A PEER-DRINKING GROUP BRIEF MOTIVATIONAL INTERVENTION FOR REDUCING ALCOHOL USE AND CONSEQUENCES IN THAI MALE UNDERGRADUATE STUDENTS

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A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Research for Health Development
(Interdisciplinary Program)
Graduate School
Chulalongkorn University
Academic Year 2009

การบำบัดอย่างย่อเพื่อเสริมสร้างแรงจูงใจในกลุ่มเพื่อนร่วมดื่ม เพื่อลดการดื่มเครื่องดื่มแอลกอฮอล์
และปัญหาจากการดื่ม ในนักศึกษาชายไทยระดับปริญญาตรี

นางวิภาวรรณ ชะอุ่ม เพ็ญสุขสันต์

Thesis Title	A PEER-DRINKING GROUP BRIEF MOTIVATIONAL INTERVENTION FOR REDUCING ALCOHOL USE AND CONSEQUENCES IN THAI MALE UNDERGRADUATE STUDENTS
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วิภาวรรณ ชะอุ่ม เพ็ญสุขสันต์ : การบำบัดอย่างย่อเพื่อเสริมสร้างแรงจูงใจในกลุ่ม
เพื่อนร่วมดื่ม เพื่อลดการดื่มเครื่องดื่มแอลกอฮอล์และปัญหาจากการดื่ม ในนักศึกษา
ชายไทยระดับปริญญาตรี. (A PEER-DRINKING GROUP BRIEF
MOTIVATIONAL INTERVENTION FOR REDUCING ALCOHOL USE AND
CONSEQUENCES IN THAI MALE UNDERGRADUATE STUDENTS)
อ. ที่ปรึกษาวิทยานิพนธ์หลัก: ศาสตราจารย์ นพ.สุรศักดิ์ ฐานีพานิชสกุล, อ. ที่ปรึกษา
วิทยานิพนธ์ร่วม : Professor Michelle A. Williams, Sc.D., 121 หน้า.

การดื่มเครื่องดื่มแอลกอฮอล์โดยเฉพาะในประชากรวัยผู้ใหญ่ตอนต้นเป็นปัญหาด้าน
สุขภาพที่สำคัญ โดยเฉพาะอย่างยิ่งเมื่อพิจารณาถึงผลกระทบจากการดื่ม ได้แก่ การเกิด
อุบัติเหตุจากการดื่มแล้วใช้ยานพาหนะ การทำร้ายร่างกาย การใช้ความรุนแรง การเพิ่มขึ้นของ
การใช้สารเสพติด อาชญากรรม และปัญหาในระยะยาว เช่น การติดสุราและภาวะซึมเศร้า
ปัจจุบันประเทศไทยยังไม่มีข้อมูลการประเมินผลโปรแกรมการลดการดื่มเครื่องดื่มแอลกอฮอล์
และปัญหาจากการดื่ม การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาผลของการบำบัดอย่างย่อเพื่อ
เสริมสร้างแรงจูงใจในกลุ่มเพื่อนร่วมดื่ม เพื่อลดการดื่มเครื่องดื่มแอลกอฮอล์และปัญหาจาก
การดื่ม ในนักศึกษาชายไทยระดับปริญญาตรี เป็นการศึกษาแบบกึ่งทดลอง จำนวน 2 กลุ่ม
ผู้เข้าร่วมการศึกษาเป็นนักศึกษาจาก 2 มหาวิทยาลัย นักศึกษาจากมหาวิทยาลัยที่หนึ่งถูกจัดอยู่
ในกลุ่มควบคุม จำนวน 110 คน นักศึกษามหาวิทยาลัยที่สองถูกจัดอยู่ในกลุ่มทดลอง จำนวน
115 คน

ผลการศึกษาพบว่า คะแนนเฉลี่ยเมื่อ 1 และ 3 เดือนหลังเข้ากลุ่ม เปรียบเทียบกับคะแนน
เฉลี่ยก่อนเข้ากลุ่ม นักศึกษากลุ่มทดลองมีคะแนนเฉลี่ยของการดื่มลดลง 50.4% และ 61.2%
คะแนนเฉลี่ยของปัญหาจากการดื่มลดลง 42.0% และ 42.9% และพบว่าคะแนนเฉลี่ยของการ
ดื่มและคะแนนเฉลี่ยของปัญหาจากการดื่มลดลงทุกช่วงเวลา เมื่อเปรียบเทียบกับกลุ่มควบคุม
ภายหลังการปรับความแตกต่างของข้อมูลพื้นฐาน จึงสรุปได้ว่าการบำบัดอย่างย่อเพื่อ
เสริมสร้างแรงจูงใจในกลุ่มเพื่อนร่วมดื่มสามารถลดการดื่มเครื่องดื่มแอลกอฮอล์และปัญหา
จากการดื่ม ในนักศึกษาชายไทยระดับปริญญาตรี

สาขาวิชา วิจัยเพื่อการพัฒนาสุขภาพ   ลายมือชื่อนิสิต ....
ปีการศึกษา 2552   ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.......................
                                                   ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์ร่วม ....

##4989691320 : MAJOR RESEARCH FOR HEALTH DEVELOPMENT

KEYWORDS : ALCOHOL INTERVENTION / PEER-DRINKING GROUP / MALE UNDERGRADUATES

WIPAWAN CHAOUM PENSUKSAN : A PEER-DRINKING GROUP BRIEF MOTIVATIONAL INTERVENTION FOR REDUCING ALCOHOL USE AND CONSEQUENCES IN THAI MALE UNDERGRADUATE STUDENTS. THESIS ADVISOR : PROFESSOR SURASAK TANEEPANICHSKUL, M.D., THESIS CO-ADVISOR : PROFESSOR MICHELLE A. WILLIAMS, Sc.D., 121 pp.

Alcohol consumption, particularly among young males, is an important global health problem. Adverse outcomes include injuries secondary to drunk-driving, physical aggression and violence, increased risks of illicit drug use, crime, and longer term risks such as alcohol dependence and depression. There are no data available to evaluate the extent to which interventions are effective in reducing alcohol consumption and consequences among young males in Thailand. We sought to examine the efficacy of a peer-drinking group brief motivational intervention (PD-GMI) among Thai male undergraduates. Used a quasi-experimental study design involving two student groups with assessments at baseline and at two follow-up sessions was used. Participants were students enrolled in two public universities and who reported alcohol consumption during the current academic year.

Students in one university were assigned to an assessment-only study group (n=110); and students at the other university were assigned to a 2-hour PD-GMI intervention (n=115). Students receiving the intervention had significant reductions in mean AUDIT scores; 50.4% at baseline to 1-month and 61.2% at baseline to 3-month post-intervention. Their mean RAPI scores were also reduced; 42.0% at baseline to 1-month and 42.9% at baseline to 3-month post-intervention. This intervention decreased significantly AUDIT and RAPI over time compared to the control group after adjusting for baseline difference. These results suggest the efficacy of the PD-GMI for reducing alcohol consumption and consequences among Thai male students.

Field of Study : Research for Health Development   Student's Signature Wipawan C. Pensuksan

Academic Year : 2009   Advisor's Signature

Co-Advisor's Signature

ACKNOWLEDGEMENTS

I wish to express my deep appreciation to Professor Surasak Taneepanichskul, M.D. and Professor Dr. Michelle A. Williams for their valuable suggestions and guidance throughout this study. I would like to express my special thanks to Professor Dr. Michelle A. Williams and her colleagues, including Dr. Swee May Cripe and Mr. Bizu Gelaye at the MIRT Program for their kind assistance in developing and helping prepare my manuscript and poster presentation.

I would like to thank the examining committee members, including Associate Professor Dr. Sathirakorn Pongpanich, Associate Professor Somrat Lertmaharit, Assistant Professor Dr. Ratana Somrongthong, and Associate Professor Dr. Sawitri Assanangkornchai, M.D. for their valuable suggestions. In addition, I would like to thank the experts who validated the instruments I used in this research study.

I am grateful to Ms. Christina Montsma and Mr. Johnny Mettlach for helping me edit my writing throughout my dissertation and manuscript and for their friendship. I also wish to express my sincere appreciation to my host mom, Mrs. Joyce E. Meenen, for her understanding and kind support, which made the seven months spent in Seattle, Washington more interesting and valuable.

I gratefully acknowledge all of the students and university staff at Walailak University and Taksin University who so willingly participated in this study. I also gratefully acknowledge all of the students and university staff at Nakhon Si Thammarat Rajabhat University and Suratthani Rajabhat University who so kindly supported this study by testing the intervention and instruments. In addition, I would like to express my special thanks to my closest friend, Mr. K.Sinsak Suvanchot, for facilitating the intervention sessions in this study and for his kind support throughout my graduate process in Thailand while I lived in Seattle.

Finally, I am deeply indebted to my parents for their support all of my life and for encouraging me throughout my graduate career; my sisters, Ms. Chidchanok Chaoum and Ms. Ketkanok Chaoum, for their understanding; and my husband, Mr. Uthai Pensuksan, for his unending support and for empowering a major opportunity in my life.

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INTRODUCTION

Background and Significance of the Research Problem

Excessive alcohol consumption, responsible for increased illness and death, is a major factor for the global burden of disease and should be considered a public health priority regionally, nationally, and globally for the vast majority of countries in the world (Room et al., 2003; Room, Babor, and Rehm, 2005). Excessive alcohol consumption is thought to cause 1.8 million deaths (3.2% of total worldwide deaths) and 58.3 million Disability-Adjusted Life Years (DALYs) (4% of total worldwide DALYs). Unintentional injuries alone are responsible for approximately one third of the 1.8 million deaths, while neuro-psychiatric conditions are responsible for nearly 40% of the 58.3 million DALYs (World Health Organization [WHO], 2010). Alcohol takes a heavy toll both in public and private life by causing disability and premature deaths, drowning, violent crimes, and sexual abuse. Moreover, those abusing alcohol tend to have chronic problems such as, increased risk of cancers in the gastrointestinal tract, digestive disease, liver cirrhosis, epilepsy, stroke (especially subarachnoid hemorrhage), and psychological problems (Alcohol and Mental Health Policy Sections, 2002; Foxcroft et al., 2009; WHO, 2010).

Psychiatric problems related to alcohol, primarily alcohol-use disorders, are estimated to account for 38% of the total DALYs attributable to alcohol. Depression has a notable association with heavy alcohol consumption. Data from several countries suggest that alcohol dependence is more common among individuals suffering from affective disorder (notably, depression) than among the general population (Stimson et al., 2007). There is good evidence that in many societies suicide rates (especially homicide) are affected by the overall levels of alcohol

consumption (Ramstedt, 2001; WHO, 2010). Globally, alcohol consumption has increased in recent decades with all or most of that increase in developing countries. This increase has often occurred in countries with a tradition of alcohol use on an overall population level and few methods of prevention, control, or treatment. The rise in alcohol consumption in developing countries provides ample cause for concern over the possible advent of a matching rise in alcohol-related problems in those regions of the world most at risk (WHO 2010).

Adverse consequences associated with alcohol have increased to the point of significant financial and resource burdens, due to loss in productivity, health-care costs, and costs related to road traffic accidents and crime (Cobiac et al., 2009). For example, Thai citizens are subjects to the costs of all medical services regardless of whether the consumption of alcohol resulted in injury, or if they were the victims of someone who consumed alcohol (Darunee Phukao, 2006). The Ministry of Public Health, Thailand (2007) reported that alcohol use was 13% of total health risk factors in Thai male using DALYs Loss in 2004. The percentage increased from 9% in 1999.

Over the past decade, there has been a marked increase in the number of people who consume alcoholic beverages, especially amongst Thai young people between the ages of 15-24. This population had on a high percentage of alcohol use (21.9%) in 2007. Thai males over 15 years old consume alcohol (51%) about six times more than their female counterparts (8.8%) (Ministry of Public Health, 2007; Center for Alcohol Studies, 2008). According to the Thai national household survey of substance and alcohol use (Administrative Committee for Substance Abuse Research Network, 2007) the second highest prevalence of alcohol use disorders was in the age group of 12-24 years (31%). The highest prevalence was in the age group of 25-44 years (32%). Studies from different parts of the world have shown that college students have a higher prevalence of alcohol consumption and alcohol-use disorders than non-college youth (Karam, Kypri, and Salamoun, 2007). Based on

these statistics, young people hold a significant part in overall alcohol consumption with unique drinking patterns and different risk factors and problematic concerns compared to the population in general (Ham and Hope, 2003).

Consumption of alcohol among young people usually begins as experimentation (WHO, 2008). In the South-East Asia Region, experimentation with alcohol starts in groups of friends. From here, some young people move from experimentation to regular consumption and some to a pattern of harmful consumption (WHO, 2008). In addition to the quantity and frequency of alcohol use, adverse consequences need to be taken into consideration as quantity and frequency alone are insufficient to determine the severity of college students' drinking problems (O'Hare, 1997 cited in Ham and Hope, 2003).

Alcohol consumption is a widespread source of individual and social pleasure in most countries around the world (Stimson et al., 2007). Throughout college years, students pass through a vulnerable phase of vulnerability intellectually, emotionally, and socially. Most undergraduate students are away from family and longstanding friendships and are in a new environment characterized by considerable peer influence, which often includes promoting the consumption of alcoholic beverages (Karem et al., 2007). Studies in Thai undergraduate students show that 62.6% of undergraduate students have experienced alcohol consumption and most of them started to drink when they were 18 years old. These studies show that students perceive drinking as a way to prove adulthood and therefore drink more when they are in a peer group. Some of them have experienced alcohol-related problems (Chonticha Rojanasang, 2007; Oiythip Thananta, 2007). Drinking problems are common among undergraduate students and often lead to serious physical, psychological, and social harms. These include both chronic health consequences and acute outcomes. Students who drink heavily report academic, personal, and social impairment, leading to disruptions in studies and concerns about health (i.e. missing

class, failure to complete an assignment, impairment at a test or exam, falling grades, hangovers, vomiting, blackouts, physical harm and violence, stealing public property, arguing with friends, and engaging in unplanned sexual activity). These acute harms associated with alcohol use in undergraduate students are mainly caused by intoxication. Intoxication is linked to psychomotor impairment, lengthened reaction time, impaired judgment, emotional changes, and decreased responsiveness to social expectations (Babor et al., 2003 cited in Alcohol Advisory Council of New Zealand [ALAC], 2004). If students have drinking patterns that promote frequent and heavy intoxication, they tend to have chronic health problems called "toxic effects" or "physical toxicity." Physical toxicity includes the longer-term physical effects of alcohol abuse. Some examples include arrhythmia, elevated blood pressure, increased risk of cancer in digestive organs, liver cirrhosis, stroke (especially subarachnoid hemorrhage), peripheral neuropathy, cardiomyopathy, pancreatitis, gastritis, and sexual concerns including erectile dysfunction (Alcohol and Mental Health Policy Section, 2002; Population Health Division, 2005). These adverse consequences are only the beginning concerns for university students who drink heavily. Some students indicate signs of physical dependence including increased tolerance (56%), blackouts (45%), and withdrawal symptoms (5%) (Gilles, Turk, and Fresco, 2006). ALAC (2004) also additionally found that students who are non-drinkers have also reported alcohol associated adverse consequences, which are called "secondhand effects" or "secondary negative effects." Some examples include study/sleep interruption, finding vomit in the hallway or bathroom, property damage, serious arguments, being pushed, hit, or assaulted, sexual assault/rape, insults and humiliation, and riding in a car with a drunk driver, which can result in disability or premature death. Clearly, the negative effects of drinking among undergraduate students are not confined to individual consumers but have serious social impacts, affecting family and

community functioning, public order, and economic productivity (Stimson et al., 2007).

Many institutions of higher education in the United States have promoted safe living and learning environments. A survey of college administrators from 747 institutions revealed that all campuses engaged in some form of alcohol abuse prevention programming. Ninety percent of them provided counseling and treatment services for students and nearly as many (84%) provided prevention services, such as alcohol education for freshmen or other at-risk groups. Forty-three percent of all schools, including those that do not allow alcohol anywhere on campus, ban alcohol in all campus residence halls, and 81% offered at least some alcohol-free dorms or floors to students (Wechsler et al., 2004). Karam et al. (2007) conducted a review of published articles in the period of 2005-2006 on alcohol use and intervention methods among colleges in Africa, Asia, Australia, Europe, and South America. The results indicated that college students in many countries are at an elevated risk for heavy drinking, with serious immediate health risks such as drunk-driving and other substance abuse, and longer term risks such as alcohol dependence. To address this issue, the study found that the provision of web-based screening and brief intervention in Sweden and New Zealand was effective in reducing hazardous alcohol consumption for 6-12 months. For students whose parents had/have alcohol problems, two 2-hour sessions of motivational intervention and psychosocial health education were effective in reducing alcohol consumption at 12 months.

In Thailand, several universities' staff attempt to reduce the prevalence of drinking and its adverse consequences. They have implemented alcohol-free university residences and campuses by making rules and regulations, requiring student attendance of alcohol educational programs, and providing staff or peer counseling to students with potential alcohol abuse problems. However, there is no data available to evaluate the extent to which harm reduction intervention strategies

are effective in reducing hazardous/harmful alcohol consumption and its consequences among young males. There are also still many "new drinkers" in undergraduate populations and students who increase their drinking or do not change in their drinking behaviors. The vast majority of undergraduate students are not seeking alcohol treatment because they do not have severe drinking problems requiring intensive or formal treatment delivered by specialists. Brief motivational interventions therefore, may be particularly suited for undergraduate student drinkers (Tevyaw et al., 2007).

Motivational Interviewing (MI), one type of behavioral intervention, is a relatively new and promising therapeutic intervention that integrates the relationship-building principles of humanistic therapy with more active cognitive-behavioral strategies targeted to the client's stage of change (Rogers, 1951 cited in Burke, Arkowitz, and Menchola, 2003). Miller and Rollnick (2002) defined MI as a client-centered, directive method for enhancing intrinsic motivation towards change by exploring and resolving ambivalence. MI honors and respects the individual's autonomy to choose. It has been successful in substance abuse counseling in motivating clients to change their behaviors involving alcohol, drugs, diet, and exercise (Fernandez, Hartman, and Olshaker; 2006). Moreover, the tailored alcohol interventions for undergraduate student drinkers should be designed to meet their current life situation and needs. Interventions also need to consider the reality of their drinking and demands (Stimson et al., 2007). Interventions around alcohol in undergraduate students are best applied so as to minimize the potential for harm.

The International Harm Reduction Association (IHRA) (2009) stated that harm reduction refers to policies, programs, and practices that aim primarily to reduce the adverse health, social, and economic consequences of the use of legal and illegal psychoactive drug consumption. Harm reduction approaches are practical, feasible, effective, safe, and cost-effective. The concept of harm reduction targets the

causes of risks and harms, does not aim at abstinence, and covers a range of possible interventions. Harm reduction would like to make drinking a safer behavior. The identification of specific harms, their causes, and decisions about appropriate interventions requires proper assessment of the problem and the actions needed. Thus, harm reduction includes working with individual drinkers, while helping them to manage their problems with more insight. It can also mean modifying the public drinking environment (such as in ways to avoid violence) or adapting aspects of public policy to encourage moderation (such as control of bar opening hours). Harm reduction strategies are well represented in the area of preventing drinking-related harms amongst college students. Several reviews have concluded that interventions based on cognitive behavioral skill training and motivational enhancement approaches have the best evidence of effectiveness in reducing alcohol use and related negative consequences in this population (Neighbors et al., 2006). However, brief alcohol interventions are needed because most multi-component programs are resource-intensive making them difficult to implement on a large scale. Brief interventions are usually defined as minimal contact between the client and the health care professional, which ranges from several minutes to several sessions. They typically last one or two sessions but almost always less than four (White, 2006).

Brief motivational interventions aim mainly to increase the awareness of alcohol problems and enhance the motivation to change while remaining brief therapeutic encounters, often only one session in length (Emmen et al., 2004; Borsari, Murphy, and Carey, 2009). Brief individual-based motivational interventions incorporating feedback have been successful in reducing college student drinking and have received considerable empirical support in the literature. Over the past few years, innovative approaches to implementing brief motivational interventions have also been developed and delivered in-person, by mail, or electronically (Larimer and Cronce, 2002; Walters and Neighbors, 2005 cited in Mallett, Bachrach, and Turrisi,

2008). Despite the versatility of implementation, individual motivational interventions are time-consuming and do not provide immediate peer feedback and support. The results from an adaptation to motivational group intervention in freshmen college students reported the group motivational intervention has advantages over individual formats because larger numbers of students can benefit with comparable expenditures of time and effort (LaBrie, Pedersen et al., 2007). In addition, LaBrie et al. (2006 cited in LaBrie, Thompson et al., 2007) found success implementing a single session motivational enhancement group intervention to reduce levels of drinking, negative alcohol-related consequences, and judicial recidivism in a mandated co-ed sample referred for violating campus alcohol policies. In a review article that focused on effectiveness of group and peer motivational interventions, no findings about the influence of peer-drinking groups consisting of friends who are peer drinkers were found to reduce harmful/hazardous alcohol consumption and its adverse consequences.

Collectively, studies of Thai students and others around the globe (Stimson et al., 2007; Neighbors et al., 2008) suggest that alcohol consumption is influenced by the drinking habits of their peers. Some studies conducted among students enrolled in universities in the United States (Hernandez et al., 2006; Stimson et al., 2007) and the United Kingdom (Bewick et al., 2008) suggest that intervention programs that impact students' perception and understanding of their drinking habits and those of their peers may reduce alcohol consumption patterns. According to several social explanations for the high rates of drinking found in the college student population have been proposed. Of these, peer influence has gained attention in the literature as an important variable that may be related to the elevated levels of drinking seen on college campuses (Mallett et al., 2008). In young people, strong emphasis on their peer group and the need for peer approval utilizes much of their energy. Students often have misperceptions about their drinking practices in relationship to their peers.

Effectively enhancing undergraduate students' motivation to reduce their drinking usually involves peer norms (Blume and Marlatt, 2004). It is very important to note that those in peer-drinking groups who are friends and peer-drinkers still participate in exchanging information and discussing their knowledge, experiences, and attitudes about alcohol consumption and its adverse consequences. Peer involvement has directly helped and not hindered the students from implementing harm reduction techniques and incorporating ideas into their goal setting to change their peer drinking behaviors.

The researcher is interested in examining the efficacy of alcohol harm reduction strategies administered as a peer-drinking group brief motivational intervention (PD-GMI) for reducing alcohol use and its adverse consequences in young people. This intervention was designed to (1) increase the awareness of risks associated with hazardous/harmful alcohol consumption; (2) enhance students' motivation to change their drinking behaviors; and (3) encourage harm reduction strategies during episodes of alcohol consumption. This study focused on Thai male undergraduate students in Southern Thailand.

Objectives of the Study

The aim of the study is to evaluate the impact of a peer-drinking group brief motivational intervention (PD-GMI) on alcohol use, its associated adverse consequences, and drinking self-regulation strategies within two groups of students. The researcher also investigated the efficacy of intervention versus assessment-only in reducing alcohol use, its associated adverse consequences, and increasing the participants' drinking self-regulation strategies using Alcohol Use Disorders Identification Test (AUDIT), Rutgers Alcohol Problem Index (RAPI), and The Drinking Self-Regulation Strategies Questionnaire (DSRQ).

Research Question

Is a peer-drinking group brief motivational intervention (PD-GMI) more efficacious than the usual practice for reducing alcohol use and its associated adverse consequences in Thai male undergraduate students, using AUDIT, RAPI, and DSRQ?

Hypotheses

From the research question, a series of analyses in this study will test the null hypothesis for the efficacy of a peer-drinking group brief motivational intervention (PD-GMI) as undifferentiated from the usual practice for reducing alcohol use and its adverse consequences in Thai male undergraduate students, evaluated by AUDIT, RAPI, and DSRQ.

The alternative hypothesis is stated that the efficacy of a peer-drinking group brief motivational intervention (PD-GMI) is different from the usual practice for reducing alcohol use and its adverse consequences in Thai male undergraduate students, evaluated by AUDIT, RAPI, and DSRQ.

Conceptual Framework

The notion that behavior change involves a process that occurs in increments and involves specific and varied tasks is at the heart of the transtheoretical model (TTM) of intentional human behavior change (Miller and Rollnick, 2002). This model offers an integrative framework for understanding the process of behavior change. Change involves the initiation, modification, or cessation of a particular behavior. The TTM views behavior change as a series of gradual steps that involve multiple tasks and require different coping activities rather than a single dimension.

The stages of change represent a key component of the TTM and describe a progression through which people pass as they change a behavior (DiClemente and Velasquez, 2002).

The stages of change are defined by six stages (Prochaska, DiClemente, and Norcross, 1992; Miller and Rollnick, 2002; Prochaska and DiClemente, 1986 cited in Beckham, 2003). First, in the *pre-contemplation stage*, the person is not currently considering change. Drinkers are unaware of difficulties arising from alcohol use and will only tend to seek treatment when coerced. Second, in the *contemplation stage*, the individual undertakes a serious evaluation of considerations for or against change. Drinkers are typically ambivalent about their behavior, seeing reasons for change and not to change. Third, planning and commitment are secured in the *preparation stage*. Drinkers prepare to move from contemplation into the action phase. They may have already attempted to cut back or stop use on their own. In the fourth stage, during the *action stage*, drinkers' plans for change are formally implemented and their drinking pattern is interrupted by a plan of action chosen by the individuals. In this stage, drinkers make the specific behavioral change. If successful, action leads to the fifth stage. In the fifth stage, drinkers who are continuing through the change process start to achieve personal goals in the *maintenance stage*. The drinker's work is to maintain and sustain long-term change. The final stage, the *relapse stage*, is viewed as normal and is identified by drinkers who have relapsed or are starting to lapse. After a return to alcohol use, individuals usually revert to an earlier stage, more often to some level of contemplation. The goal of this stage is to assist the drinker in renewing his or her commitment for change and to reenter the motivational cycle. These stages appear to be applicable to the larger process of behavior change, whether that change occurs with or without the help of a therapist, an intervention, or a treatment program. The overview of the stages of change (The National Institute of Drug Abuse [NIDA] cited in Texas A&M University, 2010) are presented in Figure 1.

Figure 1

Overview of the stages of change
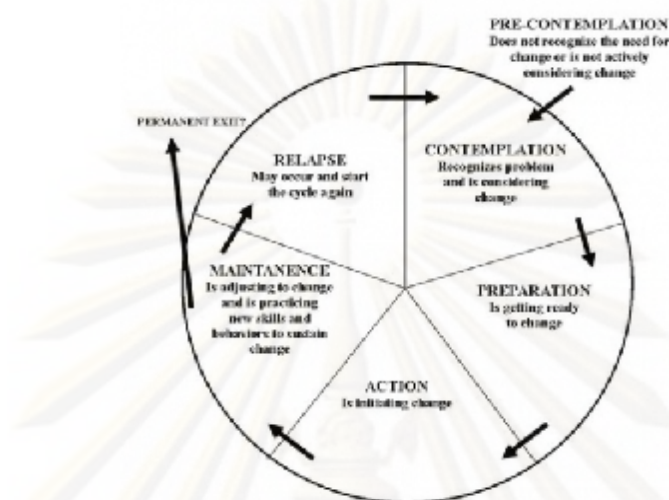
Individuals move through being unaware or unwilling to change the problem, considering the possibility of change, becoming determined and prepared to make the change, and finally, taking action and sustaining or maintaining that change over time. Motivational interviewing is a good tool in assisting individuals to accomplish the various tasks required to transition from the precontemplation stage to the maintenance stage. However, moving through the stages of change requires effort and energy for thinking, planning, and implementing (Miller and Rollnick, 2002). Miller and Rollnick (2002) believe that each person possesses a powerful potential for change. They stated that the most obvious connection between motivational interviewing (MI) and the stages of change is that MI is an excellent counseling style to use with clients who are in the early stages. The counselor facilitates clients to examine their own behaviors and consequences through a collaborative approach, in which the counselor evokes the person's intrinsic motivation and resources for change. The philosophical underpinnings of motivational interviewing are consonant with respect to the client's process of change (Miller and Rollnick, 2002). Therefore,

MI tailors interventions for undergraduate student drinkers so that they can make needed changes to their drinking behaviors by reducing alcohol consumption and the harms associated with excessive drinking.

A peer-drinking group brief motivational intervention (PD-GMI) was developed based on TTM, harm reduction, and a group motivational interviewing styled approach. The assumption underlying MI is that reduction of alcohol consumption improves when the clients have high motivation to change their drinking behavior. In addition, the motivation should come from the clients themselves rather than another's attempt to impose change (Darunee Phukao, 2006). The spirit of MI is to present a collaborative rather than confrontational or authoritative way of being with the client. The principle of a MI style is known as "DARES," which stands for Develop discrepancy, Avoid argumentation, Roll with resistance, Express empathy, and Support self-efficacy. 'Develop discrepancy' means change is motivated by a perceived discrepancy between present behavior and important personal goals or values. This often involves identifying and clarifying the person's own goals and values with which the behavior may conflict. 'Avoid argumentation' refers to the client presenting the arguments for change, rather than the counselor. 'Roll with resistance' includes involving the person actively in the process of problem solving. It is assumed that the person is a capable and autonomous individual, with important insight and ideas for the solution to his or her own problems. 'Express Empathy' means an empathic counselor seeks to respond to a person's perspectives as understandable, comprehensible, and valid. The attitude underlying this principle of empathy is properly termed "acceptance." Ambivalence is accepted as a normal part of human experience and change. Self-efficacy is a key element in motivation for change. 'Support self-efficacy' refers to enhancing the client's confidence in his or her capability to cope with obstacles and to succeed in change. There are five specific methods that are useful throughout the process of

motivational interviewing. These skillful methods are known as "OARSE," which consist of Open-ended questioning, Affirmative, Reflective listening, Summarization, and Elicit change talk (self-motivating speech). The first four (OARS) are derived largely from client-centered counseling, which emphasizes helping people explore their ambivalence and clarifying reasons for change. The fifth method (E) is more clearly directive and is specific to motivational interviewing. It is designed to resolve motivational issues that inhibit positive behavior change. This skillful clinical method can be easily learned (Miller and Rollnick, 2002; Pichai Saengchamchai, 2006; Darunee Phukao, 2006). The structure of this intervention is simple. Trained university personnel can deliver this intervention in a short period of time to reduce alcohol use and consequences for undergraduate students. The conceptual framework for this study is presented in Figure 2.

Figure 2
The conceptual framework in this study
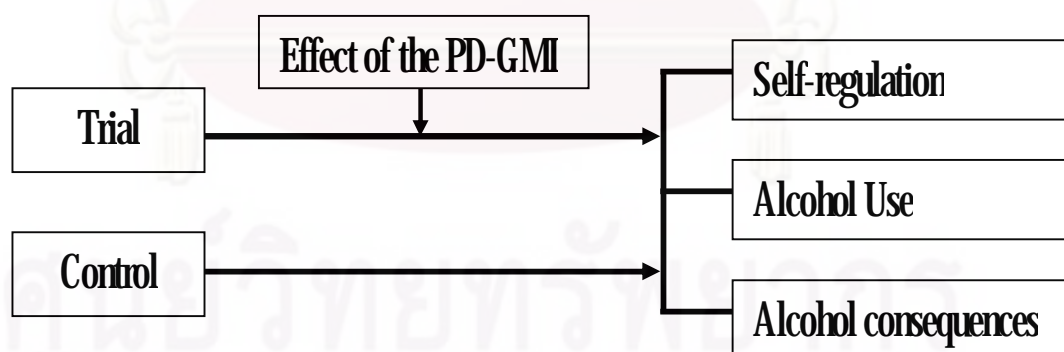
Definition of Terms

A peer-drinking group brief motivational intervention (PD-GMI) is an intervention based on TTM, harm reduction, and a group motivational interviewing styled approach using a brief intervention process. The researcher developed this intervention to (1) increase the awareness of risks associated with hazardous/harmful alcohol consumption; (2) enhance students' motivation to change their drinking behaviors; and (3) encourage harm reduction strategies during episodes of alcohol consumption. All undergraduates in the intervention are in a peer-drinking group who are friends and peer-drinkers (i.e. drinking during social gatherings).

Usual practice is the usual services in a university provided by the staff. Undergraduate students walk-in and phone to get services about reducing alcohol use and it adverse consequences via one-to-one or group counseling.

Undergraduate students are Thai male young people aged 18 to 24 years attending universities full-time for a bachelor degree in Nakhon Si Thammarat and Phatthalung Province, Southern Thailand. All participants have reported alcohol consumption during the current academic year, which has been assessed by Alcohol Use Disorders Identification Test (AUDIT). Their self-rating scores were between 1 and 40.

Consequences associated with alcohol use are a variety of negative life events undergraduate students experience as the direct result of alcohol consumption based on Rutgers Alcohol Problem Index (RAPI).

CHAPTER II

LITERATURE REVIEWS

The review of the literature in this chapter is organized into five major parts. The first part is concerned with alcohol use and drinking behaviors in young adult people. The second part is related to adverse consequences associated with alcohol use in undergraduate students. The third part covers factors associated with alcohol use and its adverse consequences in undergraduate students. The fourth part focuses on prevention and treatment strategies to reduce alcohol consumption and its adverse consequences on university campuses. The fifth part concerns concepts in the application of the motivational interviewing intervention.

Alcohol Use and Drinking Behaviors in Young Adult People

Currently, young adult people, especially university/college students who use alcohol, are viewed as a significant public health problem. Alcohol research has been more intensively studied and widely discussed with this age group in particular in the past decade (Dowdall and Wechsler, 2002). Most countries set a minimum age limit at which drinking and/or the purchase of alcohol becomes legally permitted. This may or may not coincide with the age requirement for the majority of other activities necessitating a certain assumed maturity standard (such as voting, entering the military, driving, or getting married). Where such limits are set, the range in age for legal alcohol purchasing and consumption is between the ages of 16 and 25 (Stimson et al., 2007). In this review, alcohol use and drinking behaviors in young adult people is expanded to include alcohol and the definition of one standard drink, drinking patterns, instruments for assessing alcohol consumption, and intervention for drinking levels.

1. Alcohol and definition of one standard drink

Alcohol is ethyl alcohol (C_2H_5OH) or ethanol, produced by the fermentation of yeast, sugars, and starches. It is an intoxicating ingredient found in beer, wine, and distilled spirits or liquor (i.e. gin, rum, vodka, and whisky). Alcohol is a relatively simple chemical substance which is rapidly absorbed through the gastrointestinal tract. It enters the blood stream by passing from the stomach through the pyrolic sphincture and into the small intestine. Unlike food, it does not have to be digested before reaching the bloodstream. Within two or three minutes of the first sips of an alcoholic drink, alcohol can be detected in the bloodstream. The maximum blood-alcohol concentration is usually reached about one hour after consumption. Alcohol is a licit drug that is a central nervous system (CNS) depressant. It is a toxic substance in terms of its direct and indirect effects on a wide range of body organs and systems. The psychoactive properties of alcohol contribute to changes in mood, cognition, and behavior. Three important mechanisms explain alcohol's ability to cause medical, psychological, and social harms including (1) physical toxicity, (2) intoxication, and (3) dependence (Alcohol and Mental Health Policy Section, 2002; Alcohol and Public Policy Group, 2003; Centers of Disease Control and Prevention [CDC], 2008).

In practice, alcohol content varies among different beers, wines, and distilled spirits. The International Center for Alcohol Policies (ICAP) (1998) stated that the concept of a standard drink, from the public health perspective, was introduced as a means of advising the public whether they were drinking within a reasonable threshold in order to avoid potential harm. Interpretations differ across countries of how much alcohol is contained in one standard drink. Unit size measurements for a standard drink range from the equivalent of 8 grams of ethanol in the United Kingdom to 19.75 grams of ethanol in Japan. In Austria, for instance, a Trinkeinheit, or a drink unit, is the equivalent of 12 grams of ethanol for beer or wine or 6 grams of ethanol for spirits. These definitions are largely dependent on the

accepted and prevailing practices in different countries. In the United States, all states have adopted 0.08% as the legal limit for operating a vehicle for drivers aged 21 years and older. However, drivers under the age of 21 are not allowed to drink and drive with any alcohol in their system. Additionally, the Department of Health and Human Services (DHHS), CDC (2010) uses the Dietary Guidelines for Americans to recommend and define drinking in moderation as having no more than one drink per day for women and no more than two drinks per day for men. For Thai people, one standard drink should be considered in the definition of safe drinking levels of drinking per hour, containing roughly 12 grams of ethanol for both Thai men and women with blood alcohol concentrations below 0.05% or 50 mg/dL. In addition, Thai men and women should not drink more than one standard drink per hour: approximately, one can of regular beer (330 mL.) or 50 mL. of a distilled spirit (Veeravan Lekskulchai and Somdee Rattanawibool, 2007).

In this study, the definition of one standard drink was the equivalent of 12 grams of ethanol. Standard drinks are useful for the implementation of drinking guidelines and for the dissemination of messages to the general population, but they are also used as a research tool for quantifying drinking levels and for describing the drinking patterns of individuals (ICAP, 1998).

2. Drinking patterns

The Alcohol and Mental Health Policy Section, Australian Government (2002) articulated that the patterns and styles of alcohol use help to characterize and assess drinking behavior. These ways of describing alcohol use also give an indication of the reasons why people are drinking and an indication of the context of their drinking. It is useful to identify patterns and styles and attach them to the individual's potential problems using the Thorley Model.

The Thorley model included five patterns of alcohol use. First, *experimental* is a short-term and non-patterned trial of alcohol. Alcohol use is usually motivated by curiosity, a desire to experience altered mood states or new feelings, or to achieve a rite of passage. This pattern is usually associated with young people in their early teens. Drinking may occur alone or with friends who are also experimenting. Second, *social recreational* is typified by consumption of alcohol on specific social occasions or at a regular, moderate level. It is motivated by social conventions or the desire for social interaction and there are usually no problems associated with consumption. Third, *circumstantial situational* is characterized by drinking to incur specific effects or in response to particular situations. This may be drinking to relieve stress or boredom or to escape from emotional pain or other problems. Fourth, *an intensive* is a more severe need to achieve relief from a persistent problem or stressful situation. The final pattern, *compulsive dependence* is defined by high alcohol consumption on a regular (daily) basis over a significant period of time, with the subsequent result of the body's inability to function without alcohol. The physical process of dependence is known as neuroadaptation and involves the development of tolerance to alcohol and the presence of withdrawal effects if drinking stops.

The Alcohol and Mental Health Policy Section, Australian Government (2002) also stated that the styles of alcohol use are considered in conjunction with the patterns. The styles of alcohol use include maintenance, episodic, and intoxication. Maintenance drinking is defined as consumption at the same level over a period of time. Episodic drinking, (also referred to as binge drinking), is drinking in large amounts over a relatively short period of time. Intoxication drinking is best described as drinking to get drunk. This involves alcohol consumption to the point of significant or substantial effect on mood, cognition, and psychomotor function.

In the epidemiological literature, drinking behaviors and drinking levels are often defined in terms of a particular number of drinks. In addition, the ways in

which people consume alcohol is referred to as 'patterns of drinking.' CDC (2008) delineates the definition of *heavy drinking* for men as more than 2 drinks per day on average and more than 1 drink per day on average for women. The definition of *binge or harmful drinking* is defined as 5 or more drinks during a single occasion for men and 4 or more drinks during a single occasion for women. *Excessive drinking* includes heavy drinking, binge drinking, or both. *Alcohol abuse* is a pattern of drinking which results in harm to one's health, interpersonal relationships, or ability to work. Manifestations of alcohol abuse include the following five criteria. By using criteria this means someone has to have all five in order to achieve the term "alcohol abuse." If they do not have all five, then they do not qualify for alcohol abuse." The five criteria include (1) failure to fulfill major responsibilities at work, school, or home; (2) drinking in dangerous situations, such as drinking while driving or operating machinery; (3) legal problems related to alcohol, such as being arrested for drinking while driving or for physically hurting someone while drunk; (4) continued drinking despite ongoing relationship problems that are caused or worsened by drinking; and (5) long-term alcohol abuse can turn into alcohol dependence. *Alcohol dependence*, also known as alcohol addiction and alcoholism, is a chronic disease. The signs and symptoms of alcohol dependence include a strong craving for alcohol, continued use despite repeated physical, psychological, or interpersonal problems, the inability to limit drinking, physical illness when one stops drinking, and the need to drink increasing amounts to feel its effects.

Strunin (2001) utilized qualitative research methods and ethnographic, open-ended interviewing to more accurately capture drinking patterns among adolescent students, ranging in age from 14-23 years in the United States. The goal of this interview was to elicit the beliefs, behaviors, and interactions of the adolescents from their point of view, within their own personal and cultural context. The results indicated several characteristics of their drinking patterns, including (1) *lifetime use* (whether they had ever used alcohol), (2) *general drinking experience*

(acknowledgment of drinking experiences prior to or including the past six months, month, week), and (3) *current drinking activity* (acknowledgement of drinking in the past six months, month, week). There were also differences indicated in drinking behaviors according to varying contexts and situations.

The Alcohol and Mental Health Policy Section, Australian Government (2002) also stated that the drugs people use and the way they use them change over time. As people age, their alcohol consumption patterns and the way in which they drink usually change. Generally, speaking, most people consume more alcohol in the 17 to 25 year-old age range. Thereafter, most people begin to decrease their overall consumption levels and become regular drinkers rather than drinking in episodic patterns.

3. Instruments for assessing alcohol consumption

The instruments for assessing alcohol consumption in young adults are divided into two groups, including (1) alcohol consumption measures and (2) screening measurements for problem drinking;

3.1 Alcohol consumption measures

All four measures have been commonly used with adults, college students, and adolescents in alcohol research. Most have been used with clinical and healthy drinker populations and have evaluated both males and females (Fishburne and Brown, 2006; Sobell and Sobell, 2008).

3.1.1 Quantity-Frequency measure (QF)

The QF is based on work by Cahalan and Cisin (1968 cited in Fishburne and Brown, 2006) and is used to determine self-reported alcohol use. These methods inquired about average or typical consumption patterns, usually over a specific period of time. They generally provided reliable information about total

consumption (quantity) and the number (frequency) of drinking days. Participants responded to questions concerning their alcohol use during the past 30 days. QF methods provided a quick and easy estimate when information needs were limited to a rough estimate of the total amount consumed or of the total number of drinking days in an interval, or if time was at a premium and knowledge of atypical drinking was not needed.

3.1.2 Lifetime Drinking Measures

Measures of lifetime drinking structurally parallel QF methods because they ask about average quantities and average frequencies of drinking; however, they assess either an entire drinking career or a lengthy period of time, usually more than the past year. These measures take about 20-30 minutes to complete. They provided an overall picture of respondents' alcohol consumption rather than a detailed account. These measures were advantageous when a longer assessment interval was needed, such as when assessing drinking patterns from adolescence through adulthood, or over a selected time period in the distant past.

3.1.3 Form 90

Form 90 was developed by National Institute on Alcohol Abuse and Alcoholism (NIAAA) (1999) for Project MATCH (Matching Alcoholism Treatments to Client Heterogeneity). It was created to generate baseline and follow-up information. Besides collecting daily drinking information for the 90 days prior to the last drink, Form 90 also collected data on other aspects of clients' functioning such as use of drugs, experience with medical and psychological treatments, and lifestyle activities (work, school involvement, and religious participation). The pattern, variability, and level of drinking was profiled using variables, such as the percentage of days drinking at different levels or the pattern of weekend/weekday drinking. However, Form 90 could not be used in some situations, such as mailed-out

questionnaires, surveys, and self-help interventions, because it required trained interviewers.

3.1.4 Alcohol TimeLine Follow-Back (TLFB)

The TLFB, a daily drinking estimation method, provides a detailed picture of a person's drinking over a designated time period. It has been extensively evaluated with a wide range of clinical and nonclinical populations and was chosen by the American Psychiatric Association as having met criteria for inclusion in their Handbook of Psychiatric Measures (American Psychiatric Association [APA], 2000 cited in Sobell and Sobell, 2008). Using a calendar, respondents provide retrospective estimates of their daily drinking over a specified time period. Several memory aids are used to enhance recall. Key date is served as anchors for reporting drinking standard drink conversion. Previous research findings indicted that the TLFB method was essential for assessing college students who often drink at keg parties and fraternity/sorority events where cans and bottles are typically not used. The TLFB can be administered in various formats including a face to face interview, paper and pencil, and computer. It takes 15 minutes to complete the TLFB for a 90-day period and about 30 minutes for a 12-month period.

The TLFB has been shown to have good psychometric characteristics while assessing a variety of drinker groups and it generates variables that provide a wide range of information about an individual's drinking such as pattern, variability, and magnitude of drinking. The method is recommended for use when relatively precise estimates of drinking are necessary, especially when complete pictures of drinking days, such as high and low risk days, is needed. A discussion of the TLFB results with the client is used to point out triggers to use, high-risk situations, and relapse periods. Repeated administrations of the TLFB, beginning with assessment, continuing through the course of treatment, and throughout follow-up, produces a continuous profile of changes in drinking patterns.

The TLFB is used in treatment as an advice-feedback tool. For example, using the information provided by a client on the TLFB, a personalized feedback summary that includes group norm comparisons of the person's drinking in the past year, as well as health risk indicators and the cost of drinking, is prepared for use in enhancing a client's motivation and increasing commitment to change. Ample evidence supports the test-retest reliability and validity of the TLFB when used to assess alcohol use in college populations.

3.2 Screening for problem drinking

3.2.1 Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT was developed by the WHO (2001) as a screening tool but has also been used widely in a variety of research and epidemiological studies. The AUDIT differs from other self-report screening tests in that it is based on data collected from a large multinational sample. It also uses an explicit conceptual-statistical rationale for item selection, emphasizes identification of hazardous drinking rather than long-term dependence and adverse drinking consequences, and focuses primarily on symptoms occurring during the recent past rather than on a comprehensive history. It is a 10-item questionnaire with three main areas assessed: 3 questions on the amount and frequency of drinking, 3 questions on alcohol dependence, and 4 on problems caused by alcohol. Each of the questions has a range of responses which are scored on a range between 0 and 4. The total possible score is 40 and takes under 2 minutes to administer. The AUDIT is not a diagnostic assessment, rather it is an interpretive and indicative tool.

The AUDIT is linked to an eventual decision-making process that includes brief intervention for heavy drinkers and a referral for specialized treatment for patients who show evidence of more serious alcohol involvement. Populations appropriate for a screening program using the AUDIT include primary care, emergency rooms, surgery, psychiatric patients, and college students.

3.2.2 CAGE

The CAGE questionnaire is a brief 4-item, relatively non-confrontational questionnaire for detection of alcoholism, usually phrased as 'have you ever.' Its focus is to delineate past or present alcohol problems. It was designed to be a screening instrument rather than a diagnostic instrument and it is an effective screening tool for alcohol abuse and dependence. This instrument is limited by the fact that it might not be adequately sensitive to accurately identify individuals' suffering from short-term problems. A common criticism of the CAGE is that it is not gender-sensitive. Women screened who were problem drinkers were less likely to screen positive than men. Also, it identified alcohol dependent persons but does not identify binge drinkers (Ewing, 1984; Larimer and Cronce, 2002).

In this study, Alcohol Use Disorders Identification Test (AUDIT) was selected as the measurement for assessing alcohol consumption and for screening problem drinking. The Alcohol TimeLine Follow-Back (TLFB) was used as the alcohol consumption measure during the intervention process as an advice-feedback tool to enhance students' motivation to change. Both were selected because the instruments have been confirmed as effective, valid, and reliable by research studies that strongly recommend using these two measurements to ensure more accurate data collection in college students and adults.

4. Intervention for drinking levels

Using the AUDIT, the alcohol screening and brief intervention approach described in this study offers a simple way to provide the client with an appropriate intervention, based upon the level of risk. The following describes the four score categories and risk levels in the AUDIT, including interventions connected to these scores (WHO, 2001; Alcohol and Mental Health Policy Section, 2002).

4.1 AUDIT scores between 0 and 7

This score generally indicates low-risk drinking. Although no formal intervention is required, alcohol education is appropriate for the following reasons: (1) it contributes to the general awareness of alcohol risks, (2) it may be effective for clients who have experienced past problems but who have already reduced their drinking levels or whose circumstances may have change, and (3) it is effective for those clients who have minimized the extent of their drinking on the AUDIT questions.

4.2 AUDIT scores between 8 and 15

Scores in this level are likely to be recorded by a significant proportion of clients. They indicate alcohol use in excess of the low-risk guidelines. Persons scoring in this level generally drink at risky or hazardous levels and are at moderate risk of alcohol-related harm. However, this level may also include clients experiencing actual harm and low levels of dependence. Generally, simple advice focused on the reduction of hazardous drinking and information on the alcohol guidelines and risk factors is an appropriate intervention.

4.3 AUDIT scores between 16 and 19

This level indicates risky drinking and problems related to higher levels of consumption. This score indicates a pattern of consumption that is already causing harm to the drinker who may also have symptoms of dependence. Persons scoring in this level are generally called high-risk or harmful drinkers. Clients in this level are engaged through a combination of simple advice, brief counseling, and continued monitoring. Follow-up and referral, in some cases, may be necessary.

4.4 AUDIT scores of 20 or above

Scores in this level indicate that the person falls into the high-risk category of alcohol-related harm. Clients scoring in this level are likely to be alcohol dependent and require more intensive intervention. Service providers should note that dependence varies along a continuum of severity and is clinically significant within lower AUDIT scores. Clients in this level need to be referred to specialist services to consider withdrawal, pharmacotherapy, and other more intensive treatments.

The findings of a preliminary focus group study of three peer-drinking groups in Thai male undergraduate students (n=25) found that each peer-drinking group consisted of students in all levels of risk (low-risk, hazardous, harmful, and dependence drinkers) using AUDIT scores. All of them responded that they are more likely to drink together, than in a smaller subgroup. In addition, low-risk drinkers tend to take care of their friends who drink heavily (such as being the driver, helping them get into bed, taking off dirty shirts) (Wipawan Pensuksan, 2008).

Thus, the most effective assessment and management of alcohol consumption in all levels of risk for undergraduate students needs to be feasible, practical, and suited to the real context.

Alcohol Adverse Consequences in Undergraduate Students

Young people's inexperience with alcohol and their inability to gauge and stick to their own limits increase the potential risk for harm. Among young people, extreme drinking is strongly correlated with other risk taking (Stimson et al., 2007).

Stimson et al., (2007) reviewed drinking outcomes among young people and found that drinking outcomes were divided into 2 patterns: (1) chronic outcomes and (2) acute outcomes. Chronic outcomes in young people are similar to the mental and physical health problems adults experience through excessive drinking. However,

there is evidence that heavy and abusive drinking patterns may take a particularly high toll on young people. This risk is largely due to a heightened sensitivity to alcohol as a result of developmental changes that occur during childhood and adolescence, potentially resulting in greater risk of physiological damage (Spear, 2004 cited in Stimson et al., 2007). Moreover, the developing brain is particularly sensitive to disruption by heavy drinking, which affects various regions of the brain, including those involved in learning and memory. There has been considerable concern regarding drinking by young people and the potential to later develop alcohol dependence and its related problems. Alcohol problems and mental health problems often coincide (such as depression, anxiety, and bipolar disorders). Acute outcomes, especially injuries, are often the result of single isolated episodes of heavy drinking, intoxication, or of repeated harmful drinking patterns. Young people make up a significant proportion of those injured or killed in road traffic crashes, often involving alcohol.

Frequent intoxication is more prevalent among undergraduate students. The link between intoxication and adverse consequences is clear and strong, especially for violence, traffic causalities, and other injuries (Alcohol and Public Policy Group, 2003). The incidence of driving after drinking alcohol is highest among those aged 21 to 24 years, as are alcohol-related fatal crashes, of which 33% have a blood alcohol content [BAC] of 0.08 g/dl or greater (Usdan et al., 2005). According to Stimson et al. (2007) intoxication has also been linked with risky sexual behavior, unwanted pregnancy, sexually transmitted diseases, sexual assault, and date rape. Risk of violence is also increased particularly where drinking or heavy drinking occurs in public venues.

Park and Grant (2005) studied the determinants of positive and negative consequences of alcohol consumption in 181 college students. The positive consequences included feeling relaxed, feeling better about one's self, more fluid expression, fitting in with people, and performing certain tasks better. The negative

consequences included getting hurt or injuries from an accident, unplanned sexual activity, arguing with friends, academic struggles (such as hangovers or missing class), regretting something, and acquiring legal problems (such as property damage). These have been well documented in both convenience and national samples. Findings from this study indicated that men reported encountering more negative consequences than women, particularly missing class and getting in trouble with police. They reported that higher levels of alcohol consumption were related to higher levels of both negative consequences and positive consequences.

Alcohol is highly correlated with adverse consequences for undergraduate students. Moreover, data shows that alcohol consumption, especially heavy drinking episodes, not only affects those engaged in the drinking, but also indirectly effects others in the drinkers' social and community life (Stimson et al., 2007).

Factors Associated with Alcohol Use and Its Adverse Consequences in Undergraduate Students

The factors associated with alcohol use and its consequences in undergraduate students are divided into two major categories: internal influences and external influences. Each factor is described as follows:

1. Internal influences

These influences include demographic variables, pre-college alcohol use, and self-regulation.

1.1 Demographic variables

1.1.1 Genetic

Stimson et al., (2007) states that much research has been conducted on genetic underpinnings of increased sensitivity to alcohol and predispositions to alcohol dependence. Currently, over 60 genes have been found to respond in a significant way to alcohol and may be involved in mediating dependence. Genetic factors also underlie why some individuals who are not alcohol dependent experience greater adverse outcomes from drinking than do others. These predisposing factors may manifest themselves as low tolerance to alcohol and differential metabolism of alcohol through the enzymes alcohol dehydrogenase (ALH) and aldehyde dehydrogenase (ALDH).

More than 95% of acetyldehyde, which is produced in the liver by oxidation of ethanol, is further oxidized to acetate in the liver. Aldehyde dehydrogenase (ALDH) is primarily responsible for this conversion. There is a clear association between the aldehyde dehydrogenase 2 (ALDH2) genotypes and alcohol-use disorders, flushing symptoms (facial flushing and associated symptoms, such as palpitation, perspiration, nausea, and occasionally including vomiting and headaches), drinking patterns, and drinking problems. The presence of the ALDH2*2 allele is found to decrease the risk for heavy drinking and alcohol dependence in the Thai population. This means that Thai men with the ALDH2*2 allele drink less alcohol, less frequently, and have a smaller number of alcohol-related problems than those without ALDH2*2 (Sawitree Assanangkomchai et al., 2003).

1.1.2 Gender

Gender plays an important role in shaping drinking behavior. In general, men are more likely than women to drink and they are more likely to consume a greater amount. This difference between sexes is in part due to social and cultural factors and the relative acceptability of drinking for men versus women.

Among drinkers, men drink heavily to the point of intoxication or in large quantities per occasion, much more often than women. Gender also makes a difference in how alcohol is consumed because of physiological differences in the ability to metabolize alcohol's components (Stimson et al., 2007). The difference in body composition, and therefore, the resulting difference in metabolism rates also encourage an increased capacity for consumption in men. In addition to the differences in overall frequency and quantity of use, men tend to engage in higher-risk drinking more often than women, including more heavy episodic drinking stints (Werner and Greene, 1992, Li et al., 1998, Wood et al., 2004, cited in Borsari, Murphy, and Barnett, 2007). It is also very likely that gender differences in drinking behavior are modified by cultural and not just biological factors (Wilsnack et al., 2000 cited in Wilsnack et al., 2009). There is no evidence that gender differences vary by class year or in other words, first-year students show the same gender differences as older college classes (Borsari, Murphy, and Barnett, 2007).

1.2 Pre-college alcohol use

Experience with alcohol is another influence on how people drink. Borsari, Murphy, and Barnett (2007) conducted a literature review on influences on college drinking in first-year students. The research found that a high level of pre-matriculation drinking consistently predicts first-year alcohol use. A large percentage of freshmen come to college with established drinking patterns, which are generally maintained or increased during the first year. Many students who were light drinkers and abstainers in high school also increase their drinking after matriculation. Specifically, between 40-50% of students who enter college as non-drinkers start drinking during their freshman year and 25% of students who did not engage in heavy episodic drinking adopted this style of use during their first year.

The first year is a unique transition period in which the student establishes a college identity and social network. Students leave their homes, parents, and old

friends when they enter universities/colleges. These changes lead to new freedoms and the desire to develop new relationships with roommates, classmates, academic seniorities, academic advisors, lecturers, and university staff, (especially dormitory staff). Alcohol is sometimes used to facilitate making new friendships during this transition period. This pattern of use for social facilitation continues, even as they become upper classmen and begin to build friendships with the first year students (White, 2006; Wipawan Pensuksan, 2008).

1.3 Self-regulation

The term self-regulation is often used to refer broadly to efforts by humans to alter their thoughts, feelings, desires, and actions in the pursuit of such higher goals. Self-regulation consists of two basic proponents. First, it is a dynamic motivational system of setting goals, developing and enacting strategies to achieve those goals, appraising progress, and revising goals and strategies accordingly. Second, self-regulation is concerned with the management of emotional responses, which are seen as crucial elements of the motivational system and are conceived of as intricately linked with cognitive processes (Carver and Scheier, 1998, Cameron and Leventhal, 2003, Vohs and Baumeister, 2004, cited in De Ridder and De Wit, 2006).

Individuals motivated to meet goals incongruent with alcohol use are more compelled to employ self-regulatory strategies. Studies from Adams, Stephens, and Williams (2000, cited in Williams, 2003) demonstrate that higher use of self-regulatory strategies correlates with lower drinking quantity and frequency among college students. Brown et al. (1999, cited in Neal and Carey, 2005) reports the results of several studies, including those with treatment, community, and college samples, further demonstrating the relationship between generalized self-regulation and alcohol use and its problems. Across these samples, lower scores on the self-regulation inventory were associated with heavier drinking, such as more drinking days, larger number of drinks per occasion, and the likelihood of alcohol related

problems. In college samples, self-regulation was also negatively correlated with impulsivity and engaging in multiple risky behaviors. Such evidence suggests that self-regulation skills do differentiate among persons with varying levels of alcohol involvement.

2. External influences

External influences are divided into two categories including peer influences and environmental factors that may influence alcohol consumption among undergraduate students.

2.1 Peer influences

There is no doubt that peers and friends play an important role in drinking habits in young people (Stimson et al., 2007). The effects of peers on adolescent and young adult alcohol use operate either through peer modeling, peer pressure, peer approval, or the selection of alcohol-using peers or through some combination of these factors. Undergraduate students' drinking practices tend to be highly influenced by peers (Neighbors et al., 2008). A student who regularly goes out to drink with his friends might well be motivated to drink heavily because of the approval that he gets from his peers for doing so, rather than the pleasure that he gets from the pharmacological effects of the alcohol. However, if he continues his pattern of heavy drinking, he might develop a physical dependence on alcohol, thus bringing that physiological variable to play a greater role in his drinking (Cox and Klinger, 2004).

Alcohol is also used as a coping mechanism. Many students report that they use alcohol to relieve stress. Most of heavy drinking events occur in reaction to a period of high stress, such as examinations, homework demands, or the end of the semester. The findings from a primary focus group study to assess drinking patterns in Thai male undergraduate students indicated that all of the participants preferred to

drink with peer-drinkers because of the positive feelings that came with them. They are able to talk about everything and feel free to show feelings or share opinions when they are drunk. The study also found that they consumed alcohol with their peers in both positive and negative events. The examples of positive events include the occasional parties, such as birthday parties, graduation parties, and new-year's parties. In the United States in particular, the 21 st birthday marks a transition to the legal age for drinking. Therefore, alcohol consumption is often considered a rite of passage during this event (Neighbors, Walters, and Lee, 2007 cited in LaBrie, Migliuri, and Cail, 2009). The examples of negative situations include having relationship problems with their friends, especially a girl friend or close friend, and impairment at a test or exam. These are only a few reasons they persuade their peers to drink (Wipawan Pensuksan, 2008).

2.2 Environmental factors

The environmental factors that influence alcohol consumption among undergraduate students include culture, noncommercial alcohol, availability of alcohol, pricing, and density of bars and other drinking outlets near campus (Usdan et al., 2005). The role and significance of alcohol varies across cultures, as do tolerance of drinking, its social impact, and the acceptability of drinking among different groups, including women, older adults, and young people (Heath, 1995, 2000, MacAndrew and Edgerton, 1969, cited in Stimson et al., 2007). Noncommercial alcohol is used widely around the world. The production and consumption of such beverages are steeped in tradition and culture. Home-produced beverages are not subject to the same controls as commercially produced alcohol. Contamination with methanol, heavy metals, bacteria, and other undesirable ingredients is a common cause of poisoning and health problems (Stimson et al., 2007). Previous studies have found high density drinking locations to be good predictors of heavy alcohol use and alcohol-related problems among adult and college students at high risk for drinking

and driving. The vast majority of drinking prior to impair driving takes place either at a bar or at a friend's house (Usdan et al., 2005).

From the literature reviewed, many causes of alcohol use in college students are related to factors that cannot be controlled, such as genetics, gender, pre-college alcohol use, and the availability of alcohol, whereas the factors that can be controlled are self-regulation and peer influences.

The Prevention and Treatment Strategies to Reduce Alcohol Consumption and Its Adverse Consequences on Campuses

This study revealed that interventions are organized into three broad categories: (1) educational/awareness, (2) cognitive/behavioral skills-based, and (3) motivational/feedback-based. The other alcohol prevention interventions are based on a harm reduction approach. Lastly, intensive treatment and medication are used for students with more serious alcohol-related problems.

Larimer and Cronce (2002, 2007) conducted a review and assessed the existing body of literature on individually focused prevention and treatment approaches for college drinking. Their results are as follows:

1. Educational/awareness programs

Alcohol education is heavily targeted at young people. It has been implemented in a variety of settings from schools and university campuses to less formal channels involving a range of key individuals and influences that shape young people's behavior (Stimson et al., 2007). These programs are based on the assumption that students' misuse of alcohol or other substances is due to a lack of knowledge regarding the negative effects of these substances, and if they were more educated, they would choose to decrease their use. Three relatively distinct types of

education programs include (1) information/knowledge programs, (2) values clarification programs, which are designed to help students evaluate their goals and values, and (3) normative re-education programs, which provide accurate normative information to students about peer drinking rates and problems as well as modifying students' attitudes about alcohol consumption.

This study suggests that continuing to pursue approaches based solely on informative or awareness models is a poor use of resources on college campuses. Values clarification approaches, such as On Campus Talking about Alcohol might be efficacious, but they have not been evaluated in randomized trials and are time and resource intensive. Educational programs based on normative reeducation approaches are less costly and might hold more promise, but they have yet to be widely tested.

2. Cognitive/behavioral skills-based programs

Cognitive-behavioral skills-training programs are a relatively newer addition to the college drinking prevention repertoire than are educational or awareness approaches. These programs range from specific alcohol-focused skills training to general life skills training with little or no direct relationship to alcohol or alcohol-specific skills (i.e. expectancy challenge interventions, self-monitoring/self-assessment), multi-component alcohol skills training, or general life skills training/lifestyle balancing.

Several cognitive-behavioral interventions, including specific, global, or multi-component skills-training approaches, have been associated with behavioral changes in drinking. Research designs evaluating these approaches have generally been stronger than those utilized with educational programs, but methodological limitations are present due to small sample sizes and relatively high attrition rates in some samples.

3. Motivational/feedback-based approaches

These prevention programs include brief motivational interventions and mailed or computerized motivational feedback. Taken as a whole, the results continue to provide support for brief motivational interventions for college drinking.

To date, alcohol prevention interventions based on a harm reduction approach are well represented in the area of preventing drinking-related harms amongst college students. Most harm reduction approaches are inexpensive, easy to implement, and have a high impact on the individual and community health (IHRA, 2009). Neighbers et al., (2006) provides a brief overview of harm reduction and individually focused alcohol prevention strategy efforts in the United States. This study found that harm reduction is a practical approach to preventing alcohol-related harm. Evidence is mounting that this approach is more effective than traditional abstinence-only approaches to prevention. Neighbers et al., (2006) argue that the message of harm reduction is not anti-abstinence. For individuals who choose to drink or who may choose to drink in the future, harm reduction approaches to prevention provide a balanced view and practical skills for reducing alcohol harms that zero-tolerance approaches do not provide. LaBrie, Migliuri, and Cail (2009) report that a harm-reduction birthday card intervention (the 21 st birthday card program) not only reduced alcohol consumption, but most likely contributed to reductions in the alcohol-related negative effects associated with extreme Blood Alcohol Concentration (BAC) levels. They found that this type of intervention was easy to carry out, replicate, and was inexpensive. However, this intervention might only have some effect on students' decisions to drink in relatation to celebratory alcohol consumption. Moreover, this study found that many traditional school-based prevention programs that focus on disseminating negative information have been found to be ineffective. According to the Alcohol and Public Policy Group (2003), school-based alcohol education programs have been found to increase knowledge and

change attitudes toward alcohol and other substances, but actual substance use remains unaffected.

ALAC (2004) report that a number of strategies for reducing alcohol-related harm among tertiary students, especially those aged between 18 and 24 years, have been evaluated. Most are from the US and a few of the tertiary education programs in New Zealand have been evaluated as well. These strategies include (1) controlling alcohol supply, such as restricting hours of sale, banning or partially banning alcohol, restricting who can buy alcohol, reducing outlet density, and adjusting institution policies, and (2) reducing demand, such as applying the social norms strategy to harm reduction programs, changing the drinking environment, education and persuasion, and fostering healthy settings. The intensive treatment, which is an incorporation of a residential or intensive outpatient component into on-campus treatment services, might be an effective means of maintaining academic connections for students with more serious alcohol-related problems.

Medication, such as naltrexone, has been shown to be effective in increasing drinking latency and in reducing overall consumption. This finding suggests that opioid blockers might be a useful adjunct to treatment for college students wishing to moderate consumption.

In Thai universities/colleges, campus health centers always promote alcohol educational/awareness programs and provide alcohol and substance prevention counseling services by trained staff and student peers. Unfortunately, there are no data available to evaluate these strategies in reducing alcohol consumption and its adverse consequences.

Concepts in the Application of the Motivational Interviewing Intervention

The following literature presents the relevant theories and concepts for application in this study: brief intervention (BI), motivational interviewing (MI), brief motivational intervention (BMI), and group-based motivational interviewing (GMI).

1. Brief intervention (BI)

Brief interventions have proved to be a cost-effective strategy for reducing both risky alcohol consumption and alcohol-related problems. They are defined as any therapeutic or preventive consultation of short duration, lasting between one and five sessions, undertaken either by a health-care professional, general practitioner, or nurse (Healther, 1996, Wutzke et al., 2001, Aalto et al., 2001, cited in Vasilaki, Hosier, and Cox, 2006). However, brief interventions are not suitable for everyone. Heather (1995 cited in Vasilaki et al., 2006) concludes that three target populations are appropriate candidates for brief interventions: (1) individuals who drink above guidelines for safe drinking but who are not considered alcoholic, (2) problem drinkers with low or moderate levels of dependence, and (3) people with high levels of dependence who are not reached by conventional treatment services.

FRAMES represents the key elements of brief intervention. It stands for feedback, responsibility, advice, menu of options, empathy and self-efficacy. They are described as follows: *feedback* on the harmful effects of excess alcohol in individuals; an emphasis on clients' *responsibility* and freedom of choice in maintenance of drinking behaviors; the need for clear, non-directive *advice*, given as recommendations and not contingencies; a *menu* of alternatives for clients; the need for therapists to be *empathic*, warm, and supportive while using client-centered skills of reflective listening; and an emphasis on clients' *self-efficacy* and perceived optimism. Goal setting, follow-up, and timing also have been identified as important

to the effectiveness of brief intervention (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 1999). It has been suggested that these components impact motivation to change by setting into motion a process whereby an individual becomes more interested in changing his or her drinking (Hayes, 2006).

2. Motivational Interviewing (MI)

Motivational interviewing, a therapeutic style, is a non-judgmental and client-centered counseling method designed to increase intrinsic motivation to change by exploring, highlighting, and helping clients resolve ambivalence about change (Miller and Rollnick, 2002). Burke et al., (2003) found that MI is equivalent to other active treatments and more beneficial than no treatment or placebo controls relative to reducing alcohol use in their meta-analytic review. MI is frequently used in the context of brief interventions.

3. Brief Motivational Interviewing (BMI)

Brief motivational interviewing is well supported in alcohol treatment literature and shows promise as an intervention for college students. This style of intervention has been successfully used in the context of secondary and tertiary prevention intervention programs (Michael et al., 2006). A major attraction to brief intervention includes its cost-effectiveness. It has the potential to reach a large number of clients, is less time consuming than conventional methods, and is conducted by non-specialist workers (Heather, 1989 cited in Tucker et al, 2002). The style and skillful methods within the interventions are effective in motivating drinkers to change within a limited number of sessions.

4. Group-Based Motivational Interviewing (GMI)

Walters, Ogle, and Martin (2002) stated that group treatment is less expensive and serves more clients with fewer providers than individual treatment does. The

presence of the group also provides participants with additional opportunities for role playing and social support. However, they found that the previous studies provided little evidence for the efficacy of GMI among heavy-drinking college students. GMI is more a process of following the concerns of the group and reflecting points of individual and group discrepancy to enhance motivation.

In this study, the researcher is interested in conducting a peer-drinking group brief motivational intervention, using a harm reduction and group motivational interviewing styled approach, and utilizing a brief intervention process. These approaches are the main intervention components that are thought to provide more efficacious interventions for reducing alcohol use and adverse consequences in Thai male undergraduate students. The peer-drinking group format with a same-sex group is an effective method to discuss specific issues and bolsters participation that generates collective energy towards change-talk and actual behavior change. The previous studies have found that the group motivational interviewing intervention appears to successfully change and be an efficient and effective means of reducing heavy drinking among both male and female college students (Michael et al., 2006; LaBrie, Thompson et al., 2007; LaBrie et al., 2008). The ability to plan, evaluate, and execute goal-directed activities comprise the functions of self-regulation. Cognitive, behavioral, and environmental self-regulation strategies foster behavior under the triadic view of reciprocal determinism.

Summary

The review of literature in this study shows that alcohol consumption is one of the most serious public health problems due to health and social consequences. Drinking has been and continues to be the norm on most university campuses. Alcohol consumption among this population is a concern because younger drinkers

are more vulnerable to adverse outcomes, in which both chronic and acute outcomes threaten the physical and psychological well-being of the students. These problems affect the individuals, families, and society in the long term. Important factors contributing to the reduction of alcohol use and its adverse consequences in young men include peer-drinking group influences, harm reduction strategies, and group motivational interviewing intervention.

After a considerable amount of research studies have been conducted in Thailand on the subject, no data has been available to confirm that traditional programs are effective in reducing alcohol consumption and its consequences. Other western countries have found that school-based alcohol education programs have been found to increase knowledge and change attitudes toward alcohol and other substances, but actual substance use remains unaffected. They suggest that peer influences, harm reduction, and group brief motivational interviewing interventions are effective for reducing alcohol use and its consequences among college students. However, to date there have been no studies that combine these concepts for reducing alcohol consumption and its consequences in college students.

Considering the enormous costs and effects of alcohol consequences (such as health burdens in long term care and mortality and disability associated with traffic accidents), early screening in alcohol use disorders and early alcohol prevention intervention for alcohol consumption and reducing its adverse consequences is the best and most cost-effective approach. The efficaciousness of a peer-drinking group brief motivational intervention must be tested. It is the researcher's prediction that this model will help reduce alcohol consumption and its adverse consequences in Thai male undergraduate students.

CHAPTER III

METHODOLOGY

This chapter describes research methodological approaches to test the peer-drinking group brief motivational intervention (PD-GMI) in comparison to the usual practice. The topics consist of research design, population and sample, settings, instrumentation, protection of human subjects' rights, data collection and intervention procedures, strategies to minimize threats to internal validity, and data analysis.

Research Design

A quasi-experimental, pretest-posttest design was conducted, consisting of two student groups with assessments at baseline and two follow-up periods following the pretest, beginning in September 2008 and ending in December 2008. The experiment evaluated the efficacy of the peer-drinking group brief motivational intervention for reducing alcohol consumption and its adverse consequences in Thai male undergraduate students who consume alcohol.

Population and Sample

The target population in this study refers to Thai male undergraduate students in Southern Thailand who consume alcohol. To be eligible for participation in the study, Thai male undergraduate students had to be first identified for alcohol use by a self-report of drinking behaviors. They were interviewed to make sure that they had consumed alcohol with same-peer drinkers at least one time in the previous three months. They also had to be 18 to 24 years of age with no history of a diagnosis of or treatment for alcohol dependence. Students were excluded if they were currently

enrolled in another behavioral intervention program. Using these criteria, six eligible students in one peer-drinking group chose not to join the intervention.

1. Sample size

The sample size was approximated based on statistical power analysis at a significance level of 0.05 and a desired power of 80%. One study consisted of a single-session group motivational enhancement approach for the prevention of heavy drinking among first-year college women using a randomized design. This study revealed that the effect size (d) of a main effect for intervention in reducing binge episodes at the two follow-up points (4 and 10 weeks) was 0.42 (LaBrie et al, 2008). The effect size on F-test on the mean in the analysis of variance and covariance was computed by using the following equation (Cohen, 1988):

$$N = \frac{n_{05}}{400 f^2} + 1$$

Whereas n_{05} is the necessary sample size to detect $f = 0.05$ for a (significant level) = 0.05, with power = 80%; the sub table of Table 8.4.4 illustrates $n_{05} = 1571$ (Cohen, 1988).

f is the standard deviation of standardized means translated from d (ES index for the t-test), which is equal to $d/2$ (Cohen, 1988). Thus, $f = 0.42/2 = 0.21$.

Substituting in the equation:

$$N = \frac{1571}{400(0.21)^2} + 1 = 90.06$$

Using this equation, the target sample size for each arm in the study is 90. Over-sampling by at least 20% is undertaken in order to reduce the threat of sample

attrition. The final study sample is 220 Thai male undergraduate students with 110 students in each group.

2.   Sample selection

Participants were recruited from among students enrolled in two public universities and who reported alcohol consumption during a three month period using the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT was distributed in university common areas such as student centers and dormitories which sought to identify students who report current regular alcohol consumption. Prior to distributing the AUDIT, one university was specified as the institution where participating students would receive the PD-GMI, while the other was specified as the institution where participating students would be members of the control group. For the intervention, we selected male students who screened positive for alcohol consumption during the current academic year and those who reported drinking with a steady group of friends (i.e. peer-drinking group). A total of 115 students were assigned to the PD-GMI group. For the control group, we selected a total of 110 male students who reported alcohol consumption and those who reported drinking with a steady group of friends to serve as the control group.

Settings

This study included Thai male undergraduate students from two universities to participate in this study. Students from one university underwent intervention and students from the other university were the control group. Using two universities took into account the researcher's concern about diffusion that may occur from interventions if the subjects of the two groups study in the same university.

The universities held similar and different characteristics. Both of them were public universities located in Southern Thailand, were autonomous universities, had

multidisciplinary fields of study, and reported similar incidence of alcohol use in Thai male students. Both universities had dormitory staff that provides basic counseling services to students and each had similar counseling systems. However, the two universities differed in the number of undergraduate students with the control university having about 2,000 students enrolled, and the intervention university having about 6,000 students.

Instrumentation

The research instruments in this study comprise five groups. They include: 1) a demographic data form; 2) intervention process measures that comprised TimeLine Follow-Back, Readiness to Change scores, and Self-efficacy scores; 3) outcome measures that comprised AUDIT scores, Alcohol-Related Problems scores, and Drinking Self-Regulation Strategies scores; 4) a group brief motivational intervention; and 5) the usual practice that is broken down as follows:

1. The demographic data form. This form was developed by the researcher based on reviewed literature and information from focus group discussions that identified relevant information pertaining to alcohol consumption among male undergraduate students. It included personal information according to age, age at first of alcohol use, religious affiliation, grade point average, program of study, academic seniority, number of friends living as dormitory roommates, perceived adequacy of their income, problems experienced due to alcohol consumption, and smoking behaviors.

2. Intervention process measures

This study used five assessment measures in the intervention process, which are described as follows:

2.1 TimeLine Follow-Back (TLFB) (Sobell and Sobell, 1992) was developed to assess alcohol consumption in several dimensions of drinking. The examples of data collecting in this method were total drinks per month, drinking days per month, average drinks consumed per occasion in each month, maximum drinks consumed at one time in each month, number of binge drinking events, and problematic behavior related to alcohol consumption. It incorporated recall-enhancing techniques that resulted in reliable information. The TLFB method uses important events, calendars, and other memory prompts to enhance recall. This method was used to aid students with assessing their drinking behaviors over the three month period before the intervention.

2.2 The Readiness to Change Ruler (RTCR) is a self report measure based on Prochaska and Diclemente's stages of change model, which assesses individual's motivation to change drinking behavior. This measure asks participants to rate how ready they are to change their drinking behavior on a ruler from 0 ("I've never needed to change my drinking.") to 10 ("My drinking has changed; I now drink less than before.") This Change Ruler performs equivalently to standard multiple item questionnaires in assessing readiness to change drinking behaviors (LaBrie et al., 2005 cited in LaBrie, Thompson et al., 2007).

2.3 The Self-efficacy Ruler (SR) is a self report measure used to assess the perception of participant's self-efficacy to change drinking behaviors. This measure asks participants to rate themselves with a percentage of how capable they think they are to change their drinking behavior on a ruler from 0% ("I do not have the capability to change my drinking.") to 100% ("I'm perfectly capable of changing my drinking.")

2.4 Perception of Intervention Satisfaction Ruler (ISR) is a self report measure used to assess the perceptions of the students at immediate post-intervention regarding their satisfaction of the PD-GMI in reducing alcohol consumption and its adverse consequences. This questionnaire was designed by the researcher. This measure asks participants to rate what they think about the PD-GMI on a ruler from 0 ("I am not satisfied with this intervention,") to 10 ("I am completely satisfied with this intervention.")

2.5 Perception of the Commitment Card's Usefulness Ruler (CUR) is a measure designed by the researcher. It was used to assess the perceptions of the students regarding the usefulness of their commitment card in reducing alcohol consumption and its adverse consequences among male undergraduate students who received the PD-GMI at 3 months post-intervention. This measure asks participants to rate what they think about the benefit of the commitment card on a ruler from 0 ("I think the commitment card is not useful for me,") to 10 ("I think it is absolutely useful for me.")

3. Outcome measures

This study used three assessment outcome measures to evaluate the efficacy of intervention. Participant self-reporting alcohol consumption, alcohol related-problems, and self-regulation strategies assessed at baseline, as well as 1 and 3-month post-intervention is as follows:

3.1 Alcohol Use Disorders Identification Test (AUDIT) was developed by the WHO (2001). This study used the Thai version translated by Sawitri Assanangkornchai. AUDIT has 10 items that assess frequency of drinking and consumption-related behavior problems. The three main areas of questioning to elicit specific information about patterns of use and potential for dependence are

questions 1-3: quantity and frequency of use, questions 4-6: possible dependence on alcohol, and questions 7-10: alcohol-related problems. Total scores range from 0 to 40 with 1-7 indicating low risk drinking, 8-15 indicating hazardous drinking, 16-19 indicating harmful drinking, and 20-40 indicating alcohol dependence. The AUDIT has shown an internal consistency of 0.80 in a college sample and acceptable levels of predictive validity with college students (Fleming, Barry, and MacDonald, 1991 cited in Neal and Carey, 2004) and 0.77 in heavy-drinking college students (Neal and Carey, 2004). In this study, Cronbach's alpha was 0.79.

3.2 The Rutgers Alcohol Problem Index (RAPI) (White and Labouvie, 1989 cited in Fearer, 2004). The RAPI is used to assess negative consequences associated with alcohol consumption. The participants are asked to indicate on a 5-point Likert scale from 0 (never) to 4 (more than 10 times) of how often they had experienced each of 25 presented items representing alcohol's role in personal, social, and academic functioning in the past six months. Low scores reflected fewer alcohol consequences and higher scores indicated more consequences experienced by participants. The RAPI has strong psychometric properties. The coefficient alpha was 0.91 (Martens et al., 2005 cited in Kulesza, 2008), indicating excellent internal consistency. This scale has also been shown to be a reliable discriminator between clinical and non-clinical samples of college age drinkers demonstrating evidence of construct validity (White and Labouvie, 1989 cited in Fearer, 2004). Cronbach's alpha in this current study was 0.94.

3.3 The Drinking Self-Regulation Strategies Questionnaire (DSRQ) assesses participants' use of specific strategies to avoid drinking altogether or to avoid drinking heavily. This study used the modified version of DSRQ. Fearer (2004) modified the original measure based on data from the pilot study and a previous study. The modified version consisted of 38 items including cognitive strategies,

behavioral strategies, and environmental strategies. Each item is scored with a range of 0-4 with higher scores indicating more drinking self-regulation strategies. The average of all items comprised DSRQ scores used in analyses because there were no differential hypotheses for subscales (Williams, 2003). The scales were found to evidence good internal consistency, with alpha coefficients ranging from 0.81-0.91. In this study, Cronbach's alpha was 0.95. Measurement tools were used in this study, which are shown in table 1.

Table 1

Measurement tools in this study

	Measurement tools	Objective	Scale	Reliability Coefficient (this study)
	The demographic data form	To assess personal information	No	-
In the intervention process	1. TimeLine Follow-Back (TLFB)	To assess alcohol consumption per day and per month and alcohol-related situations	No (calendar technique)	-
	2. The Readiness to Change Ruler (RTCR)	To assess motivation to change drinking behaviors	On a ruler from 0-10	-

Table 1

Measurement tools in this study *(continued)*

	Measurement tools	Objective	Scale	Reliability Coefficient (this study)
In the intervention process (cont.)	3. The Self-efficacy Ruler (SR)	To assess the perception of participant's self-efficacy to change drinking behaviors	On a ruler from 0-100%	-
	4. Perception of Intervention Satisfaction Ruler (ISR)	To assess the perception of participant's satisfaction of the intervention	On a ruler from 0-10	-
	5. Perception of the Commitment Card's Usefulness Ruler (CUR)	To assess the participant's perception of the usefulness of the commitment card	On a ruler from 0-10	-
Outcome measures	1. Alcohol Use Disorders Identification Test (AUDIT)	To assess quantity and frequency of drinking and consumption-related behavior problems	0-40 (total scores)	0.79
	2. The Rutgers Alcohol Problem index (RAPI)	To assess negative consequences associated with alcohol use	0-4 (average scores)	0.94

Table 1

Measurement tools in this study *(continued)*

	Measurement tools	Objective	Scale	Reliability Coefficient (this study)
Outcome measures (cont.)	3. Drinking Self-Regulation Strategies Questionnaire (DSRQ)	To assess participants' use of specific strategies to avoid drinking	0-4 (average scores)	0.95

4. Group brief motivational intervention

The peer-drinking group brief motivational intervention was constructed and developed through these steps:

4.1 The researcher reviewed the literature of alcohol interventions found in Thailand and analyzed the existing interventions in order to find useful strategies to respond to existing interventions' limitations.

4.2 The researcher conducted a literature review of the theoretical and empirical literature relating to Western alcohol intervention approaches among college students, for which there was evidence of effectiveness in identifying the status of evidence-based alcohol intervention, determinants, processes and pathways involved in alcohol consumption, and related behavioral change, including measurement tools relating to those processes and pathways.

4.3 The researcher developed three preliminary focus group discussions to explore Thai male undergraduate students' perceptions and opinions (n=25) about alcohol consumption in order to find useful qualitative data to develop an intervention tailored to the needs and issues for this specific population.

4.4 The researcher developed an overview of the model and structure for intervention to reduce alcohol consumption and its adverse consequences among Thai male undergraduate students based on steps 4.1-4.3. These conclusions can be summarized in Figure 3.

Figure 3

Overview of the model and structure of the intervention in college students
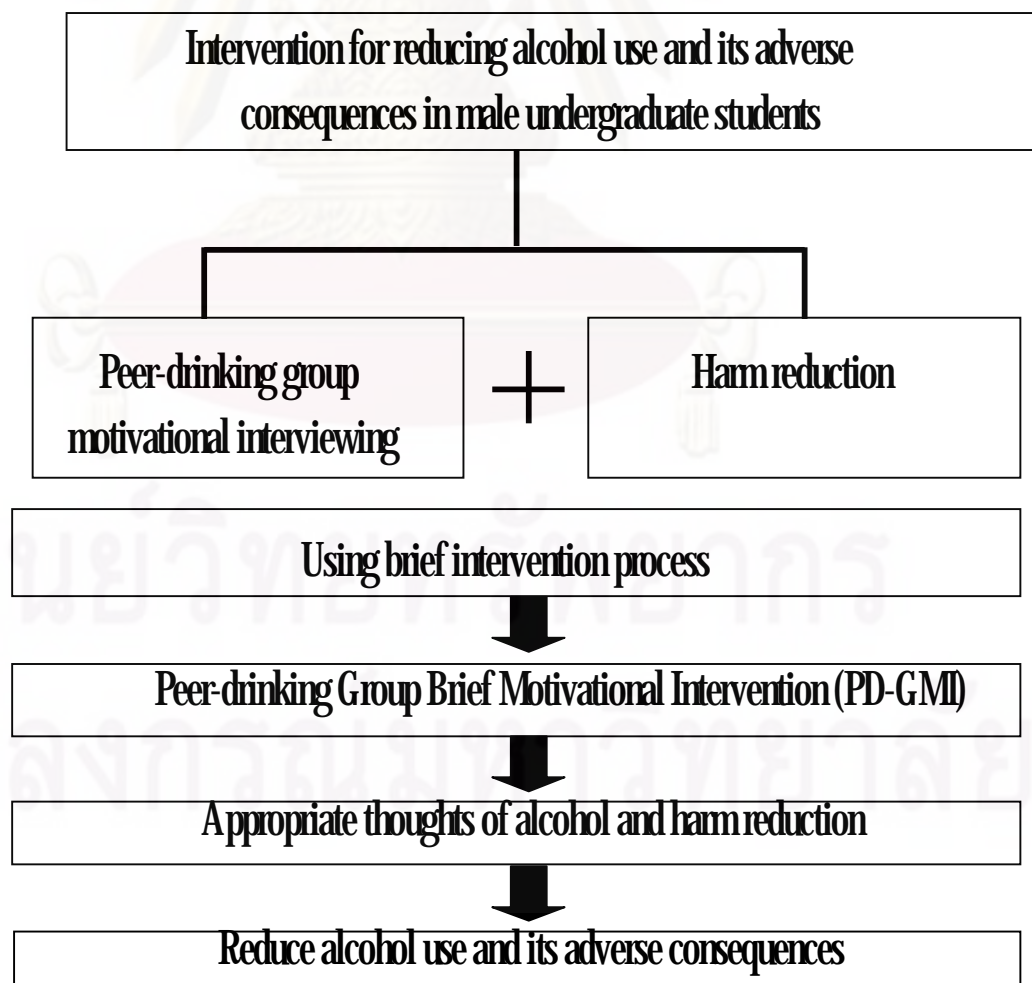
4.5 The intervention was examined by 5 experts in order to correct and improve content and the structure of the intervention. They consisted of: a psychiatrist and a psychiatric nurse who are experts in brief interventions, motivational interviewing (MI), and cognitive behavioral therapy (CBT); a social policy maker who is an expert in childhood issues; and two Thai male undergraduate students who have direct experiences in reducing alcohol use, of which one is an ex-addict and the other is in the process of quitting drinking.

4.6 The researcher tested the intervention with one peer-drinking group consisting of Thai male undergraduate students (n=10) in a public university in Southern Thailand and revised it before actual utilization with the participants in the present study.

The process for developing a peer-drinking group brief motivational intervention can be summarized in Figure 4.

Figure 4

The process of developing a peer-drinking group brief motivational intervention

Review the evidences in motivational interviewing and brief intervention

↓

Develop the intervention based on evidence

↓

Discussion with Thai male undergraduate students providing knowledge and developing strategies for reducing alcohol use and its consequences

↓

Five experts examine the intervention

↓

Test and revise the intervention
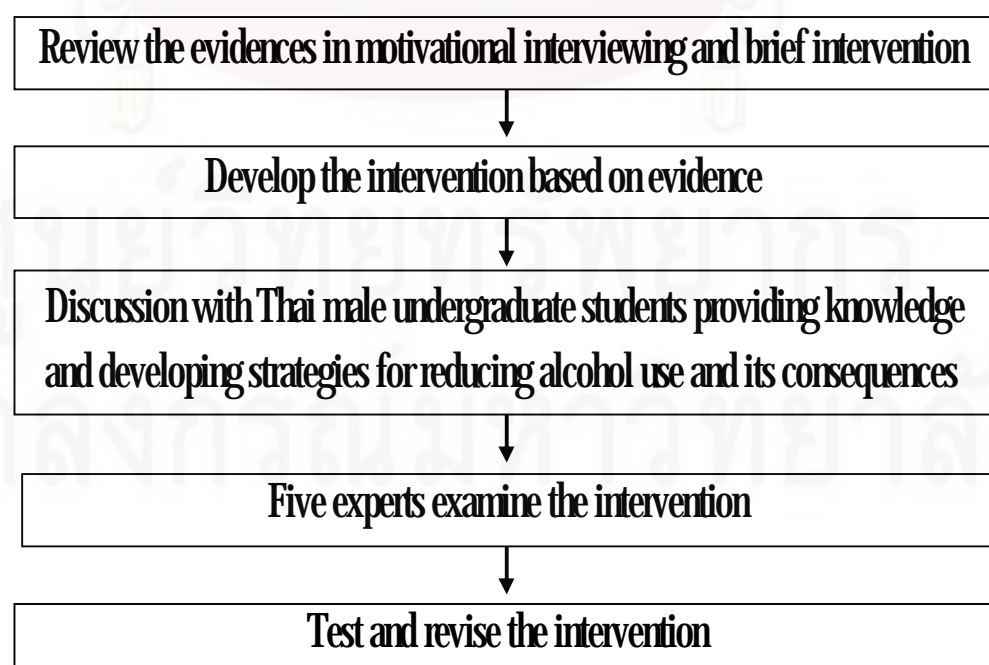
5. Usual practice

Usual practice is a single individual or group session providing counseling to students with potential alcohol problems from university staff in the university's health care center. This provides students with problem-focused counseling aimed at helping and encouraging students to solve their problems.

Protection of Human Subjects' Rights

Ethical approval was obtained from the Ethical Clearance Committee on Human Rights Related to Researches Involving Human Subjects, Walailak University, Thailand, before collecting data.

To begin, the researcher was permitted to meet the university presidents of the two participating universities: in Thasala District, Nakhon Si Thammarat Province and in Paphayoum District, Phatthalung Province, Southern Thailand. The university presidents were informed of the details of the study and the benefits and risks to the students. A letter asking for permission to collect data was drafted by the Graduate School, Chulalongkorn University and was submitted to the university presidents.

After human subject approval and permission from the university presidents was granted, Thai male undergraduate students were screened for alcohol use with the Thai translated Alcohol Use Disorders Identification Test. Those students who used alcohol with same peer-drinkers at least one time in the previous three months, had an AUDIT self-reporting score of 1-40, and were willing to participate in the study were selected.

The researcher initially made an appointment with prospective participants to provide a personal introduction and to inform them of the procedures of the study. The prospective participants were invited to participate in the study and were assured that all information would be kept confidential, including the activities in the

program and the persons involved in the program. They were also informed of the benefits and risks that are a part of the process of the study and also that they are free to withdraw from the study at any time if they wished to do so. In addition, they also formally consented by signing a written consent form prior to participation in the study. All participants received non-financial (health information) and financial incentive for transportation reimbursement (approximately USD 3.00).

Data Collection and Intervention Procedures

The researcher approached the students who met all inclusionary criteria and who were willing to make a commitment to the study. Everyone underwent an informed consent procedure by signing a written consent prior to participation in the study. The research procedures are presented in Figure 5.

Figure 5

The research procedures

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┌─────────────────────────────────────────────┐
│              Eligible participant             │
└─────────────────────────────────────────────┘
                       │
                       ▼
        ┌─────────────────────────────┐
        │    Human rights protection   │
        └─────────────────────────────┘
                       │
         ┌─────────────┴─────────────┐
         ▼                           ▼
┌──────────────────────┐   ┌──────────────────────┐
│ Intervention group   │   │  Control group        │
│ (n=115)              │   │  (n=110)              │
└──────────────────────┘   └──────────────────────┘
         │                           │
         ▼                           ▼
┌──────────────────────┐   ┌──────────────────────┐
│ Pre-intervention      │   │  Baseline             │
│ (baseline)           │   │  AUDIT, RAPI, DSRQ    │
│ AUDIT, RAPI, DSRQ    │   │                       │
└──────────────────────┘   └──────────────────────┘
         │                           │
         ▼                           ▼
┌──────────────────────┐   ┌──────────────────────┐
│ The PD-GMI            │   │  The usual practice   │
└──────────────────────┘   └──────────────────────┘
         │                           │
         ▼                           ▼
┌──────────────────────┐   ┌──────────────────────┐
│ 1 month post-         │   │  1 month follow-up    │
│ intervention          │   │  AUDIT, RAPI, DSRQ    │
│ (follow-up)          │   │                       │
│ AUDIT, RAPI, DSRQ    │   │                       │
└──────────────────────┘   └──────────────────────┘
         │                           │
         ▼                           ▼
┌──────────────────────┐   ┌──────────────────────┐
│ 3 months post-        │   │  3 months follow-up   │
│ intervention          │   │  AUDIT, RAPI, DSRQ    │
│ (follow-up)          │   │                       │
│ AUDIT, RAPI, DSRQ    │   │                       │
└──────────────────────┘   └──────────────────────┘
```
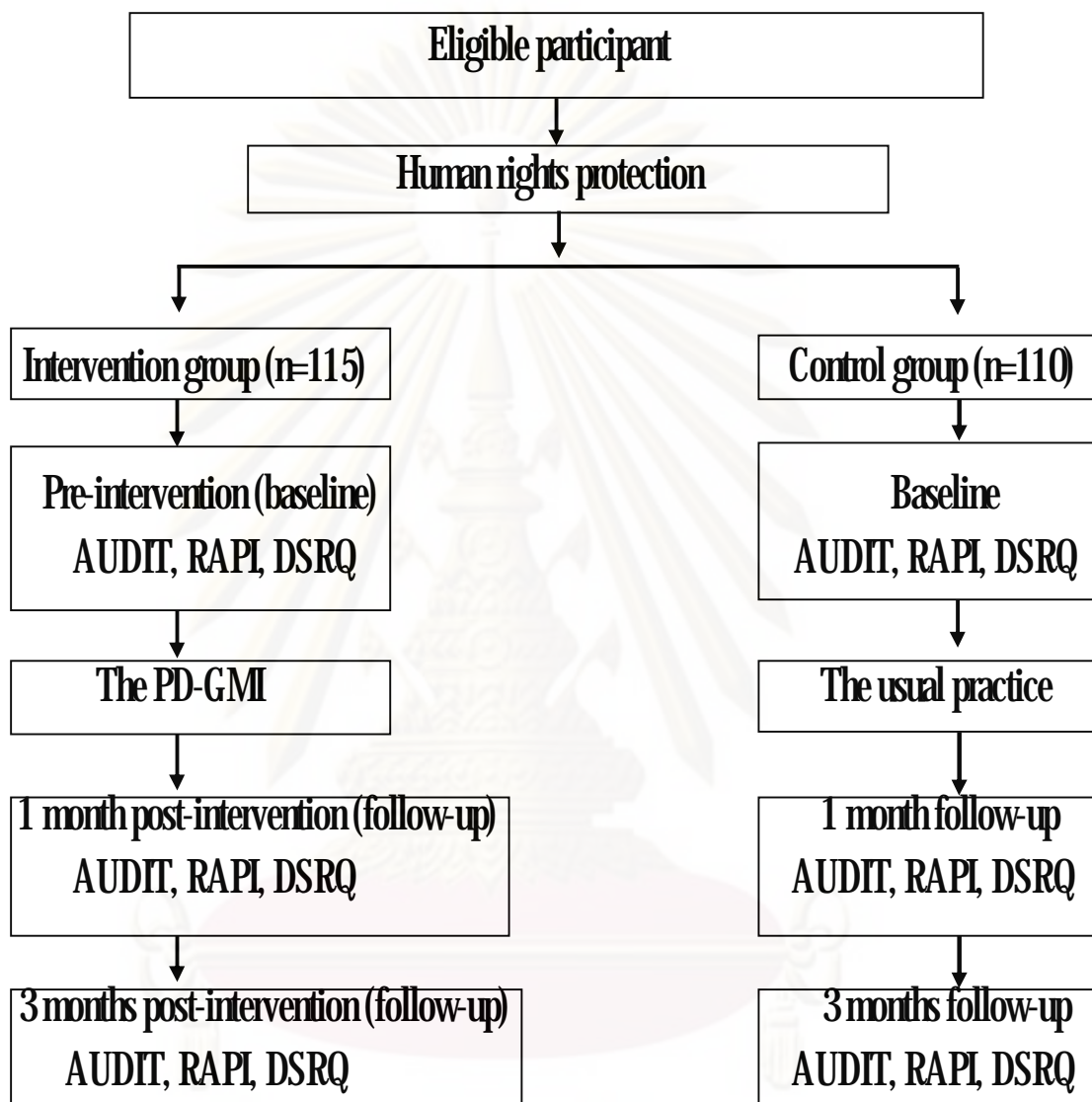
Assessment-only or control group

Students assigned to the control group (non-intervention group) were advised that study personnel would re-contact them after 1 and 3 months for follow-up data collection efforts.

PD-GMI group

The peer-drinking group brief motivational intervention (PD-GMI) was administered to students assigned to the intervention group. These two hours of alcohol intervention, which employs a menu of topics for discussion based on qualitative data from male undergraduate students in three focus group discussions (Wipawan Pensuksan, 2008) and a group motivational intervention program used in previous studies (Michael et al., 2006; LaBrie, Thompson et al., 2007; LaBrie et al. 2008), was administered to a total of 115 students in the intervention group. The intervention was administered after all baseline assessments were made. Groups of 5-8 students in the same peer-drinking group were invited to meet research personnel in a private room after completing the baseline interview. These small group meetings were led by a psychiatric nurse facilitator. The facilitator was the same sex as the students. He had received training in the motivational interviewing (MI) and cognitive behavioral therapy (CBT). He had extensive experience counseling for abuse treatment and general psychiatry. Prior to the start of the intervention, he was thoroughly educated in all of the topics of discussion.

Prior to the meeting for the intervention group session, the nurse facilitator provided each student with a TimeLine Follow-Back (TLFB) calendar that was used to aid students with assessing their drinking behaviors over the 3-month period before the intervention. Then the nurse facilitator provided each student with the Readiness to Change Ruler (RTCR) and the Self-efficacy Ruler (SR), which were used to evaluate students' self-efficacy and readiness for reducing alcohol consumption and its adverse consequences. Students were asked for permission to audio-tape record during the intervention session.

During the intervention session, students were invited to discuss the details of their drinking behaviors over the period of observation. Consequently, individual calendars were updated as a result of discussions with friends who were members of particular peer-drinking groups. Next, students were encouraged to engage in guided

discussion about how alcohol consumption contributes to physiological and neurobehavioral changes including addiction. They were also encouraged to examine their own alcohol consumption patterns and their experiences with implementing harm reduction strategies during episodes of alcohol consumption. Students were then guided through discussions that helped them explore the benefits (advantages) and costs (disadvantages) of their current drinking habits and the desirability of taking steps to curb problem drinking. Subsequently, the facilitator guided students through open discussions about peer-drinking group behaviors and group-level reasons for promoting safe alcohol consumption levels. These discussions included the identification and exploration of activities that may be used to facilitate the reduction of alcohol consumption personally and among their drinking-group peers.

Students were then encouraged to record their personal and peer-drinking group commitment, goals, and activities that they would undertake to curb their alcohol consumption in the personal card they had been given. The nurse facilitator provided each student with the Readiness to Change Ruler (RTCR) and the Self-efficacy Ruler (SR), which were used to evaluate students' self-efficacy and readiness for reducing alcohol consumption and its adverse consequences after the intervention. The Perception of Intervention Satisfaction Ruler (ISR) was also used to evaluate their perceptions regarding satisfaction of the intervention at immediate post-intervention. Lastly, students were reminded that study personnel would re-contact them within a month after the intervention and then again during the third month after the intervention. The Perception of the Commitment Card's Usefulness Ruler (CUR) was used to evaluate the students' perception regarding the usefulness of the commitment card at the third month after the intervention. The intervention procedures are presented in Figure 6.

Figure 6

The intervention procedures

| Groups of 5-8 students in the same peer-drinking group meet research personnel |

↓

| Thai male nurse facilitator provided each student with a TLFB calendar, RTCR, and SR prior to the meeting for the intervention group session |

↓

The PD-GMI session

Students were asked permission to audio-tape record during the intervention session

↓

Students discussed the details of their drinking behaviors

↓

Students discussed how alcohol consumption contributes to physiological and neurobehavioral changes including addiction

↓

Students examined their own drinking patterns and experiences with implementing harm reduction strategies during episodes of alcohol consumption

↓

Students discussed peer-drinking group behaviors and reasons for promoting safe alcohol consumption levels including the identification and exploration of activities used to reduce alcohol consumption and harm reduction strategies personally and among their drinking group peers

↓

| Each student recorded personal and group commitments, goals, and activities in the personal commitment card |

↓

| The facilitator provided each student with the RTCR and SR to re-evaluate self efficacy, readiness to change, and ISR to evaluate satisfaction of the intervention |

Strategies to Minimize Threats to Internal Validity

In order to minimize threats to internal validity, the participants were recruited from two universities that presented similar characteristics, such as being in the same area in Southern Thailand, having similar alcohol use problems, and having similar university policies. The selection of two universities for the intervention and control groups was due to the researcher's concern of diffusion threatening internal validity. If done at the same university, participants in the intervention and control groups may have influenced each other's scores and responses.

Mortality was also considered as a threat to internal validity, as the participants in this study would be monitored for changes of their behaviors over three months and might loss contact. Participants dropping out from the study also threatened the study's validity. Therefore, for this study, the sample was increased by at least 20% of the sample size calculation. Furthermore, to minimize the rate of participant loss and early drop out, several strategies were adopted in the study. They were as follows: (1) participants were given a reminder by either telephone or in person one or two days before their appointments and (2) if the participants failed to attend their scheduled appointments, the researcher immediately contacted them to reschedule as soon as possible.

Data Analysis

Data will be analyzed using the Statistical Package for Social Sciences (SPSS for Windows). Descriptive statistics, including means, standard deviations, frequencies, and percentages, will be computed to summarize demographic variables, alcohol use, alcohol-related problems, and drinking self-regulation scores separately. Differences between the intervention and control groups will be evaluated using

independent t-tests for continuous variables and Chi-square test statistics for categorical variables. Variables in which differences between the two groups approached statistical significance will be identified as potential confounders and will be included as covariates in the models. Group differences at each time point will be examined using analysis of covariance (ANCOVA) adjusting for confounders measured at baseline. Information from the audio-tape recorded during the intervention process will be analyzed using content analysis to gain more understanding about students' thoughts and perceptions in reducing alcohol consumption and its adverse consequences.

CHAPTER IV

RESULTS

This chapter focuses on the results of the study. The results are represented in four parts: (1) the subjects' characteristics, (2) the impact of the PD-GMI on outcome measures within each condition group, (3) the efficacy of intervention versus control condition, and (4) content analysis.

RESULTS

Subjects' characteristics

The subjects in this study consisted of Thai male undergraduate students with alcohol use (N=225), including the intervention group (n=115) and the control group (n=110). The mean age of the 225 student participants was 20.49 (SD = 1.33, min = 18, max = 25). The majority of participants were Buddhist (n = 215) and were in their first or second year of academic study (n = 150) in the Sciences and Health Sciences program (n = 190). Grade point average for most students ranged between 1 and 2.50 on a 4.0 scale (n = 163) and lived with their dormitory roommates (n = 206). The average age of their first use of alcohol was 15.3 (SD = 2.58, range 9 to 21). Most of these initial experiences were related to birthday parties (n = 77). The most common beverage participants first tried was beer (n = 151). The majority were non-smokers (n = 115).

Baseline characteristics of students in the two study groups are summarized in Table 2. Students in the intervention and control groups were similar with regards to age, age at first use of alcohol, religious affiliation, grade point average, number of friends living as dormitory roommates, and perceived adequacy of their income (all

p's > 0.05). The two groups did differ, however, according to their program of study, academic seniority, reported problems experienced due to alcohol consumption, and smoking behaviors (all *p*'s < 0.05).

Table 2

Subjects' demographic characteristics at baseline

Variables	Numbers (%)			P-value
	Total (N = 225)	Intervention Group (n = 115)	Control Group (n = 110)	
Age at First Use of Alcohol: mean (SD)	15.30 (2.58)	15.54 (2.29)	15.05 (2.84)	0.16
Age				
18-20	123 (54.67)	51 (44.3)	72 (65.5)	0.16
≥ 21	102 (45.33)	64 (55.7)	38 (34.5)	
Religious Affiliation				
Buddhist	215 (95.56)	110 (95.7)	105 (95.5)	0.94
Muslim	10 (4.44)	5 (4.3)	5 (4.5)	
Program of Study				
Sciences & Health Sciences	190 (84.44)	90 (78.3)	100 (90.9)	0.01
Technology & Social Sciences	35 (15.56)	25 (21.7)	10 (9.1)	
Academic Seniority				
First to Second year	150 (66.67)	66 (57.4)	84 (76.4)	0.01
Third year and above	75 (33.33)	49 (42.6)	26 (23.6)	
Grade Point Average				
< 2.5	163 (72.44)	88 (76.52)	75 (68.18)	0.16
≥ 2.5	62 (27.56)	27 (23.48)	35 (31.82)	

Table 2

Subjects' Demographic Characteristics at baseline *(continued)*

Variables	Numbers (%)			P-value
	Total (N = 225)	Intervention Group (n = 115)	Control Group (n = 110)	
Number of Friends Living as Dormitory Roommates				
1-3	201 (89.33)	95 (82.61)	106 (96.36)	0.82
More than 3	9 (4)	5 (4.35)	4 (3.64)	
Perceived Adequacy of Income				
Adequacy	205 (91.11)	104 (90.4)	101 (91.8)	0.72
Inadequacy	20 (8.89)	11 (9.6)	9 (8.2)	
Problems Experienced due to Alcohol Consumption in Past 6 Months				
Ever	81 (36)	57 (49.6)	24 (21.8)	0.001
No	144 (64)	58 (50.4)	86 (78.2)	
Smoking Behaviors				
Current	90 (40)	58 (50.4)	32 (29.1)	0.01
No	135 (60)	57 (49.6)	78 (70.9)	
Baseline Outcome Measures: mean (SD)				
AUDIT scores		12.33 (7.02)	9.55 (5.6)	0.01
RAPI scores		1.12 (0.45)	0.80 (0.32)	0.001
DSRQ scores		1.68 (0.59)	1.91 (0.66)	0.01
Perception of Intervention Satisfaction Ruler (ISR) * scores: mean (SD)		8.55 (1.21)		

Table 2

Subjects' Demographic Characteristics at baseline *(continued)*

Variables	Numbers (%)			P-value
	Total (N = 225)	Intervention Group (n = 115)	Control Group (n = 110)	
Perception of the Commitment Card's Usefulness Ruler (CUR) ** scores: mean(SD)		7.45 (1.76)		
Readiness to Change Ruler (RTCR)* scores: mean (SD)		a 5.28 (2.96) b 6.88 (3.6)		0.001
Self-efficacy Ruler (SR)* scores: mean (SD)		a 60.03 (26.48) b 71.54 (20.92)		0.001

Note. AUDIT: Alcohol Use Disorders Identification Test; RAPI: The Rutgers Alcohol Problem Index; DSRQ: Drinking Self-Regulation Strategies Questionnaire, *the intervention group only; a: before the intervention; b: immediately after the intervention; **at the third month post-intervention only

Impact of the PD-GMI on outcome measures within each condition group

Mean baseline AUDIT, RAPI, and DSRQ scores are summarized in Table 2 for students in the intervention and control groups respectively. Mean baseline AUDIT scores were higher for students in the intervention group compared with those in the control group (mean ± SD: 12.33 ± 7.02 vs. 9.55 ± 5.6, $t = 3.17$, 223 df, $p < 0.01$). Mean baseline RAPI scores were higher for students in the intervention group compared with those in the control group (mean ± SD: 1.12 ± 0.45 vs. 0.80 ± 0.32, t

= 6.11, 223 df, $p < 0.001$). Mean baseline DSRQ scores were lower for students in the intervention group compared with those in the control group (mean± SD: 1.68 ± 0.59 vs. 1.91 ± 0.66, $t = -2.80$, 223 df, $p < 0.01$). Mean Readiness to Change Ruler (RTCR) and Self-efficacy Ruler (SR) scores before and immediately after the intervention are also presented in Table 2 for students in the intervention group. Mean RTCR scores before the intervention were lower than after the intervention (mean± SD: 5.28 ± 2.96 vs. 6.88 ± 3.6, $t = -4.75$, 93 df, $p < 0.001$). Mean SR scores before the intervention were also lower than after the intervention (mean± SD: 60.03 ± 26.48 vs. 71.54 ± 20.29, $t = -7.48$, 93 df, $p < 0.001$). Effect sizes were calculated using Cohen's d to quantify the magnitude of difference in mean scores and to assess the practical significance of changes between before and immediately after the intervention. The analysis revealed that mean RTCR scores and mean SR scores had a 30.49% and 19.17% increase immediately after the intervention. The moderate effect sizes were found for RTCR ($d = 0.54$) and for SR ($d = 0.44$). Mean ISR scores at the end of the intervention were on a high level (mean 8.55, SD 1.21). Mean CUR scores at the third month after the intervention were also on a high level (mean 7.45, SD 1.76).

Table 3 (Figure 7) shows the mean baseline, 1 month, and 3 months post-intervention AUDIT, RAPI and DSRQ scores for the two study groups. Students in the intervention group had a 50.36% reduction in their mean AUDIT scores at 1 month post intervention and the large effect size was found to be lower (baseline mean 12.33 ± 7.02 vs. 1 month follow-up mean 6.12 ± 5.22, $t = 10.86$, 114 df, $p < 0.001$, $d = 0.87$). By the 3-month follow-up, the AUDIT scores among students in the intervention group were 61.15% lower than the values noted at baseline and the large effect size was also found to be lower (baseline mean 12.33 ± 7.02 vs. 3-month follow-up mean 4.79 ± 4.0, $t = 12.42$, 114 df, $p < 0.001$, $d = 1.06$). Students in the control group had significantly increased their drinking at the 3-month post-intervention follow-up. Their mean AUDIT scores at the 3-month post-intervention

were 7.54% higher than the values noted at baseline (baseline mean 9.55 ± 5.6 vs. 3-month follow-up mean 10.27 ± 5.3, $t = -2.52$, 109 df, $p < 0.02$, $d = 0.13$).

Students in the intervention group had a 41.96% reduction in their mean RAPI scores at 1 month post-intervention and the large effect size was found to be lower (baseline mean 1.12 ± 0.45 vs. 1 month follow-up mean 0.65 ± 0.26, $t = 12.40$, 114 df, $p < 0.001$, $d = 1.04$). By the 3-month follow-up, the RAPI scores among students in the intervention group were 42.86% lower than the values noted at baseline and the large effect size was also found to have lowered (baseline mean 1.12 ± 0.45 vs. 3-month follow-up mean 0.64 ± 0.21, $t = 11.96$, 114 df, $p < 0.001$, $d = 1.07$). However, students in the control group had a significant reduction of 10% in their mean RAPI scores at 1 month post-intervention (baseline mean 0.80 ± 0.32 vs. 1 month follow-up mean 0.72 ± 0.27, $t = 3.1$, 109 df, $p < 0.01$, $d = 0.25$). By the 3-month period of follow-up the RAPI scores among students in this group were 12.5% lower than the values noted at baseline (baseline mean 0.80 ± 0.32 vs. 3-month follow-up mean 0.70 ± 0.23, $t = 3.62$, 109 df, $p < 0.001$, $d = 0.31$).

With regards to the DSRQ scores, students in the intervention group had a 8.93% increase in their mean DSRQ scores at 1 month post-intervention and the small effect size was found to be higher (baseline mean 1.68 ± 0.59 vs. 1 month follow-up mean 1.83 ± 0.71, $t = -2.49$, 114 df, $p < 0.02$, $d = 0.25$). By the 3-month follow-up, the DSRQ scores among students in the intervention group were 14.88% higher than the values noted at baseline and the moderate effect size was found to be higher (baseline mean 1.68 ± 0.59 vs. 3-month follow-up mean 1.93 ± 0.77, $t = -3.79$, 114 df, $p < 0.001$, $d = 0.42$). Students in the control group had significant decreases by the 3-month follow-up: the DSRQ scores among these students were 8.90% lower than the values noted at baseline (baseline mean 1.91 ± 0.66 vs. 3-month follow-up mean 1.74 ± 0.66, $t = 2.4$, 109 df, $p < 0.02$, $d = 0.26$).

As seen in Table 4 (Figure 8), a larger proportion of students in the intervention group compared with students in the control group had AUDIT scores at

baseline that were consistent with alcohol dependence (AUDIT scores $\geq$ 20 for 15.7% of students in the intervention group vs. 3.6% of students in the control group). The table also summarizes changes in alcohol consumption patterns over the course of the study.

Table 3

Outcomes comparison within intervention and control groups

Variables	Intervention group (n = 115) Mean (SD)			Control group (n = 110) Mean (SD)		
	Time			Time		
		Post-intervention			Post-intervention	
	Baseline	1 month	3 months	Baseline	1 month	3 months
AUDIT Scores	12.33 (7.02)	6.12 (5.22)^a†	4.79 (4.0)^b†,^c†	9.55 (5.6)	10.14 (5.82)	10.27 (5.3)^b*
RAPI Scores	1.12 (0.45)	0.65 (0.26)^a†	0.64 (0.21)^b†	0.80 (0.32)	0.72 (0.27)^a‡	0.70 (0.23)^b†
DSRQ Scores	1.68 (0.59)	1.83 (0.71)^a*	1.93 (0.77)^b†	1.91 (0.66)	1.86 (0.72)	1.74 (0.66)^b*

Note. AUDIT: Alcohol Use Disorders Identification Test; RAPI: The Rutgers Alcohol Problem Index; DSRQ: Drinking Self-Regulation Strategies Questionnaire, a = Baseline to 1 month FU; b = Baseline to 3 months FU; c = 1 month FU to 3 months FU; *p*-value from paired *t*-test: † $p < 0.001$, ‡ $p < 0.01$, * $p < 0.02$

Table 4

Drinking levels based on AUDIT scores within intervention and control groups

Categories of Drinking Levels Based on AUDIT Score	Intervention group (n = 115) Numbers (%)			Control group (n = 110) Numbers (%)		
	Time			Time		
	Baseline	Post-intervention		Baseline	Post-intervention	
		1 month	3 months		1 month	3 months
Low Risk Drinking (Score 0-7)	35 (30.4)	70 (60.9)^{a}†	92 (80.0)^{b}†, ^{c}†	44 (40.0)	40 (36.4)	39 (35.5)
Hazardous Drinking (Score 8-15)	45 (39.1)	42 (36.5)	21 (18.3)^{b}‡, ^{c}†	49 (44.5)	52 (47.3)	53 (48.2)
Harmful Drinking (Score 16-19)	17 (14.8)	1 (0.9)^{a}†	1 (0.9)^{b}†	13 (11.8)	9 (8.2)	13 (11.8)
Alcohol Dependence (Score $\geq$ 20)	18 (15.7)	2 (1.7)^{a}†	1 (0.9)^{b}†	4 (3.6)	9 (8.2)^{a}**	5 (4.5)^{c}*

Note. a = Baseline to 1 month FU; b = Baseline to 3 months FU; c = 1 month FU to 3 months FU; *p*-value from paired *t*-test: † $p < 0.001$, ‡ $p < 0.01$, ** $p < 0.03$, *$p < 0.05$

The efficacy of the PD-GMI versus control group

ANCOVA results (Table 5) indicated that AUDIT scores at all post-intervention time points were significantly lower for students in the intervention group compared with the control group, controlling for AUDIT scores at baseline and other covariates. Additionally, a significant group and time interaction was observed during each phase, including baseline to 1 month, $F(1, 224) = 21.79$, $p < 0.001$; baseline to 3 months, $F(1, 224) = 60.9$, $p < 0.001$ was observed. Analysis of RAPI scores revealed that values at all post-intervention time points were significantly lower for the students in the intervention group compared to the control group, even after controlling for RAPI scores at baseline and other covariates; a significant group and time interaction during each phase, including $F(1, 224) = 6.04$, $p < 0.02$; baseline to 1 month, $F(1, 224) = 6.46$, $p < 0.02$; baseline to 3 months. There were no significant interactions in the ANCOVA, indicating that the DSRQ scores did not increase significantly at all post- intervention time points in the intervention group in relation to the control group $F(1, 224) = 0.84$, $p > 0.05$; baseline to 1 month; $F(1, 224) = 2.87$, $p > 0.05$; baseline to 3 months. The moderate effect size of the intervention program was found in this study (Table 5).

Table 5

ANCOVA results: Intervention and control groups during each phase

Variable	Intervention Means (SD) (n = 115)			Control Means (SD) (n=110)			ANCOVA (T0-T1)		ANCOVA (T0-T2)	
		Post-intervention			Post-intervention					
	Baseline	1 month	3 months	Baseline	1 month	3 months	F	d	F	d
AUDIT Scores	12.33 (7.02)	6.12 (5.22)	4.79 (4.0)	9.55 (5.6)	10.14 (5.82)	10.27 (5.3)	21.79†	0.57	60.9†	0.65
RAPI Scores	1.12 (0.45)	0.65 (0.26)	0.64 (0.21)	0.80 (0.32)	0.72 (0.27)	0.70 (0.23)	6.04*	0.27	6.46*	0.21
DSRQ Scores	1.68 (0.59)	1.83 (0.71)	1.93 (0.77)	1.91 (0.66)	1.86 (0.72)	1.74 (0.66)	0.84	0.22	0.09	0.25

Note. AUDIT: Alcohol Use Disorders Identification Test; RAPI: The Rutgers Alcohol Problem Index; DSRQ: Drinking Self-Regulation Strategies Questionnaire; Covariates were baseline levels of all outcome measures, program of study, academic years, problems' experience of alcohol use, and smoking behaviors; p values = group and time interaction, † $p < 0.001$, * $p < 0.02$, d = effect size; T0-T1 = baseline to 1 month post-intervention, T0-T2 = baseline to 3 months post-intervention

Figure 7

Mean scores of outcome measures from baseline to 3 months follow-up
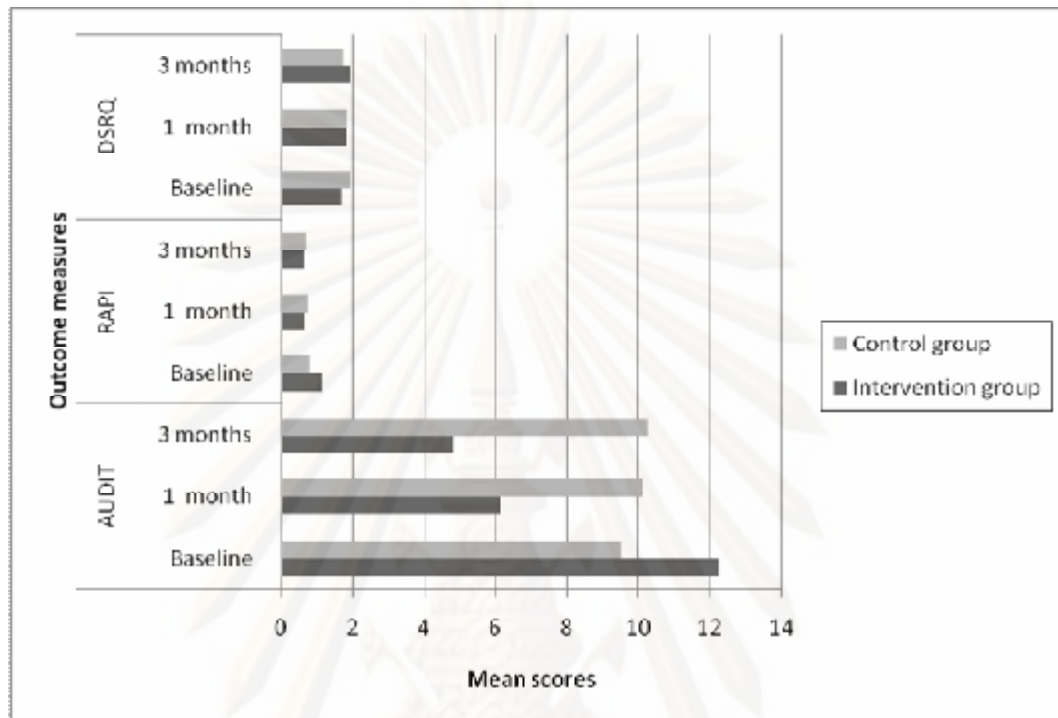
Note. AUDIT: Alcohol Use Disorders Identification Test; RAPI: The Rutgers Alcohol Problem Index; DSRQ: Drinking Self-Regulation Strategies Questionnaire

Figure 8

Drinking level according to AUDIT score from baseline to 3 months follow-up
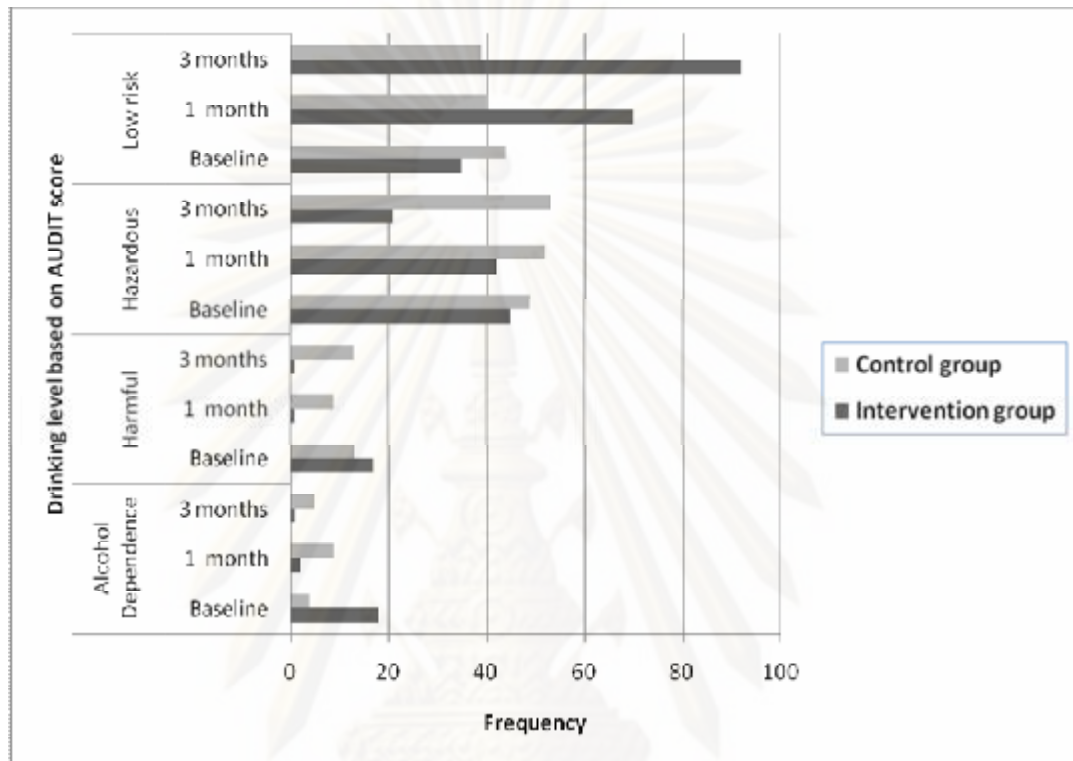
Note. AUDIT: Alcohol Use Disorders Identification Test

Content analysis

This study sought to carry out a content analysis to gain more understanding about students' thoughts and perceptions in order to reduce alcohol consumption and its adverse consequences. The data in this part comes from students who participated in the intervention group (PD-GMI). Total peer-drinking groups in the PD-GMI came to 19. Of the 19, 5 student groups did not permit audio-tape recording or note-taking. Therefore, this study was composed of 14 audio-tape recordings of the PD-GMI process. The 5 groups that did not allow audio-tape recording or note-taking did allow key words to be recorded, which were written on a whiteboard or flip-chart for their review. The baseline characteristics of students in the PD-GMI are shown in Table 2. For this content analysis, the researcher focused on two issues, which include (1) students' perceptions of benefits (advantages) and costs (disadvantages) of their current drinking and reduced drinking and (2) the effect of harm reduction strategies experienced.

Perceptions of benefits and costs of current drinking and reduced drinking

During the PD-GMI session, peer-drinkers decided on one student to write the group's key words from their discussion on a whiteboard or flip-chart. Within the topic of students' perceptions of benefits (advantages) and costs (disadvantages) of their current drinking and reduced drinking, all students expressed a strong satisfaction with alcohol associated positive outcomes especially those including social integrity and stress reduction (Table 6). During the process, the nurse facilitator also asked about concerns they have with adverse consequences in current alcohol consumption. Most students showed strong concern about the costs of their current drinking. Most students reported problems that included the categories of health, economic status, education achievement, expectations from a girlfriend, parents, academic staff, and other persons of influence. Students identified the

benefits and costs of reducing their drinking as opposite to the benefits and costs of their current drinking habits. Most of them agreed that they needed to reduce their hazardous/harmful drinking patterns. Some of them recorded short messages about the need to reduce alcohol consumption and its adverse consequences. Many students stated the following:

"Heavy drinking and its consequences should be a strong concern," (students in group 1, 2, 5, 8, 10, 12, 13).

"I am thinking about reducing alcohol consumption now because many good things will occur in my life," and "I will reduce my drinking," (students in group 1, 2, 3, 4, 10, 12, 13).

"I can have many friends without alcohol," (students in group 1, 5, 6, 7, 10, 11, 13, 18).

Table 6

Students' perceptions and key words that emerged in the content analysis: Example statements

Current drinking

Key words	Example*
A. Benefits of current drinking	
(1) Social integrity	
I have more confidence	"I just talk so much; normally I cannot talk so easily with my friends." (1, 6, 9-10, 12, 14)
	"There is more open-mindedness and understanding with other peer-drinkers. I just get super confident." (1, 6, 8-9, 14)

"I can talk and do anything; it is a very good feeling." (1-2, 4-5, 7-9, 14, 16)

"I can talk smoothly with women." (2, 6, 9, 16)

I attain new relationships and maintain current relationships

"Alcohol helps everyone talk the truth. So, I meet new friends." (1, 4, 5, 7-11, 14, 16-17, 19)

"All of my peer-drinkers are my real friends. If one member in our group has some problems with others, we will help him." (1, 10, 13, 19)

"Alcohol creates a better atmosphere for conversation." (2, 6, 8-11, 14, 18)

It is normative to being a man

"I think most Thai men consume alcohol." (1, 4, 8)

(2) Stress reduction

It is a time to relax

"Alcohol helps me relax when I have some serious problems." (1, 4-5, 8-11, 14-16, 18-19)

"I release my problems and feelings when I am drunk." (2-3, 10, 12)

B. Costs of current drinking

(1) Health Problems

It is not good for my health

"Alcohol is damaging to my health." (1-5, 7-8, 11-19)

"I and/or my friend will have an accident." (1-7, 9-10, 13, 15, 18-19)

"I had a motorcycle accident." (1, 5, 9, 12)

"At the time, I thought I could control my motorcycle but I crashed into a cow." (1)

"I cannot use a condom when I am drunk." (1, 8)

(2) Economic Status

I do not have enough money

"I spend too much money." "I cannot save my money." "Sometimes I have no money for buying my food or new textbooks." (1-12, 14-16, 19)

(3) Educational Achievement

It is not good for my grades

"I always wake up late and cannot go to class on time." "I cannot wake up and then I miss class." (1-7, 9-11, 14, 16-19)

"I go to take the exam with a hangover." (3, 5)

"I am wasting my time." (3, 17,19)

(4) Expectations from parents and girlfriend

It is not acceptable to my parents and girlfriend

"My parents do not like drinkers." (12, 13, 14)

"I have serious arguments with my girlfriend about my drinking behavior." "I could lose my girlfriend." (1, 5-6, 10, 19)

"My girlfriend has terminated the relationship and has a new man who is a non-drinker." (1, 4, 10, 19)

(5) Relationships with other persons

I cannot control my high emotions

"After drinking, I am always moody and then I have a serious argument with other friends." (1-2, 5-6, 10-11, 18)

Note. *The numbers after the example sentences represent group numbers of students in the PD-GMI

Reduced drinking

Key words	Example*
A. Benefits of reduced drinking	
(1) Health	
It is good for my health and body image	"There is lower risk for an accident." (1-4, 9-12)
	"There is lower risk for sexually transmitted disease and HIV infection." (1, 8, 15)
	"I feel better physically." "I will be healthy." (1-7, 9-19)
	"It is good for my body image." (1-2, 4-6, 12, 18)
(2) Economic Status	
I will have more money	"It will help with money problems." "I can save my money." "I can buy many useful things." (1-11, 14-19)
(3) Educational Achievement	
It will be good for my grades and my academic goals	"I am more responsible for studying." "I will get good grades." "I have more time to read my textbooks." "I can wake up in the early morning to go to class." (1-6, 9-11, 14, 16, 19)
(4) Expectations from society, parents, teachers, and girlfriend	
My girl friend, parents, and teachers will accept my new behavior	"My girlfriend will come back to me." (1, 5, 8-9, 19)
	"Many people will accept my personality." "I will be attractive to women who do not like

drinkers." (1-2, 4-6, 12, 18)

"My parents and teachers will not be upset
with my drinking behaviors." (3, 8)

(5) Relationships with other persons

I can control my emotions   "I will have less conflict with family or other
persons." (1-2, 8, 14, 18)

B. Costs of reducing drinking
(1) Social Anxiety

My friendships in my peer-   "I will not meet with my friends who are peer-
drinking group will lose out   drinkers." "I will have a small group of
friends." (1, 3, 6, 8-14, 16-17)

"My friends who currently drink may not
accept me." (2, 4, 6, 18-19)

I feel anxious if I stop or reduce   "I will miss the drinking atmosphere." (6, 9,)
my drinking   "I enjoy getting high." "I like the good taste of
alcoholic beverages." (2, 5)

Note. *The numbers after the example sentences represent group numbers of
students in the PD-GMI

Experience of harm reduction strategies

This study did not focus on stopping drinking or abstinence. The harm reduction concept was included in the PD-GMI. The main topic in this intervention was to clarify their previous useful experiences in harm reduction strategies and to encourage their self-efficacy. Students shared about their useful techniques for preventing hazardous/harmful drinking and its adverse consequences. There were many techniques to prevent heavy drinking, such as diluting, sipping, eating light food before going to drink, and talking more than drinking (Table 7). Many students then shared their new conceptualized techniques for preventing hazardous/harmful drinking and its adverse consequences. They followed up on their strategies in the 3-month post-intervention. They included limiting the number of glasses, limiting the amount of money to buy alcohol, limiting the amount of time spent on drinking, exercising or engaging in some useful social activities rather than drinking, and using verbal warnings within their peer-drinking group (Table 8). Most students thought about ways to prevent adverse consequences after drinking, such as not driving, not having sex with others, and going home or to their dormitory to sleep (Table 8).

Table 7

Students' experiences of useful harm reduction strategies during episodes of alcohol consumption

Steps	Strategies/Techniques experienced
Before going to drink	Have light food
During drinking	Know my limit
	Dilute, Sip
	Talk or eat snacks more than drink
After drinking	Drive slowly

Table 8

Students' strategies/plans until the 3-month post-intervention

Prevent heavy drinking
Limit number of glasses
Limit money to buy alcohol
Limit duration of drinking (per episode)
Limit frequency of drinking (per month)
Accept warnings from peer-drinkers
Develop more useful social activities
See and follow by personal commitment card
Prevent alcohol adverse consequences
Drink with peer-drinkers only
Stay with peers
Stop drinking when there are warning signs of drunkenness
Do not drive after drinking
Do not have sex with others when drunk
Go home/dormitory to sleep

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This chapter provides discussion, a summary of this research study, and recommendations. The discussion is split between: (1) subjects' characteristics and (2) the efficacy of the peer-drinking group brief motivational intervention (PD-GMI). The summary is divided into two parts. The first part focuses on conclusions based on the research results. The second part discusses the limitations of this study. Finally, the third part presents the recommendations of this research study.

DISCUSSION

Subjects' Characteristics

In this study, group comparisons were computed using independent t-tests and Chi square analyses. The results showed no significant differences in the variables of age, age at first use of alcohol, religious affiliation, grade point average, number of friends living as dormitory roommates, and perceived adequacy of their income (all p's > 0.05). All students were Thai male students aged 18 to 24 years attending universities full-time for a bachelor degree. The mean age of the 225 students was 20.49. The characteristics of this population point to the highest rates of alcohol consumption among young adults. Numerous studies have documented that men are more likely to consume alcohol than women, male drinkers consume larger quantities of alcohol than female drinkers, and overall, they experience more behavioral problems related to their drinking than female drinkers (Higuchi et al., 1994, Balabanova, 1999, Wilsnack et al., 2000, Almeido-Filho et al., 2004, Hao et al., 2004, Bobak et al., 2004, Nolen-Hoeksema 2004, Parry et al., 2005, Slone et al.,

2006 cited in Wilsnack et al. 2009). Wilsnack et al., (2009) conducted general population surveys in 35 countries: Argentina, Australia, Belize, Brazil, Canada, Costa Rica, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Iceland, India, Ireland, Isle of Man, Israel, Italy, Japan, Kazakhstan, Mexico, the Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Peru, Spain, Sri Lanka, Sweden, Switzerland, Uganda, the United States, and Uruguay. They found more drinking and heavy drinking occurring among men, more long-term abstention occurs among women, and no cultural differences or historical changes have entirely erased these differences. This study stated that heavy drinking and heavy episodic drinking are habits of reckless youth. This is also supported by the preliminary focus group study among Thai male undergraduate students (Wipawan Pensuksan, 2008). The students perceived that their drinking behaviors were related to a larger influence of human social behavior. They observed that within normal cultural events and settings, it is acceptable for them to get drunk in public. This recognition then fueled their perception that men hold a type of superiority over women in status and authority.

The two groups in this study did differ, however, according to their program of study, academic seniority, reported problems experienced due to alcohol consumption, and smoking behaviors (all p's < 0.05). The majority of the 225 students in this study studied in Sciences and Health Sciences (n = 190), were students in first to second year (n = 150), and had a grade point average of less than 2.5 on a 4.0 scale (n = 163). Most of them had experienced no problems due to alcohol consumption in the past six months (n = 144) and had no smoking behaviors (n = 135). These variables were treated as covariates in subsequent between-group comparisons.

The Efficacy of the Peer-Drinking Group Brief Motivational Intervention (PD-GMI)

AUDIT, RAPI, and DSRQ scores were used as the outcomes of impact of the PD-GMI in this study. The PD-GMI was significantly more efficacious than the usual practice in reducing alcohol consumption and its adverse consequences in male undergraduate students. The intervention reduced both AUDIT and RAPI scores and increased DSRQ scores. The study findings also showed that a single-session group motivation interviewing intervention delivered during the term of study produced a significant reduction in alcohol consumption and its adverse consequences that continued for 3 months. Moreover, the PD-GMI significantly decreased AUDIT and RAPI scores over time compared to the control group after adjusting for baseline difference.

The PD-GMI was designed to (1) increase the awareness of risks associated with hazardous/harmful alcohol consumption, (2) enhance students' motivation to change their drinking behaviors, and (3) encourage harm reduction strategies during episodes of alcohol consumption. This intervention model was intended to set up the stage of change. It assumed that change is likely to occur when the perceived benefits (advantages) of drinking are outweighed by the perceived costs (disadvantages) of continuing to drink (Miller and Rollnick, 2002; Hayes, 2006). The context of a brief motivational interview had numerous advantages for undergraduate students (Marlatt et al., 1993 cited in White, 2006). First, the non-confrontational and non-judgemental style of this intervention is appropriate for undergraduate students who are generally defensive about their drinking and do not respond positively to being lectured. Second, this technique avoids labeling young people as having a problem or as being a substance abuser. Third, the technique is based on each individual's specific history and risk factors. Therefore, it addresses the highly variable nature of undergraduate students' drinking behavior. Finally, because this intervention put the responsibility

on the individual to recognize his or her own need to change, the students felt they were treated as a "thoughtful adult."

Referring back to the transtheoretical model (TTM) and stages of change, the students are able to pass the pre-contemplation stage, the contemplation stage, the preparation stage, and stay in the maintenance stage at the third month after intervention. To accomplish this change in motivation, students are assisted in self-evaluating, self-monitoring, and learning to self-regulate their drinking (Miller and Rollnick, 1991, Miller et al., 1992 cited in Hayes, 2006). These results provided evidence of efficacy of the intervention in support of the model.

This study found significantly improved mean self efficacy scores (19.17%) and mean readiness to change scores (30.49%) for students in the intervention group between before and immediately after the intervention. The moderate effect sizes were represented by a medium magnitude of change in self-efficacy ($d = 0.44$) and readiness to change ($d = 0.54$). Furthermore, the results showed that mean baseline AUDIT and RAPI scores were higher for students in the intervention group compared with those in the control group. Students in the intervention group had significant reductions in their mean AUDIT scores at 1 month and 3 months post intervention with a large magnitude of change (50.36%, $d = 0.87$ and 61.15%, $d = 1.06$), respectively. They also had a 41.96% and 42.86% significant reduction in their mean RAPI scores at 1 month and 3-month post-intervention with a large magnitude of change ($d = 1.04$-1.07). Numerous studies have shown that a single-session group motivational interviewing intervention can change behaviors and be an efficient and effective means of reducing heavy drinking among both male and female college students in short-term measures with 4 weeks, 10 weeks, and 3 months post-intervention periods (Micheal et al., 2006; LaBrie, Pederson et al., 2007; LaBrie et al., 2008). For example, a 51% reduction alcohol consumption was reported by LaBrie, Pederson et al. (2007) in their study of male college students. Collectively, findings indicate that the PD-GMI contributes to reductions in alcohol consumption

and adverse consequences in peer-drinking groups with varying demographic and academic characteristics, such as age, academic seniority, and levels of harmful/hazardous alcohol consumption at baseline. The magnitude of reductions in harmful drinking observed in our cohort is larger than previous reports (i.e., 94.12% in our present study versus a range of 37-57% in prior studies). Reasons for the differences in magnitude are unknown. We speculate the personal commitment cards, provided to students enrolled in our study served to reinforce the intervention and effectively motivated behavior change. However, our results have to be confirmed in larger studies conducted in Thailand.

Moreover, most students perceived that they were satisfied with the PD-GMI. They gave many reasons regarding their satisfaction. First, this intervention is a new technique where all group members are given space to share knowledge, experiences, and feelings. Second, it does not look down on students who are heavy drinkers. Third, the students are the ones who create the stages for changing their drinking behaviors. Fourth, they weigh the advantages/benefits and disadvantages/costs concerning their alcohol consumption and its adverse consequences by themselves. Fifth, they acquire harm reduction techniques to take care of themselves and peer-drinkers. Finally, this intervention is not time consuming and is only one session. In addition, students also perceived that their personal commitment card was useful in curbing their heavy drinking and adverse consequences. This card was created collaboratively by the individual and his peers and included a commitment, personal and group goal, and harm reduction strategies. Harm reduction is a practical approach to preventing alcohol-related harm and evidence is mounting that it is more effective than traditional abstinence-only approaches to prevention (Neighbors et al., 2006). Interestingly, students reported that they reminded themselves of their commitments by using the card before making a decision to go drink.

In previous studies (Larimer and Cronce 2002; LaBrie, Pederson et al., 2007; LaBrie, Thompson et al., 2007; LaBrie et al., 2008), many students were recruited

who exhibited the same level of drinking. The severity of baseline alcohol consumption and its associated adverse consequences were higher in those samples or students were at the same academic seniority, such as first-year students, and some studies had no control group. These may have influenced treatment responses.

The PD-GMI implemented the principles of motivational interviewing; develop discrepancy, avoid argumentation, roll with resistance, express empathy, and support self-efficacy. This intervention also used collaborative MI methods, including open-ended questioning, affirmative, reflective listening, summarization, and elicit change talk or self-motivating speech. These methods aid in exploring ambivalence, promoting participants' self-efficacy, and encouraging the individual's motivation to change drinking behaviors and reducing alcohol consumption and its adverse consequences among peer-drinking group undergraduate students.

The success of the PD-GMI in reducing alcohol consumption and its associated adverse consequences can be explained by the stages of change (Prochaska et al., 1992, Prochaska and DiClemente, 1986 cited in Beckham, 2003). First, students alter their drinking behavior by passing the pre-contemplation stage, in which they are unaware of difficulties arising from alcohol use. The perceived benefits of drinking are outweighed by the perceived costs of continuing to drink. Social integrity and stress reduction are the few benefits they get from continuing to drink. They gradually begin to see more clearly that they have many alcohol-related problems, including their health status, economic status, educational achievement, and expectations from close persons (i.e. girlfriend, parents, and academic staff). Second, in the contemplation stage, students are typically ambivalent about their behavior. In this stage, students may see reasons for change, but will tend to avoid doing anything to change their behavior. Most students become concerned that they might have social anxiety if they reduce or stop their drinking. In the third stage, or the preparation stage, students tend to begin making preparations for moving from a state of contemplating change towards actually implementing change. They have

more clearly defined their personal and group goals and have created their harm reduction techniques to prevent hazardous/harmful drinking and its adverse consequences. They have developed a personal and group commitment to reduce their alcohol consumption and its adverse consequences. Fourth, students tend to begin implementing changes in their drinking patterns during the action stage. These changes are reinforced by a plan of action chosen by the individual and peers. The final stage, the maintenance stage, describes students who have continued through the change process and have likely begun achieving personal and group goals.

This present study uses MI techniques with same-sex students who are friends and are also peer-drinkers (i.e. drink during social gatherings). Administration of MI techniques were facilitated by creating groups of students who were well acquainted with each other and thus comfortable with engaging in candid discussions about their current alcohol consumption behavior patterns and associated adverse consequences, such as missing class, academic struggles, and financial problems. Discussions about positive outcomes, such as stress reduction, greater sociability, and improved social integration, were also facilitated by creating groups that were familiar and comfortable with each other. In short, the group MI-based atmosphere provided students with the opportunity and means to discuss their attitudes, concerns about positive and negative peer-pressures, and concerns about maintaining their friendships while changing their individual and group alcohol consumption patterns.

Without this collaborating intervention process, students in the control group increased alcohol consumption and had low levels of self-regulation in avoiding drinking heavily. However, they did show a reduction in adverse consequences over time. The researchers found that students in the assessment-only group had a 6.18% and 7.54% increase in their mean AUDIT scores at 1 month and 3 months post-intervention respectively. These numbers described a slight reduction in adverse consequences over time. They had a 10% and 12.5% reduction in their mean RAPI scores at 1 month and 3 months post-intervention respectively.

It is possible that undergraduate students in the control group may have controlled themselves in order to mitigate its adverse consequences during a time period when they were preparing for final exams. It is important to also keep in mind that previous research suggests that many students engaging in significant levels of drinking report no adverse consequences (Perkins, 2002). Some students' alcohol consumption behaviors may lead to a number of personal, interpersonal, and academic problems, while others may engage in the same pattern of drinking but experience fewer and/or less severe adverse consequences (Perkins, 2002).

Of note, the effectiveness of drinking self-regulation strategies increased over time for students in the intervention condition. Conversely, students in the control group had significantly decreased their self-regulation strategies at the 3-month follow-up. In general, college students perceive alcohol consumption as normative and acceptable in a college setting. A previous study (Hustad et al., 2009) showed heavier alcohol use may be determined more by social and environmental factors and less by intrapersonal factors, such as self-regulation. According to the preliminary focus group study (Wipawan Pensuksan, 2008), Thai male undergraduate students offered many factors associated with alcohol consumption in this population. First, most of the students in the technology and social sciences programs (such as engineering, agricultural, social development) always consumed large quantities of alcohol. Students in these groups perceived it as a social norm. Second, they stated that the first to second year students usually consumed alcohol because they would like to make new friends or to maintain their current relationships. The relationship between self-regulation, alcohol consumption, and its associated adverse consequences in college students is mixed. Self-regulation is an individual difference variable that should be considered when attempting to explain a young adult's vulnerability to adverse consequences as well as decreasing trajectories of use and consequences (Hustad et al., 2009).

CONCLUSIONS

This study's findings indicated that the peer-drinking group brief motivational intervention (PD-GMI) was effective in reducing alcohol consumption and its associated adverse consequences. The peer-drinking group brief motivational intervention was designed to (1) increase the awareness of risk associated with hazardous/harmful alcohol consumption, (2) enhance students' motivation to change their drinking behaviors, and (3) encourage harm reduction strategies appropriate to this population during episodes of alcohol consumption. Students in the intervention group showed a significant decrease in self-reported alcohol consumption (AUDIT scores) and these improvements continued from baseline to the 1 month and 3-month post-interventions (50.36% and 61.15% respectively). Conversely, students in the control group showed no significant change in their alcohol consumption at 1 month post-intervention and had a significant increase by the 3-month post-intervention. These results provide preliminary evidence of the effective intervention for reducing alcohol consumption among Thai male undergraduate students.

The analysis of alcohol associated adverse consequences (RAPI scores) showed that students in the intervention group displayed significant reductions from baseline scores across two post-interventions (41.96% and 42.86% respectively). The effects of the intervention effectively continued for at least 3 months. However, students in the control group also had significant reductions (10% and 12.5% respectively).

With regards to the self-regulation strategies (DSRQ scores), students in the intervention group improved with significant increases from baseline scores across two post-interventions (8.93% and 14.88% respectively). Conversely, students in the control group showed no significant change in their self-regulation strategies at 1 month post-intervention and had a significant decrease by the 3-month post-intervention.

Thus, as hypothesized, the findings support the idea that two hours of alcohol harm reduction strategies administered as a peer-drinking group brief motivational intervention (PD-GMI) is effective in reducing both alcohol consumption and its associated adverse consequences among Thai male undergraduate students.

The strengths of the present study include the complete follow-up rates in both conditions. This study clarifies that 100% of enrolled participants were successfully followed up through the last assessment. The researcher believes that the strategies that were used in the study allowed for this complete follow-up. The strategies included the following for each group. In the intervention group, there were three steps. First, in each peer-drinking group, one student was chosen from their peers to remind them about their appointments. This student received financial incentive for telephone reimbursement (approximately USD 3.00) adds up from transportation reimbursement (approximately USD 3.00). Second, the student who reminded his peers was given a reminder from the researcher by either telephone or in-person two days before the appointments. Third, if students failed to attend their scheduled appointments, the researcher immediately contacted them to reschedule as soon as possible. In the control group, there were two steps. First, students were given a reminder from the co-researcher by either telephone or in-person two days before their appointments. Second, if students failed to attend their scheduled appointments, the co-researcher immediately contacted them to reschedule as soon as possible. All students received financial incentive for transportation reimbursement (approximately USD 3.00).

This study implemented an innovative intervention, which utilized peer-drinking group motivational interviewing and harm reduction techniques. Furthermore, students in each peer-drinking group were on varying levels of alcohol consumption drinking scales and severity and from multiple academic seniorities. Finally, this study utilized a control group to compare the observed reductions in alcohol consumption and its associated adverse consequences.

Limitations

The researcher acknowledges that there are some limitations in the present study. First, this study focused specifically on male undergraduate students in Thailand. Therefore, the study results may not generalize beyond this specific group. Second, this investigation was limited to a 3-month post-intervention follow-up. While this follow-up period was suitable to the academic term for undergraduate students, additional trials are needed to determine its stability and to test strategies to strengthen and maintain the long-term benefits of the intervention. Moreover, longer periods of follow-up are needed to determine the extent to which, if at all, booster sessions are required to help sustain the benefits of the intervention. Third, this study's results focused specifically on individual data. Each peer-drinking group's data should be provided as explicit results of the intervention. Fourth, the quasi-experimental approach did not succeed in creating equivalence between study groups. This important limitation hinders causal inferences. Fifth, this study was limited to self-report measures with varying degrees of validation and did not include objective measures, such as biochemical (blood alcohol concentration [BAC] and breath alcohol concentration [BrAC]) verification of alcohol use. However, numerous studies and study reviews have shown that self-reports, the most common method to obtain alcohol use data, provide accurate information about alcohol use and its adverse consequences (Hernandez et al., 2006; Reilly and Wood, 2008; Turrisi et al., 2009). To mitigate the impact of recall bias and increase response validity, the researchers provided students with assurances of anonymity and confidentiality. The researchers also stressed the importance of truthful responses and used multiple validated data collection instruments to assess students' alcohol consumption habits.

RECOMMENDATIONS

The recommendations of the study are presented in two parts. The first part discusses implications for practice. The second part focuses on implications for research.

Implications for Practice

University campuses need to implement new strategies for screening and early identification of hazardous/harmful student drinking and ensure that an intervention is readily available to those in need. The findings confirm that the PD-GMI is the more efficacious intervention in reducing alcohol consumption and its adverse consequences among Thai male undergraduate students. This study has positive implications for intervention efforts among male undergraduate students. It is suitable for their lifestyle and academic term, large numbers of students, and reducing costs for group format intervention programs. The trained university staff is easily able to provide this intervention for students in any academic term. The intervention does not demand additional resources and is effective in reducing alcohol consumption and its adverse consequences. The PD-GMI is easily applied within the Thai context and thus is translatable for use in different cultures, such as the South-East Asia Region where experimentation with alcohol consumption largely begins as a group activity among young friends or peer-groups. If our results are confirmed in larger study populations, public health and health care providers should consider implementing programs such as this one as part of an overall alcohol harm reduction strategy.

Implications for Research

This study provides evidence that the PD-GMI holds significant influence in reducing alcohol consumption and its adverse consequences among male undergraduate students up to three months after the intervention. In considering the limitations of the present study, more research is needed to evaluate the full efficacy of a peer-drinking group brief motivational intervention. Further research should consider multi-site samples, which may adjust for future randomized controlled trials. Future research in this area should also examine how a peer-drinking group brief motivational intervention differs across gender, religion, culture, and for other addictive behaviors. Furthermore, following these results, a longitudinal research design is another way to confirm the efficacy and effectiveness of this intervention.

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APPENDICES

APPENDIX A
RESEARCH INSTRUMENTS

TimeLine Follow-Back (TLFB)

คำชี้แจงการบันทึกข้อมูลการดื่มเครื่องดื่มแอลกอฮอล์ของท่าน ใน 3เดือนที่ผ่านมา

1. ขอให้นักศึกษาระลึกถึงการดื่มของตนเอง เมื่อ 3เดือนที่ผ่านมา
2. ข้อมูลการดื่มของนักศึกษาไม่มีถูก หรือ ผิด และ ไม่เกี่ยวข้องกับการประเมินใดๆ ที่ จะส่งผลกระทบต่อนักศึกษา ข้อมูลที่ได้จะถูกนำมาใช้เป็นข้อมูลภาพรวมในงานวิจัย ไม่เผยแพร่เป็นรายบุคคล
3. ขอให้นักศึกษาตอบตามความเป็นจริง
4. บันทึกข้อมูลการดื่มลงในปฏิทินนี้ในแต่ละวัน ได้แก่ ชนิดของเครื่องดื่ม ปริมาณการ ดื่ม และเหตุการณ์ที่เกี่ยวข้อง

ตัวอย่าง เดือนเมษายน **2551**

เสาร์	อาทิตย์	จันทร์	อังคาร	พุธ	พฤหัสบดี	ศุกร์
13	14	15	16	17	18	19
←	วันสงกรานต์ →					
เบียร์ช้าง 1 กระป๋อง ใน 1 ชั่วโมง ก่อนไป เที่ยว สงกรานต์	เหล้าแม่โขง เฉลี่ย 2เป๊ก/ ชั่วโมง ดื่ม 3ชั่วโมง ฉลอง สงกรานต์					

แบบประเมินความพร้อมเพื่อลดการดื่มเครื่องดื่มแอลกอฮอล์ (RTCR)

คำชี้แจง ขอให้นักศึกษาตอบคำถามต่อไปนี้ ตามความรู้สึกของนักศึกษาอย่างแท้จริง

1. ท่านรู้สึกอย่างไรต่อการลด ละ เลิก การดื่มของท่านในปัจจุบันนี้ <u>**โปรดเลือกตอบเพียงข้อเดียว**</u> ที่ตรงกับตัวท่านมากที่สุด โดยการทำเครื่องหมาย **ü** ลงใน ☐ ด้านล่างรูปภาพที่ตรงกับตัวท่าน

L

☐

K

☐

J

☐

2. จากคำตอบข้อ **1** กรุณาระบุเหตุผล เนื่องจาก ....

....

....

3. เส้นตรงด้านล่าง แสดงถึงระดับความพร้อมของท่านในการที่จะลดการดื่ม โดยมีตัวเลขจาก **0** และเพิ่มขึ้นจนถึง **10**

จงวงกลมตัวเลขด้านล่าง ตามความคิดหรือความรู้สึกอย่างแท้จริง ที่มีต่อการดื่มในขณะนี้

0---------1---------2---------3---------4---------5---------6---------7---------8---------9----------10

ไม่เคยคิด   บางครั้ง....   ตัดสินใจ....   พยายามลด ...   ดื่มน้อยลงกว่า

อะไรเกี่ยวกับ   ที่ผ่านมาแล้ว

การดื่ม

4 ....

แบบประเมินการรับรู้ความสามารถในการเปลี่ยนแปลงตนเอง (SR)

ขอให้ท่านประเมินระดับความสามารถของตนเอง ในการที่จะเปลี่ยนแปลงพฤติกรรมการดื่มของ
ท่าน ให้เป็นการลด ละ เลิก การดื่มเครื่องดื่มแอลกอฮอล์

เส้นตรงด้านล่างนี้ แสดงถึงระดับความสามารถของตัวท่านเองในการที่จะ ลด ละ เลิก การดื่มของ
ท่านในปัจจุบันนี้ ขอให้ท่าน**วงกลมรอบตัวเลขที่ตรงกับความคิดของท่านมากที่สุด**

| 0% | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100% |

ไม่สามารถ   เปลี่ยนแปลงได้   เปลี่ยนแปลงได้
เปลี่ยนแปลงได้เลย   50%   แน่นอน 100%
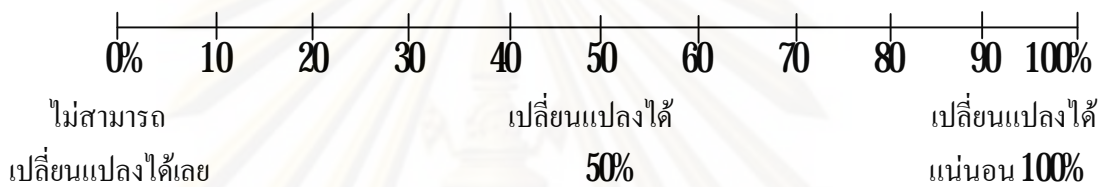
ท่านเลือกตัวเลขข้างต้น เนื่องจาก...
....
....
....

แบบประเมินความพึงพอใจในการเข้ากลุ่ม PD-GMI (ISR)

คำชี้แจง

ให้นักศึกษาประเมินความพึงพอใจของตัวท่านเองต่อการเข้ากลุ่ม คำตอบของท่านไม่มีการ
ประเมินว่าถูกหรือผิด และไม่มีผลกระทบใดๆ ต่อการดำเนินชีวิตตามปกติของท่าน ขอให้ท่าน
ตอบตามความเป็นจริง

ให้นักศึกษาวงกลมรอบตัวเลขด้านล่างนี้ ที่ตรงกับความพึงพอใจของตัวท่านเอง

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
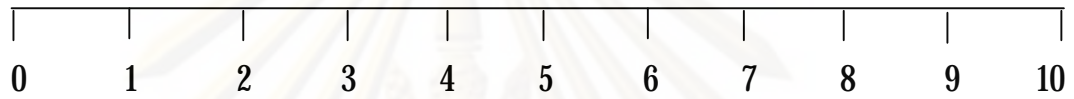
ไม่พึงพอใจเลย   พึงพอใจระดับปานกลาง   พึงพอใจมากที่สุด

เหตุผลที่ท่านเลือกตัวเลขข้างต้น เนื่องจาก..
....
....

วิธีการที่จะเพิ่มระดับความพึงพอใจของท่านได้ มีดังนี้

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ตัวอย่าง **Commitment Card**

ด้านหน้า

เป้าหมายของกลุ่ม
....
....
เป้าหมายของผม
....
ข้อความนี้ได้จากการเข้ากลุ่ม เมื่อวันที่............................

ด้านหลัง

กิจกรรมเพื่อป้องกันการดื่มอย่างหนักและ อันตรายที่จะเกิดจากการดื่ม
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....
....

แบบประเมินประโยชน์ที่ได้จาก Commitment Card (CUR)

Commitment card ที่อยู่กับตัวท่าน มีประโยชน์ต่อการควบคุมการดื่มฯ ของท่านระดับใด (วงกลม
รอบตัวเลขที่ตรงกับความคิดเห็นของท่าน)

คำตอบของท่านไม่มีการประเมินว่าถูกหรือผิด และไม่มีผลกระทบใดๆ ต่อการดำเนินชีวิต
ตามปกติของท่าน ขอให้ท่านตอบตามความเป็นจริง

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

ไม่มีประโยชน์ต่อการ   มีประโยชน์ต่อการต่อ
การควบคุมการดื่มเลย   ควบคุมการดื่มมากที่สุด
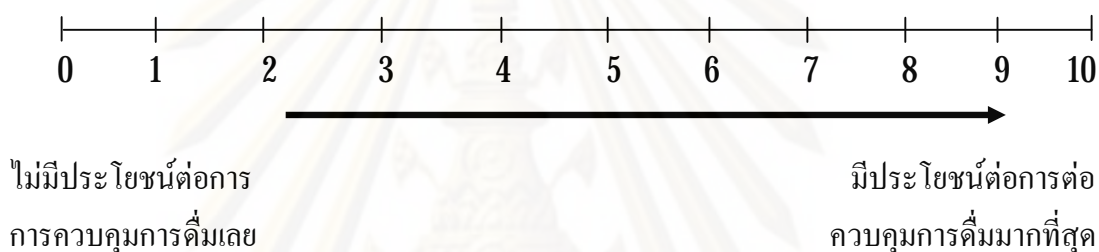
แบบประเมินการดื่มเครื่องดื่มแอลกอฮอล์ (Alcohol Use Disorders Identification test; AUDIT)

1. คุณดื่มเครื่องดื่มที่มีแอลกอฮอล์บ่อยเพียงไร				
0 ไม่เคยเลย	**1** เดือนละครั้ง หรือน้อยกว่านั้น	**2** 2-4ครั้งต่อเดือน	**3** 2-3ครั้งต่อสัปดาห์	**4** 4ครั้งขึ้นไปต่อสัปดาห์

2. เวลาที่คุณดื่ม โดยทั่วไปแล้วคุณดื่มประมาณเท่าไรต่อวัน				
<u>ตอบเป็น "เบียร์" ทำเฉพาะข้อ ก, ตอบเป็น "เหล้า" ทำเฉพาะข้อ ข</u> **เลือกตอบเฉพาะข้อ ก. หรือ ข. เพียงข้อเดียวเท่านั้น**				
] **ก. ถ้าเทียบเป็นปริมาณเบียร์ (เช่น เบียร์สิงห์, คลอสเตอร์, คาลสเบอร์ก)**				
0 ไม่เคยเลย	**1** 1 - 1.5กระป๋อง	**2** 2- 3กระป๋อง	**3** 3.5- 4กระป๋อง	**4** 4.5– 6กระป๋อง
] **ข. ถ้าเทียบเป็นปริมาณเหล้า (เช่น แม่โขง, หงส์ทอง, หงส์ทิพย์, เหล้าขาว 40ดีกรี)**				
0 ไม่เคยเลย	**1** 1 เป๊ก	**2** 1.5 – 2เป๊ก	**3** 2.5 – 3เป๊ก	**4** 3.5 – 4.5เป๊ก

3. บ่อยเพียงไรที่คุณดื่มเบียร์ 4กระป๋องขึ้นไป หรือ เหล้า 3เป๊กขึ้นไป				
0 ไม่เคยเลย	**1** น้อยกว่าเดือนละครั้ง	**2** เดือนละครั้ง	**3** สัปดาห์ละครั้ง	**4** ทุกวันหรือเกือบทุกวัน

4.............
5.............

แบบวัดผลจากการดื่มเครื่องดื่มแอลกอฮอล์

ขณะที่ท่านดื่มหรือหลังการดื่มมีหลายเหตุการณ์เกิดขึ้นแตกต่างกัน เหตุการณ์เหล่านั้นอยู่ในรายการ
ด้านล่างนี้ ขอให้ท่านระบุ**จำนวนครั้ง**ของการเกิดเหตุการณ์นั้นๆ ที่เกิดขึ้นกับตัวท่านเอง **ตั้งแต่...........**
จนถึงปัจจุบัน

 กรุณาวงกลมตัวเลขที่มีความหมายตรงกับสิ่งที่เกิดขึ้นจริงกับตัวท่าน

จำนวนครั้งของเหตุการณ์ที่เกิดขึ้นขณะที่คุณดื่มหรือเป็นผลมาจากการดื่มของคุณ

0 = ไม่เคย

    1 = หนึ่ง – สองครั้ง

        2 = สาม – ห้าครั้ง

            3 = หก – สิบครั้ง

                4 = มากกว่าสิบครั้ง

0	**1**	**2**	**3**	**4**	ไม่สามารถที่จะทำการบ้าน หรือไม่สามารถที่จะเรียนหนังสือสำหรับการสอบได้
0	**1**	**2**	**3**	**4**	พร้อมที่จะทะเลาะวิวาท, แสดงกิริยาไม่ดี
0	**1**	**2**	**3**	**4**	ไม่ได้ทำบางสิ่งบางอย่าง เพราะใช้เงินจำนวนมากไปกับการดื่ม
0	**1**	**2**	**3**	**4**	ไปทำกิจกรรม หรือไปมหาวิทยาลัยทั้งที่ยังมึน, เมา
0	**1**	**2**	**3**	**4**	ทำเรื่องน่าอาย หรือสร้างความอึดอัดใจให้กับคนอื่น
0	**1**	**2**	**3**	**4**	ละเลย/ไม่เอาใจใส่ สิ่งที่ตนต้องรับผิดชอบ
0	**1**	**2**	**3**	**4**	ญาติพี่น้องหลีกเลี่ยงที่จะพบคุณ
					....
					....
					....

## แบบสอบถามวิธีการที่เคยใช้ในการหลีกเลี่ยงการดื่ม

แบบสอบถามนี้ ต้องการข้อมูลเกี่ยวกับ**วิธีการที่นักศึกษาใช้** ทั้งการเลี่ยงที่จะไปดื่ม และ/หรือ เลี่ยงการดื่มอย่างหนัก

ถ้านักศึกษาคิดว่าวิธีการนั้นๆ ไม่ตรงกับตัวเอง ขอให้วงกลมคำว่า N/A ซึ่งหมายถึง ไม่ตรงกับตัวนักศึกษา

กรุณาวงกลมรอบตัวเลขที่ตรงกับตัวเอง ซึ่งเป็นการประเมินว่านักศึกษาใช้**วิธีการนั้นๆ บ่อยครั้งเพียงใด** ตั้งแต่....................

0 ไม่เคย	1 ไม่บ่อย	2 บางครั้ง	3 หลายครั้ง	4 เป็นประจำ

1.	0	1	2	3	4	N/A
2.	0	1	2	3	4	N/A
3. คิดถึงประสบการณ์ที่ไม่ดีที่ผ่านมา ที่เกี่ยวข้องกับเครื่องดื่มแอลกอฮอล์	0	1	2	3	4	N/A
4.	0	1	2	3	4	N/A
5. ฉันเตือนตัวเอง เมื่อฉันคิดว่าดื่มเพียงพอแล้ว	0	1	2	3	4	N/A
6.	0	1	2	3	4	N/A
7. คิดว่าฉันจะรู้สึกอย่างไรในชั่วโมงนั้น	0	1	2	3	4	N/A
8. คิดถึงเวลาที่ฉันดื่มหนักและฉันรู้สึกแย่กับมัน	0	1	2	3	4	N/A
9.	0	1	2	3	4	N/A
10. ดื่มช้าๆ	0	1	2	3	4	N/A
11. จำกัดปริมาณการดื่ม	0	1	2	3	4	N/A
12.	0	1	2	3	4	N/A
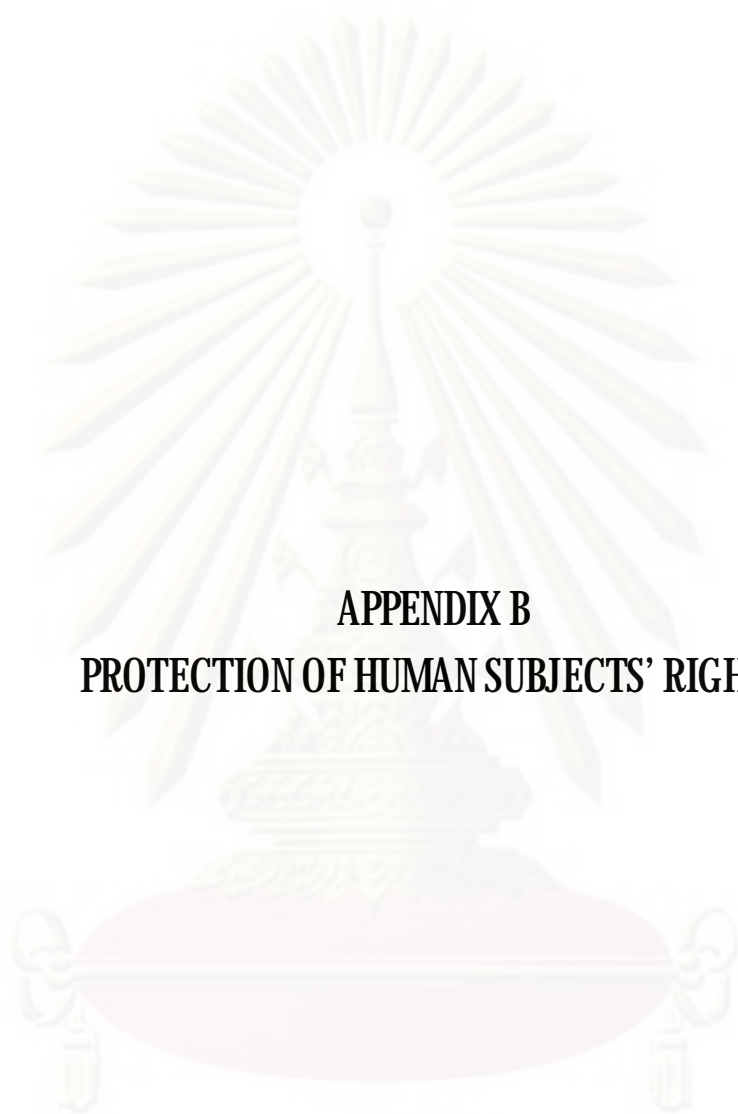
APPENDIX B
PROTECTION OF HUMAN SUBJECTS' RIGHTS

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เอกสารยินยอมเข้าร่วมวิจัย

(informed consent form)

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ข้าพเจ้านาย...บัตรประชาชนเลขที่.........................อายุ.........ปี
ที่อยู่ **(**ที่สามารถติดต่อได้ทันที**)** .... โทรศัพท์.........................
ได้ทราบรายละเอียดของโครงการวิจัยเรื่อง....การบำบัดอย่างย่อเพื่อเสริมสร้างแรงจูงใจในกลุ่ม
เพื่อนร่วมดื่ม เพื่อลดการดื่มเครื่องดื่มแอลกอฮอล์และปัญหาจากการดื่มในนักศึกษาชายไทยระดับ
ปริญญาตรี...
ตลอดจนประโยชน์และข้อเสี่ยงที่จะเกิดขึ้นต่อข้าพเจ้าจากผู้วิจัยแล้วอย่างชัดเจน ไม่มีสิ่งใดปิดบัง
ซ่อนเร้นและยินยอมให้ทำการวิจัยในโครงการที่กล่าวข้างต้น และข้าพเจ้ารู้ว่าถ้ามีปัญหาหรือข้อ
สงสัยเกิดขึ้น ข้าพเจ้าสามารถสอบถามผู้วิจัยได้ และสามารถถอนตัวออกจากการวิจัยนี้เมื่อใดก็
ได้โดยไม่มีผลกระทบใดๆต่อข้าพเจ้า นอกจากนี้ผู้วิจัยจะเปิดเผยข้อมูลของข้าพเจ้าเพื่อประโยชน์
ในการวิจัยและ/หรือทางวิชาการ โดยไม่ระบุชื่อหรือส่วนที่ทำให้รู้ว่าเป็นข้อมูลข่าวสารของ
ข้าพเจ้า และจะเก็บข้อมูลในตู้เอกสาร โดยผู้วิจัยปิดล๊อคและเก็บกุญแจไว้กับผู้วิจัยเอง

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ลงชื่อ...ผู้เข้าร่วมวิจัย

(...)

ลงชื่อ...พยาน

(...)

ลงชื่อ...พยาน

(...)

วันที่..............เดือน.......................พ.ศ.........

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หมายเหตุ สำหรับผู้ที่อ่านเขียนหนังสือไม่ได้เมื่อรับฟังเข้าใจแล้วให้พิมพ์ลายนิ้วหัวแม่มือแทน
การลงนามคำอธิบายของผู้วิจัย

ข้าพเจ้าได้อธิบายรายละเอียดของโครงการวิจัยตลอดจนประโยชน์ของการวิจัย รวมทั้ง
ข้อเสี่ยงที่อาจจะเกิดขึ้นแก่ผู้เข้าร่วมโครงการวิจัยทราบแล้วอย่างชัดเจน โดยไม่มีสิ่งใดปิดบังซ่อนเร้น

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ลงชื่อ...ผู้วิจัย

(นางวิภาวรรณ ชะอุ่ม เพ็ญสุขสันต์)

วันที่.............เดือน....................พ.ศ. ....

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APPENDIX C
LIST OF EXPERTISES

LIST OF EXPERTISES

1. Lt.Col.Pichai Saengchamchai, M.D.
   Department of Psychiatry & Neurology, Phramongkutklao Hospital, Thailand

2. Amornvit Nakorntap, Ph.D.
   The Ramjitti Institute, Thailand

3. Darunee Phukao, Ph.D. (Addiction Studies)
   Ministry of Public Health, Thailand

4. Thai male undergraduate student who is an ex-addict.

5. Thai male undergraduate student who is in the process of quitting drinking.

BIOGRAPHY

Name   Mrs. Wipawan Chaoum Pensuksan   Student ID   4989691320

Date of Birth   24 April 1969

Educational Attainment

Degree	Name of Institution	Year of Graduation
L.L.B.	Sukhothai Thammathirat Open University, Thailand	2003
M.N.S (Adult Nursing)	Mahidol University, Thailand	1994
B.N.S First Class Honors	Saint Louis Nursing College, Thailand	1990

Scholarship Awards during Enrollment

The Ph.D. study and dissertation were funded by the Strategic Scholarships for Frontier Research Network for the Joint Ph.D. Degree Program, Office of the Higher Education Commission, Thailand.

Work-Position and Address

Assistant Professor, School of Nursing, Walailak University, Thailand

List of Publications in this study

Pensuksan, W.C., Taneepanichskul, S., and Williams, M.A. (2010). A peer-drinking group motivational intervention among Thai male undergraduate students. *International Journal of Drug Policy,* (Article accepted for publication, February 26).

Pensuksan, W.C., Taneepanichskul, S., and Williams, M.A. (2010). An innovative alcohol harm reduction intervention among Thai male undergraduate students. Poster session presented on Harm Reduction 2010: IHRA's 21st International Conference, Liverpool, United Kingdom. April 25-29.