong, Stevenson, Lavigne & Wood , 2010; Labrie, Hummer, Grant & Lac, 2010) as well as members of varsity athletic teams (Labrie et al., 2010; Leichliter, Meilman, Presley & Cashin, 1998) have been identified as distinctly "high-risk" groups

of drinkers because these students tend to drink more and experience more negative consequences as a result of drinking when compared to students in general.

Research consistently suggests that approximately 40% of college student drinkers may be classified as heavy episodic drinkers (O'Malley & Johnston, 2002). Heavy episodic drinking for men is defined as consuming five or more drinks at a single sitting within in a 2-week period. For women, consumption of four or more drinks over the same timeframes constitutes heavy episodic drinking (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Other researchers use only the five-drink model for heavy episodic drinking, and do not differentiate based on gender (O'Malley & Johnston 2002; Presley, Meilman & Leichliter, 2002). These are the commonly accepted definitions in the field (O'Malley & Johnston 2002; Presley, Meilman & Leichliter, 2002; Wechsler et al., 1994).

More recently, the National Institutes on Alcohol Abuse and Alcoholism (NIAAA) advanced a more concise definition of heavy episodic, or "binge" drinking as consumption or four or five drinks for women and men respectively "in about two hours" (NIAAA, 2004, p. 3). Alcohol consumption at these levels has been shown to result in an approximate blood alcohol level (BAL) at or above the legal limit of .08 in the typical drinker (NIAAA, 2004). The likelihood of experiencing negative consequences (e.g., hangovers, missed classes, unplanned and/or unprotected sexual activity) increases significantly among those who occasionally or frequently engage in heavy episodic drinking (Wechsler et al., 1994; 1998; Wechsler & Nelson, 2008).

Results from a recent study by Wechsler and colleagues suggest that heavy episodic drinking is much more prevalent among Greek-affiliated students than those not involved in Greek organizations, and as level of involvement increases, so too does frequency of these drinking behaviors (Wechsler, Kuh & Davenport, 2009). Wechsler and colleagues found that in their sample, 86% of resident Greek members were binge drinkers. The rate was 71% for non-resident members, and approximately 45% for students not involved with the Greek system.

Consequences of College Student Drinking

Given the prevalence of student drinking in college, many studies have been conducted to assess consequences stemming from student alcohol use. The literature on consequences can be classified into three main categories: personal, secondary, and institutional (Perkins, 2002). These rather broad categories provide the framework in which researchers attempt to capture the vast array of potential costs associated with college student drinking.

Personal consequences. At the personal level, one of the most obvious and salient potential consequences for students is academic difficulty. Among studies investigating this issue, reports suggest that prevalence of missing class due to drinking may be as high as one-third of drinkers (Perkins, 2002). Heavy drinkers may also be nearly three times as likely to fall behind on schoolwork when compared to their more moderate drinking peers (Perkins, 2002). A consistent inverse relationship between self-reported GPA and alcohol consumption has been demonstrated across several studies

(Engs, Diebold, & Hanson, 1996; Presley, Meilman & Cashin, 1996; Singleton & Wolfson, 2009).

Another problematic aspect of heavy drinking is increased likelihood of experiencing alcohol-related physical illness or injury. Headaches, hangovers, nausea, and vomiting are all relatively common experiences. The frequency of alcohol-induced blackouts is also quite high. One study found that 51 percent of drinkers in a college student sample had experienced at least one blackout in his/her lifetime (White, Jamieson-Drake & Swartzwelder, 2002). White et al. also found that 40 percent of drinkers had experienced at least one blackout in the previous year, and nearly 10 percent had done so within 2 weeks prior to participating in the study.

Another concern is driving under the influence of alcohol or riding with an intoxicated driver. One report showed that approximately 29 percent of college student drinkers have driven a car while under the influence (Hingson, Zha & Weitzman, 2009). This suggests that as many as 5.3 million college students may be engaging in one or both of these dangerous behaviors monthly.

There is also evidence of a relationship between use of alcohol and participation in unplanned and/or unprotected sexual activity (Perkins, 2002; Hingson, Zha & Weitzman, 2009), and sexual assault (Abbey, 2002; 2011). One study found that approximately 25 percent of participants acknowledged at least one experience of alcohol-related unplanned/unprotected sex during the school year (Perkins, 1992). Another study found unplanned sexual activity to be three times as likely among heavy episodic drinkers as compared with other drinkers (Wechsler & Isaac, 1992). About 20

percent of students from two other samples reported engaging in unplanned sex as a result of drinking, and between nine and 17 percent had done so without protection (Meilman, 1993; Wechsler & Dowdall, 1998). With regard to sexual assault, alcohol is involved in as many as half of all instances, and the perpetrator is most often someone the victim knows (Abbey, 2002; 2011).

Secondary consequences. Secondary effects of alcohol use are those experienced as a result of another person's drinking. These can include property damage, fights/aggression, injury, sexual violence, sleep disturbances, or disruptions while studying. Studies suggest that vandalism and damage to residence halls or other shared living spaces is not an uncommon result of heavy drinking (Perkins, 2002; Wechsler, Lee, Nelson & Kuo, 2002). The findings of Wechsler et al. (2002) suggest that campus residents are more likely than non-residents to encounter secondhand drinking effects, and nearly all who reside in Fraternity or Sorority housing have experienced at least one such effect (Wechsler, Kuh & Davenport, 2009).

Wechsler, Moeykens, Davenport, Castillo and Hansen (1995b) found that 66 percent of their college student sample had experienced at least one negative effect of others' drinking. Their results also indicated that the likelihood of encountering secondary effects was related to the students' own degree of alcohol involvement. This study utilized data from 17,592 students at 140 U.S. colleges and universities. Institutions were classified as "high-level", "mid-level", or "lower-level" drinking schools based on the amount of student-reported heavy drinking. Among abstainers and moderate drinkers,

the probability of secondary consequences was related to institution classification (Wechsler et al., 1995b). This was true for all secondary effects except sexual assault.

Institutional costs. Institutions also incur substantial costs associated with alcohol use by students (Perkins, 2002). The vandalism and property destruction mentioned above can and does carry over to significant repair costs, and increased burden placed upon campus personnel in dealing with these issues (Perkins, 2002). Wechsler et al (1995b) found that among administrators surveyed from "high-level" drinking schools, 53 percent indicated that damage to campus property was a moderate or major problem on their campuses. With regard to administrators from "mid-level" and "low-level" drinking schools, these same percentages were 33 and 26 percent respectively. Finally, and no less important, student alcohol use can result in legal costs to the institution, and certainly be a factor in expulsion or voluntary withdrawal of students from the institution.

Numerous factors may contribute to the development of problematic drinking behaviors during college. These include factors related to the campus environment, individual variables, social/normative influences as well as motives and expectations associated with drinking. The next section will provide a brief discussion of these factors.

Etiology of Student Alcohol Use

Campus Environment

Institution location and type have been shown to be factors in student drinking. Schools in the Northeast generally have higher rates of student drinking when compared to other regions of the country. Also, more drinking occurs at four-year institutions than at two-year schools (Presley et al., 2002). This is presumably partly due to the availability of on-campus housing at most four-year schools. Students residing on campus are among the most frequent drinkers (Presley, 2002). Specifically, white freshman male campus residents drink the most (Presley et al., 2002; Wechsler et al., 1994; Wechsler & Dowdall, 1998). Collegiate athletics and the presence of Greek organizations on campus are related to drinking rates as well (Presley et al., 2002).

As stated earlier, affiliation with collegiate athletics (Leichliter, Meilman, Presley & Cashin, 1998) and the campus Greek system (Borsari & Carey, 1999; Wechsler, Kuh & Davenport, 2009) predict greater quantity and frequency of alcohol consumption as well as a higher incidence of alcohol-related negative consequences (Perkins, 2002b). Within these "high-risk" groups, students in positions of leadership tend to have higher rates of drinking and consequences than other members (Cashin, Presley & Meilman, 1998; Leichliter et al., 1998; Perkins 2002b).

The availability of alcoholic beverages is another important contributor to the drinking situation on campus. There is evidence that alcohol outlet density on and around campus is related to quantity and frequency of student use, as well as alcohol-related consequences (Weitzman, Folkman, Folkman & Wechsler, 2003). Where alcohol is most

easily obtained, drinking rates of students tend to be highest. Studies have shown pricing to be inversely related to alcohol use (Kuo, Wechsler, Greenberg & Lee, 2003). Not surprisingly then, the findings of Kuo et al. also suggest that availability of beer, which is generally less expensive than other forms of alcohol, is a strong predictor of student drinking. Greater availability may also be a factor in the higher rates of drinking exhibited by Greek-involved students. Evidence suggests that members of the Greek system may have greater access to alcohol than do non-Greeks residing on campus (Borsari & Carey, 1999; Larimer, Anderson, Baer & Marlatt, 2000; Wechsler, Kuh & Davenport, 2009).

Individual Characteristics

Several individual-level variables have been explored for potential relationships with drinking in college (Baer, 2002). Among these are gender, race, and family history of alcohol use, as well as personality characteristics and social/normative expectations about drinking.

Experimentation with alcohol typically begins before students enter college, usually during their high school years (Johnston, O'Malley & Bachman, 2003). College bound students tend to drink less during high school compared to other students (Schulenberg & Maggs, 2002). Between the ages of 18-22, however, college students drink slightly more heavily than their non-college peers do. With regard to the family, there appears to be a relationship between parental alcoholism and alcohol use by their children during the college years (Sher, Walitzer, Wood & Brent, 1991). Their study

compared children of alcoholics (COAs) with non-COAs and found that COAs reported more past-year alcohol use, and more negative consequences of drinking.

Personality characteristics. Personality characteristics of extraversion and impulsivity/sensation seeking seem to be related to college drinking behavior as well. Students who identify themselves as extraverts drink more alcohol compared to introverts, and "impulsive/sensation seekers" exhibit higher alcohol consumption rates in college than other students (Baer, 2002; Quinn, Stappenbeck & Fromme, 2011). Personality measures related to novelty or sensation seeking, and unconventionality are the most predictive of substance use disorder diagnoses (Sher, Bartholow & Wood, 2000), as they represent the same general construct as "impulsivity-sensation seeking".

Social/normative variables. Social norms may be among the most important factors involved in student drinking (Dejong, Schneider & Towvim, et al., 2006 ; Perkins, 2002b; Perkins & Wechsler, 1996). A distinction can be made between "descriptive" and "injunctive" norms. The former refers to perceptions about actual (drinking) behaviors, while the latter describe beliefs about attitudes and expectations of others regarding the appropriateness or level of permissiveness for these behaviors (Larimer & Neighbors, 2003). Studies suggest that most college students have exaggerated beliefs, or normative expectations regarding drinking by their peers (Baer, Stacy & Larimer, 1991), and the findings of Baer et al. (1991) suggest that perceptions of drinking among one's friends have a stronger relationship to the individual's own drinking than do perceptions of drinking by other groups and students in general. These normative beliefs tend to have a stronger influence on actual drinking behavior than one's personal beliefs about alcohol

do (Perkins, 2002b). Further, when one's personal beliefs and normative beliefs are in conflict, it is hypothesized that the behavioral tendency of most students is to drink according to normative beliefs (Dejong et al., 2006; Perkins, 2002b).

Intervention Strategies

A wide variety of interventions aimed at problematic drinking by students have been developed and implemented. These efforts encompass two broad categories: environmental management strategies (Toomey & Wagenaar, 2002; Toomey, Lenk & Wagenaar 2007.) and individual-focused approaches (Larimer & Cronce, 2002; 2007). The literature on college student prevention approaches is briefly reviewed next.

Environmental Management Strategies

There are five main goals of environmental interventions. These are (a) enforcement of minimum legal drinking age (MLDA), (b) promoting a safe normative environment, (c) consumption reduction through limiting access to alcohol (d) minimizing negative consequences of alcohol use, and (e) de-emphasis of drinking as an important part of the college years (Dejong & Langford, 2006; Toomey & Wagenaar, 2002; Toomey, Lenk & Wagenaar, 2007).

MLDA law enforcement. There is a relationship between increased enforcement of minimum drinking age laws and decreased use of alcohol (Toomey & Wagenaar, 2002). But these laws are not always strictly enforced. Evidence suggests that one of the most effective means to facilitate compliance with these laws is to instill the belief that noncompliance will be followed up with inevitable penalties to the individual (Dejong & Langford, 2006, Rubington, 1993; Toomey & Wagenaar, 2002; Toomey, Lenk &

Wagenaar, 2007). Laws are most effective when appropriately and reliably enforced. Wagenaar et al. (1996) found that underage drinkers obtain alcohol most frequently from someone of legal drinking age. Given this finding, increased monitoring by law enforcement and retailers to discourage on-premises supplying of alcohol to minors would appear to be a crucial aspect of effective enforcement.

Promoting accurate alcohol norms. As noted previously, normative expectations regarding alcohol use may be among the strongest predictors of drinking behaviors (Dejong et al., 2006; Perkins, 2002b). Students often hold exaggerated perceptions of the amounts of alcohol others are consuming. At the environmental level, social norms media campaigns are aimed at correcting norms by providing accurate normative messages throughout the campus community (Perkins, 2002; Perkins, Haines & Rice, 2005; Turner, Perkins & Bauerle, 2008). Exposure to accurate normative information can lead to changes in beliefs and expectations regarding alcohol use levels on campus, and has shown association with subsequent reductions in drinking behavior and negative consequences (Haines & Spear, 1996; Turner, Perkins & Bauerle, 2008).

In a randomized trial of campus-level social normative campaigns across 18 institutions, DeJong et al. (2006) found that students attending treatment schools reported lower overall alcohol consumption, lower peak drinks, lower weekly drinking, and lower number of drinks consumed per drinking occasion. The follow- up period for the study was three years, and the results suggest that having a social norms campaign intervention was associated with safer levels of alcohol consumption. This study was recognized as the most rigorous test of social norms media campaigns (NIAAA, 2007). An unsuccessful

replication study was conducted more recently (Dejong, Schneider & Towvim, et al., 2009). Findings revealed no significant differences between intervention and control schools on normative perceptions or alcohol use behaviors. Since the two studies followed virtually identical protocols for implementation, the authors point to differential dosage intensity or institutional characteristics as potential partial explanatory factors for the replication failure. Different institutions with some differing characteristics were used in the respective studies.

These findings are consistent with the mixed results for social norms campaigns reported elsewhere (NIAAA, 2007). Many factors could contribute to different results, including differences in implementation fidelity, dosage strength, among others. The most consistent finding with regard to social norms campaigns is that they appear to be most effective when combined with other interventions (NIAAA, 2007).

Consumption reduction. Reducing overall alcohol consumption on college campuses can involve law enforcement, as mentioned above, as well as restrictions as to where and when alcohol use is allowed (Toomey, Lenk & Wagenaar, 2007; Toomey & Wagenaar, 2002). Cohen and Rogers (1997) reported on a campus alcohol policy that combined consequences for underage and public alcohol consumption with strict regulations regarding where drinking is allowed. Alcohol was not permitted at university-sponsored events, there were no alcohol outlets on campus, and students of legal drinking age could only drink in their private rooms. This policy addressed drinking by limiting access and simultaneously striving for consistent and uniform consequences for policy and law violations.

Minimizing negative consequences. Efforts to address specific alcohol-related problems have included blood alcohol concentration (BAC) awareness, safe-ride programs to reduce or prevent drinking and driving by students, aggression reduction in bars by decreasing crowds and providing food service in bars to slow alcohol absorption, as well as campus-specific approaches focused on concerns of individual institutions (Toomey, Lenk & Wagenaar, 2007; Toomey & Wagenaar, 2002). These types of programs, also termed "harm reduction", focus on lowering the likelihood of negative consequences associated with drinking rather than targeting actual drinking behavior (Baer, Kivlihan, Blume, McKnight & Marlatt, 2001; Marlatt & Witkiewitz, 2002).

Alcohol de-emphasis. Consideration of the role alcohol plays in the lives of students during the college years has led to some methods of intervention aimed at de-emphasizing the importance of this role (Toomey, Lenk & Wagenaar, 2007; Toomey & Wagenaar, 2002). These methods focus on providing alcohol-free campus activities, social events, and housing options for students, with the belief that doing so will decrease drinking by decreasing the importance of alcohol to the college experience (DeJong & Langford, 2002; Toomey, Lenk & Wagenaar, 2007; Toomey & Wagenaar, 2002).

In addition to the environmental approaches to intervention discussed above, many techniques have a more individualized focus. What follows is a highlight of some of the main individual-level attempts to address college student drinking.

Individual-Level Strategies

At the individual level, intervention strategies can be classified into three main categories: (a) information dissemination, (b) cognitive-behavioral skills, and (c) motivational enhancement (Larimer & Cronce, 2002; 2007).

Information dissemination. Traditional information/knowledge transmission programs may involve a lecture-based curriculum in which participants are given information about negative effects of alcohol use and benefits associated with moderating potentially problematic drinking behaviors (Larimer & Cronce, 2002; 2007). While this information is valuable and necessary in many cases, available research indicates that the effectiveness of this approach when used alone appears minimal (Baer et al., 2001; Larimer & Cronce 2002; Walters, Bennet & Noto, 2000).

Normative reeducation is another approach. Programs that utilize normative reeducation as part of the intervention seem to be more promising than traditional information dissemination alone (Larimer & Cronce, 2002; Toomey, Lenk & Wagenaar, 2007). It was noted earlier that most college students hold inaccurate beliefs about peer drinking (Baer et al., 1991). This may result in a tendency for individuals to drink in accordance with those normative beliefs, even if the normative beliefs conflict with personal ones (Perkins, 2002b). The goal of normative reeducation is to create a discrepancy between one's previously held normative beliefs and more accurate ones (Neal & Carey, 2004). Neal and Carey found that after receiving individualized normative feedback regarding their drinking behaviors, participants indicated greater intentions to decrease their drinking following the intervention. However, follow-up

revealed little effect on actual drinking behavior. As a possible explanation, the researchers note that the follow-up period was only one week. This may not have been adequate time for intervention effects to emerge.

Cognitive-behavioral skills. These approaches often incorporate aspects of educational awareness type interventions, and also try to teach students specific skills aimed at changing beliefs and behaviors associated with drinking (Larimer & Cronce, 2002; 2007). Cognitive-behavioral approaches may include (a) expectancy challenge, (b) BAC discrimination, or (c) self-monitoring tasks. These can be utilized individually or in combination, with most studies using multiple methods (Larimer & Cronce, 2002; 2007).

Expectancy challenge involves creating a controlled social environment and having participants interact and take part in structured activities. Participants may or may not be given alcohol during these activities, and each is asked to try to determine who among the group has or has not received alcohol (Larimer & Cronce, 2002; 2007). Participants are also asked to share beliefs and expectations about drinking, and facilitators provide accurate normative information as well as discussion of the impact of expectations on the drinking experience (Darkes & Goldman, 1993). The findings of Darkes and Goldman suggest that, at least over short follow-up periods, the approach may be useful in decreasing student drinking, especially when compared to traditional information-based intervention. However, other recent research has not found expectancy challenges to be efficacious in reducing alcohol use and related problems (Wood, Capone & Brand, 2003).

Blood alcohol concentration (BAC) discrimination and self-monitoring methods have also had some successes in decreasing consumption as well as incidence of problems associated with drinking (Larimer & Cronce, 2002; 2007). Self-monitoring typically requires that participants keep track of their drinking either over a given time period, retrospectively over a period in the recent past, or to anticipate drinking behaviors and situations in the near future (Larimer & Cronce, 2002; 2007; Neighbors, Larimer, Lostutter & Woods, 2006).

Motivational enhancement. This approach involves a combination of information, skills-training and personalized feedback on drinking beliefs and behaviors (Larimer & Cronce, 2002; 2007). These interventions are done over a brief period of time (usually one or two sessions), and are designed to help motivate students to change risky or problematic drinking beliefs and behaviors (Larimer & Cronce, 2002; 2007). They often include structured individual interviews designed to provide individual feedback on drinking behavior, discuss participants' normative beliefs, provide accurate information about alcohol's effects and peer norms, and motivate participants to modify potentially problematic patterns of drinking (Marlatt et al., 1998). The results of Marlatt's study, as well as those of Borsari and Carey (2000) suggest that motivational methods may be particularly useful in college populations for attempting to lower student alcohol consumption and negative consequences.

The above sections have been an attempt to highlight the main issues, factors and concerns associated with alcohol use by college students, as well as the main strategies implemented toward addressing potential consequences. This is a broad overview of the

overarching contextual framework from which the field of college alcohol prevention is commonly understood.

As can be seen, much of the available research involves rates of alcohol consumption, prevalence of negative consequences associated with drinking, examining the various contexts in which students drink (Perkins, 2002b), or the development and testing of intervention strategies aimed at promoting reductions in alcohol consumption and associated negative consequences (Dejong & Langford, 2002, Larimer & Cronce, 2002; 2007). Much work has been done in these areas, and the research base is continually expanding. Many studies have been undertaken to better understand problematic drinking and its associated consequences (Baer, 2002; Perkins, 2002).

However, there are limited studies investigating peer-facilitated interventions to address college student alcohol use. These approaches may be efficacious because they require minimal resources; they utilize students as peer mentors and leaders, as well as have the potential to be met with less resistance by students in general because their peers, rather than authority figures, serve as facilitators. The following section provides a brief discussion of peer-facilitated interventions and their relevance to the current study

Peer-Facilitated Interventions

It is estimated that approximately 80% of colleges and universities in the United States utilize peer educators in some form (Hunter, 2004). They can add to the effectiveness of existing health and safety programs because they are trusted members of the campus community, and serve as an important link between the student body and the administration (NIAAA, 2002). Peer educators are often campus leaders. These

individuals can act as change agents, and can influence campus norms pertaining to a wide range of health and safety behaviors (Hunter, 2004; NIAAA, 2002). They also increase the visibility of prevention programs because they have a farther reach into the student body through their peer groups than administrators have. The utilization of peer educators increases the effectiveness of health and safety programming by increasing exposure to the information within the student body (Hunter, 2004).

Peer-facilitated interventions are becoming more commonly used in efforts to prevent sexual violence among college students (Burn, 2009; Gidycz, Orchowski & Berkowitz, 2011). Often referred to as "bystander interventions", these types of programs directly engage student peers to disseminate information in various formats about the importance of prevention and to learn to take action to prevent or stop dangerous and/or violent situations (Banyard & Moynihan, 2011; Burn, 2009; Gidycz, Orchowski & Berkowitz, 2011). These strategies emphasize the possibility that anyone among the campus community could find her/himself in a dangerous situation, so all community members have a vested interest in trying to prevent such situations (Burn, 2009; Gidycz, Orchowski & Berkowitz, 2011; McMahon, Postmus & Koenick, 2011). Banyard and Moynihan (2011) suggest that bystanders are most likely to take action in problematic situations when the situation is recognized as unambiguous, there is a sense of responsibility to address the problem, community norms support taking such action, and the costs of intervening are perceived as being low. Also, the degree of connectedness to the individual or individuals in need is associated with bystander likelihood to take action (Charaund & Brauer, 2008). Bystander interventions are promising because peers take on

the role of helping to create norms for intervening in dangerous situations. They model helping behavior which may increase others' self-efficacy to intervene. These interventions may also be more positively received because peers, rather than authority figures, act as facilitators (Burn, 2009).

Peers have been utilized in alcohol prevention efforts as well. Cimini, Martens, Larimer, Kilmer, Neighbors and Monserrat (2009) tested three intervention strategies that utilized trained peer facilitators. Participants were randomly assigned to receive group motivational interviewing, peer theater, (where scenarios representing a variety of beliefs and behaviors were role-played by trained peers) or an interactive educational program. There were no significant differences on alcohol use by condition, but reductions in perceived norms were associated with lower levels of alcohol use in all conditions (Cimini et al., 2009).

Research on peer-based interventions appears promising. Peer interventions are cost effective, and emphasize the importance of a shared vested interest in maintaining a safe campus community. Modeling helping behaviors, and increasing receptivity to the interventions may be two important additional benefits of these approaches (Burn, 2009; Cimini et al., 2009).

The current study involved the development of a scale intended to measure caretaking behaviors within drinking peer groups. This included examining the construct for reliability and validity, with the ultimate goal of informing the development of peer facilitated interventions for college student alcohol use using high-scoring students on the

measure as facilitators. The following section discusses the measure and its intended purpose and place in the literature on college student drinking.

Measuring Drinking Peer Caretaking

Numerous instruments have been developed and tested to asses alcohol use behaviors and associated consequences. These include measures such as the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985), measures of heavy episodic or "binge" drinking, the College Alcohol Problems Scale (CAPS; O'Hare, 1997), the Young Adult Alcohol Problems Screening Tool (YAAPST; Hurlbut & Sher, 1992), and many others were devised to measure high risk drinking and associated problems or consequences.

The focus of the current study was to develop a survey instrument that attempts to measure a construct defined as Drinking Peer Caretaking. Investigating caretaking behaviors within drinking peer groups, and the individuals who exhibit these behaviors may be of interest and utility to alcohol researchers and campus prevention professionals. This could potentially serve as a basis for further development of peer-based or bystander intervention strategies.

Other than a single study by Boekeloo and Griffin (2009), nothing in the literature was found that appeared to investigate anything related to drinking peer caretaking specifically. Boekeloo and Griffin (2009) used a sample of college freshmen to develop a brief scale intended to measure the types of intervening behaviors students were willing to engage in if they noticed a friend or acquaintance had become intoxicated. Likelihood of intervention varied based on whether the intoxicated student was a roommate, friend,

or stranger, and how confident students would be in intervening if the intoxicated student was a dorm roommate/suitemate. The measure created for the study was not explicitly provided, but findings suggested that students were confident in their ability to intervene in another's drinking, and that likelihood of intervention was positively related to level of relationship with the intoxicated student. Further, participants were more likely to engage in caretaking behaviors such as driving or walking someone home, or getting water for the intoxicated student than they were to actually attempt to stop the student from drinking through actions such as taking drinks away.

Additionally, Novik and Boekeloo (2011) described the development and psychometric analysis of an instrument measuring protective behavioral strategies used by first-year college student drinkers. Some of the items reflected strategies such as limiting number of drinks consumed, drinking water between drinks containing alcohol, and using a designated driver. The measure focused on individual drinkers' protective strategies rather than caretaking behaviors within drinking peer groups.

The idea for the present survey is based primarily on conversational evidence from several years of conducting individualized motivational interventions with mandated college students, referred for violating campus alcohol policies. Anecdotes suggest that there is often at least one individual within a drinking peer group who drinks considerably less than the others, and stays aware of the condition of others in the group out of concern for their safety and well-being. These individuals would often report being "the one who takes care of others when we're drinking" or "the one who makes sure that nobody gets too messed up or does anything stupid." Based on these ideas, the notion of

studying drinking peer group caretakers emerged. For the purposes of the present study, drinking peer group caretakers have been defined as follows:

> Drinking peer caretakers are individuals who tend to concern themselves with the safety and well-being of other members of their close peer group in drinking situations. These individuals tend to drink less than their drinking peers, be attentive to the amount their peers are drinking in drinking situations, and try to prevent or minimize the likelihood of their drinking peers experiencing negative consequences in drinking situations. When they notice that a friend has become overly intoxicated in a drinking situation, the drinking peer caretaker takes action to help their friends stay out of trouble, remain safe, and/or prevent them from drinking more.

The construct definition was developed by the researcher. Prior to study, only the construct definition and items attempting to measure the construct had been created.

Hypothesis

1) The Drinking Peer Caretaking Measure would demonstrate high (>70) internal consistency reliability (Cronbach's alpha) and validity (convergent, concurrent, predictive and discriminant).

Research Questions

2) Are there specific demographic differences on drinking peer caretaking
    a. Gender – Do women or men score higher on drinking peer caretaking?
    b. Class status – Are there differences by year in college on drinking peer caretaking scores?

c. Residence (on/off campus) – Are there differences on drinking peer caretaking scores between students who reside on or off campus?

d. Race/ethnicity – Are there differences on drinking peer caretaking scores based on race/ethnicity?

Chapter 3

Method

The following sections describe the process of developing the Drinking Peer Caretaking instrument. Sampling, pilot testing, and analysis strategies are also discussed.

Participants

Participants were recruited through the University of Tennessee Office of the Registrar, Student Data Services. A random sample of 4000 undergraduate students, stratified by class status (First-year, Sophomore, Junior, Senior; 1000 participants in each group) was solicited. Participants were contacted by email with an invitation to participate (see Appendix A). A reminder email was sent one week after the initial contact, and a second, final reminder was sent one week after the first reminder.

A response rate of just over 10% (n=430) was achieved, approximately evenly distributed by class. Because assessing gender differences on drinking peer caretaking was a major research question of the study, we excluded participants who did not identify their gender (n=87). Additionally, graduate students (n=3), participants under the age of 18 (n=1), and over the age of 40 (n=2) were excluded. This was done because the researcher decided to define the undergraduate age range as between the ages of 18 and 40. The resulting sample of 337 undergraduate students was 58% female (n=194), and 42% male (n=143). Twenty six percent were First-Year students (n=86), 22% were Sophomores (n=73), 22% Juniors (n=74), and 30% Seniors. Ninety percent (n=302) identified as White/Caucasian, 5.6% (n=19) as Hispanic 4% (n=13) as Asian/Pacific

Islander, 3% (n=10) Black/African American, .6% (n=2) Native American/Alaskan Native.

A sample of this size allowed for exploratory principal components analysis (PCA) to assist in the assessment of reliability of the scale (Comrey & Lee, 1992). Participants were given the opportunity to be entered for chance to receive a Kindle Fire or one of four $25 Amazon.com gift certificates as an incentive for participation.

Development of Drinking Peer Caretaking Scale

The Drinking Peer Caretaking (DPC) survey (see Appendix B) was developed through a process of item construction and review. Several preliminary items were written for the survey by the researcher (J.T. Black), and those items were reviewed and edited by an expert in psychometrics, Dr. John Lounsbury, and an alcohol research content expert, Dr. Jennifer Ann Morrow. The items were checked for clarity, consistency, and lack of double-barreled concepts. Development of preliminary items was guided by consultations with adjudicated student drinkers who indicated that within their drinking groups, they tended to be the ones to watch out for and take care of others. These students often report drinking less than others in the peer group, being concerned for the safety of group members when drinking, staying aware of how much alcohol others in the group had consumed, and discouraging intoxicated peers from continued drinking. Caretakers also reported often serving as designated drivers, walking with intoxicated friends to ensure that they arrived home safely, and suggesting that they drink water. These commonly reported activities informed survey item construction, and will guide future item revision and refinement. The pilot survey contained 20 items. Sample

items include “I usually drink less than my friends at parties or social gatherings so that I can help the rest of them avoid problems”, “If someone gets too drunk, I try to make sure that they stay out of trouble and remain safe, “I naturally want to help when I see that a friend has had too much alcohol to be able to make good decisions”, and “I try to encourage my friends to drink water or non-alcoholic drinks between drinks containing alcohol”. All responses are coded from 1-5 respectively as “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree”, and “Strongly agree”.

Other Measures

Along with demographic variables (see Appendix B), the following measures were included with the drinking peer caretaking scale. These additional measures were used to assess social desirability of survey responses, as well as several types of validity.

Social desirability. Social desirability was measured using a 10-item short form of the Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972). This measure assessed participant propensity to answer questionnaire items in a way that they perceive desirable by the researcher. Correlations between social desirability and outcome measures were assessed. If strong correlations exist (i.e., .50 or greater), social desirability would be used as a covariate in subsequent analyses. High scores on social desirability suggest that participant responses may reflect what they believe the researcher wants to hear rather than being true to their experiences. See Appendix C for a copy of the measure.

Convergent validity. Convergent validity the (extent to which the DPC is related to a measure of a similar construct) was assessed using a modified form of the Social

Support Behaviors Scale (SSB; Vaux, Riedel & Stewart, 1987). The SSB is a 45-item instrument designed to measure perceived likelihood of various social support behaviors among participants' family and friends. Responses are coded from one through five respectively as "no one would do this", "someone might do this", "some family member/friend might do this", "some family member/friend would certainly do this", "most family members/friends would certainly do this". For the purposes of the current study, all item stems were modified to reflect first-person and reference "a friend", and responses will be coded as follows: 1= Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree. This instrument has demonstrated high levels of internal consistency reliability (alphas > .85 with college student samples) and concurrent validity (Vaux, Riedel & Stewart, 1987). The alpha coefficient of the SSB with the current sample was .96. Sample items include "I would suggest doing something just to take my mind off a friend' s problems", "I would give a friend a ride if they needed one", and "I would help would help a friend out with a move or other big chore". This was selected because although there are no measures directly comparable to the DPC, it is similar in that the scale assesses peer support behaviors. See Appendix D for a copy of the measure.

Concurrent validity. Concurrent validity (the extent to which the DPC can differentiate between groups on another measure) was assessed using the Liking People Scale (LPS; Filsinger, 1981). This is a 15-item scale that asks respondents to indicate level of agreement with statements such as "my happiest experiences involve other people", "it is important to me to be able to get along with other people", and "no matter

what I am doing, I would rather do it in the company of other people". Items were scored as 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree. The majority of the items are negatively worded. The six positively worded items were reverse coded so that higher summed scores on the item will indicate more liking people. The measure has demonstrated high internal consistency reliability with college student samples (alpha .75-.85) and appears to have good concurrent and convergent validity (Filsinger, 1981). The coefficient alpha of the LPS for the current sample was .82. The rationale for selection of the LPS is that liking people or not would logically distinguish those who are likely to be caretakers from those are not. See Appendix E for a copy of the measure.

Predictive validity. Predictive validity (the extent to which DPC scores can be predicted by another measure administered at a different time) was assessed using the NEO Big Five Short Form of the Conscientiousness construct measure (McCrae & Costa, 2004). This is a 12-item version of the measure, and has been shown to be a highly reliable and valid personality measure across a variety of populations and situations (McCrae & Costa, 2004). Coefficient alpha for Conscientiousness was .82 in the current sample. Items are scored from 1-5 as "Strongly disagree", "Disagree", "Neutral", "Agree", and "Strongly agree" respectively. Item scores are summed to derive a construct score with higher scores indicating higher levels of conscientiousness. Sample items include "I keep my belongings neat and clean", "I am pretty good about pacing myself to get things done on time, and "I have a clear set of goals and work toward them in an orderly fashion". Scores on this personality trait should predict scores on caretaking.

Although both measures were given at the same time, there is theoretical temporal ordering because personality traits are considered stable and enduring. See Appendix F for a copy of the measure.

Discriminant validity. Discriminant validity (the extent to which a measure it should not related to a measure it should not be related to).was assessed using the NEO Big Five Short Form of the Neuroticism construct measure (McCrae & Costa, 2004). This is a 12-item version of the measure, and has been shown to be a highly reliable and valid personality measure across a variety of populations and situations (McCrae & Costa, 2004). Coefficient alpha for Neuroticism was .87 in the current sample. Items are scored from 1-5 as "Strongly disagree", "Disagree", "Neutral", "Agree", and "Strongly agree" respectively. Item scores are summed to derive a construct score with higher scores indicating higher levels of neuroticism. Sample items include "I often feel inferior to others", "I often get angry at the way people treat me", and "I often feel helpless and want someone to solve my problems". This construct appears to differ substantially from the DPC. Thus a weak relationship is expected in order to demonstrate discriminant validity. See Appendix G for a copy of the measure.

Procedure

Following IRB approval, a stratified (by class status) random sample of 4000 undergraduate students was obtained by the University of Tennessee Registrar, Student Data Services. An anonymous database was then created, and an email link to the list was sent to the researcher. Students on the list were then contacted by email and informed that the purpose of the study was to test a new measure related to college student alcohol use,

that the study had been approved by the university Institutional Review Board, and that their participation was completely voluntary. They were also instructed that they were free to discontinue the survey at any time, or to skip any items that they did not wish to answer. Items asked participants to select their level of agreement with each statement. Response options consisted of a five-point Likert scale from “Strongly Disagree” to “Strongly Agree”. A neutral response option was included in the middle. No identifying information was gathered, so anonymity was maintained. Only the researcher and advisor had access to the data.

A second database was linked to the anonymous survey. Students were given the opportunity to enter their contact information for the incentives drawing. Prizes included a Kindle Fire, and four $25 gift certificates to Amazon.com. Winners were randomly selected, and prizes sent directly from Amazon.com.

Chapter 4

Results

Data were cleaned and assessed for assumptions of PCA prior to analyses. Very little missing data remained (< 5% on all measures) after excluding cases based on gender and age as discussed previously. Tabachnick and Fidell (2007) suggest that when the amount of missing data is less than five percent, any of the methods for addressing them are appropriate. Therefore, pairwise deletion was chosen as the method for handling all missing data during analyses. This approach retains cases in the dataset, and excludes them from analyses if there is a missing value on one of the measures being analyzed (Tabachnick & Fidell, 2007). Data were also checked for normality, linearity, outliers and multicolinearity. Skewness and kurtosis values were acceptable (~<=/2/; Tabachnick & Fidell, 2007) indicating normality. Bivariate scatterplots were spot-checked, and no evidence of curvilinear relationships was shown. Therefore it can be assumed that correlations represent linear relationships (Tabachnick & Fidell, 2007). There were no outlying values, or correlations approaching .9 that would have suggested multicolinearity (Tabachnick & Fidell, 2007).

Factor Solution and Reliability of the DPC Scale

Principal Components Analyses (PCA) with varimax rotation (i.e., orthogonal) were run on the DPC scale items to discover the underlying factor structure represented by scale items. PCA is the recommended procedure when the researcher has no assumptions about the factor structure, and varimax rotation is recommended when the components are intended for use as dependent variables in subsequent analyses

(Tabachnick & Fidell, 2007). Measures of sampling adequacy indicated that PCA was appropriate on the correlation matrix of these items. The Kaiser-Meyer-Olkin measure of sampling adequacy was .88, and Bartlett's Test of Sphericity was significant (p <.001). Examination of the eigenvalues revealed that the first four components had values greater than one. However, examination of the scree plot (see Figure 1) suggested a two component solution. Thus, two, three, and four component solutions were explored. The three and four component solutions revealed components containing fewer than three items, so the two component solution was chosen as the final solution to explore.

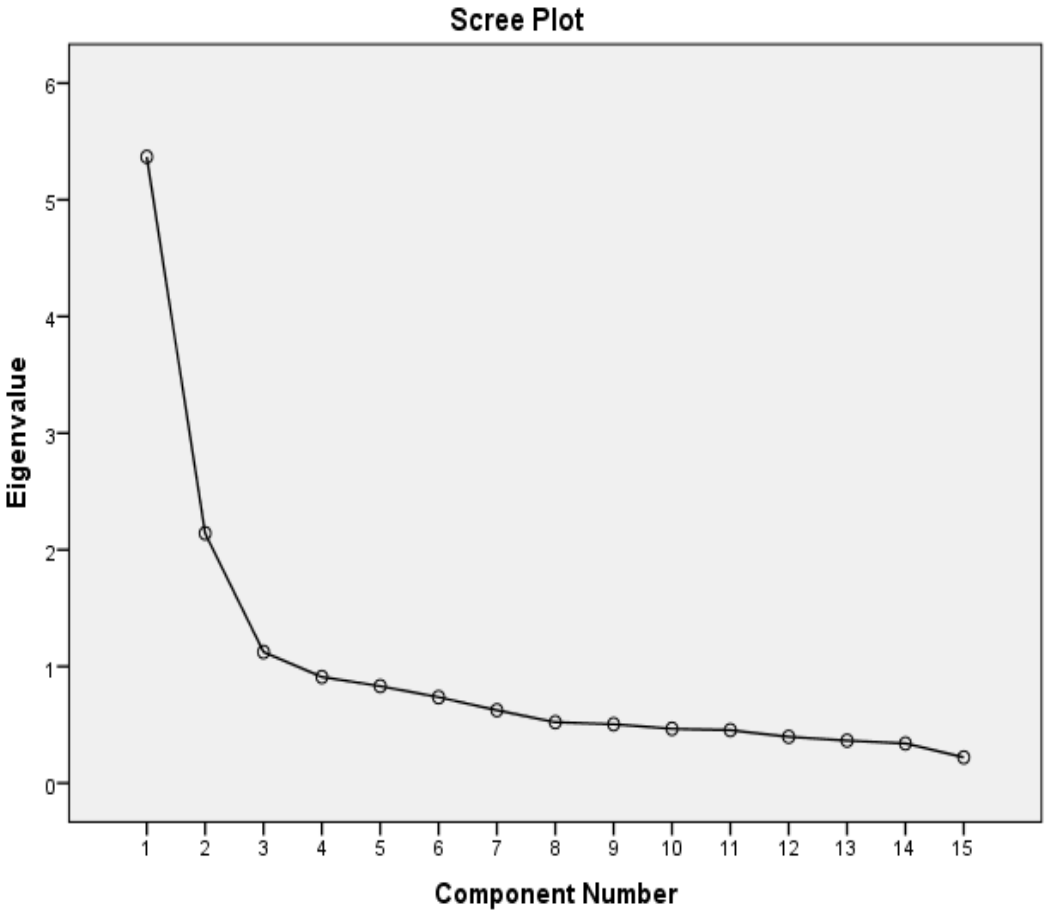

Figure 1

Scree Plot of Unrotated Components

Items with complex loadings, and those with component loadings <./30/ were dropped from further analyses. Complex loading items with greater than a .2 difference in their loading size were individually examined and retained for further analysis. The process was repeated until all remaining items loaded clearly on one component with a loading value greater than .30. The final solution resulted in two components, each containing eight items, which accounted for 50.14% of the variance (27.47% and 22.67% of the variance was accounted for by components one and two respectively). A solution that accounts for 50% of the variance or greater is desirable (Tabachnick & Fidell, 2007).

Following the PCA analyses, alpha coefficients were calculated for each component. Alphas were .85, and .81 for the first and second component respectively. Item analysis revealed that the deletion of one item from component two would increase the alpha coefficient to .84. This item was weakly correlated with all but one the others, and was therefore dropped. The final version of the Drinking Peer Caretaking Scale is comprised of two components. The first component, *proactive caretaking,* is comprised of eight items with an alpha of .85, and the second, *reactive caretaking* contains seven items with an alpha of .84 (see Table 1 for factor loadings). The correlation between proactive and reactive caretaking was r (335) = .48, $p < .001$, which corresponds to a large effect (Cohen, 1992). Assessing the preliminary factor structure of a set of items as was done here with the PCA procedures allows the researcher to better understand relationships among items and underlying factors, and is useful for correctly calculating alpha (DeVellis, 2003).

Table 1

DPC Component Loadings

Item	Component	
	Proactive	Reactive
I try to limit my friends' drinking at a party or social gathering where alcohol is being served.	.766	
I usually drink less than my friends at parties or social gatherings so that I can help the rest of them avoid problems.	.755	
I try to keep track of how many drinks my friends have had.	.742	
I become concerned when I notice friends who have been drinking are slurring their words or becoming incoherent.	.724	
I often serve as designated driver when my friends and I go to a party/event where there are people drinking.	.692	
I become concerned when I notice a friend who has been drinking is having difficulty with balance.	.673	
If I notice a friend drinking faster than the rest of the group I will call it to his or her attention.	.590	
I try to encourage my friends to drink water or non-alcoholic drinks between drinks containing alcohol.	.525	
If a friend becomes physically sick from drinking, I try to help them get to a safe place.		.734
I'm quick to help a friend who shows signs of alcohol poisoning.		.709
If someone gets too drunk, I try to make sure that they stay out of trouble and remain safe.		.683

Table 1 Continued

Item	Component	
	Proactive	Reactive
I naturally want to help when I see that a friend has had too much alcohol to be able to make good decisions.		.676
When my friends get out of control from too much drinking, I try to calm them down.		.675
I try to make sure all my friends get home safely after we have been at a party or social gathering where alcohol has been served.		.616
I try to prevent m friends from driving after they have been drinking at a party or social gathering.		.525

Note. Alpha coefficients for Proactive and Reactive caretaking were .85 and .84 respectively.

Validity of the DPC Scale

Convergent, concurrent, predictive and discriminant validity of the drinking peer caretaking scale was assessed by examining correlations with the SSB, LPS, Conscientiousness, and Neuroticism measures respectively.

Convergent validity. To assess convergent validity, correlations between the Social Support Behaviors (SSB) scale and each of the DPC subscales. The correlation between social support behaviors and proactive caretaking was, r (335) = .22, p <.001. According to Cohen (1992), this represents a small to moderate effect. For reactive caretaking, the correlation with social support behaviors was, r (335) = .32, p <.001 which corresponds to a moderate effect. These findings suggest some evidence for convergent validity of the DPC.

Concurrent validity. Concurrent validity was assessed with correlations between the Liking People Scale (LPS) and each DPC subscale. The correlation between liking people and proactive caretaking was, r (334) = .18, p < .01. For reactive caretaking, the correlation with liking people was, r (334) = .22, p < .001. These results show modest evidence for concurrent validity.

Predictive validity. The short form of the Big five Conscientiousness scale was utilized to assess predictive validity of the DPC scale. Correlations between Conscientiousness and each DPC subscale were examined. The correlation between Conscientiousness and proactive caretaking was, r (333) = .25, p <.001. For reactive caretaking, the correlation with Conscientiousness was, r (333) = .21, p <.001. These relationships provide modest evidence for predictive validity.

Discriminant validity. The short form of the Big five Neuroticism scale was utilized to assess Discriminant validity of the DPC scale. Coefficient alpha for Neuroticism was .87 in the current sample. Correlations between Neuroticism and each DPC subscale were examined. The correlation between Neuroticism and proactive caretaking was, r (334) = -.15, p <.01. For reactive caretaking, the correlation with Neuroticism was, r (334) = -.10, ns. These weak associations provide modest evidence for discriminant validity. Support for discriminant validity would have been stronger if no relationships were present.

College Students and Drinking Peer Caretaking

Participants indicated different levels of agreement with the final DPC items. Means and standard deviations for each item are displayed below (see Table 2).

Table 2

DPC Means and Standard Deviations

Item	Mean	SD
I try to limit my friends' drinking at a party or social gathering where alcohol is being served.	2.54	1.12
I usually drink less than my friends at parties or social gatherings so that I can help the rest of them avoid problems.	3.36	1.28
I try to keep track of how many drinks my friends have had.	2.76	1.14
I become concerned when I notice friends who have been drinking are slurring their words or becoming incoherent.	3.61	1.11
I often serve as designated driver when my friends and I go to a party/event where there are people drinking.	3.22	1.31
I become concerned when I notice a friend who has been drinking is having difficulty with balance.	3.72	1.02
If I notice a friend drinking faster than the rest of the group I will call it to his or her attention.	3.16	1.03
I try to encourage my friends to drink water or non-alcoholic drinks between drinks containing alcohol.	3.32	1.14
If a friend becomes physically sick from drinking, I try to help them get to a safe place.	4.42	0.62
I'm quick to help a friend who shows signs of alcohol poisoning.	4.09	0.80

Table 2 Continued

Item	Mean	SD
If someone gets too drunk, I try to make sure that they stay out of trouble and remain safe.	4.26	0.78
I naturally want to help when I see that a friend has had too much alcohol to be able to make good decisions.	4.24	0.74
When my friends get out of control from too much drinking, I try to calm them down.	4.07	0.80
I try to make sure all my friends get home safely after we have been at a party or social gathering where alcohol has been served.	4.14	0.88
I try to prevent m friends from driving after they have been drinking at a party or social gathering.	4.41	0.78

Note. 1 = Strongly disagree, 2 = Disagree, 3 = Neither, 4 = Agree, 5 = Strongly agree

As can be seen in Table two, the means for Proactive caretaking (the first eight items) range from 2.54 to 3.72. These values correspond to disagreement through neutrality/slight agreement. Percentages of participants who agreed or strongly agreed with the proactive caretaking items ranged from 19% for "I try to limit my friends' drinking at parties or social gatherings where alcohol is being served", to 58% and 65% for "I become concerned when I notice friends who have been drinking are slurring their words or becoming incoherent" and "I become concerned when I notice a friend who has been drinking is having difficulty with balance" respectively. The latter items were the only proactive items that over 50% of participants agreed with.

With regard to reactive caretaking (the final 7 items on Table 2), means ranged from 4.07 to 4.42. All means were indicative of agreement with the reactive caretaking items. Percentage of agreement with the reactive items ranged from 77% for "I'm quick to help a friend who shows signs of alcohol poisoning" to 95% for "If a friend becomes physically sick from drinking, I try to help them get to a safe place." The majority of participants agreed with each of the reactive caretaking items.

Group Differences in Drinking Peer Caretaking

In order to address the stated research questions regarding differences in DPC scores based on gender, class status, residence status, and race/ethnicity, a series of independent samples t-tests and Analysis of Variance (ANOVA) tests were conducted. It was unnecessary to control for social desirability in these group difference tests. The correlations between the social desirability measure and proactive and reactive caretaking

were very weak (.18, and .17 for proactive and reactive caretaking respectively), and well below the .5 level that would have warranted concern (Cohen, 1992).

Gender differences. Independent samples t-tests were conducted to examine potential gender differences on proactive and reactive caretaking (see Table 3). The Bonferroni correction was applied to account for the fact that a separate test on gender was conducted for each subscale. This resulted in an alpha level of .025 for each test. For proactive caretaking, t (323) = 2.93, $p < .025$. Females (M = 26.45, SD = 6.68) scored significantly higher than males (M = 24.42, SD = 3.80) did. For reactive caretaking, t (335) = 2.31, $p < .025$. Again females (M = 29.95, SD = 4.08) scored significantly higher than males (M = 28.94, SD = 3.80) did.

Table 3

Independent Samples T-tests for Gender Differences on DPC

	Gender			
	Females	Males	t	df
Proactive Caretaking	26.45 (6.68)	24.42 (3.80)	2.89*	335
Reactive Caretaking	29.95 (4.08)	28.94 (3.80)	2.32*	335

Note. * = $p < .025$. Standard Deviations appear in parentheses below mean.

Class status. A one-way, between-subjects ANOVA was conducted on each of the DPC subscales to assess potential differences by class status. The Bonferroni correction was applied to account for multiple tests. For proactive caretaking, the overall Anova was significant, F (3,331) = 3.41, $p < .025$. Post hoc Tukey tests revealed that first-year students (M = 27.02, SD = 6.91), scored significantly higher on this subscale than seniors (M = 24.16, SD= 6.24), $p < .01$ did (see Tables 4 & 5). No significant differences were found on reactive caretaking, F (3,331) = .231, *ns* (see Tables 6 & 7).

Table 4

Means and Standard Deviations for Class Status on Proactive Caretaking

Grade Level	n	Mean	SD
First Year	86	27.02	6.91
Sophomore	73	26.16	6.34
Junior	74	25.50	5.71
Senior	102	24.16	6.24

Note: Means for First-years and Seniors are significantly different from each other according to the Tukey HSD test.

Table 5

One-way ANOVA for Class Status Differences on Proactive Caretaking

Source	*df*	*F*	*p*
Class Status	3	3.41	.018*
Error	331		

Note. * = $p < .025$.

Table 6

Means and Standard Deviations for Class Status on Reactive Caretaking

Grade Level	n	Mean	SD
First Year	86	29.57	4.32
Sophomore	73	29.37	3.71
Junior	74	29.85	3.77
Senior	102	29.41	4.05

Note: Analysis of Variance revealed no significant mean differences.

Table 7

One-way ANOVA for Class Status Differences on Proactive Caretaking

Source	*df*	*F*	*p*
Class Status	3	.231	.88
Error	331		

Note. * = $p < .025$.

Residence status. The six residence status categories were collapsed into a dichotomous measure of “on-campus”, or “off campus”. Independent samples t-tests were then conducted to assess potential differences on the DPC subscales based on students living on or off campus (see Table 8). The Bonferroni correction was applied to account for multiple tests. No differences were found for proactive [t (333) = .298, *ns*] or reactive [t (333) = .702, *ns*] caretaking based on residence.

Table 8

Independent samples T-tests for Residence Differences on DPC

	Residence		*t*	df
	On-Campus	Off-Campus		
Proactive Caretaking	25.70 (6.49)	25.49 (6.38)	0.30	333
Reactive Caretaking	29.35 (4.31)	29.66 (3.75)	0.70	333

Note. * = $p < .025$. Standard Deviations appear in parentheses below means

Race/ethnicity. Because 90% of the sample (n=300) identified as White/Caucasian, it was necessary to collapse race/ethnicity into Non-Minority/Minority. Independent samples t-tests were run on both DPC subscales (see Table 9), and these tests were followed up with nonparametric Mann-Whitney U tests because the sample sizes were extremely unequal (Tabachnick & Fidell, 2007). No differences were found in any of these analyses [proactive: t (335) = 1.71, *ns*; reactive: t (335 = .285, *ns*; Mann-Whitney proactive: p = .146, *ns*; reactive: p = 8.58, *ns*].

Table 9

Independent samples T-tests for Race/ethnicity Differences on DPC

	Race/ethnicity			
	Non-minority	Minority	*t*	df
Proactive Caretaking	25.45 (6.39)	26.80 (6.97)	1.71	335
Reactive Caretaking	29.55 (3.87)	29.34 (4.98)	0.29	335

Note. * = $p < .025$. Standard Deviations appear in parentheses below means.

Chapter 5

Discussion

The purpose of the present study was to develop and pilot test a measure of caretaking behaviors within college student drinking peer groups for use by alcohol researchers and prevention professionals. It was hypothesized that the new measure would be reliable and valid. Several research questions regarding potential group differences in drinking peer caretaking based on demographic variables of gender, class status, residence status, and race/ethnicity were also examined.

Assessing Reliability and Validity of the Drinking Peer Caretaking Scale

It was hypothesized that the drinking peer caretaking measure would demonstrate high reliability (> .70) and evidence for validity. Reliability was assessed with principal components analyses (PCA) and internal consistency analyses. After conducting a series of PCAs, the original 20-item scale was reduced to 15 items, which accounted for 50 percent of the variance. According to Pett, Lackey and Sullivan (2003), accounting for 50% of the variance in a solution is the minimum adequate amount. Meeting the minimum criteria suggests that some caution in interpreting results and conclusions, and it also means that the scale could likely be subsequently improved by rewording some items and including additional ones. However, this was a pilot scale development study of a measure for which nothing comparable currently exists. As such, it is encouraging that an adequate solution was found.

In determining the solution to explore, the scree plot was examined, as were components with eigenvalues greater than one. This information led the researcher to examine two, three, and four component solutions before determining that two was most appropriate. The final measure contains two subscales: proactive caretaking (8 items) and reactive caretaking (7 items), with internal consistency coefficients (alphas) of .85 and .84 respectively. The overall measure had an alpha of .88. These results provide moderate support for the reliability of the measure (DeVellis, 2003; Tabachnick & Fidell, 2007).

Convergent, concurrent, predictive, and discriminant validity was assessed through examining correlations between each DPC subscale and the Social Support Behaviors Scale (SSB), Liking People Scale (LPS), Conscientiousness Short Form (CNS), and Neuroticism Short Form (NRT) respectively. Correlations were small to medium (Cohen 1992), providing modest evidence for validity. The strongest relationships were those between DPC and SSB, suggesting that convergent validity, (especially for reactive caretaking, which showed a stronger association with SSB) is most strongly supported in the current study. Also, the associations with NRT were weak and non-significant, as would be expected as evidence for discriminant validity of DPC. The low correlations that emerged from the validity analyses might suggest that the chosen scales were not the most appropriate measures for assessing the validity of the DPC. However, they were chosen because published evidence of their utility with college student samples was available, and it made theoretical sense to use each measure in the analyses of validity.

Addressing Research Questions

With regard to the DPC subscales, it is evident that students in the current sample are more likely to engage in reactive caretaking behaviors, and that they are not very proactive. The mean scores for the proactive scale items suggested that the majority of students either did not typically engage in proactive caretaking behaviors, or were neutral about doing so. This may indicate a simple lack of awareness about proactive types of drinking peer caretaking behaviors, and/or reflect an emphasis on extrinsic values such as popularity and being judged favorably by peers among college students in the current sample (Seider, 2007; Sheldon, 2005). Prevention efforts targeting increases in proactive caretaking may help facilitate an overall decrease in alcohol consumption, and by extension, incidences of negative consequences associated with drinking. In contrast, mean scores on the reactive scale items indicated that the majority of students were engaging in these behaviors. This is encouraging, and there is room for improvement here as well.

Research question one examined gender differences in DPC scores. For both the proactive and reactive subscales, women in the sample scored significantly higher than men did. This is not a surprising finding, and is consistent with studies on gender differences in caring behaviors. For instance, in their qualitative study investigating protective strategies utilized by college freshman when drinking alcohol, Howard, Griffin, Boekeloo, Lake, and Bellows (2007) found that women expressed a tendency to instinctively want to care for others in need more than men did. Similarly, Eagly and Crowley (1986) conducted a review and synthesis of the literature on gender-role helping

behavior, and asserted that women were more comfortable with and likely to engage in caring-type helping behaviors than men were. This was evident based both on self-ratings and gender ratings. Women and men both rated women more likely to engage in helping behaviors.

More targeted prevention resources could be directed at increasing men's awareness of the important role their own caretaking behaviors might play in decreasing alcohol related consequences experienced by their friends in drinking situations. Borsari and Carey (2006) report that men use alcohol as a means to foster closeness and social support from their same-sex peers more often than women do, and that this is likely because men are less comfortable expressing feelings with their same-sex friends than women are. Because alcohol is a major mechanism by which male peers develop a sense of closeness, there is a tendency toward higher levels of use among males (Borsari & Carey, 2006). However, their research also suggests that moderate drinking males (those who tend to drink four or fewer drinks per drinking occasion) report higher levels of social support and closeness with their same-sex peers (Borsari & Carey, 2006).

These findings point to some possibilities for attempting to increase caretaking behaviors among male peers. Social media messages could include this information as a benefit of moderate drinking, along with the more common emphasis on reductions in alcohol-related consequences. Information about the differences in the way alcohol is used in male versus female peer groups could also be included in workshops, classes, and/or presentations delivered by peer facilitators as discussed previously. This could provide an effective entry point to discussions about caretaking behaviors for both men

and women. Facilitators could utilize scenarios in which caretaking behaviors would be indicated. This type of activity/module could be easily incorporated into workshops/presentations, etc. These approaches have the potential to target norms as well as behaviors. There may also be some utility for increasing proactive caretaking behaviors among men and women. The messages and information could easily be framed in terms of staying aware of the number of drinks an individual and his/her peers consume, both for safety and for the benefit of the friendships themselves. As this would largely involve peer-to-peer interaction, the potential exists for the information to have far reaching benefits in the student body and campus community, and potentially change normative expectations and subsequent behaviors (Hunter, 2004).

Research question two examined potential differences in DPC scores based on class status. The groups did not differ on reactive caretaking, but a significant difference between first-year students and seniors emerged on proactive caretaking. First-year students as a group scored significantly higher than seniors did. This is an interesting finding, which may be at least partially attributable to living in close proximity to one another and the programming provided to first-year students concerning health and safety issues, including alcohol use, associated with moving away from home and coming to college.

Virtually all first-year students at the institution where the present study was conducted are required to live in on-campus housing. Thus they share dormitories, dining facilities, and spend a majority of their time together on campus property. Proximity may aid in facilitation of close friendships, a sense of community, and a shared sense of

responsibility for the campus environment (Charaund & Brauer, 2008). Studies suggest that the degree of connectedness individuals feel toward one another and to their shared community (Charaund & Brauer, 2008), as well as sense of responsibility, awareness of community norms, and the ability to accurately assess the situation (Banyard & Noynihan, 2011) are all factors associated with an increased likelihood of intervening on behalf of another to prevent or minimize a dangerous situation. The campus environment in which first-year students typically reside provides the potential for those factors to exist. Further, campus level health and safety programming can easily reach first-year students. These programs may include topics such as moderation skills (Neighbors et al., 2006), many of which are individual strategies that correspond to proactive caretaking items. Perhaps the combination of community factors along with access to information contributed to first-year students' higher levels of engaging in proactive caretaking behaviors relative to seniors.

Seniors may be less likely to need to engage in proactive caretaking behaviors for their friends because their experience, development of personal moderation skills and tendency toward "maturing out" (O'Malley, 2005) of high-risk drinking, make those types of caretaking behaviors less necessary within their drinking peer groups than may be the case for first-year students. Another possibility is that as students move through the college years they more often find themselves in less cohesive, more diffuse social situations that lack the strong connectedness found among campus residents (Charaund & Brauer, 2008). Although seniors at the institution where the present study was conducted were likely exposed to similar community and programmatic circumstances early on in

their college experiences, the effects of these experiences may have diminished as they became more distal to the immediate campus community (Levine et al., 2005). There is potential utility in offering campus programming and social opportunities that could facilitate more engagement with the campus community among upper-level students.

Research questions three and four examined potential differences in DPC scores based on residence status (on/off campus) and race/ethnicity respectively. No differences emerged in proactive or reactive caretaking based on either of these demographic variables. These are encouraging results, as they suggest that neither place of residence nor racial or ethnic background appears to differentiate students in terms of their drinking peer caretaking behaviors. Intervention approaches incorporating caretaking behaviors should be comparably effective regardless of place of residence.

However, the results regarding racial/ethnic differences need to be interpreted with caution for at least two reasons. First, the racial/ethnic homogeneity of the sample (i.e. 90% Caucasian) did not allow for a thorough examination of these differences. Second, there is empirical evidence that group membership is an important factor in predicting helping behaviors, such that group members are more likely to help "in-group" others than "out-group" counterparts (Levine et al., 2005; Singh & Winkel, 2012; Wegner & Crano, 1975).

Limitations

The pilot study provided evidence for the viability of drinking peer caretaking as a construct and an instrument. However, there are several limitations to the study that should be noted. The factor solution, which accounted for approximately 50% of the

variance, was acceptable, though minimal according to Pett, Lackey & Sullivan (2003). This could potentially be improved in subsequent studies of the DPC scale by rewording items, and/or including additional items. Perhaps including more items pertaining to individual moderation skills and adapting them to reflect caretaking behaviors may provide a more comprehensive explanation of the phenomenon.

Also, while the initial sample size (N=430) slightly exceeded the anticipated 10% response rate from the sample of 4000 students, 93 respondents were excluded because they did not provide demographic data pertaining to the research questions of the study. However, virtually all respondents completed the DPC scale (missing n ranged from 1 to 6 on each item). The demographic items were placed at the very end of the survey, which is a common recommendation (Colton & Covert, 2007). Based on the response rate for the DPC items, which represented the first 20 items on the survey, it appears that the ultimate sample size may have been substantially increased if demographics were placed immediately following the DPC items.

Another sample limitation was the lack of racial/ethnic diversity among participants. This was expected given the predominance of Caucasian students in the student body as a whole. However, it did limit the ability to assess racial/ethnic differences on DPC. It was highly undesirable to dichotomize race/ethnicity. The vast overrepresentation of Caucasian students in the sample necessitated this approach. The present findings need to be interpreted with caution. The ability to generalize beyond Caucasian students regarding drinking peer caretaking is lacking at this time. Future

studies need to be undertaken to with more diverse samples to investigate potential racial/ethnic differences in drinking peer caretaking.

While evidence for reliability of the two factor DPC scale was relatively strong, the validity results were modest at best. This may have been enhanced by utilizing a separate validation sample to confirm the factor structure and test validity. Perhaps the scales that were chosen to assess validity were not the most appropriate measures, thereby degrading the validity results. The chosen scales were used because there was published evidence on each suggesting good reliability and validity with college student samples. It made conceptual sense to include each scale to test for the respective types of validity. There were no comparable measures of DPC to incorporate, so an attempt was made to locate scales that appeared appropriate for validity analyses.

Implications

The results of the pilot study of the DPC scale suggest that the measure is reliable, valid, and applicable to college students. These results provide a preliminary support for the viability of the construct of drinking peer caretaking. This could be of value to alcohol researchers, and especially prevention professionals tasked with developing and implementing effective programming on their campuses. It could also be a basis for, or an adjunct to peer facilitated interventions.

Peer-facilitated interventions have utility in the domain of health and safety behaviors, including sexual assault prevention (Burn, 2009; Gidycz, Orchowski & Berkowitz, 2011) and alcohol prevention (Cimini et al., 2009). The apparent viability of drinking peer caretaking as a phenomenon suggests that it could indeed be utilized as a

point of emphasis for the development of peer-facilitated alcohol interventions. Caretaking behaviors could be incorporated as part of campus media campaigns, as a component of workshops or training programs provided to students, and incorporated in courses dealing with health and safety behaviors and peer leadership.

The success of the peer-based intervention conducted by Cimini et al., (2009) appeared to be due to the impact on normative perceptions, which translated into decreases in alcohol use and associated problems at follow-up. Interestingly, there were no differences by intervention group. This suggests that peer-facilitated interventions are effective in a variety of dissemination formats, and that peer influences on behavioral norms may be a key factor in the success of the approach. Impacting norms regarding drinking peer caretaking behaviors could also be a primary mechanism by which inclusion of this information might enhance the effectiveness of prevention programs.

An ideal use of the DPC scale by prevention professionals would be as a means of identifying students who are likely to model caretaking behaviors within peer drinking groups, and communicate with others about the benefits of engaging in these behaviors when interacting with their drinking peers. The measure itself could be included as part of institutional data collection from students. Those who score highly could be recruited as mentors for whom an initial training could be provided by prevention staff. These mentors could potentially provide training to other students in workshop formats as part of various campus health/safety events.

Beyond campus-wide data collection, the DPC scale could also be used in mentorship and/or leadership courses and workshops. Students are likely to self-select

into these opportunities because they either already perceive themselves as campus leaders or they are interested in developing leadership/mentorship skills (Hunter, 2004). The combination of social media campaigns emphasizing caretaking strategies, and the utilization of trained peer educators/facilitators has the potential to enhance the effectiveness of existing alcohol prevention programs by including these new caretaking components in ways that are highly visible and require minimal additional resources.

The results of the present study suggest that there is a particular need to emphasize proactive behaviors. Students in the current sample were not very proactive in their caretaking. If the activities mentioned above included a strong emphasis on proactive behaviors, increases in these behaviors could contribute to reductions in drinking behaviors, and subsequent reductions in consequences associated with drinking. These outcomes are consistent with the goals of a harm reduction approach to alcohol prevention (Marlatt & Witkiewitz, 2002).

Suggestions for Future Research

Clearly, a pilot study is a first step in process of developing and testing a measure. A confirmatory factor analysis (DeVellis, 2003) with another sample is a logical and necessary next step. Further assessments of validity, ideally with a wider range of validated measures should also be undertaken. Based on the sampling issues discussed above, it is suggested that survey items be reorganized such that the demographic measures immediately follow the DPC items for future data collection efforts. It is also suggested that future studies utilizing the scale might include additional items, and that researchers consider revisions to the present items in order to improve the factor solution.

Regarding group differences, future studies should include samples with more racial/ethnic diversity than was present in the current study. This was a clear limitation, and the ability to further investigate potential racial/differences would contribute to a greater understanding of drinking peer caretakers, and potentially, to the validity of the scale. Similarly, group differences in DPC based on Fraternity/Sorority involvement and participation in collegiate athletics were unable to be examined. The questionnaire distributed to participants did not include items pertaining to these characteristics. Studies suggest that those involved in the Greek system as well as student athletes tend to drink more than students in general do (Fairle, et al., 2010; Labrie et al., 2010). These individuals may also occupy positions of leadership (Hunter, 2004). Assessing differences on DPC for these groups would also contribute to a further understanding of drinking peer caretakers.

In addition to the above suggestions for addressing current limitations in subsequent studies, could examine relationships between each of the DPC subscales and drinking behaviors (quantity, frequency, binge, etc.), as well as personality characteristics, and measures of prosocial behavior (Carlo & Randall, 2002; Kosek, 1995). It would also be worthwhile to administer the DPC to multiple samples within the same study in order to further assess the factor structure and assess test-retest reliability (Carlo & Randall, 2002).

Conclusion

This study provided some encouraging support for the construct of drinking peer caretaking. The measure has utility as a tool for both prevention professionals and alcohol

researchers. There is much work that can be done to improve the existing scale, further examine and validate the measure, as well as contribute to a greater understanding of caretaking in peer drinking groups.

It is hoped that the present study will serve as a starting point for a useful line of investigation to assist prevention specialists and researchers in developing and evaluating innovative and effective peer-facilitated alcohol interventions. Capitalizing on social interaction and peer influence appears to have promise in continued efforts to understand and address dangerous drinking behaviors and their associated negative consequences among college students.

The results of the present study suggest that emphasis on proactive caretaking behaviors is needed, because most students are not engaging in them. Increases here could have wide ranging impacts by decreasing the severity of, or completely preventing problematic situations. Decreases in dangerous situations and their associated negative consequences are the ultimate goals of harm reduction approaches to prevention. Thus, the construct of drinking peer caretaking, and the measure developed for this study offer some promising new areas of investigation and expansion on existing preventive interventions.

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Appendices

Appendix A

Recruitment email and informed consent

College Student Caretaking Survey
Dear Student,

The purpose of this survey is to test a new measure related to caretaking behaviors within college student peer groups while drinking alcohol. The study has been approved by the University Institutional Review Board. Your participation is completely voluntary, and your responses to the survey will be anonymous. We will not ask you for any identifying information, so your responses cannot be linked back to you. You are free to discontinue the survey at any time, or to skip any items that you do not wish to answer. There are no known risks associated with participating in this survey. We estimate that it will take approximately 15 minutes to complete the survey. If you have additional questions or concerns, please feel free to contact Jason Black at jblack21@utk.edu

INFORMED CONSENT

If you agree to participate, please click on the link below and proceed to the survey. Completion of the survey constitutes consent to participate. Thank you for your consideration.
I have read the above information and agree to participate in the survey

Link to survey here

Appendix B

Caretaking Survey

Directions: Please indicate your level of agreement with each of the following statement by placing an x or check mark (✓) in the appropriate box.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. If I am drinking with friends and someone appears to be losing self-control I will suggest they slow down or take a break.					
2. I often act as the leader of the group of friends I hang out with.					
3. If I notice a friend drinking faster than the rest of the group I will call it to his or her attention.					
4. I usually drink less than my friends at parties or social gatherings so that I can help the rest of them avoid problems.					
5. I try to keep track of how many drinks my friends have had.					
6. If someone gets too drunk, I try to make sure that they stay out of trouble and remain safe.					
7. I often serve as designated driver when my friends and I go to a party/event where there are people drinking					
8. I naturally want to help when I see that a friend has had too much alcohol to be able to make good decisions.					
9. When my friends get out of control from too much drinking, I try to calm them down.					
10. I become concerned when I notice friends who have been drinking are slurring their words or becoming incoherent.					
11. I become concerned when I notice a friend who has been drinking is having difficulty with balance.					
12. If a friend becomes physically sick from drinking, I try to help them get to a safe place.					

13. I know the signs of alcohol poisoning and how to take quick action to deal with it					
14. I try to encourage my friends to drink water or non-alcoholic drinks between drinks containing alcohol.					
15. I am very aware of the safety of my friends who drink at a party or social gathering					
16. I'm quick to help a friend who shows signs of alcohol poisoning.					
17. I try to make sure all my friends get home safely after we have been at a party or social gathering where alcohol has been served					
18. I try to limit my friends' drinking at parties or social gatherings where alcohol is being served.					
19. I try to prevent m friends from driving after they have been drinking at a party or social gathering.					
20. I try to make sure all of my friends have a ride home from a sober driver after we have been at a party or social gathering where there has been drinking.					

If you tend to take care of friends when they are drinking, what kinds of things do you typically do?

If you tend to take care of friends when they are drinking, why do you take on this role (i.e. do you volunteer? Are you asked? Other reason(s)?)

Directions: Please answer the following questions:

What is your gender? ___Female ___Male ___Prefer not to answer	**What is your age (in years)?** _____ ___Prefer not to answer	**What is your class standing?** ___First-year ___Sophomore ___Junior ___Senior ___Other (please specify)_____ ___Prefer not to answer
What is your Race/Ethnicity? **(**select all that apply**)**	**Are you Hispanic?** ___No	**Where do you live?** ___Residence hall

___Asian/Pacific Islander ___Black/African American ___White/Caucasian ___Native American/Alaskan Native ___Other (Please specify ___Prefer not to answer	___Yes ___Prefer not to answer	___Apartment ___House ___Fraternity/Sorority Residence ___Other (Please specify) ___Prefer not to answer
What is your current marital status? ___Single ___Married ___Separated ___Divorced ___Widowed ___Prefer not to respond	**Do you drink alcohol?** ___No ___Yes ___Prefer not to answer	**If yes, how many days in a typical week during the school year do you have at least one drink?** ___NA I do not drink ___1 ___2 ___3 ___4 ___5 ___6 ___7 ___Prefer not to answer
About how many drinks do you usually have on a typical day when you are drinking during the school year (enter number of drinks)? _____ ___Prefer not to answer	In the past two weeks, how many times have you had four or more drinks in one sitting? _____ ___Prefer not to answer	In the past two weeks, how many times have you had five or more drinks in one sitting? _____ ___Prefer not to answer

Thank you for your participation. Your participation is greatly appreciated

Appendix C

Marlowe-Crowne Short Form 1 - Strahan, R. & Gerbasi, K. C. (1972). Short forms of the Marlowe-Crowne social desirability scale. *Journal of Clinical Psychology, 28 (2)* 191-193.

Directions: Please indicate whether each of the following statements is true or false for you.

Question	Answer	
1. I'm always willing to admit it when I make a mistake.	T	F
2. I always try to practice what I preach.	T	F
3. I never resent being asked to return a favor.	T	F
4. I have never been irked when people expressed ideas very different from my own.	T	F
5. I have never deliberately said something that hurt someone's feelings.	T	F
6. I like to gossip at times.	T	F
7. There have been occasions when I took advantage of someone.	T	F
8. I sometimes try to get even rather than forgive and forget.	T	F
9. At times I have really insisted on having things my own way.	T	F
10. There have been occasions when I felt like smashing things.	T	F

Appendix D

SSB

Directions: Suppose one of your friends had some kind of problem (were upset about something, needed help with a practical problem, needed some advice or guidance), how likely would you help out a friend in each of the specific ways listed below?

Please indicate your level of agreement with each of the following statement by placing an x or check mark (✓) in the appropriate box.

How likely would you help out a friend in each of the specific ways listed below?	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1. I would suggest doing something just to take my friend's minds off of their problems.					
2 I would visit the friend or invite the friend over.					
3. I would comfort the friend who was upset.					
4 I would give my friend a ride if they needed one.					
5. I would have lunch or dinner with my friend.					
6. I would look after my friend's belongings for a while.					
7. I would loan a car to the friend who need one.					
8. I would joke around or suggest doing something to cheer up my friend.					
9. I would go to a movie or concert with my friend.					
10. I would suggest how my friend could find out more about a situation.					

11. I would help my friend out with a move or other big chore.					
12. I would listen to my friend need to talk about feelings.					
13 I would go have a good time with my friend.					
14. I would pay for lunch if my friend was/were broke.					
15. I would suggest a way that my friend might do something.					
16. I would give my friend encouragement to do something difficult.					
17. I would give my friend advice about what to do.					
18. I would chat with my friend.					
19. I would help my friend figure out what they wanted to do.					
20. I would show my friend that I understood how they were feeling.					
21. I would buy my friend a drink if they were short on money.					
22. I would help my friend decide what to do.					
23. I would give my friend a hug, or otherwise show them I cared.					
24. I would call my friend just to see how they were doing.					
25. I would help my friend figure out what was going on.					
26. I would help my friend out with some necessary purchase.					
27. I would not pass judgment on my friend.					
28. I would tell my friend who to talk to for help.					
29. I will loan my friend money for an indefinite period.					
30. I would be sympathetic if my friend were upset.					
31. I would stick by my friend in a crunch.					
32. I would buy my friend clothes					

if they were short on money.					
33. I would tell my friend about available choices and options.					
34. I would loan my friends tools, equipment or appliances if they needed them.					
35. I would give my friends reasons why they should or should not do something.					
36. I was show affection for my friend.					
37. I would show my friend how to do something they did not know how to do.					
38. I would bring my friend little presents of things they needed.					
39. I would tell my friend the best way to get something done.					
40. I would talk to other people to arrange something for my friend.					
41. I would loan my friend money with no expectation of repayment.					
42. I would tell my friend what you do.					
43. I would offer my friend a place to stay for a while.					
44. I would help my friend think about a problem.					
45. I would loan my friend a fairly large sum of money (say the equivalent of a month's rent or mortgage).					

Appendix E

LPS

Directions: Please indicate your level of agreement with each of the following statement by placing an x or check mark (✓) in the appropriate box.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Sometimes when people are talking to me, I find myself wishing that they would leave.					
2 My need for people is quite low.					
3. One of the things wrong with people today is that there are too dependent upon other people.					
4. My happiest experiences involve other people.					
5. People are not important for my personal happiness.					
6. Personal character is developed in the stream of life.					
7. I could be happy living away from people.					
8. It is important to me to be able to get along with other people.					
The matter what I am doing, I would rather do it in the company of other people.					
10. There is no question about it -- I like people.					
11. Personal character is developed in solitude.					
12. In general, I don't like people.					
13 Except for my close friends, I don't like people.					
14. A person only has a limited amount of time and people tend to cut into it.					
15. People are the most important thing in my life.					

Appendix F

Neo Big Five Short form C

Directions: Please indicate your level of agreement with each of the following statement by placing an x or check mark (✓) in the appropriate box.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. . I keep my belongings neat and clean					
2 . I am pretty good about pacing myself to get things done on time					
3. I am not a very methodological person.					
4 I try to perform all tasks assigned to me conscientiously					
5. I have a clear set of goals and work toward them in an orderly fashion					
6. I waste a lot of time before settling down to work.					
7. I work hard to accomplish my goals.					
8. When I make a commitment, I can always be counted on to follow through.					
9 Sometimes I'm not as dependable or reliable as I should be.					
10. I am a productive person who always gets the job done.					
11. I never seem to be able to get organized.					
12. I strive for excellence in everything I do.					

Appendix G

Neo Big Five Short form N

Directions: Please indicate your level of agreement with each of the following statement by placing an x or check mark (✓) in the appropriate box.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I am not a worrier.					
2. I often feel inferior to others.					
3. What I'm under a great deal of stress, I feel like I am going to pieces.					
4. I rarely feel lonely or blue.					
5. I often feel tense and jittery.					
6. Sometimes I feel completely worthless.					
7. I rarely feel fearful or anxious.					
8. I often get angry at the way people treat me.					
9. Too often, when things go wrong, I get discouraged and feel like giving up.					
10. I am seldom depressed.					
11. I often feel helpless and want someone to solve my problems.					
12. At times, I have been so ashamed I just want to hide.					

Vita

Jason Black earned a double major Bachelor's degree in Psychology and Sociology from the University of Rhode Island in 2002. He then enrolled in the Behavioral Science graduate program at the University of Rhode Island. He trained in applied social psychology, quantitative methods, and alcohol/substance abuse research. Jason also gained experience as a quantitative methods instructor, prevention specialist, and data manager/analyst before earning a Master's degree in 2006. In 2009 he joined the Evaluation, Statistics, and Measurement doctoral program at the University of Tennessee. During his doctoral studies, Jason worked on several evaluation projects, authored and coauthored several evaluation reports, gained skills and experience in measurement development and assessment, and served as a statistical/methodological consultant for researchers throughout the University community. Jason Black graduated from the University of Tennessee in August of 2012 with a Ph.D. in Evaluation, Statistics, and Measurement.