

TEST OF A GOAL MODEL: GOAL PERCEPTION ASSESSMENT TO BOLSTER HEALTH
INTERVENTION EVALUATION

by

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(Under the Direction of Jennifer L. Monahan)

ABSTRACT

This dissertation examined the utility of adding a goal perception assessment to bolster health intervention evaluation. Study 1 used the “expectancy theory model of antecedents and consequences of goal commitment” (Hollenbeck & Klein, 1987) to guide assessment of perceptions of goal difficulty (degree of proficiency or performance level sought), goal commitment (a volitional psychological bond reflecting dedication to and responsibility for a particular target), goal acceptance (initial agreement with a goal) which were used to predict performance outcomes (e.g., frequency and negative consequences of drinking) following a mandated intervention to reduce alcohol-related risk behavior among college students. Study 2 examined publicness, need for achievement, subjective norms, self-efficacy, and locus of control as predictors of goal commitment in an exercise context. Results from Study 1 indicated that goal commitment had a main effect on performance. Further, there was a goal difficulty and commitment interaction indicating that commitment moderated the relationship between goal difficulty and performance. When the goal was perceived as at least moderately difficult, those with the highest levels of commitment outperformed (e.g., spent fewer hours drinking and experienced fewer negative alcohol-related consequences) those with lower commitment levels.

In Study 2, extant health outcome indicators (e.g., subjective norms, self-efficacy) significantly predicted goal commitment, indicating that goal perception assessment integrates within existing intervention theoretical frameworks. Together, these results suggest that goal perception assessment provided utility in bolstering intervention evaluation by (1) predicting intervention outcomes and (2) complementing and integrating within existing intervention frameworks.

INDEX WORDS: Commitment, Evaluation, Goals, Goal Difficulty, Health Intervention, Performance

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DEDICATION

I dedicate this dissertation to my grandfather, George Fogle, may he rest peacefully with God.

Among your last words to me were how proud you are of me to earn my PhD. You are one of the smartest men I know whose success cannot be measured by his education. Please know that your legacy of learning lives on through your family.

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CHAPTER 1: INTRODUCTION

At their core, health interventions motivate individuals to change problematic health behaviors (e.g., smoking, drinking, having unprotected sex). Unless interventions successfully motivate participants, they often fail to encourage healthy behaviors (Ball, Carroll, Canning-Ball, & Rounsaville, 2006), suffer from high dropout rates (Brorson, Ajo Arnevik, Rand-Hendriksen, & Duckert, 2013; Stark, 1992), experience fading intervention effects (e.g., Prochaska, Delucchi, & Hall, 2004), and affect only a minority of participants (W. R. Miller, Walters, & Bennett, 2001). This dissertation argues that motivation to engage in behavior change is rooted in a goal perspective and agrees with past goal theorists that commitment is a necessary condition for goals to have motivational effects (see e.g., Locke, Latham, & Erez, 1988). A commitment must be anchored to a particular goal; goals are defined as future objectives that a person wants to achieve and they are the aim of an action or set of actions (e.g., increase exercise by running). While many interventions inherently seek to influence goal based behavior changes, surprisingly few actually *assess* outcomes as a function of a participant's goals and commitment. Doing so would bolster existing intervention evaluation and help clarify uneven effects found for health interventions (see Greaves et al., 2011; Lopez, Tolley, Grimes, Chen, & Stockton, 2013; McEachan, Conner, Taylor, & Lawton, 2011; Metcalf, Henley, & Wilkin, 2012; Neve, Morgan, Jones, & Collins, 2010; Orrow, Kinmonth, Sanderson, & Sutton, 2012).

Commitment to Goals in Health Interventions

Health interventions promote healthy behaviors within a targeted population (Rychetnik, Frommer, Hawe, & Shiell, 2002). This definition of an intervention assumes that intervention

participants engage in a problematic health behavior and that the intervention's primary purpose is to *change* problematic behaviors such as smoking, excessive drinking, and unhealthy eating. Thus, the structure of health interventions inherently includes health promotion goals for positive behavior change.

Further, health intervention meta-analyses have identified goal setting, defined as identification of a future objective, as a behavioral change strategy associated with intervention success (Bravata, Smith-Spangler, Sundaram, & et al., 2007; Greaves, et al., 2011; Ogilvie et al., 2007). Goal setting theory (Locke & Latham, 2002) suggests that health interventions are successful to the degree that the intervention motivates an individual to adopt and be *committed* to a goal.

Commitment is “a volitional psychological bond reflecting dedication to and responsibility for a particular target” (Klein, Cooper, & Monahan, 2012, p. 137) that may be understood as an individual's determination to reach and responsibility for a goal. In health intervention research, commitment is largely examined in counseling contexts such as motivational interviewing (W. R. Miller & Rollnick, 1991, 2002, 2013) and in specific health contexts such as weight loss (Nyer & Dellande, 2010), safe sex (Stone, Aronson, Crain, Winslow, & Fried, 1994) and healthy eating (Kelly, 2011). Counseling-based research has found that strength of commitment statements is indicative of positive health outcomes (Aharonovich, Amrhein, Bisaga, Nunes, & Hasin, 2008; Amrhein, 2004; Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003). Further, commitment theorists argue that individuals who publicly state their commitment feel an obligation to fulfill the commitment (Cialdini, 2009) due to social norms or expectations of others (Johnson, 1973) so as to save face through consistent behavior (Becker, 1960). Public commitments have persistent effects (Cialdini & Trost, 1998) and allow the

individual to more easily provide reasons for their commitments (Cioffi & Garner, 1996). Thus, goal commitment emerges as a critical ingredient to a successful intervention as commitment positively influences health outcomes.

To assess goal and commitment perceptions, the “expectancy theory model of antecedents and consequences of goal commitment,” herein referred to as the “goal commitment model” or the GCM (Hollenbeck & Klein, 1987), can be applied to health behavior change interventions. The GCM, developed within organizational research, provides a model to systematically assess how goals and commitment to goals affects performance or the *change in goal-directed behavior* such as increasing sales by 20%. Addition of GCM goal assessment would help evaluate intervention effectiveness. Therefore, this dissertation demonstrates the GCM’s usefulness to health intervention researchers by (1) testing the GCM relationship between goals and commitment in an ongoing intervention to reduce alcohol-related risks and (2) testing the relationship between proposed GCM antecedents of commitment and commitment in an exercise context. This dissertation begins by defining a goal and discusses how health interventions incorporate and assess intervention goals. Next, a brief overview of the GCM is presented. Third, the importance of using goal assessments in health interventions is discussed. Fourth, Study 1 is presented. Last, the antecedents of goal commitment are explained and Study 2 is presented.

Goal Definition

This dissertation defines goals by drawing from organizational theory where goals are future objectives that a person wants to achieve and they are the aim of an action or set of actions (e.g., manage diabetes through diet; see Locke et al., 1981; Locke & Latham, 1990). This definition differs slightly from Dillard’s (1997) definition where goals are future states that an

individual is committed to achieving or maintaining (Dillard, 1997). While Dillard includes commitment as an explicit component of a goal thereby making goal-directed actions and cognitions less malleable, Locke and colleagues (1988) implicitly view commitment as a necessary component for goals to have motivating effects.

Both definitions imply that goals are future states suggesting individuals in some way are discontent with their present circumstances or behaviors and they wish to change. Thus, a person has to create a reality of a future self thereby connecting one's present with one's future via goal success (Hacker, 1985). Goals motivate individuals to exert behavioral effort to reach that future desired state or reach goal attainment. In summary, commitment is a necessary condition for goals to be motivating. This dissertation defines goals as future objectives a person wants to achieve and they are the aim of an action or set of actions.

Health Intervention Goal Inclusion and Assessment

Because commitments are anchored to goals, how goals and goal setting has been incorporated into health interventions is important to determining how to assess goal and commitment perceptions. Health interventions involve group goals (Weldon & Weingart, 1993) and this goal is routinely assigned to a participant (Zander, 1980). Thus, interventions *set the behavior change* or *assign goals* they want participants to adopt. For example, participants in the sexual health intervention HORIZONS are given the goal to “reduce sexually transmitted infections (STIs) through safer sex” (DiClemente et al., 2009). Therefore, participants are expected to adopt the goal “reduce STIs” and do so by engaging in behaviors such as negotiating condom use with male partners, purchasing condoms, and, if the intervention is successful, using condoms each and every time they have sex. Unfortunately, little information exists on how individuals translate an intervention group goal into an individual goal.

While health communication scholars develop and implement theory-driven projects, calls have been made in the public health intervention field to apply theoretically-based models that explicitly emphasize and measure health intervention goals as goals serve to increase commitment leading to greater behavior change (Werch, 2007). Despite this call for theory-driven health interventions, health intervention development does, at times, include goal setting as a behavior change strategy incorporated into the intervention. A meta-analysis identified goal setting as a promising approach to modifying dietary behaviors and noted that goal setting consistently led to a significant intervention effect (Ammerman, Lindquist, Lohr, & Hersey, 2002). Thus, public health intervention research should consistently incorporate goal-setting to improve health outcomes.

While goal setting is promising, it remains underutilized and it is rarely systematically evaluated in public health interventions (Brown et al., 2012; Levack, Dean, Siegert, & McPherson, 2006; Levack et al., 2006). For example, in one meta-analysis, goal-setting was identified as a strategy in only 22% of 122 health interventions (Michie, Abraham, Whittington, McAteer, & Gupta, 2009). Importantly, the inclusion of goal setting in an intervention does not mean goals are automatically assessed; rather it is quite atypical for them to be assessed. For example, goal setting was used in a diet and physical fitness promotion intervention to improve women's cardiovascular risk factors, yet goals were not measured beyond behavioral outcomes (Anderson, Mizzari, Kain, & Webster, 2006). Goal setting is an important preliminary step toward inclusion of goals in health interventions, and these goals should be systematically included and assessed.

Intervention Goal Assessment

As noted above, goal assessment is limited within intervention research in that when goals are assessed, they are generally measured only as behavioral outcomes. In sharp contrast to many other content areas, goals are commonly mentioned in the intervention literature on diet and physical activity (Bodenheimer & Handley, 2009; Cullen, Baranowski, & Smith, 2001; Shilts, Horowitz, & Townsend, 2004a; Shilts, Townsend, & Dishman, 2012). One goal example from the EatFit health intervention is to increase fruit and vegetable intake (Shilts, Horowitz, & Townsend, 2004b). In a motivational interviewing intervention that supported self-care of diabetes through better glycemic control (e.g., lower blood glucose levels), realistic and achievable goals were discussed so that goals could be attained during a certain time frame, such as “over the following four weeks go to the [sweet] shop after school three days out of five and buy just one item” (Channon, Smith, & Gregory, 2003, p. 681). The primary behavioral outcome measure reported was blood-glucose levels. While improved diabetes self-care for glycemic control did occur within the intervention group, Channon and colleagues (2003) did not investigate these outcomes in relation to participants’ own diabetes goals. The authors did suggest that other factors could mediate the relationship between self-care and glycemic control, so exploring goals and how they function could impact goal achievement.

Goal assessment is also often limited to qualitative discussions or intervention components that are not part of assessment. In a content analysis of 208 health interventions (i.e., physical activity, healthy eating, intention/behavior, and HIV/AIDS), goals were mentioned in 3 of 26 identified behavior change intervention techniques (i.e., set graded tasks, prompt specific goal setting, and prompt review of behavioral goals; Abraham & Michie, 2008). For example, a dietary intervention’s goal was to increase fruit and vegetable intake (Reuter, Ziegelmann, Wiedemann, & Lippke, 2008). This study assigned the same goal to all intervention participants

(eat five fruit and vegetable servings per day). While intervention participants significantly increased their fruit and vegetable intake versus the control, they did not assess how the intervention goal functioned within the individual as the behavioral outcome (fruit and vegetable servings consumed) was the primary assessment. Thus, while some public health interventions do use goals and goal-setting as key intervention components, they do not systematically assess how goals function.

Intervention Goal Theoretical Frameworks

One reason why goals are not systematically assessed is because public health intervention development inconsistently provides explicit theoretical guidance on goal inclusion and assessment. While formal acknowledgement of theory-driven intervention development may not always be published, in a meta-analysis of 354 HIV prevention interventions with the common goal to reduce risky sexual behavior, only half of the interventions (51.4%, $k = 182$) formally acknowledged the intervention was theoretically based (Albarracín et al., 2005). If health interventions inherently have goals, and goals should be assessed, the fact remains there are many useful theoretical frameworks that health interventionists may be incorporating that implicitly use goals, yet provide little guidance on goal assessment.

For example, the Health Promotion Model or HPM (Pender, Murdaugh, & Parsons, 2011), drawing from expectancy value theory (Atkinson, 1957), focuses on the pathways to a health promoting behavior or a goal such as preventing hearing loss from noise exposure (Lusk, Ronis, & Hogan, 1997; Ronis, Hong, & Lusk, 2006). One way this goal is reached is by considering the benefits of goal-directed behaviors. However, the HPM and its applications do not actually test goal setting or investigate goals, rather, HPM research examines predictors of goal behavior and the resulting behavioral outcomes. For example, HPM model testing *assumes*

that individuals have adopted certain goals such as increased physical activity (Garcia, Antonakos, & Ronis, 1998; Keegan, Chan, Ditchman, & Chiu, 2012; Wu & Pender, 2002) without assessing participant's goals. While some HPM-based interventions have found significant differences between intervention and control participants (Dehdari, Rahimi, Aryaeian, & Gohari, 2014), other HPM interventions have not been successful in motivating change (see, e.g., Samaras et al., 1997). An understanding of how behavior change intervention goals function within the individual could provide further understanding of why some HPM interventions are less successful.

Another way in which goals are used within health interventions is through the development of self-efficacy (Bandura, 1977) or one's belief in one's ability to perform behaviors to accomplish a desired outcome. One accepted way to increase self-efficacy is to facilitate achievable performance mastery over the desired outcome behavior(s) (Marks & Allegrante, 2005; O'Leary, 1985). For example, researchers may assign the goal of walking regularly to an individual suffering from painful arthritis. To enact that goal, the individual must first perform the skill, walking, to eventually be able to walk regularly (Allegrante & Marks, 2003). Performance skills mastery, walking, becomes a proximal behavior to the distal intervention goal of walking regularly. In this research, self-efficacy and the outcome (walking more) are assessed, yet how the goal functions within the individual is not understood from these results. Thus, adding goal assessment may provide key details on how intervention goals function within the individual.

However, there are theories that would be extremely useful for health interventionists to adopt that provide explicit guidance surrounding goals, especially when reviewing communication theory. For example, Goals-Plans-Actions Theory (GPA; Dillard, 1990, 2008)

examines how goals influence message production processes through plans and enact those messages through behavior. Goals are seen as future states that an individual is committed to achieving or maintaining (Dillard, 1997). In the GPA, goals influence the development of plans that are cognitive representations of behaviors that support goal attainment (Berger, 1997). While both goals and plans are internal processes, actions are behaviors that are enacted to reach a goal (Dillard, 1997). For example, a health intervention may encourage participants to have the goal to lose weight. Losing weight, however, can be accomplished through several behaviors such as eating a healthy diet or increasing exercise. Thus, goals are important in behavior-change interventions as goals serve to guide behavioral effort. GPA theory provides explicit direction on how plans direct behavior, and, thus, one could assess intervention outcomes in relation to participants' plans and subsequent actions.

In summary, health interventions include goals and interventionists assign these goals to participants. Traditionally, goal assessment has been limited to goal achievement or the positive health behavior outcome. Intervention strategies or curriculum components may include goals and goal setting, although these remain underutilized and lack systematic inclusion and assessment. Further, while theory-driven guidance for goal assessment exists, current public health intervention theoretical frameworks currently lack explicit guidance on goal assessment. If goals are an inherent part of a behavior change intervention, then assessment is needed to understand how goals work within the individual. This dissertation proposes using a goal model, "expectancy theory model of antecedents and consequences of goal commitment" or the goal commitment model (GCM; Hollenbeck & Klein, 1987), to systematically assess how goal perceptions and commitment to those goals affect intervention success. The GCM is first explained below and then applied to a health intervention context.

Goal Commitment Model

Research examining the antecedents of increased performance (e.g., increase sales by 20%) developed the “expectancy theory model of antecedents and consequences of goal commitment” (herein referred to as the “goal commitment model” or the GCM; Hollenbeck & Klein, 1987). The GCM (1) explains the *goal difficulty effect*, (2) explains how the goal difficulty effect is moderated by *goal commitment* and (3) identifies the *antecedents of goal commitment*. Study 1 of this dissertation examines the goal difficulty effect and the moderating effect of goal commitment. Study 2 of this dissertation examines antecedents of goal commitment in a health context. The GCM draws from both goal setting theory (Locke, 1968; Locke & Latham, 1990; Locke & Latham, 2002) and expectancy theory (Vroom, 1964) to understand how goal setting affects *performance* or, as previously mentioned, the amount of change in goal directed behavior. Before explaining the goal difficulty effect, the discussion of goals from earlier in the dissertation is further expanded.

Goals

From a GCM perspective, goals are cognitive, directing effort and performance toward a specific task whereas behaviors are actions performed for goal achievement. Goal setting theory (Locke & Latham, 1990) proposes that goals have at least three properties: specificity, proximity and difficulty. Goal specificity is the level of detail in which a goal is described. For example, a specific goal may be to “lose 10 lbs.” whereas a less specific goal would be to “lose weight.” Specific goals are more likely to result in success than “do your best” or “try hard” goals (Locke & Latham, 1990). Proximity, a second goal property, is how far a goal exists in the future. Proximal goals are those that immediately require effort to perform the goal. Distal goals are those that are in the future and seemingly do not require immediate, focused actions for goal

achievement. Goal research in health contexts has found that proximal goals lead to better performance than distal goals (Bandura & Simon, 1977; Latham & Seijts, 1999). Early goal research in health found that dieters were able to self-regulate their eating habits regardless if they were assigned a proximal or a distal goal, however, those given distal goals often set proximal goals to achieve the distal one (Bandura & Simon, 1977). In summary, proximal and specific goals are generally achieved more quickly than distant, long-term and vague goals.

Research reviewed above demonstrates goal specificity and proximity typically are linearly related to performance (e.g., specific, near-future goals lead to greater performance), however, the third goal property, goal difficulty is *not* linearly related to performance. Goal difficulty is defined as the degree of proficiency or performance level sought (Kwan, Lee, Wright, & Hui, 2012), and, in the GCM literature, it is often separated into three levels: easy, moderate, and difficult. A difficult goal is one that is complex and hard to perform requiring high levels of skill and knowledge to achieve (Locke & Latham, 1990). The relationship between goal difficulty and performance is referred to as the *goal difficulty effect*.

Goal Difficulty Effect

The *goal difficulty effect* describes the relationship between goal difficulty and performance: difficulty and performance are curvilinearly related such that performance is highest for moderately difficult goals. Several studies have established a curvilinear relationship between goal difficulty and performance (Atkinson, 1958; Erez & Zidon, 1984; C. K. Miller, Headings, Peyrot, & Nagaraja, 2012). Goal difficulty positively predicts performance up until a goal is seen as too difficult (unattainable) at which point performance declines. Organizational theorists call a goal that is challenging, but not discouraging, a *moderately difficult goal*. A moderately difficult goal should be challenging enough to encourage the highest levels of

performance, yet low enough to be perceived as attainable and acceptable. Research has demonstrated that moderately difficult goals lead to the best performance (Kyllo & Landers, 1995; Locke, Chah, Harrison, & Lustgarten, 1989; Tubbs, 1986). Typically, difficult goals involve greater complexity in behaviors to fulfill the goal, and, therefore, individuals may become overwhelmed or stop attempting to fulfill a goal due to the extensive effort that must be used to fulfill the goal (Berger, 1997).

Here is a key reason to measure performance rather than goal attainment: if measuring attainment, easier goals should lead to successful attainment more often than difficult goals. However, given the curvilinear relationship between goal difficulty and performance, easy goals (those that have the lowest level of goal difficulty) and the most difficult goals negatively impact *performance* level. Performance is a measurable amount of effort extended toward reaching a goal and this may exceed goal attainment. For example, if a woman's goal is to lose 10 pounds, whether she loses 5 pounds or 15 pounds, the total pounds lost are *performance*. For easy goals, the least amount of effort is required to achieve these goals that should thus lead to low performance level. For the most difficult goals, individuals will most likely abandon the goal extending little effort and, thus, also lead to low performance level. Moderately difficult goals produce more effort than easy goals and, thus, the greatest performance.

While theorists argue that goal difficulty and performance are curvilinearly related, the literature is complex. Note, in the literature review below, goal difficulty is typically operationalized as ranging from easy to moderately difficult and, because truly challenging goals are rarely assessed, it is not surprising that meta-analyses find a positive linear relationship between goal difficulty and performance rather than a curvilinear one. One meta-analysis found a positive linear relationship between goal difficulty and performance with effect sizes from .52 to

.82 (Locke & Latham, 1990). In another meta-analysis (Locke, Shaw, Saari, & Latham, 1981) the positive linear relationship was only supported when feedback was provided (e.g., Strang, Lawrence, & Fowler, 1978) and some lab-based studies have reported *no* relationship between goal level and performance. The authors note that lab-based studies may find no relationship due to: limited time (Bevalas & Lee, 1978), limited range of goal difficulty (Frost & Mahoney, 1976; Oldham, 1975), and lack of goal acceptance or initial agreement with the goal (Oldham, 1975).

More recent theoretical considerations often explore goal characteristics (e.g., specificity) and moderators such as commitment (Latham & Locke, 2007). Thus, for the most part, the theoretical hypothesis of a positive linear relationship between goal difficulty and performance (note, when goal difficulty is operationalized as moderately difficult) has largely been supported yet more recent work assumes that important moderators such as commitment affect the relationship.

Goal Commitment as a Moderator

The goal commitment model (GCM) suggests that the relationship between goal difficulty and performance (called the “goal difficulty effect”) is moderated by goal commitment. The GCM argues that goal commitment is a function of the attractiveness of goal attainment (value an individual assigns to goal attainment) and the expectancy of goal attainment (an individual’s perception of the likelihood that goal attainment results from a particular behavior or set of behaviors). Recall that a health intervention’s purpose is to promote positive behavior change through goals (e.g., reduce STIs, manage diabetes, lose weight). Further, intervention researchers argue participants must accept the goal *and* commit to that goal to motivate performance. Thus, commitment emerges as an important component of behavior change interventions.

Like goal setting theory (Locke, 1968; Locke & Latham, 1990), the GCM asserts that goal commitment strengthens the positive, linear relationship between goal difficulty and performance so that increased commitment improves performance so that those high in goal commitment outperform those low in goal commitment (Hollenbeck & Klein, 1987; Klein et al., 1999). Note, when GCM researchers refer to “goal difficulty,” they mean moderately difficult goals rather than difficult goals.

Therefore, assuming that goals range from not difficult to moderately difficult, commitment moderates the relationship between difficulty and performance. Goal difficulty, however, is often manipulated as a part of a research design. For example, in one goal-based intervention, Type 2 diabetics were assigned to eat either 8 or 6 low-glycemic index (LGI) food servings a day where the researchers operationalized the “more difficult” goal as 8 LGI servings and “less difficult” as 6 LGI servings. At the end of the intervention, participants assigned to consume 8 LGI servings perceived the goal as significantly more difficult than did participants assigned to consume 6 LGI servings (C. K. Miller, et al., 2012). Participants, however, who were assigned a less difficult goal (e.g., 6 LGI servings), were significantly more committed to goal achievement thus suggesting that the more difficult goal of 8 LGI servings may have been perceived by participants as too difficult.

Overall, commitment has a positive effect on performance (those with high commitment outperform those with low commitment) when everyone is assigned a moderately difficult goal (Harrison & Liska, 1994; Klein, et al., 1999). However, people often perceive the same goals at different difficulty levels. Thus, goals vary in both their goal difficulty and commitment levels. The GCM predicts that when there is sufficient variance in both commitment and difficulty, commitment moderates the relationship between goal difficulty and performance: *the positive*

relationship between difficulty and performance will be stronger for those high in goal commitment relative to those low in goal commitment.

Scope and Application of the GCM in Health

The GCM is not useful for studying all health interventions. The GCM may best predict performance for health goals when (a) goals to achieve the behavior are considered moderately difficult, (b) the performance requires multiple behaviors often enacted over time (e.g., diabetes self-care, condoms used with all sexual partners, etc.) and (c) commitment to attaining the goal is important (see meta-analyses such as Klein, Wesson, Hollenbeck, Wright, & DeShon, 2001; Wright, 1990).

In organizational research, goals are commonly assigned based on past performance of a given task (Wright, 1990). These tasks often require multiple sequential behaviors for goal achievement. For example, in a computer card sorting task that was supposed to simulate clerical work, individuals were assigned to sort 40 (easy goal), 60 (moderate goal), or 80 (difficult goal) cards in 40 minutes based on the past performance (Peters, Chassie, Lindholm, O'Connor, & Kline, 1982). This task required multiple behaviors including gathering, sorting, fastening, and filing different pieces of information located on the computer card using four predetermined steps (1) removing cards, (2) pairing cards using a predetermined coding system, (3) attaching the cards using a specific colored paper clip, and (4) filing both cards using the coding system (Peters, et al., 1982). Goals also could be set based on multiple trials of repetitive behaviors. For example, tasks could include solving 24 five-letter anagrams in 3 minute trials or brainstorming lists of uses for a given object during 1 minute trials (Wright & Kacmar, 1994).

Thus, simple to achieve health goals such as getting vaccinated are not good applications for the theory. Rather, the theory's scope is limited to those behaviors that require some

moderate to *complex planning* to achieve. Planning can be considered a proximal predictor of health behavior (Schwarzer et al., 2007). Berger (1997) notes that pursuing a goal requires that relevant knowledge is accessed to guide actions to reach desired end states. This knowledge is organized in plans. Complex plans include more actions, more diversity of behavior, more detail and more contingencies than simple plans (Berger, 1997).

Berger's emphasis on specific plans of action and behaviors emphasizes important characteristics for health intervention contexts. Often, a health behavior goal is not simply a matter of enacting a behavior once. Rather health behavior changes often require a certain level of skills and abilities, often referred to as preparatory behaviors, to enact changes. For example, for a woman to engage in safer sex, she must learn how to put on a condom, purchase condoms in advance of sex, successfully negotiate condom use with a partner, and correctly use a condom during sex. Research confirms that safer sex preparatory behaviors correlate with condom use and also act as a mediator between behavioral intention and condom use (Bryan, Fisher, & Fisher, 2002; Noar, Kellie, & Cole, 2006; Sheeran, Abraham, & Orbell, 1999). Safer sexual communication among sexual partners related to condom use had an effect size of $r = 0.22$ in a meta-analysis (N=18,529; Noar et al., 2006). In relation to health goals, these preparatory behaviors require that *planning* occurs to purchase, carry, and discuss condoms prior to the sexual act.

Based on prior work with the GCM, the model would seem most useful in health as it predicts performance for goals that require preparatory behaviors such as managing diabetes, losing weight, and increasing physical fitness. Special considerations for how goal difficulty and performance in health are operationalized are further discussed in Chapter 2.

In Study 1, a preliminary test of the GCM as an assessment tool is provided. Towards that goal, Chapter 2 presents Study 1, a test of the hypotheses derived from the GCM within the context of an intervention to decrease alcohol-related risk behaviors. The purpose of Study 1 is to determine whether the *goal difficulty effect* and *commitment's moderating effect* occur as expected in a successful and widely-adopted health intervention, Brief Alcohol Screening and Intervention of College Students. In Chapter 3, goal commitment and selected health-related antecedents or predictors, as presented in the GCM, are examined. Many GCM commitment predictors, such as self-efficacy, are widely included in health intervention assessment, thus, understanding their effects on commitment and how they operate within the GCM are important. In Chapter 4, Study 2 specifically looks at these selected predictors of commitment in the context of exercise goals. Chapter 5 provides a discussion of Study 1 and Study 2's results and suggests future directions for research.

CHAPTER 2: STUDY 1: BACK TO BASICS

An Application of the Goal Commitment Model to Reduce Alcohol-Related Risk Behavior

Drinking on college campuses is an established and highly publicized issue (Courtney & Polich, 2009; Hingson, Zha, & Weitzman, 2009; T. F. Nelson, Xuan, Lee, Weitzman, & Wechsler, 2009; Wechsler, Lee, Kuo, & Lee, 2000). Drinking is associated with a variety of negative consequences that range in frequency and severity from mild (e.g., being late for class) to more severe (e.g., sexual assault; Hingson, et al., 2009; Perkins, 2002). College administrators and health professionals are determined to find evidence-based approaches to preventing or reducing alcohol consumption and reducing alcohol-related problems.

Finding effective interventions is no easy task; college students are faced with a complex set of age and context-specific circumstances that perpetuate problematic drinking. The so-called college “wet environment” (Wechsler & Nelson, 2008; Weitzman, Nelson, & Wechsler, 2003) is characterized by having social networks where drinking, especially binge drinking (e.g., five or more drinks for men or four or more drinks for women in one sitting; Wechsler, et al., 2000), is common and endorsed. Further, wet environments include other social (e.g., drinking before college), residential (e.g., Greek life) and market surroundings where drinking is prevalent and alcohol is inexpensive (Weitzman, et al., 2003).

This wet environment has led to specific problematic drinking patterns among college students that tend to include heavy episodic drinking (e.g., binge drinking). Nearly 80% of students admit to drinking and 37% admit to having ever engaged in binge drinking (Johnston, O'Malley, Bachman, & Schulenberg, 2013; Wechsler & Nelson, 2001). In a 2013 study, during

the past two weeks, roughly 2 out of 5 college students report engaging in binge drinking (National Institute on Alcohol Abuse and Alcoholism, 2013; see also Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994; Wechsler, et al., 2000). As a result of college drinking, an estimated 1,825 college students die as a result of alcohol-related unintentional injuries; 599,000 students are unintentionally injured; 696,000 students are assaulted by another student who has been drinking; and an estimated 97,000 students are victims of alcohol-related sexual assault or date rape (Hingson, et al., 2009). While male students tend to have more external consequences (e.g., property damage) than female student drinkers, male and female student drinkers report roughly the same negative consequences to the self such as memory loss and injury (Perkins, 1992, 2002).

To address problematic drinking, numerous health interventions on college campuses have been created. *The Community Guide*, a manual for best practices, suggests that screening and brief interventions (SBI) should be used (Community Preventive Services Task Force, 2013). SBIs, the focus of the present study, assess a participant's drinking patterns and, for those that test positive for excessive drinking, provide feedback about alcohol-related risks and consequences of excessive drinking. SBIs further include face-to-face conversations about drinking patterns and include referral for further treatment when needed. SBI evaluation research shows frequency of binge drinking (e.g., measured as drinking occasions per month) has typically been reduced around 16.5% among excessive drinkers and 1.8% among all types of drinkers (Community Preventive Services Task Force, 2013) with effects lasting up to 12 months post-intervention (Bertholet, Daeppen, Wietlisbach, Fleming, & Burnand, 2005).

Such brief interventions have emerged as a successful health intervention modality to reduce excessive drinking with lasting effects post-intervention, yet little theoretical work has

been done to demonstrate *how* such interventions work or to assess how participant's goal perceptions may play an important part in an intervention's efficacy. To further understand how these brief interventions work, this dissertation applies the GCM to college students enrolled in a Brief Alcohol Screening and Intervention of College Students (BASICS) intervention at the University of Georgia (UGA). The study proposes to assess (1) the relationship between goal difficulty and performance and (2) commitment's moderating role on the goal difficulty effect. In applying the GCM to this context, the goal is an assigned one (typical of most interventions) and the performance measure is one of a reduction in drinking behavior and related negative consequences. In the following sections, the BASICS intervention is summarized, problematic drinking for college students is explained, and the GCM hypotheses are applied.

BASICS: Brief Alcohol Screening and Intervention of College Students

The Substance Abuse and Mental Health Services Administration (SAMHSA, 2013) identifies BASICS or a Brief Alcohol Screening and Intervention of College Students (Dimeff, 1999) as a model health intervention. The objective of BASICS is to motivate students to reduce risky-alcohol related behaviors. BASICS works to help college students make better alcohol-related decisions to prevent negative consequences such as missed classes, accidents, and interpersonal violence. It uses a motivational interviewing (W. R. Miller & Rollnick, 1991, 2002, 2013) approach where students meet with counselors. The tone of sessions is empathetic, not confrontational or judgmental. UGA students are either mandated to attend BASICS via university services or the local court system. Students may also be referred to the program, although the overwhelming majority of students are mandated (94.3%; Walters, 2013). Upon being mandated, UGA student accounts are "flagged" which prohibits them from enrolling in the

following semester's classes or obtaining official college transcripts. Such flags are removed upon BASICS completion.

Despite the wet environment or culture of drinking on and around college campuses, BASICS has proven effective at reducing alcohol consumption with significant effects lasting up to four years after the intervention, although the greatest impact is found between baseline and one year post-intervention (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Borsari & Carey, 2000; Larimer et al., 2001; Murphy et al., 2001; SAMHSA, 2013). BASICS has shown significant reductions in the number of times alcohol was consumed ($\eta^2 = 0.28$) and the frequency of binge drinking ($\eta^2 = 0.12$) at six weeks post-intervention (Borsari & Carey, 2000).

Because the goal of BASICS is to motivate students to change their problematic drinking behaviors, the Goal Commitment Model (GCM; Hollenbeck & Klein, 1987) emerges as a potentially useful way to understand participant motivation based on their BASICS program goal. The assigned intervention goal is *to reduce alcohol-related risks*; however, how students decide to reduce risk is a personal decision. Part of the BASICS program includes goal-setting and creating plans of action to make better alcohol-related decisions and potentially reduce problematic drinking. For example, participants may create subgoals² to reduce their alcohol-related risks that range from reducing drinking (e.g., “only have three drinks tonight” or “only drink on weekends”) to preventing alcohol-related risk behaviors (e.g., “always use a designated driver” or “only drink after my work is completed”). BASICS is designed to encourage students to drink less (amount consumed) and to drink on fewer occasions as well as to reduce alcohol related problematic behavior. The conceptualization of problematic drinking is discussed below.

Problematic Drinking Among College Students

Reducing alcohol-related risks involves drinking less, spending less time drinking and having fewer alcohol-related consequences. When students drink too much, too often and have alcohol-related problems, this set of behaviors is referred to as “problematic drinking.” While scholars have noted that the concept of “problematic drinking” lacks standardization (Ham & Hope, 2003), there are generally two types of measures associated with this concept—actual drinking behavior (e.g., how much one drinks and how often) and negative outcomes of that drinking behavior.

The drinking part of problematic drinking is typically conceived of as how much people drink, how long they drink during a drinking occasion, and how often they drink. For quantity or how much one drinks, binge drinking (earlier defined as drinking five or more drinks for men or four or more drinks for women in one sitting; see Wechsler et al., 2000) is considered a marker of problematic drinking. Frequency of drinking has been examined as a function of drinking occasion (e.g., how many hours per occasion) or number of drinking days per week (Collins, Parks, & Marlatt, 1985). Heavy episodic or binge drinking or drinking frequently or in great amounts is a demonstrated public health risk factor for college students. For college students, number of hours spent drinking is especially important as they may engage in prepartying or pregameing where drinking occurs before a night of drinking (Hummer, Napper, Ehret, & LaBrie, 2013), so that time spent drinking becomes a risk factor for heavy alcohol use (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2007).

The second component of problematic drinking is alcohol-related negative consequences such as injury or accidents (Baer, 2002). The negative outcomes component has been conceptualized as (a) damage to the self, (b) damage to other people, and (c) institutional costs

(Perkins, 2002). Problematic drinking is an important contributing factor to physical, social, and legal problems that directly affect the individual. These consequences include academic impairment, blackouts, personal injuries, short- and long term physical illnesses, unintended sexual activity, impaired driving, and legal repercussions. While self-inflicted damages occur as a result of drinking, damages may also affect others. Others' property could be damaged, fights and interpersonal violence may occur, and sexual violence happens. Students' problematic drinking also may affect institutions and lead to property damage. Perkins (2002) noted that institutional costs include student attrition, staff costs, and legal costs.

Thus, reducing alcohol-related risks involves drinking less and less frequently and reducing negative consequences related to drinking. Typically, researchers consider these as a single performance measure. However, this dissertation examines drinking behavior as a mediator between the GCM components and the performance outcome of negative consequences as clearly, drinking behaviors cause the negative outcomes of drinking.

Goal Difficulty and Commitment in BASICS

Traditionally, a health intervention *assigns* a goal (e.g., reduce alcohol-related risk, reduce sexual risk). When applying the GCM to the BASICS intervention, student participants are given an assigned intervention goal to "to reduce alcohol-related risks." Because assigned goals are generally considered moderately difficult goals (Wright, 1990), organizational researchers would *assume* that the assigned BASICS goal to reduce alcohol-related risks is a moderately difficult goal. However, the present study measures student perceptions of goal difficulty.

According to the GCM, moderately difficult goals result in higher performance than less difficult goals. As performance for the BASICS program is a *reduction* in negative outcomes

associated with drinking, it is hypothesized that there is a negative relationship between perceptions of goal difficulty and negative outcomes of drinking that is mediated by drinking behavior.

H1: Drinking behavior mediates the negative relationship between goal difficulty and alcohol-related negative consequences.

Recall that the vast majority of BASICS participants are mandated to attend the program. Until they have completed BASICS, a “flag” is placed on their student account that prevents them from enrolling in classes and prevents receipt of official University transcripts. Therefore, to remain a student and/or graduate from the University, mandated students are motivated to complete the BASICS program yet may not be committed to change their alcohol related risks. Thus, commitment to reducing alcohol related risks should be an important predictor of performance. Recall that the GCM predicts that commitment moderates the goal difficulty effect (performance is highest for moderately difficult goals) such that:

H2: Goal commitment moderates the negative relationship between goal difficulty and alcohol-related performance such that the relationship between difficulty and alcohol-related performance will be stronger when commitment is high relative to when it is low.

The final model tested is found in Figure 2.1. This is one of moderated mediation where actual drinking behavior is a mediator to alcohol-related negative consequences and commitment moderates the goal difficulty-performance relationship.

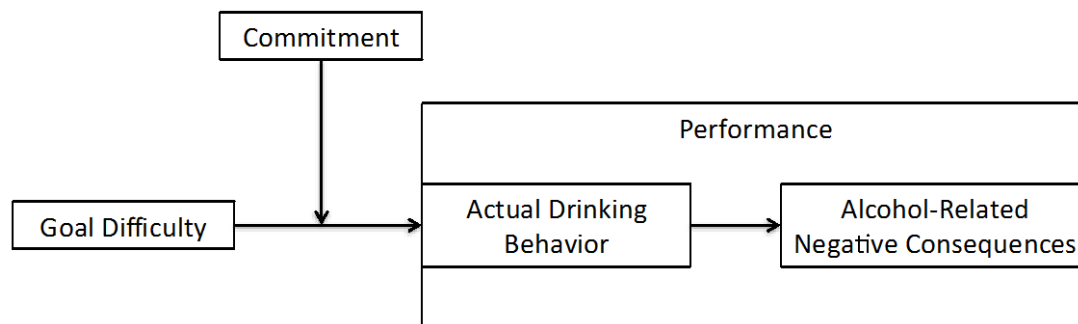


Figure 2.1. Conceptual BASICS Goal Commitment Model

Methods

Participants

Two hundred and twenty-seven undergraduate students who attended BASICS were recruited to participate between April and November, 2014. The BASICS program is administered through the University Health Services (UHS) at the University of Georgia. The majority (86.7%) of BASICS participants during this time period were mandated to attend because they had legal problems related to alcohol use or violated the university's alcohol and drug policy. Students were mandated via county municipal court, university judicial programs, housing services, Greek life, or the Athletic Association.

Study eligibility criteria were: attend BASICS and be a current student at time of the intervention. In the present study, BASICS students identified as 59.9% male, 40.3% Greek (fraternity/sorority) members, 52.7% first year students, 15.5% second year students, 11.9% third year students, 4.1% fourth year students, 2.4% fifth year students. The average self-reported GPA was 3.42 ($SD=0.47$).

Data were collected at the end of the BASICS sessions. As immediate post-BASICS assessment was not required for program completion, an incentive was provided for participants

who completed the immediate post-BASICS survey. These participants were entered into a \$250 gift card incentive drawing.

Procedure

The UHS asked me to evaluate the BASICS program while collecting data for this dissertation. UHS already had contracted out (with BluSky) data collection on BASICS participants (primarily demographic measures and assessments of problematic drinking). The BluSky data collection process could not be altered; however, the UHS did allow for inclusion of additional goal assessments post-intervention.

Prior to the first BASICS session, students were provided an informed consent form. Informed consent consisted of the student releasing de-identified information of data that the UHS had already collected on students in the BASICS program and the additional goal-related data. If students had questions about the informed consent, they could ask their counselor at the beginning of the appointment. If consent was given, the signed informed consent document was given to the BASICS counselor.

During the first meeting with their BASICS counselor, students completed an online assessment using the BluSky computer program. The BluSky assessment includes demographic and problematic drinking performance measures. At the end of the final BASICS session, UHS staff agreed to administer a supplemental immediate post-BASICS paper and pencil survey for the goal perception measures and to measure performance since beginning BASICS. Students took approximately 10-15 minutes to complete this survey.

A final de-identified data set was provided by the UHS where each participant was identified with a study ID number. The students' names and study ID numbers were kept on a master list by UHS staff to protect student identity.

BASICS sessions. BASICS sessions were face-to-face with trained counselors. Students attended scheduled appointments at the University Health Center (UHC). Unfortunately, without notifying me, the UHC changed BASICS' implementation in the middle of data collection. Thus, data collected over Spring and Summer semesters included students who had attended three BASICS sessions while data collected over Fall included students who had attended only two BASICS sessions. Both the three-session and two-session BASICS are described below.

Three-session intervention (BASICS-3). The three-session intervention (n=85) included two 60-minute sessions where alcohol-related risk is assessed and personalized feedback is provided to help participants envision ways they can reduce future risk. A third 60-minute session was used to review past information, ask questions, and discuss and make changes to individual plans of action. Informally, this session is referred to as the “goals” session where students can discuss and make changes to individual plans of action by talking about eight areas of health: academic/cognitive health (e.g., class attendance), physical health (e.g., nutrition), mental health (e.g., stress management), relationship health (e.g., family, friends), financial health (e.g., credit cards), spiritual health (e.g., spiritual and religious beliefs and practices), recreational health (e.g., fun without alcohol), and community involvement (e.g., alienation). Conversation was guided to discuss three health areas of the student's choosing: identify student strengths in each health area, areas for improvement, how alcohol has affected this health area, setting a goal related to this area, and plans to reach that goal. BASICS-3 sessions took place every two weeks, for a total of four weeks in the program.

Two-session intervention (BASICS-2). The two-session intervention (n=142) included two 60-minute sessions where there is a shortened discussion on goals, as this is incorporated into the first session. Specifically, during the first session, alcohol-related risk is assessed and

personalized feedback is provided. During the second session, students are encouraged to envision ways to reduce future risk and to identify three goals, based on their personalized feedback assessments, so that they can decrease their alcohol-related risks. BASICS-2 sessions take place every five weeks.

Measures

This dissertation was restricted in terms of what could be measured as the data collection was largely dependent on measures the UHS had already implemented. As noted above, demographic items and performance measure were already collected by the UHS and, thus, those are the measures used in the dissertation. Means and standard deviations are in Tables 2.1 and 2.2 for the BASICS-3 and BASICS-2 data respectively. Measures are in Appendix A.

Goal difficulty. Goal difficulty is operationalized in three ways within organizational goal research: self-set vs. assigned, a self-perception measure (how difficult is this goal for me?), or an external perception measure (how difficult is this goal for others to accomplish?). Historically, goal difficulty has been examined as a self-set goal or an assigned goal within GCM research (see Latham & Steele, 1983; Wright, 1990). Research has found that participating in goal setting yielded significantly greater commitment for goal performance than did having an assigned goal among alcohol use intervention student participants (Lozano & Stephens, 2010). Goal commitment researchers argue that a self-set goal is “easy” and an assigned goal is “difficult” *regardless of the content of that goal*, which is a strong claim. An assigned goal approach typically works best in lab-based studies where individuals engage in a task and are provided a goal based on their past performance of this task (Wright, 1990). However, this approach does not guarantee that an assigned goal works as intended as individuals may vary in the behaviors they enact to attain the overarching goal. Prior researchers have noted (see Lee &

Bobko, 1990) that there are many conceptual issues that arise when operationalizing goal difficulty as self-set (easy) or assigned (difficult) goals as not everyone self-sets easy goals and not everyone may view an assigned goal as difficult.

Alternatively, goal difficulty has been assessed using a subjective self-perception measure (e.g., how difficult is the goal for me?). This assessment of goal difficulty is commonly used in field settings (Lee & Bobko, 1992; Wright, 1990). For example, goal difficulty may be measured as an “intention to do well” (Hall & Foster, 1977) or as a personal challenge (Ivancevich & McMahon, 1977a, 1977b, 1977c). Unfortunately, these different operationalizations have led to varying effect sizes (e.g., assigned $d = 0.78$, self-perception $d = 0.34$; Wright, 1990 and see Mento, Steel, & Karren, 1987; Tubbs, 1986). The smaller effects may be due to the fact that a self-perception goal difficulty measure is “ipsative, in that such measures generally reflect the individual’s assessment of whether or not he or she can accomplish the task at hand” (Lee & Bobko, 1992, p. 1419). In essence, self-efficacy influences how one views goal difficulty. Thus, a self-perception goal difficulty measure is problematic because it tends to confound difficulty with other variables such as self-efficacy. Due to limited empirical evidence regarding the impact of a self-perception goal difficulty measure in health, this dissertation also investigated whether a self-perception goal difficulty measure would be useful.

To remove confounds associated with a self-perception goal difficulty measure, a third consideration is to treat goal difficulty as an externally-referenced item (Lee & Bobko, 1992; Locke & Latham, 1990). By asking an individual to assess goal difficulty for someone who is “average,” this externally-referenced measure makes goal difficulty normative. Prior work found that this measure correlated with self-perception, but importantly it was not significantly related

to self-efficacy (Lee & Bobko, 1992). By determining goal difficulty based on an average person, potential confounding variables (e.g., self-efficacy) are eliminated.

An externally-referenced measure of goal difficulty was used because when intervention group goals are assigned to each participant (Zander, 1980), Lee and Bobko (1992) suggest goal difficulty would be best determined through an externally-referenced goal difficulty measure.

Externally-referenced goal difficulty. Externally-referenced goal difficulty (goal difficulty-external) was measured using six adapted items used in the GCM literature (Kwan, et al., 2012; Lee & Bobko, 1992). Each item begins “For the average UGA student, the goal to reduce their alcohol-related risk is...” Responses are given using 5-point scales with different poles. Poles include: (1) extremely challenging...no challenge at all, (2) enormous effort...almost no effort, (3) an extreme degree of thought and problem solving...almost no effort, (4) an enormous amount of persistence and tenacity...very little persistence and tenacity, (5) very high standards of performance...no standards of performance at all, and (6) discovering better ways of doing things...never discovering better ways of doing things. Prior studies found externally referenced goal difficulty was distinct from self-referenced goal difficulty with a factor intercorrelation of 0.49 (Lee & Bobko, 1992). Subsequent research has confirmed a valid factor structure (Kwan, et al., 2012). Internal consistency for the externally-referenced goal difficulty measure in this dissertation was acceptable (Cronbach’s $\alpha = .82$) and somewhat lower but consistent with past reports (e.g., $\alpha = .91$; Lee & Bobko, 1992). The items were reverse coded so that higher numbers indicated a greater goal difficulty perception. Following past procedures, the items were averaged to create a final goal difficulty score where higher numbers indicated the greater goal difficulty perception.

Self-referenced goal difficulty. Self-referenced goal difficulty (goal difficulty-self) was assessed using six adapted items (Lee & Bobko, 1992). Each item begins, “What I want to accomplish right now...” Responses are given using 1-5 measures with different poles. Items and poles include: (1) will require, very little attention and effort...as much attention and effort as I can give; (2) is generally, not challenging at all...very challenging; (3) is something that I was, always able to do...always have to push myself to attain; (4) is set at a level of difficulty that I was, always able to do...always have to push myself to attain; (5) is set at a level of difficulty that is, lower than my past behavior...higher than my past behavior; and (6) is, not at all difficulty...extremely difficult. Prior studies found self-referenced goal difficulty was distinct from externally-referenced goal difficulty with a factor intercorrelation of 0.49 (Lee & Bobko, 1992). Internal consistency for the externally referenced goal difficulty measure was acceptable (Cronbach’s $\alpha = .84$) and in line with past reports ($\alpha = .89$; Lee & Bobko, 1992). Following past procedures, the items were averaged to create a final self goal difficulty score where higher numbers indicated greater goal difficulty perception.

Goal commitment. Klein et al. (2014) developed the KUT, a unidimensional target-free assessment of goal commitment. Four items used a 1-5 response scale where 1=Not at all, 2=Slightly, 3=Moderately, 4=Quite a bit, and 5=Extremely. Items include: (1) How committed are you to reducing your alcohol-related risks; (2) To what extent do you care about reducing your alcohol-related risks; (3) How dedicated are you to reducing your alcohol-related risks; and (4) To what extent have you chosen to be committed to reducing your alcohol-related risks. Internal consistency was high (Cronbach’s $\alpha = .92$) and in line with prior work (Cronbach’s α ranged from 0.86 to 0.98; Klein, Cooper, Molloy, & Swanson, 2014). Klein et al. (2014) conducted content validity through item generation, expert review (items sorted with 94%

accuracy), and testing in three studies ($N = 37-111$) resulting in the four-item KUT measure. These studies confirmed KUT was unidimensional. Also, the measure reflected target-free commitment as shown by significant within-person differences in commitment (Klein, et al., 2014). The 4-item KUT measure is beneficial as it (1) allows for parallel comparison of commitment across different targets, (2) eliminates assumptions that may be inherent with target-specific conceptualizations and operationalizations, and (3) extends the organizational commitment literature to other disciplines. Past commitment measures have been criticized for (1) structural issues (e.g., multiple factors exist) leading to calls for revised conceptualizations of commitment, (2) confounding content measurement (e.g., satisfaction) leading to spurious findings, and (3) practical concerns such as scale length and target specificity leading to concerns such as respondent fatigue and scale adaptability across contexts (Jaros, 2012). The four KUT items were averaged to create a commitment score for each participant where higher numbers indicated greater goal commitment.

The goal measures had negative skews (goal difficulty-external = -0.36, commitment = -0.56, goal acceptance = -1.47 and goal difficulty-self = -0.02; *SE* of skewness = 0.16) and were either somewhat leptokurtic (goal difficulty-external = 0.68 and goal acceptance = 1.12; *SEs* of kurtosis = 0.32) or somewhat platykurtic (commitment = -0.50 and goal difficulty-self = -0.42; *SEs* of kurtosis = 0.32).

Goal acceptance. A review of the literature found most GCM studies never measure goal acceptance or initial agreement with a goal (Locke & Latham, 1990), yet it is suggested as important to the goal difficulty-performance relationship (Atkinson, 1958; Erez & Zidon, 1984; C. K. Miller, Headings, Peyrot, & Nagaraja, 2012). One study (Erez & Zidon, 1984) measured goal acceptance with a single item measure which was used as a covariate: “Using the following

scale where, -4=Strongly Disagree and +4=Strongly Agree, to what extent do you accept the goal to reduce your alcohol-related risk?" This measure of goal acceptance was utilized and used as a covariate in analyses.

Performance. The UHS provided two assessments of performance: The Daily Drinking Questionnaire (DDQ) and The Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ). Measures of drinking behavior were taken from the DDQ and alcohol-related negative consequences were taken from the B-YAACQ.

DDQ. Four items were adapted from the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985). This self-report measure was based on the quantity and frequency (QF) of typical drinking behaviors. QF surveys are easy to administer and provide rough estimates of drinks consumed within a certain time interval (Sobell & Sobell, 1995). The DDQ begins by asking participants to consider a typical week since they began BASICS. Participants are presented with an image of how much liquid is in a standard drink (e.g., 12 oz. of beer, 8-9 oz. of malt liquor, 5 oz. wine, 1.5 oz. of liquor). Participants then enter the number of standard drinks (including zero) and number of hours drinking for each day of the week. Next, participants complete the same items (number of drinks, number of hours drinking for each day of the week) for the heaviest drinking week since beginning BASICS. Third, participants are asked to think of the time (e.g., single drinking occasion) where they drank the most since beginning BASICS, and to provide the amount of standard drinks of beer, wine, and shots or mixed drinks consumed and the number of hours spent drinking on this heaviest drinking occasion. Collins et al. (1985) reported convergent validity with the Drinking Practices Questionnaire, reporting a significant correlation of $r(52) = 0.50, p = 0.001$. Three performance measures were derived from the DDQ: (1) total number of drinks consumed (sum of drinks consumed in a typical week, drinks

consumed in heaviest drinking week, and drinks consumed on heaviest drinking occasion), (2) total number of hours spent drinking (sum of hours spent drinking in a typical week, hours spent drinking in heaviest drinking week, and hours spent drinking on heaviest drinking occasion), and (3) drinks per hour (dividing total number of drinks consumed by total number of hours spent drinking).

All three drinking behavior measures were positively skewed (skewness for total number of drinks = 1.45, number of hours spent drinking = 1.03 and number of drinks per hour = 1.05; and *SEs* of skewness = 0.17). All three measures were also leptokurtic (kurtosis for number of drinks = 1.67, number of hours = 0.59, number of drinks per hour = 1.60; and *SEs* of kurtosis for DDQ = 0.33). Because hours spent drinking is a risk factor for heavy alcohol use for college students (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2007) and hours spent drinking most closely approximated a normal distribution, this measure was used to test hypotheses.

B-YAACQ. The Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ; Kahler, Hustad, Barnett, Strong, & Borsari, 2008; Kahler, Strong, & Read, 2005) assessed alcohol consequences experienced since beginning BASICS. The B-YAACQ included 24 items that use a Yes/No response scale. Example items include: While drinking, I have said or done embarrassing things; I have felt very sick to my stomach or thrown up after drinking; I have passed out from drinking; I have often found it difficult to limit how much I drink; and I have neglected my obligation to family, work, or school because of my drinking. Internal consistency was high (Cronbach's $\alpha = 0.87$), and in line with past reported values (0.82 to 0.89; Kahler, et al., 2008; Kahler, et al., 2005). The B-YAACQ has shown to have strong internal consistency, unidimensionality, and minimal item redundancy (Kahler, et al., 2008; Kahler, et al., 2005). Additionally, the B-YAACQ is sensitive to changes in drinking behavior, reliable over a 6-week

time period and valid for use with mandated students (Kahler, et al., 2008). Items are additive; therefore, final scores range from zero to 24 where lower scores reflect mild problems with alcohol and higher scores reflect severe problems. The B-YAACQ was developed using a Rasch model that allows for the estimation of probabilities for specific symptoms expressed by each score using a raw score norm table in Kahler (2005). For example, if a student reports a score of “10”, the severity estimate is a -0.41 and the individual has a 94% chance of having said or done something embarrassing while drinking, a 56% chance of having done something impulsive while drinking, and a 22% chance of reporting that drinking has harmed the quality of their work or schoolwork. As scores increase, individuals report increased levels of distress and impairment from drinking. Alcohol-related negative consequences had a positive skew (skewness = 1.32, *SE* of skewness = 0.16) and was leptokurtic (kurtosis = 0.56, *SE* of kurtosis = 0.32).

Results

Preliminary Analyses

Recall that mid-data collection there was an intervention change from a three-session BASICS (BASICS-3) to a two-session BASICS (BASICS-2). Therefore, correlation matrices for BASICS-2 and BASICS-3 were examined to check if hypothesized relationships were similar across both. All means, standard deviations and correlations can be found for the BASICS-3 and BASICS-2 data sets in tables 2.1 and 2.2 respectively.

BASICS-3 participants reported significantly higher goal difficulty-external perceptions than BASICS-2 participants $t(238)=0.29, p < .01$ and reported drinking significantly fewer total hours, $t(233)=2.28, p < .05$ suggesting that BASICS-3 was more successful than BASICS-2. Correlational matrices revealed correlations among key variables (goal difficulty-external, commitment and performance) were similar except for one relationship: For BASICS-3 the

correlation between goal difficulty-external and commitment was significant, $r(85) = 0.33, p < .01$, whereas the same correlation for BASICS-2 participants was also positive but not significant, $r(142) = 0.13, ns$. As perceptions of goal difficulty and performance differed across the two data sets, “number of BASICS sessions” (BASICS-3 or BASICS-2) was added as a covariate to the model.

Assumptions of OLS regression. Analyses were conducted to see if the assumptions of OLS regression were met. Thirteen outliers were removed based on standardized residuals above 3.29 (no outliers were below -3.29). Data were reanalyzed revealing no outliers (standardized residual minimum = -1.83 and maximum = 2.98). Tests indicated that multicollinearity was not a concern (see Table 2.3; Tolerance > 0.10 and VIF < 10) and that data met the assumption of independent errors (Durbin-Watson value = 2.10; acceptable between 0 and 4). The histogram of standardized residuals indicated data contained approximately normally distributed errors. The normal P-P plot of standardized residuals revealed points that were not completely on the line, but close. The scatterplot of standardized predicted residuals appeared acceptable so that the assumptions of homogeneity of variance and linearity were met. The data also met the assumption of non-zero variances (variances were goal difficulty-external = 0.36, goal difficulty-self = 0.74, commitment = 0.54, goal acceptance = 4.00, hours spent drinking = 229.83, and negative consequences of drinking = 11.74). Based on these results, the assumptions of OLS regression were met. Resulting means, standard deviations, and correlations are reported in Table 2.4 (N=214) for the variables used in the final model.

Power analyses. Post-hoc power analyses were performed using G*Power 3 statistical program (Faul, Erdfelder, Lang, & Buchner, 2007). Hypotheses used moderated mediation analyses via Hayes’ PROCESS model which is based on OLS regression and yields two models:

one where the mediator, total number of hours spent drinking (DDQ), is the dependent variable, and one model where alcohol-related negative consequences (BYAACQ) is the dependent variable. For the complete data set ($n=214$), assuming a criterion of $\alpha = .05$ (two-tailed), power to detect an effect equivalent to $R^2 = 0.10$ was equal to 0.99 for the DDQ model. Assuming $\alpha = .05$ (two-tailed), power to detect an effect equivalent to $R^2 = 0.10$ effect was equal to 0.99 for the BYAACQ model. Thus, power was acceptable.

Self-referenced versus externally-referenced goal difficulty. Recall there are two measures of goal difficulty: external and self. Because the GCM has not been tested before in health, a test of the final model (including number of BASICS sessions as a covariate) was run with goal difficulty-self as the independent variable, and results were not significant. Thus, model results reported below use goal difficulty-external as the independent variable as recommended in the GCM literature (see Klein et al., 2014).

Table 2.1

Means, Standard Deviations and Correlations for BASICS-3 Data

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Goal Difficulty-External	3.60	0.58	-	0.17	0.33**	0.42**	-0.10	-0.04	-0.20	-0.05
2. Goal Difficulty-Self	2.83	0.80		-	-0.03	-0.002	0.22*	0.21	0.13	0.29**
3. Commitment	4.22	0.71			-	0.41**	-0.38**	-0.32**	-0.46**	-0.27*
4. Acceptance	1.27	2.59				-	-0.34**	-0.31**	-0.36**	-0.28*
5. DDQ1: # of drinks	12.26	17.69					-	0.901**	0.66**	0.60**
6. DDQ2: # of hours	11.32	15.31						-	0.48**	0.56**
7. DDQ3: Drinks per hour	0.61	0.72							-	0.33**
8. BYAACQ: Negative consequences	2.83	4.31								-

Note: *Significant at the .05 level; **Significant at the .01 level. N =142

Table 2.2

Means, Standard Deviations and Correlations for BASICS-2 Data

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Goal Difficulty-External	3.32	0.61	-	0.34**	0.13	0.04	0.01	-0.04	0.13	-0.001
2. Goal Difficulty-Self	2.94	0.90		-	0.27**	0.07	0.12	0.12	0.10	0.20*
3. Commitment	4.21	0.75			-	0.48**	-0.21**	-0.23**	-0.25*	-0.17*
4. Acceptance	3.33	1.04				-	-0.24**	-0.20*	-0.29**	-0.15
5. DDQ1: # of drinks	17.08	20.52					-	0.79**	0.79**	0.60*
6. DDQ2: # of hours	16.55	16.29						-	0.45**	0.54**
7. DDQ3: Drinks per hour	0.69	0.76							-	0.53**
8. BYAACQ: negative consequences	3.18	4.80								-

Note: *Significant at the .05 level; **Significant at the .01 level. N = 85

Table 2.3

Collinearity Statistics for BASICS Data

Variable	Tolerance	VIF
Goal Difficulty-External	0.82	1.22
Goal Difficulty-Self	0.91	1.11
Commitment	0.82	1.21
Acceptance	0.62	1.62

Table 2.4

Means, Standard Deviations and Correlations for BASICS Data (no outliers) Used in Final Test of Model

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Goal Difficulty-External	3.41	0.60	-	0.17**	0.07	-0.04	-0.05	-0.03	0.002
2. Commitment	4.20	0.74		-	0.34**	-0.36**	-0.32**	-0.39**	-0.34**
3. Acceptance	2.60	2.00			-	-0.24**	-0.21**	-0.29**	-0.25**
4. DDQ1: # of drinks	13.91	17.76				-	0.88**	0.75**	0.63*
5. DDQ2: # of hours	13.50	15.16					-	0.58**	0.60**
6. DDQ3: Drinks per hour	0.61	0.65						-	0.49**
7. BYAACQ: negative consequences	2.39	3.43							-

Note: *Significant at the .05 level; **Significant at the .01 level. N = 214

Tests of Hypotheses

Hypothesis 1. Hypothesis 1 states that drinking behavior (i.e., hours spent drinking) mediates the negative relationship between goal difficulty and performance (hours spent drinking and alcohol-related negative consequences). To test H1 requires a true mediation and thus that the relationship between goal difficulty and both the number of hours spent drinking and negative outcomes are both significant before testing for the mediating effect of hours spent drinking on negative outcomes. As shown in Table 2.4, the simple correlations between goal difficulty and the two outcome measures were not significant and thus H1 was not supported. Goal difficulty was not linearly related to performance.

Post hoc analyses for H1. The mean ($M = 3.41$) and standard deviation ($SD = .60$) do not suggest particularly high goal difficulty perceptions, however, the literature does indicate that goal difficulty may be curvilinearly related to performance if some participants feel the goal is quite difficult. Thus, in a post hoc analysis, curvilinear effects were tested. First, a scatterplot was investigated to examine the goal difficulty and performance (hours spent drinking) data. This scatterplot suggested a curvilinear relationship may exist (see Figure 2.1). Before conducting a hierarchical linear regression to investigate a curvilinear relationship, goal difficulty (external) was squared. In step 1, goal difficulty predicted hours spent drinking. In step 2, goal difficulty squared was added as a predictor. Results were inspected for a significant change in variance. Results were not significant, R^2 change = .01, *ns*.

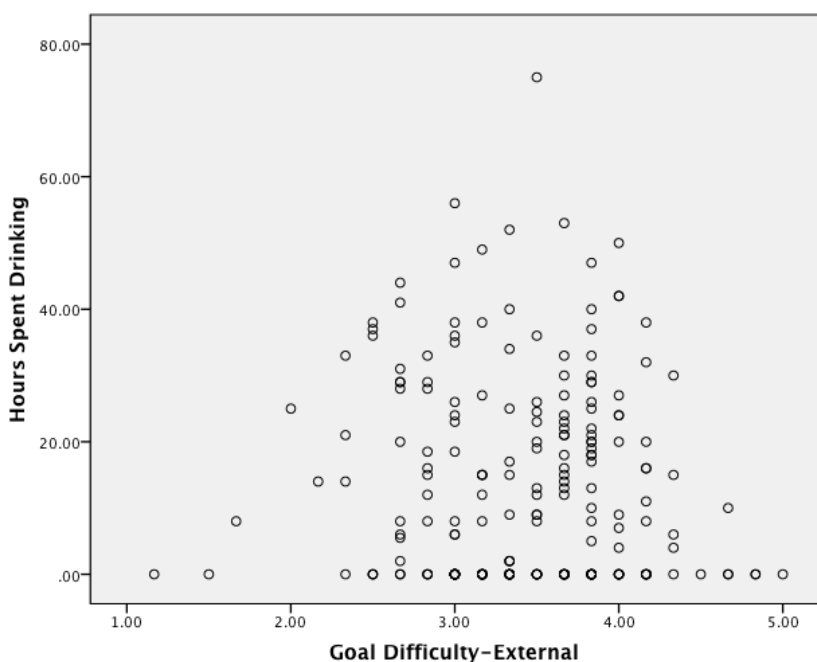


Figure 2.2. Scatterplot of Goal Difficulty-External and Hours Spent Drinking to Investigate Curvilinear Relationship

Hypothesis 2. Hypothesis 2 states that goal commitment moderates the relationship between goal difficulty and performance such that the relationship between difficulty and performance will be stronger when commitment is high relative to when it is low. To test H2 recall there are two performance measures: number of hours spent drinking and alcohol-related negative consequences (B-YAACQ). Given that there is both a mediator (number of hours spent drinking) and a moderator (commitment), a moderated mediation conditional process analyses was conducted using the PROCESS macro (Hayes, 2013) in SPSS.³ Goal difficulty is the independent variable, goal commitment serves as a moderator, the number of total hours spent drinking is the mediator, alcohol-related negative consequences is the dependent variable and the two covariates are goal acceptance and number of BASICS sessions attended.

In contrast to findings for H1, in the moderated mediation model results shown in Table 2.5, there is now a significant path from goal difficulty to total number of hours spent drinking ($\beta = 25.97, p < .01$)⁴ and from number of hours spent drinking to alcohol-related negative consequences ($\beta = 0.13, p < .001$). The relationship between goal difficulty and alcohol-related negative consequences is not significant, $\beta = 0.26, ns$.

In testing H2 where commitment moderates goal difficulty and performance, results show the path from commitment to number of hours spent drinking is significant ($\beta = 13.71, p < .05$)⁴ and the goal difficulty x commitment interaction is also significant ($\beta = -5.70, p < .01$). Finally, goal acceptance ($\beta = -1.76, p < .01$) and number of BASICS sessions ($\beta = 6.98, p < .01$) were significant covariates.

Table 2.5

BASICS Model Coefficients for the Conditional Process Model

Predictors	Performance Outcomes					
	Hours spent drinking			Alcohol-related negative consequences		
	Coeff.	SE	<i>p</i>	Coeff.	SE	<i>p</i>
Goal Difficulty	25.97	8.26	<0.01	0.26	0.33	0.43
Commitment	13.71	6.42	<0.05			
Goal Difficulty x Commitment	-5.70	1.90	<0.01			
Hours spent drinking				0.13	0.01	<0.001
Covariates						
Goal Acceptance	-1.76	0.59	<0.01	-0.22	0.12	0.06
# BASICS sessions	6.98	2.39	<0.01	-0.26	0.48	0.59
Constant	-57.28	27.75	0.04	0.72	1.46	0.62
	$R^2 = 0.19$			$R^2 = 0.39$		
	$F(5,208) = 10.00, p < .001$			$F(4,209) = 32.90, p < .001$		

Note: N = 214

Data were further inspected to understand the nature of the commitment moderation. First, goal difficulty-external and commitment were divided into approximately 3 equal groups in line with past research (see Klein et al., 1999). A goal difficulty score of 0 to 3.00 was low (n=69), 3.01 through 3.75 was medium (n=81), and 3.76 through 5.00 was high (n=73). Similarly following prior research, commitment was divided: a score of 0 through 3.75 was low (n=64),

3.76 through 4.75 was medium ($n=85$), 4.75 to 5.00 was high ($n=74$). Resulting means and standard deviations can be found in Table 2.6 for hours spent drinking and Table 2.7 for negative consequences of drinking. Hours spent drinking and negative consequences of alcohol scores were investigated using one-way ANOVAs.

Recall H2 states that commitment moderates the relationship between goal difficulty and performance so that that the relationship between difficulty and performance will be stronger when commitment is high relative to when it is low. As shown in Table 2.6, for number of hours spent drinking the means within levels of commitment are not significantly different as a function of goal difficulty. However, means within levels of goal difficulty are significantly different as a function of commitment. When goal difficulty is low, commitment is not significant, $F(2,63)=1.82$, *ns*. When goal difficulty is medium, $F(2,74)=7.03$, $p = .002$, those with moderate or high commitment outperform those with low commitment (e.g., report spending fewer hours drinking). Finally, when goal difficulty is high, $F(2,68)=23.13$, $p < .001$, those with high commitment outperform those with medium levels of commitment who, in turn, outperform those with low levels of commitment.

Next, the same relationships were examined for negative outcomes of drinking. As shown in Table 2.7, the means within levels of commitment do not significantly differ as a function of goal difficulty, replicating the findings for number of hours spent drinking. However, means within levels of goal difficulty significantly differ as a function of level of commitment. When goal difficulty is low, commitment is not a significant predictor of negative consequences of drinking, $F(2,66)=2.80$, *ns*. When goal difficulty levels are medium, those with moderate or high commitment are not significantly different yet both outperform those with low commitment, $F(2,78)=6.75$, $p = .002$. When goal difficulty is high, $F(2,79)=14.20$, $p < .001$, those with high

commitment significantly outperform those with moderate or low levels of commitment which were not significantly different than each other.

Table 2.6

Hours Spent Drinking as a Function of Commitment and Goal Difficulty

Goal Difficulty-External Level	Statistic	Commitment Level		
		Low	Medium	High
Low	M	14.84	18.46	9.59
	(SD)	(12.78)	(17.52)	(15.51)
	n	22	23	21
Medium	M	21.58 ^{ab}	10.98 ^a	5.65 ^b
	(SD)	(20.50)	(11.55)	(9.60)
	n	24	33	20
High	M	26.73 ^a	16.88 ^a	3.84 ^a
	(SD)	(14.22)	(12.87)	(7.59)
	n	15	25	31

Note: Shared superscripts denote significant differences ($p < .05$) reading across (within goal difficulty). There were no significant differences within goal commitment (reading down).

Table 2.7

Negative Consequences of Drinking as a Function of Commitment and Goal Difficulty

Goal Difficulty	Statistic	Commitment Level		
		Low	Medium	High
Low	M	2.91	2.76	1.00
	(SD)	(4.47)	(3.21)	(2.07)
	n	23	25	21
Medium	M	4.31 ^{ab}	1.91 ^a	0.90 ^b
	(SD)	(4.43)	(2.92)	(2.17)
	n	26	34	21
High	M	5.53 ^a	3.15 ^b	0.50 ^{ab}
	(SD)	(4.41)	(3.77)	(1.34)
	n	15	26	32

Note: Shared superscripts denote significant differences ($p < .05$) reading across (within goal difficulty). There were no significant differences within goal commitment (reading down).

The discussion of Study 1 is found in Chapter 5 (general discussion for both studies).

Next, predictors of goal commitment are discussed and Study 2 are presented in Chapters 3 and

4.

CHAPTER 3:

AN EXPLANATION OF SELECTED PREDICTORS OF GOAL COMMITMENT

While the “expectancy theory model of antecedents and consequences of goal commitment” or goal commitment model (GCM; Hollenbeck & Klein, 1987) provides a causal relationship known as the *goal difficulty effect* and commitment has a moderating role, the model also suggests key antecedents or predictors of commitment levels. Because the GCM has been used in organizational contexts, research expanding the application of the GCM to other contexts is necessary (see Klein, Cooper, et al., 2012). Further, understanding how key predictors of the GCM complement and integrate into existing health intervention frameworks provides additional evidence for the GCM’s utility in bolstering health intervention evaluation.

Recall from earlier that the primary purpose of a health intervention is to encourage individuals to adopt a health goal. Goal perception assessment can be implemented to complement and integrate within many existing assessment frameworks as many widely-used health assessments, such as self-efficacy and subjective norms, also operate within the GCM (Hollenbeck & Klein, 1987) as predictors of goal commitment. Therefore, the GCM may bolster health intervention evaluation by adding goal commitment assessment because the GCM includes commitment predictors that are also integral to health intervention framework and evaluation (e.g., self-efficacy). Next, a detailed discussion of the predictors of goal commitment is presented and adapted for a health context.

Predictors of Goal Commitment

Recall that the goal commitment model (GCM; Hollenbeck & Klein, 1987) draws from

both goal setting theory (Locke, 1968; Locke & Latham, 1990; Locke, et al., 1981) and expectancy theory (Vroom, 1964). Goal setting theory seeks to understand *conscious motivation* or why individuals would (choose to) perform better at some tasks than others (Locke, 1996; Locke, et al., 1981) and argues that individuals engage in purposeful behaviors that are guided by conscious goals. Thus, when a goal is set, individuals will perform behaviors to achieve the goal. Expectancy theory (Vroom, 1964) argues that motivation to perform (or not perform) a behavior or set of behaviors comes from the desirability or expected results of the outcome, known as goal attainment in the GCM. Expectancy theory explains how individuals make behavioral choices based on the multiplicative combination of expectancy (belief that effort will lead to performance required to achieve rewards), instrumentality (belief that performance leads to rewards), and valence (anticipated satisfaction).

On the surface, goal theory and expectancy theory may seem at odds, as noted by Locke and Latham (2002). Expectancy theory generally argues that expectancy is positively related to performance whereas goal theory argues that expectancy is negatively related to performance because difficult goals are harder to achieve than easy goals. This contradiction is resolved if only expectancy within and between goal difficulty levels is considered. Locke, Motowidlo and Bobko (1986) found that if goal difficulty is held constant, higher expectancies lead to higher levels of performance. Across goal difficulty levels, lower expectancies are associated with greater goal difficulty that is associated with higher performance (Locke, Motowidlo, & Bobko, 1986). Therefore, when expectancy is considered within and between goal difficulty levels, the contradiction between goal theory and expectancy theory is removed.

The GCM relies on expectancy theory to explain the predictors of goal commitment. Instrumentality exists outside of the model. Goal commitment is a function of expectancy (of

goal attainment) and valence (also known as attractiveness of goal attainment). Within the GCM, goal commitment is, in part, a function of valence that is the *attractiveness value an individual assigns goal attainment*. The GCM argues an individual will be less committed to that goal if the goal is deemed less attractive, thus, commitment levels are lower lessening the *goal difficulty effect*. For example, if an individual views the goal to stop drinking alcohol as less attractive because the decision is forced during a rehabilitation program, then that individual may be less committed to stopping and exert less effort toward goal achievement.

Goal commitment is also a function of expectancy of goal attainment or an individual's perception that one's efforts will result in the performance required for goal attainment (Hollenbeck & Klein, 1987). Like the attractiveness of goal attainment, simply because an individual may have lower expectations of reaching goal attainment does not mean that the individual will not accomplish the goal; only that the individual's level of goal commitment will be lower, lessening the strength of the goal difficulty effect. High expectancy of goal attainment leads to stronger goal commitment and low expectancy of goal attainment leads to lower levels of goal commitment. For example, if an individual takes the time to learn how to accomplish a goal such as changing diet to manage diabetes, then that individual would have a greater expectancy that performing such behaviors will result in a decrease in blood glucose levels. As more effort is expended, an individual becomes more committed to the goal (Cialdini, 2009; Johnson, 1991; Johnson, Caughlin, & Huston, 1999).

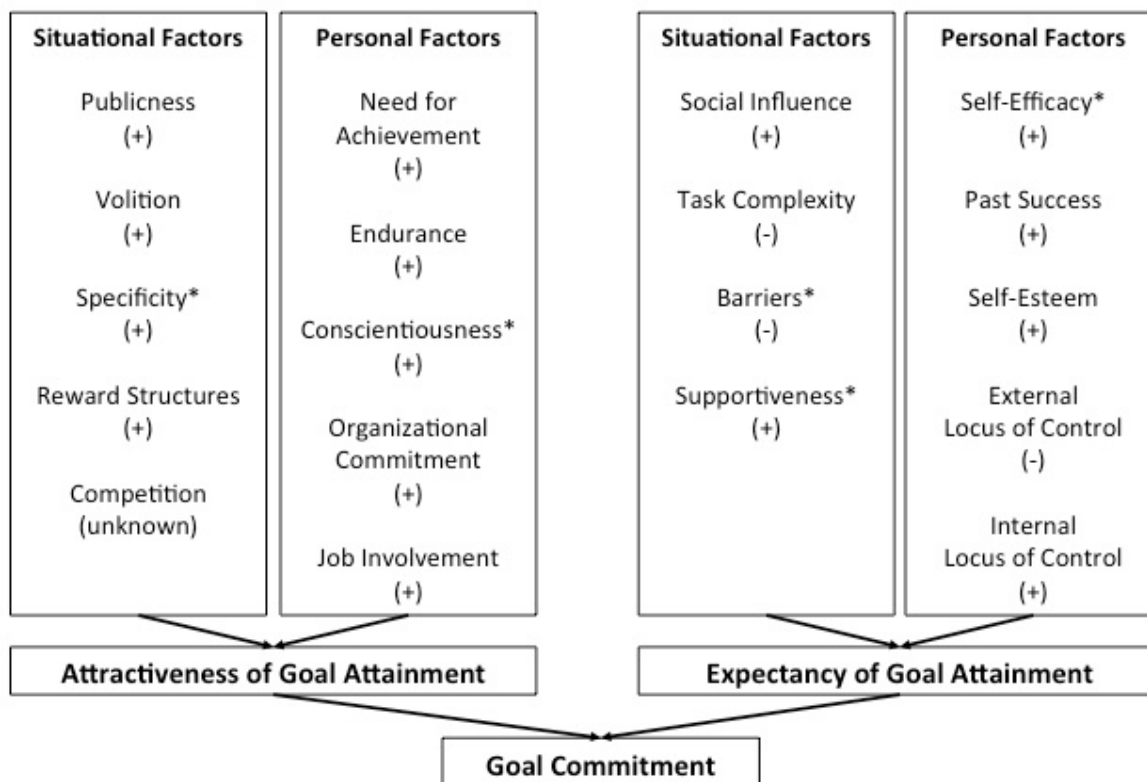


Figure 3.1. Predictors of Goal Commitment.

Note. Constructs with an asterisk (*) were originally represented in the Expectancy Theory Model of the Goal Commitment Process (Hollenbeck & Klein, 1987) as, from left to right: explicitness, Type A personality, performance constraints, supervisor supportiveness, and ability. The constructs were re-identified as commonly used health constructs that are conceptually similar or identical to the original GCM

As noted above, in the GCM goal commitment is a function of the valence or *attractiveness of goal attainment* and the *expectancy of goal attainment* (see Figure 3.1). The more attractive a goal, the more likely an individual will be motivated and committed and will perform at a higher level, putting forth effort to achieve that goal. Further, the more one expects to attain a goal, the greater the extended effort will lead to the greater commitment and performance necessary to reach a goal. Within the model, attractiveness and expectancy of goal attainment are treated as two latent factors, and, generally, organizational goal research

individually tests these as predictors of goal commitment (e.g., publicness correlated to goal commitment; see Hollenbeck, Klein, O'Leary, & Wright, 1989; Klein, Cooper, et al., 2012; Klein, et al., 1999).

An in-depth discussion of these predictors of goal commitment, organized by the attractiveness of goal attainment and expectancy of goal attainment is below. Because the GCM was developed from organizational research, some factors are specific to the organizational literature and less relevant to health contexts. While all factors are explained below, certain factors hold the most promise for using the GCM in health because they are either currently used in health contexts. Arguments are also made for adapting alternative factors in health.

Situational Factors of Attractiveness of Goal Attainment

As shown in Figure 3.1, attractiveness of goal attainment is affected by situational factors and personal factors. The construction of these two groups of factors draws from interactional psychology where situational factors are seen as external environmental or social demands, expectations and incentives. Personal factors are generally seen as needs, beliefs, attitudes, and personality traits or internal behavioral dispositions that are stable and predictable (see Ekehammar, 1974; Endler & Magnusson, 1976a, 1976b). To this end, the GCM presents situational factors (publicness, volition, specificity, reward structures, and competition) and personal factors (need for achievement, endurance, conscientiousness, organizational commitment, and job involvement) that affect attractiveness of goal attainment.

Publicness. Publicness or the “extent to which significant others are aware of one’s goal” (Hollenbeck & Klein, 1987, p. 214) is also examined as “public commitment” (Cialdini, 2009). Goals are more difficult to abandon once others know about them because individuals feel pressure to make their expressed words consistent with their actions. By making a goal

commitment public, individuals feel a greater sense of responsibility to attain the goal, making goal attainment more attractive. Hollenbeck, Williams, and Klein (1989) tested publicness as a predictor of goal commitment. Undergraduate students (N=190) were told to self-set or given an assigned GPA goal that was higher than their past semester GPA coursework performance (e.g., earn a 3.5 GPA versus the past semester's 3.25 GPA). Next, half of the participants subsequently had their GPA goals posted to all the participants in the study. When these GPA goals were made public, those participants that had their GPA goals posted had higher goal commitment accounting for a statistically significant 3% of the variance (Hollenbeck, Williams, & Klein, 1989).

Publicness can be especially important in health, as goal commitments are made public to (a) be held accountable for one's actions, (b) seek or reinforce motivation to achieve one's goal and (c) gather social support. As mentioned earlier, once goal commitments are made public, there are certain consistency pressures and social norms that are felt. Individuals hold organizations accountable for reasonable commitments (Daniels & Sabin, 2008), and individuals hold others accountable for their publicly made goal commitments. For example, when weight loss goals were made public by posting an individual's name and goal in a public display area of a fitness center, those whose goals were posted lost more weight than those participants whose goals were not posted. Further, individuals whose weight loss goals were posted longer (16 weeks versus 3 weeks) also lost the most weight (Nyer & Dellande, 2010). Thus, in sharing a weight loss commitment, individuals lose more weight than those who do not make a commitment public.

Individuals may also make goal commitments public to reinforce their motivation or seek motivation from others. Individuals may find that saying a goal commitment often enough will

make it come true; it works as a personal mantra or inspiration to drive behaviors. At other times, individuals may seek encouragement from others (e.g., “This time I know that you can quit smoking”). Self-motivation predicts goal achievement ($r=0.56, p<0.01$) accounting for 31% of the variance (Zimmerman, Bandura, & Martinez-Pons, 1992). For health behaviors, individuals often seek and talk with others as sources of motivation to maintain commitment. For example, Alcoholics Anonymous (AA) works from a mentoring model where each new AA member is assigned a sponsor. The sponsor is a seasoned AA member who has worked through the AA recovery program and is prepared to take on the responsibility of mentoring a new member. For new members, sponsors are generally available day and night to provide motivation and encouragement to stop drinking by providing support and motivation, answering questions and suggesting alternatives to drinking (Alcoholics Anonymous, 2010). Last, goal commitments can also be made public to seek social support.

Publicness is a situational factor because, after individuals verbalize a goal commitment, attaining that goal becomes more attractive. Goal attainment becomes more attractive because individuals are motivated to reach goal attainment so that their words and actions are consistent. Individuals make goal commitments public to (a) be held accountable for one’s actions, (b) seek or reinforce motivation to achieve one’s goal, and (c) gather social support. In summary, *publicness is positively related to commitment.*

Volition. Volition or “the extent to which the individual is free to engage in the behavior” (Hollenbeck & Klein, 1987, p. 214) is also known as “free will” (see Cialdini, 2009). Commitment researchers suggest that commitment decisions should be freely made for lasting effects (Cialdini, 2009; Cialdini & Trost, 1998; Freedman, 1965). Thus, high levels of volition result in stronger commitments.

Within health, it is important to note that commitment decisions intersect between (provider) recommendation, treatments available (e.g., low-cost, insurance coverage), and individual health decisions (Haynes, Devereaux, & Guyatt, 2002). Therefore, finding the best treatment option that the individual will freely commit to is important for long-term effects. Lasting effects are particularly important for health behavior changes as many health interventions and treatments require sustained change such as making dietary changes to manage diabetes, exercising regularly for cardiovascular health or maintaining weight loss, and using condoms consistently to prevent STIs, HIV, and pregnancy.

Both motivational interviewing theory and goal setting theory agree that individuals who set their own goals will find those goals more attractive, thus increasing commitment. This argument and historical understanding that volition and self-set goals are synonymous, unfortunately confounds volition with goal origin (assigned, participative or self-set) as volition is viewed as increasing when goals move from assigned goals (e.g., an individual is told a goal) to participative goals (e.g., an individual and another set a goal together) to self-set goals (e.g., an individual has complete control over setting the goal). Assigned goals typically have the least amount of volition or free will involved and self-set goals have the most volition.

While commitment researchers commonly accept the theoretical argument that individuals have higher levels of goal commitment to self-set goals, research itself has not supported that self-set goals have the highest level of volition. Rather, research finds goal commitment is higher for participatively set goals (e.g., a health educator and participant work together to create a goal) than for assigned goals (Lozano & Stephens, 2010). When volition is modified (e.g., participative goals) or taken away (e.g., assigned goals), individuals will find goal attainment less attractive. In summary, *volition is positively related to commitment.*

Specificity. The original GCM identifies explicitness as a key determinant of goal commitment, however, communication scholars would recognize explicitness as “specificity” as its used within the context of plans (see Berger, 1997). Specificity denotes concreteness that often entails more details and components. As described earlier, goal specificity ranges from abstract (e.g., lose weight) to concrete and specific (e.g., lose ten pounds). For example, when students were given specific goals to increase sit-ups during a 2 minute interval (e.g., 10%, 20%, and 40%), these students outperformed those students who were given no goal or a “do your best” goal (Bar-Eli, Tenenbaum, Pie, Btsh, & Almog, 1997). Locke (1968) suggested that vague goals are not as effective in resulting behavioral action which matches that more specific, concrete goals and plans are more easily attained (Berger, 1997).

In health contexts, greater goal specificity opens dialogue for more in-depth discussion about a given goal commitment. For example, researchers investigated how college students plan for safer sex discussions with peers who were not sexual partners (Waldron, Caughlin, & Jackson, 1995). Findings indicated that participants who successfully engaged in safer sex discussions used more specific goal information and concrete behavior steps (e.g., “use latex condoms”) versus a more general non-specific approach (e.g., “be protected”). These concrete ideas led to in-depth discussions indicating stronger communication skills. When goals are made *specific* these goals may be viewed as more easily attained and result in greater goal commitment. Therefore, *specificity is positively related to commitment*.

Reward structures. Reward structures are benefits of goal attainment that increase the attractiveness of goal attainment. Within the organizational context, rewards are often measured as “feedback” or information provision based on an individual’s performance. Klein et al.’s meta-analysis (1999) found a significant positive relationship between goal commitment and

provision of feedback (e.g., knowledge of results) and the type of feedback (e.g., specificity and quality of information) such that more feedback correlated with higher commitment (0.13). In fact, feedback for complex tasks resulted in nearly double the performance versus for simple tasks (Neubert, 1998). Thus, feedback is correlated with higher commitment and results in greater performance, especially for goals that require complex tasks.

Within health, rewards can also take the form of feedback or performance recognition. Customized, individualized feedback, such as helping a young mother identify environmental stressors, is considered helpful and attractive for managing one's health (Ramanathan, Swendeman, Comulada, Estrin, & Rotheram-Borus, 2013). Individualized feedback may take many forms including tailored health messages. Meta-analysis revealed that interventions with tailored messages (either at the beginning or throughout the intervention) are significantly more effective than comparison or control conditions (Lustria et al., 2013). Like feedback in an organizational setting, feedback in health could serve to further motivate participants to remain committed to their goals.

Within health, rewards may also be less tangible. For example, if a doctor recommends a daily exercise goal to increase overall health, certain rewards such as improving cardiovascular health are less tangible than if that individual lost weight. For some individuals, engaging in a healthy activity may provide an improved sense of well-being or self-fulfillment of a goal. However, this type of reward clearly may not apply to all health behaviors. Health interventions or programs also may provide financial incentives. These are often tied to weight loss programs and gym memberships. For example, Weight Watchers allows select members to receive lifetime program membership upon reaching their healthy weight loss goal. Gyms or exercise facilities often offer financial incentives to gain members (e.g., try one month free, family discounts) or to

try new opportunities (e.g., free personal training sessions). Thus, rewards can take many forms but the general hypothesis is that *rewards are positively related to commitment*.

Competition. The GCM originally suggested that competition between individuals who have the same goal would increase performance beyond that if there was no common goal (Hollenbeck & Klein, 1987) even though those goals may be considered unattainable (Forward & Zander, 1971). However, Klein, Cooper and Monahan (2012) note that a significant relationship between competition and commitment has not been found. Within health, competition may be less relevant as changing one's health behavior and sustaining that change is based on the individual. Competition may be relevant in situations where one generally finds a competitive spirit such as in organized athletic events and competitions (e.g., marathons). However, *more research is needed to understand the relationship between competition and goal commitment*.

In summary, publicness, volition, specificity, reward structure and competition are all situational factors that the GCM argues should predict goal the attractiveness of goal attainment. As argued above, publicness, volition and specificity are key factors in health communication contexts whereas reward structure and competition *may* be relevant, depending on the behavior.

Personal Factors of Attractiveness of Goal Attainment

Recall that personal factors are internal behavioral dispositions that are viewed as stable and predictable (e.g., beliefs, personality traits). Within the GCM, these personal factors (need for achievement, endurance, conscientiousness, organizational commitment, and job involvement) affect attractiveness of goal attainment.

Need for achievement. This personal factor under the attractiveness of goal attainment is need for achievement or an individual who “aspires to accomplish difficult tasks: maintain high

standards and is willing to work toward distant goals” (Jackson, 1974, p. 6). Need for achievement, as presented in the GCM, is a self-attributed motives approach where incentive to complete the task comes from *outside* the task itself (e.g., rewards, expectations, norms); therefore, need for achievement is treated as stable within the individual. Hollenbeck and Klein (1987) suggested in the GCM that individuals who had a high need for achievement would have higher goal commitment to challenging goals than those who were low in need for achievement. This was upheld in subsequent research as high need for achievement accounted for a significant amount of the incremental goal commitment variance (0.06%; Hollenbeck, Williams, et al., 1989); see also (Slocum, Cron, & Brown, 2002). High need for achievement has been associated with greater performance than those with low levels of need for achievement (Steers, 1975).

In the health context, need for achievement has been specifically examined as scholastic achievement and this is associated with better health (Fiscella & Kitzman, 2009; Kristjánsson, Sigfúsdóttir, & Allegrante, 2010). Individuals who are achievers tend to have a better diet and exercise more. Further, some health intervention approaches, such as the use of a health coach (Palmer, Tubbs, & Whybrow, 2003), provide additional support to help individuals achieve their health goals. Therefore, within the health context, need for achievement may emerge as an especially important goal commitment predictor as it is a stable factor within the individual that translates across health goals. Within the GCM, *need for achievement is positively related to commitment.*

Endurance. Endurance is equivalent to perseverance or continuing to work toward a goal even when faced with barriers (see Jackson, 1974). The GCM suggests that individuals high in endurance are less likely to abandon goals, so those individuals would possess greater levels of goal commitment. One study where students were given a memorization task found that students

endurance or persistence in studying for the task was positively correlated to goal commitment (mean sample weighted correlation = 0.30; Klein, et al., 1999; McCaul, Hinsz, & McCaul, 1987). Endurance may be especially important in health contexts as goal performance for moderately difficult goals often must be implemented over time, thus it takes a concerted effort to engage in behavior change. Based on McCaul, Hinsz, and McCaul (1987) research, *endurance is positively related to commitment.*

Conscientiousness. The GCM originally proposed “Type A personality” as a predictor of commitment. Type-A behavior is characterized as aggressive, setting high standards, and putting oneself under time pressures (Friedman & Rosenman, 1974). These individuals may be characterized as “hard-working” and “high strung.” Klein et al. (1999) found a .12 correlation between Type A personality and goal commitment and noted that little research had been done in this area. While Type A personality may be relevant to organizational contexts, a related and more relevant personality trait to health is *conscientiousness*. Conscientiousness, also known as the will to achieve, is one of the big five factors of personality. Conscientiousness implies an individual carefully approaches tasks and desires to accomplish those tasks well. This individual is a planner and thinks before engaging in goal-directed behaviors. Individuals who are low on conscientiousness are less motivated to accomplish tasks (Costa & McCrae, 1992). Research supports a significant, positive relationship between conscientiousness and goal commitment (Barrick, Mount, & Strauss, 1993; Bipp & Kleingeld, 2011) and goal commitment has been shown to mediate the relationship between conscientiousness and subsequent behavior (Barrick, et al., 1993). Within health, a meta-analysis of 194 studies has shown that conscientiousness is negatively related to risky health behaviors (e.g., risky sexual behavior, drug use) and positively related to positive health behaviors (e.g., physical activity, diet; Bogg & Roberts, 2004). Within

health contexts, conscientiousness may emerge as an important personality trait that predicts goal commitment and subsequent goal attainment. Because health interventions are intended to promote positive health behaviors (e.g., stop smoking, stop drinking, use condoms, manage diabetes, exercise), and conscientiousness and goal setting are positively related, *conscientiousness is positively related to commitment.*

Organizational commitment. Organizational commitment is “the relative strength of an individual’s identification with organizational goals in general” (Hollenbeck & Klein, 1987, p. 215-216). Hollenbeck and Klein (1987) suggest that increased organizational commitment leads to increased goal commitment and that individuals who are highly committed to an organization will adjust the amount of effort extended toward a goal versus changing goals. Organizational commitment is significantly, positively related to commitment of a stated organizational goal (Klein, et al., 2014). The concept of organizational commitment works within health only so far that an individual’s health goal is tied to a structured organization or health intervention, and even then the relationship could quite possibly be weak between organizational commitment and subsequent goal commitment. For example, one structured health intervention model where individuals may feel a sense of organizational commitment is AA. Many know that AA largely depends on members following the “12 steps” and the twelfth and final step is to carry the message to other alcoholics (Alcoholics Anonymous, 1984) a step often fulfilled by being a “sponsor” to a new AA member. A sponsor is supposed to embody the principles and practices of AA and help guide new members through their alcohol recovery. Therefore, a logical conclusion may be that an AA sponsor would have high organizational commitment to AA, and, most likely, have a high goal commitment to stop drinking. In summary, *organizational commitment is positively related to goal commitment.*

Job involvement. The GCM proposes that job involvement or an individual's identification with the type of work they perform (versus the organization) affects goal commitment. Hollenbeck and Klein (1987) suggested that individuals who have high job involvement are more likely to be committed to difficult goals than those with low job involvement. This predictor has not been examined within the organizational literature (Klein, Cooper, et al., 2012; Klein, et al., 1999). However, while health contexts do not necessarily use "jobs," there are sport and activity specific types of health commitments. For example, many individuals are "committed to running" (Leedy, 2000) and may identify themselves as professional, semi-professional or amateur runners (Yair, 1992). There are even individuals who may begin an activity such as joining a spin or yoga class and eventually become a certified instructor to teach others that particular activity. However, not everyone may reach this high level of "job involvement" within health contexts, but it may be an important area of study for particular sports and activities. *Involvement is positively related to commitment, especially for difficult goals.*

In summary, the attractiveness of goal attainment is predicted by five situational factors: publicness, volition, specificity, reward structures, and competition, and the attractiveness is predicted by personal factors: need for achievement, endurance, conscientiousness, organizational commitment, and job involvement. While all predictors may be adapted to health contexts, three situational factors (publicness, volition, and specificity) and three personal factors (need for achievement, conscientiousness and endurance) emerge as especially relevant to health. Next, the expectancy of goal attainment and its factors are explained as predictors to goal commitment according to the GCM.

Situational Factors for Expectancy of Goal Attainment

The expectancy component of the GCM refers to an individual's perception of the likelihood that goal attainment results from a particular behavior or set of behaviors. Within the GCM, the likelihood is described as a relationship between a behavior and a desired goal. For example, if an individual exercises regularly, she may expect to lose weight. To understand how the expectancy of goal attainment functions, the GCM presents both situational factors (social influence, task complexity, barriers, supportiveness) and personal factors (self-efficacy, past success, self-esteem, and locus of control) that effect expectancy of goal attainment. Below, situational factors are explained. Again, some of these predictors to goal commitment may be especially important for organizational contexts and less so for health. The GCM factors are discussed with regard to their general relationship to goal commitment and specifically how each may function or be adapted within a health context.

Social influence. Social influence, a situational factor, is described as “influence with respect to (a) others' performance, (b) others' goals, and (c) others' goal commitment” (Hollenbeck & Klein, 1987, p. 216) so that others' goal commitment influence's one's own goal commitment. If an individual is surrounded by people who abandon their goals or who have less difficult goals, then GCM predicts that individual will be less likely to maintain goal commitment. The effect of social influence was found in Klein et al.'s (1999) meta-analysis reporting an average correlation of 0.45 between social influence and goal commitment that was computed using data from only two studies.

While Hollenbeck and Klein (1987) give no indication of the best way to measure social influence, Early and Kanfer (1985) examined role model influence on goal acceptance, satisfaction and performance. Study participants first watched a short film that showed role

model performance as producing 3 schedules (low performance) or 8 schedules (high performance). After the film, “perceived role model performance level” was measured using two items (“How many schedules do you think the subject in the film made?” and “How many schedules do you think the average student can make?”). Ultimately, role model performance influenced participant goal acceptance, satisfaction, and performance levels so that participants exposed to a high-performance role model outperformed, had higher goal acceptance and higher goal satisfaction than those who saw the low-performance model film (Earley & Kanfer, 1985).

Social influence is an important predictor in health contexts and an alternative measure often used in health is through the construct of subjective norms (perceived social pressure to engage or not engage in a behavior) from the Theory of Planned Behavior (Ajzen, 1991). Subjective norms (see Finlay, Trafimow, & Jones, 1997b; Finlay, Trafimow, & Moroi, 1999; Fishbein & Yzer, 2003) has been examined across health behaviors such as condom use (Albarracín, Johnson, Fishbein, & Muellerleile, 2001), diet (Zoellner, Estabrooks, Davy, Chen, & You, 2012), oral health (Tolvanen, Lahti, Miettunen, & Hausen, 2012), smoking cessation (Lazuras, Chatzipolychroni, Rodafinos, & Eiser, 2012), and vaccine uptake (Gerend & Shepherd, 2012). Within health, subjective norms successfully predict subsequent pro-health behaviors (Finlay, Trafimow, & Jones, 1997a) such as exercise among college students (Okun, Karoly, & Lutz, 2002). If using subjective norms to measure social influence, the GCM predicts that commitment would be stronger when subjective norms are high because individuals wish to meet their family or friends’ behavioral expectations. Therefore, *subjective norms are positively related to commitment*.

Task complexity. Task complexity is the relation between the level of difficulty that is required to attain the goal commitment and the amount of effort extended to reach that goal

commitment. For easy goals, there is less complexity required to achieve the goal, so little effort is extended. However, more difficult goals may require more complexity and more steps for success, and, therefore, more effort must be extended. For example, chronic illnesses (e.g., hypertension, heart disease, diabetes) requires a series of complex steps for diagnosis and treatment (Wing et al., 2001). Many individuals are not diagnosed until they have become ill or have other complicating conditions, and they must be hospitalized. Following hospitalization, treatment regimens often require drug therapies, step-by-step after care, and follow-up with a primary care clinician. Unfortunately, roughly 25% of U.S. chronically ill individuals report that clinicians had not discussed goals and priorities and more than half report that they did not have a written plan to manage their condition (Wing, et al., 2001). Because chronic illnesses require coordination of treatment including drug and lifestyle changes, task complexity to follow health treatment requires considerable effort reach the goal (Cialdini, 2009), especially a more difficult goal such as chronic illness management.

New behaviors must be regularly enacted, thus effort continued to be extended to fulfill a commitment made within the context of health behavior change. In summary, the level of task complexity is related to goal difficulty in that more difficult goals will require more effort to be expended to attain that goal. Klein et al. (1999) found an average correlation of -0.50 between task complexity and goal commitment suggesting that tasks with higher complexity lead to less goal commitment because individuals are not willing to expend the effort necessary to achieve goal attainment. Therefore, *task complexity is negatively related to commitment*.

Barriers. Barriers are external influences that may block desired outcomes, also known as performance constraints. For example, if an individual has made a goal commitment to swim five laps daily, but that individual has no access to a pool, the lack of access is a barrier to goal

attainment. Barriers are considered beyond the individual's control. When these constraints are present, the individual will be less likely to expect that the goal commitment can be attained.

Barriers are often discussed in health contexts. For example, partner refusal to wear a condom, interference with sexual pleasure, discomfort and cost have been identified as barriers to condom use (Cohen, Scribner, Bedimo, & Farley, 1999; Eldridge, St. Lawrence, Little, Shelby, & Brasfield, 1995). Knowing that a partner refuses to wear a condom may preclude an individual from making a commitment because the barrier is perceived as extremely difficult or even impossible to overcome. So, of critical importance to understanding health barriers is identifying barriers and understanding how participants in an intervention perceive those barriers. It is not the number of barriers that may impede commitment, but how an individual perceives a barrier.

This *barrier perception* influences an individual's commitment. For example, young adults often cite time and effort, physical effects (e.g., hot and sweat), social components (e.g., not encouraged by family), and specific reasons (e.g., bad weather, medical reasons) as barriers to exercise (Myers & Roth, 1997). Before a commitment to exercise more is made, young adults perceive the barriers, such as sore muscles, as impossible to overcome, and, thus, have low levels of endurance to exercise. After an exercise commitment, young adults may view sore muscles as a barrier that may be overcome through gradual increases in exercise. This change in perception of the barrier is key to understanding how barriers may be overcome.

Typically for positive health behavior changes, barriers to making a commitment are given the most attention, yet barriers may also serve to keep a commitment active (Johnson, 1973, 1991; Johnson, et al., 1999; Levinger, 1965, 1979; Rusbult, 1980; Rusbult & Farrell, 1983; Rusbult, Martz, & Agnew, 1998). Johnson (1973) suggests that barriers may be immediately

consequential to the current behavior (e.g., ending a legal contract results in utilizing the legal system) or include major life changes (e.g., ending a marriage results in moving out). Thus, depending on the consequences or life changes (barriers), one may perceive barriers as impossible to overcome and decide not to end the commitment. Investments toward the commitment are also lost (e.g., time spent cannot be regained) if the commitment is ended and these investments considered too great (Johnson, 1991; Rusbult, 1980), the investment itself becomes a perceived barrier. Perception of barriers is key to making a goal commitment to positive health behavior change. When barriers are perceived as less difficult, they are perceived easier to overcome and an individual may expect to reach goal attainment.

Johnson (1973), Rusbult (1980) and Levinger (1965, 1979) concur that a lack of quality alternatives serves as a barrier to ending a commitment. For example, if a woman has tried to quit smoking in the past by using the nicotine patch, chewing nicotine gum, and seeing a counselor, and she has still failed to quit, she may view that there are no other alternatives or only unreasonable alternatives (e.g., hypnotherapy, acupuncture). So, she may *want* to quit, but the lack of options prevents her from committing to quit. Thus, alternative options (Johnson, 1991; Levinger, 1965; Rusbult, 1980), if attractive and viable, may draw a person away from a current problematic behavior or toward a new commitment whereas when alternatives are rejected, continued commitment to the problematic behavior (e.g., smoking, drinking) may occur (Becker, 1960). Perceived barriers and the potential outcomes are only important in that the individual has placed value on them. For example, older adults cite the people eating with them as one barrier to healthy food choices (Locher et al., 2009). Older adults may value the companionship of eating with someone as more important than eating healthy. As a result, the individual cannot commit to eating healthy as he or she values companionship more than a

healthy diet. Therefore, *perception of barriers as impossible or difficult to overcome is negatively related to commitment.*

Supportiveness. Supportiveness is defined as friendliness and listening to others under the original GCM, and it has been specifically operationalized as supervisor support (Hollenbeck & Klein, 1987; Klein, et al., 1999). Hollenbeck and Klein (1987) suggest that when a supervisor assigns a difficult goal and this supervisor is perceived as supportive, then the goal will be perceived as fair and realistic increasing goal commitment. Klein et al. (1999) found a 0.38 correlation between supervisor supportiveness and goal commitment, and this relationship has more recently confirmed (Häsänen, Hellgren, & Hansson, 2011) While supervisor supportiveness *may* apply to certain health circumstances as a health educator or medical professional could be akin to a supervisor, this factor in health contexts may be better viewed as social support, a variable widely examined within health.

Relating to the previously discussed predictor publicness, individuals may verbalize goal commitments to seek social support that entails verbal and nonverbal behaviors that help manage an individual's uncertainty around a given goal (Albrecht & Adelman, 1984; Albrecht, Goldsmith, & Thompson, 2003). Individuals often seek social support to provide validation and reassurance to understand what is the "right" choice (Dijksterhuis, Bos, Nordgren, & Van Baaren, 2006). The same holds true for health goal commitments. For example, a woman may seek social support from her physician by stating, "I'm going to really get my sugars under control and eat healthy foods to control my diabetes," with the expectation the doctor will respond. Thus, a doctor's positive response (e.g., "That's a great decision to improve your health") provides validation and reassurance that the woman's commitment to treating her diabetes through dietary changes was right, and the doctor may also provide additional resources

(e.g., refer her to a nutritionist or materials on diabetic diets). Negative experiences of social support have been associated with unhealthy behavior outcomes such as smoking, physical inactivity, overweight, and perceived health (Croezen et al., 2012), so seeking and providing positive social support may be especially important in health goal commitment contexts. The social support provided to an individual affects expectancy of goal attainment. For example, when an individual perceives large levels of social support, then that individual may be more likely to expect to achieve goal attainment and have greater goal commitment. In summary, *supportiveness is positively related to commitment.*

Social influence (social norms), task complexity, barriers, and supportiveness are all situational factors that the GCM suggests predict the expectancy of goal attainment. Next, expectancy of goal attainment personal factors (self-efficacy, past success, self-esteem, and locus of control) are discussed in relation to goal commitment.

Personal Factors for Expectancy of Goal Attainment

Personal factors (self-efficacy, past success, self-esteem, and locus of control) affect expectancy of goal attainment, as predicted by the GCM. In particular, self-efficacy, past success, and locus of control emerge as important factors in health contexts.

Self-efficacy. The first personal factor for the expectancy of goal achievement is self-efficacy. According to the GCM, high levels of the personal factor self-efficacy (also known as ability) lead to greater expectancy that goal attainment is achieved, thus leading to higher levels of goal commitment. Thus, high levels of goal commitment exist when self-efficacy is rated highly. Within the health context, *self-efficacy* is an individual's belief in abilities to achieve a goal (Bandura, 1977; Bandura & Adams, 1977). Generally, greater self-efficacy leads to the intended behavioral outcomes. For example, if a woman commits to using condoms, she must

not only be able to properly use a condom (e.g., self-efficacy of condom use; Bandura, 1994), but also she must engage in several behaviors prior to actual condom use including purchasing condoms, carrying condoms with her, and negotiating condom use (Brafford & Beck, 1991; Coates, 1990). Because several behaviors are generally needed to fulfill a newly made positive health goal commitment, an individual must possess a certain degree of self-efficacy to fulfill the goal commitment. Thus, as self-efficacy increases, goal commitment levels should also increase. So, *self-efficacy is positively related to commitment.*

Past success. Past success is an individual's previous attempts to engage in a goal commitment and whether or not the particular goal was attained. Hollenbeck and Klein (1987) suggest that when individuals have had past success in achieving more difficult goals, they are more likely to have future goal success because they have a higher expectancy of achieving goals. In a meta-analysis of 19 studies, Klein et al. (1999) found a 0.18 correlation between goal commitment and ability/past performance. Unfortunately, the correlation with past performance alone was not evaluated. However, this analysis shows support that past success positively influences goal commitment.

Health research supports the idea that individuals' past behavior is important to future success, as they are ingrained to "practice what they preach." In a recent meta-analysis (N=20) of dissonance-based health interventions, a hypocrisy approach (individuals were committed and made mindful of past discrepant behaviors such as saying they would always engage in condom use, yet reminded of incidents when they did not) was found to effectively induce behavior change (Freijy & Kothe, 2013). Fulfilling a goal commitment is especially powerful when individuals are reminded of past failures to engage in goal-directed behaviors (Stone, Aronson, Crain, Winslow, & Fried, 1994; Stone & Fernandez, 2008).

Planning theory (Berger, 1997) and consistency models indicate that past experiences are an important component of making goal commitments or enacting plans through goal-directed behaviors, thus what an individual has encountered before or the past success or failure, influences one's level of goal commitment. For example, track and field athletes were more likely to revise individual competition and season goals to a level of moderate difficulty based on past performance (Donovan & Williams, 2003). This goal revision process creates a more achievable goal, and, thus, the GCM predicts a person would be more committed to that goal. In summary, past success remains an important predictor to goal commitment and *past success is positively related to commitment*.

Self-esteem. Self-esteem is a person's overall feeling of self-worth or value and should be considered a stable factor within the individual. Drawing from psychological success theory (Hall, 1971), Hollenbeck and Klein (1987) suggest that "higher self-confidence that characterizes high self-esteem persons is probably associated with high perceived probabilities for attaining difficult goals" (p. 216). However, only one study from Klein et al.'s (1999) meta-analysis examined the relationship between self-esteem and goal commitment and it found no significant effect of self-esteem.

Research suggests a robust, positive relationship between higher self-esteem and better health (Kristjánsson, et al., 2010). Lower levels of self-esteem significantly predict adolescents' problematic health behaviors including problem eating and suicidal ideation. Further, self-esteem has recently been suggested as a mediator between stressors of mental health (e.g., discrimination and stigma) and subsequent health outcomes (Thoits, 2013). Self-esteem remains an important factor in health research, and, as the GCM suggests, a positive relationship between self-esteem and goal commitment may exist. However, further research, especially within health

contexts, is needed to understand how self-esteem functions in the GCM and whether self-esteem is positively related to goal commitment as the GCM would predict.

Locus of control. Locus of control (Rotter, 1966), the second personal factor, is separated into an external and internal locus of control. Those with an external locus of control perceive actions as beyond their control. Therefore, individuals who have an external locus of control may perceive goal attainment as beyond their control whereas individuals with an internal locus of control would perceive goal attainment as within their control. Locus of control was confirmed as accounting for 3% of the variance with individuals with an internal locus of control having greater goal commitment to difficult goals (Hollenbeck, Williams, et al., 1989).

Within health contexts, locus of control has been studied extensively within such areas as HIV (Ruffin, Ironson, Fletcher, Balbin, & Schneiderman, 2012), oral health (Acharya, Pentapati, & Singh, 2011), psychological symptoms (Cheng, Cheung, Chio, & Chan, 2013), and smoking (Reitzel et al., 2013). Meta-analysis shows that an internal health locus of control is related to health-promoting behavior, positive health status, health knowledge, information-seeking, and treatment success (Reeh & Reilly, 1995). Locus of control remains an important variable for understanding health outcomes, and the GCM suggests that this relationship is mediated by goal commitment. In summary, *greater external locus of control is negatively related to commitment and greater internal locus of control is positively related to commitment.*

To review, the expectancy of goal attainment is a function of five situational factors: social influence (subjective norms), task complexity, barriers, supportiveness, and it is a function of four personal factors: self-efficacy, past success, self-esteem, and locus of control. Within health contexts, social influence, barriers, self-efficacy, past success, and locus of control emerge as important factors.

Specifically, in Study 2, commitment to the goal of increased exercise is examined as a function of the attractiveness and expectancy of goal attainment. Chapter 4 presents a test of selected GCM predictors of goal commitment within an exercise context.

CHAPTER FOUR: STUDY 2: WORKING IT OUT

A Test of Goal Commitment Predictors in an Exercise Context

Emerging adulthood, typically defined as 18-25 years old, is a major transition period as young adults leave home, have increased autonomy and decision-making, and begin to establish long-term health behavior patterns (M. C. Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008). Starting from late adolescence and into early adulthood, declines in physical activity occur (Caspersen, Pereira, & Curran, 2000). College students report exercise behaviors fewer than three days per week (Huang et al., 2003), and less than half of college students attain recommended physical activity levels (Wald, Muennig, O'Connell, & Garber, 2013). Emerging adulthood is also characterized by poor diet (less healthy and more high-fat) and alcohol consumption (see M. C. Nelson, et al., 2008). Thus, as individuals become more autonomous and begin making their own decisions, physical activity becomes less of a priority, establishing a lack of exercise behavior pattern that is coupled with poor diet choices that often results in weight gain during college.

Weight gain during college is often referred to as the “Freshman 15,” although research disagrees on the exact amount and extent of weight gain. While 25% of freshman gain at least five pounds in their first year (D. A. Anderson, Shapiro, & Lundgren, 2003). Other research reports up to 82% gain weight and approximately 70% of freshman gain an average of 7.7 pounds in the first year (Lloyd-Richardson, Bailey, Fava, & Wing, 2009). Weight changes may cause emotional distress and lead to disordered eating (Delinsky & Wilson, 2008). Decreasing physical activity during college leads to lasting behavior patterns and increased weight gain that

subsequently causes detrimental effects. Because long-term exercise behavior patterns are often established during emerging adulthood, research is needed to understand what leads individuals to exercise during college (M. C. Nelson, et al., 2008).

To answer this call for research, Study 2 examines the *predictors of commitment* to exercise among college students by applying the Goal Commitment Model (GCM; Hollenbeck & Klein, 1987). This study does not look at the *goal difficulty effect* or commitment's moderating role; rather, this study focuses solely on understanding selected predictors of commitment in a health context: exercise among college students (see Figure 4.1).

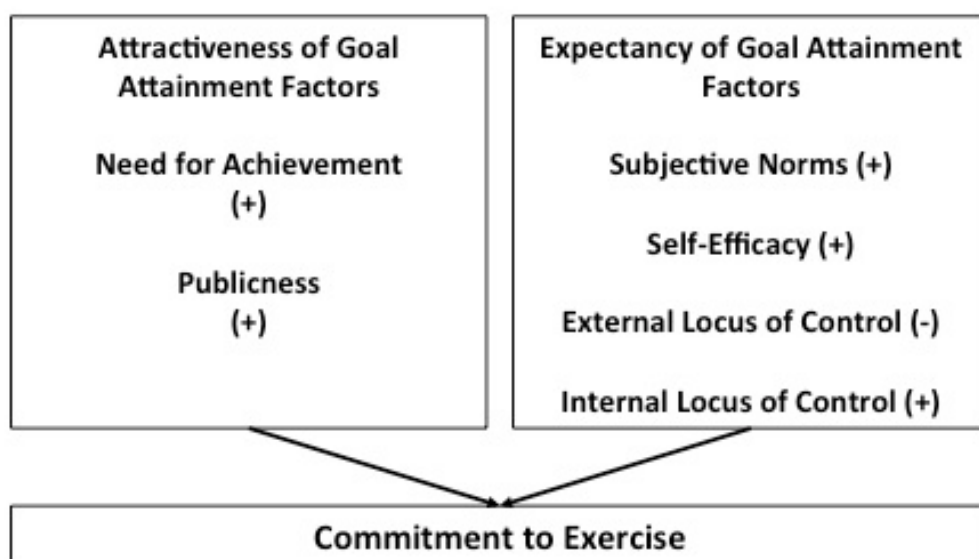


Figure 4.1. Selected Predictors of Goal Commitment in the GCM.

This study is necessary as goal commitment research has grown out of organizational contexts with little, if any, application to other contexts (see Klein, Cooper, et al., 2012). Selected predictors that translate easily into a health exercise context are tested in relation to goal commitment. This study seeks to understand the relationships between (1) attractiveness of goal commitment factors (publicness and need for achievement) and commitment to exercise and (2)

expectancy of goal attainment factors (subjective norms, self-efficacy, external locus of control, and internal locus of control) and commitment to exercise. These commitment predictors are examined as prior health research demonstrates these predictors predict behavior, although research has not necessarily demonstrated these variables predict commitment in a health context. Recall that goal commitment is “a volitional psychological bond reflecting dedication to and responsibility for a particular target” (Klein, Molloy, & Brinsfield, 2012, p. 137). Also, recall that commitment is a function of the attractiveness of goal attainment (desirability of goal attainment) and the expectancy of goal attainment (belief that effort expended leads to performance necessary for goal attainment). Relevant constructs and hypotheses are reviewed within the exercise context below.

Attractiveness of Goal Attainment Factors

Publicness. The GCM suggests that publicness is positively related to commitment. Publicness has not systematically examined within the exercise context, however stating a goal may be incorporated into health interventions (e.g., Weight Watchers, motivational interviewing). In one limited study, public statements about exercising increased exercise related behavior, although commitment was not examined (McNamara, 1986). However, based on the literature on public commitment in the health literature and based on the GCM’s predictions, within the exercise context, the first hypothesis is proposed:

H1: Publicness positively predicts goal commitment.

Need for achievement. According to the GCM, need for achievement is a stable trait within the individual that suggests the individual aspires to accomplish difficult tasks (Jackson, 1974). In a review of the exercise literature, a positive relationship between need for achievement and increased exercise behavior was found (Roberts, 2006), although there are no

studies directly testing a link between need for achievement and goal commitment. Therefore, understanding how the general need for achievement construct relates to commitment relies on past theory and research from the organizational contexts. Because past research has confirmed a positive relationship between need for achievement and commitment, the same is hypothesized for the health exercise context:

H2: Need for achievement positively predicts goal commitment.

Expectancy of Goal Attainment Factors

Subjective norms. Subjective norms are the perceived social pressure to engage or not engage in a behavior and are part of the social influence predictor of commitment. Subjective norms successfully predict exercise behavior (Okun, et al., 2002). When applying the GCM, subjective norms should be positively related to commitment that would lead to increased performance. Therefore,

H3: Subjective norms positively predict commitment.

Self-efficacy. Self-efficacy is an individual's belief in abilities to achieve a goal (Bandura, 1977; Bandura & Adams, 1977). Korean women's exercise self-efficacy has previously been found to positively influence commitment to plan for exercise, accounting for 27% to 53% variance (Shin, Hur, Pender, Jang, & Kim, 2006), which, overall, supports the GCM's prediction that self-efficacy positively influences commitment. Therefore, within the context of college students' exercise commitments,

H4: Self-efficacy positively predicts commitment.

Locus of control. Locus of control (Rotter, 1966) is separated into an external (actions beyond individual control) and internal (individual controls action) locus of control. Within health, internal locus of control is associated with pro-health behaviors (Reeh & Reilly, 1995),

and locus of control has predicted exercise behavior changes up to 3 months post-intervention (Cramer et al., 2013) which indirectly supports the GCM's prediction greater internal locus of control results in greater goal commitment. Also recall that the GCM predicts greater external locus of control is negatively related to commitment. Therefore,

H5: Greater internal locus of control positively predicts commitment (H5a) and greater external locus of control negatively predicts commitment (H5b).

Methods

Participants

Two-hundred and fifty-three undergraduate students aged 18 years or older were recruited from a large university in the southeastern United States from July 2014 to September 2014. Students were recruited from introductory communication studies courses where study participation fulfilled a course research requirement. Study eligibility criteria were: 18 years of age or older, enrolled in an introductory communication studies course and wish to exercise more in the future (have an exercise goal). The majority of participants were female ($n=162$, 64%) and the average age was 19.73 years ($SD = 2.85$). The majority identified as white ($n=174$, 68.8%). Participants also identified as Asian ($n=37$, 14.6%), Black or African American ($n=21$, 8.3%), mixed race ($n=9$, 3.6%), Hispanic or Latino ($n=8$, 3.2%) and Native Hawaiian or other Pacific Islander ($n=2$, 0.8%). Two participants did not identify their race (0.8%). Participants were also fairly evenly distributed in year in school as freshman ($n=71$, 28.1%), sophomore ($n=84$, 33.2%), junior ($n=55$, 21.7%), and senior, 5th year and older ($n=43$, 17.0%).

Procedure

Undergraduate students were recruited via an online research page where students self-selected study eligibility based on criteria above. Students enrolled in introductory public

speaking (PS students) were allowed to register for an online survey. After registering, PS students received an e-mail with the study link included. PS students were given 3 business days to access the link and complete the study. Students enrolled in introduction to interpersonal communication (IP students) registered for a convenient date and time based on one of eight sessions. After registering, IP students received an e-mail that confirmed their session date and time and reminded them that the study requires they come to an on-campus location. IP students were also asked to bring a laptop computer if they were able to do so, otherwise a computer workstation was provided. Upon arrival, a research assistant checked the IP student in, directed the student to the research laboratory or a computer workstation, and provided an online survey link to the IP student. The survey was conducted via Qualtrics. Informed consent was conducted online on the first page of the survey. After agreeing, the participants were directed to the survey items. After survey completion, the participant was debriefed and thanked for their time. Participants were free to leave at any time during the survey and still received course credit.

Online survey procedure. After online informed consent was given, participants were asked to confirm their study eligibility with a series of yes/no items confirming that they were 18 years or older, enrolled in an introductory communication studies course, and that they wished to exercise more in the future. If a participant answered “no” to any item, they were not eligible to participate in the study. Upon answering yes to all items, the survey began with a series of items described below. Additionally, at the end of the survey, participants completed a brief demographics questionnaire that includes items about age, year in school, gender, and racial/ethnic background. All measures are found in Appendix B.

Measures

Goal commitment. Klein et al. (2014) developed the KUT (Klein et al., Unidimensional, Target-free) measure of commitment that was used to measure goal commitment. Four items used a 1-5 response scale where 1=Not at all, 2=Slightly, 3=Moderately, 4=Quite a bit, and 5=Extremely. Items included: (1) How committed are you to your exercise goal; (2) To what extent do you care about your exercise goal; (3) How dedicated are you to your exercise goal; and (4) To what extent have you chosen to be committed to your exercise goal. Cronbach's alpha was 0.87, in the range of past research (Cronbach's α ranged from 0.86 to 0.98; Klein, et al., 2014). Klein et al. (2014) conducted content validity through item generation, expert review (items sorted with 94% accuracy), and testing in three studies ($N = 37$ to 111) resulting in the four-item KUT measure. These studies confirmed KUT was unidimensional. Also, the measure reflected target-free commitment as shown by significant within-person differences in commitment (Klein, et al., 2014). The 4 item KUT measure is beneficial as it (1) allows for parallel comparison of commitment across different targets, (2) eliminates assumptions that may be inherent with target-specific conceptualizations and operationalizations, and (3) extends the organizational commitment literature to other disciplines. Past commitment measures have been criticized for (1) structural issues (e.g., multiple factors exist) leading to calls for revised conceptualizations of commitment, (2) confounding content measurement (e.g., satisfaction) leading to spurious findings, and (3) practical concerns such as scale length and target specificity leading to concerns such as respondent fatigue and scale adaptability across contexts (Jaros, 2012). Following Klein et al. (2014) procedures, the four KUT items were averaged to create a goal commitment score for each participant where higher scores indicate greater commitment ($M=3.85$, $SD=0.67$).

Achievement. Achievement was measured using the Personality Research Form E, Achievement Subscale (PRF; Jackson, 1974). The PRF examines achievement motivation with 16 true/false statements. The PRF is widely used and its reliability and validity have been well-established (see Fineman, 1977; Fiske, 1973; Harper, 1975). Items were summed to create an achievement motivation index where higher scores indicated greater achievement motivation ($M=11.12$, $SD=2.87$).

Publicness of Goal. A self-report publicness scale was developed for this dissertation where participants were asked to identify whether they have told, plan to tell, do not plan to tell, have not told and unsure whether or not they will tell the exercise goal to specific individuals. Individuals included: a romantic partner, close friend, relative, doctor, and instructor. Participants could also identify an item as “Not applicable” (e.g., does not have significant other). If participants indicated they had told an individual, they were given a score of 2 and if participants indicated they were planning to tell an individual, they were given a score of 1. If a participant indicated they did not plan to tell, did not tell, or were unsure whether or not to tell, participants were given a zero score. Participants were also asked, “Have you told or do you plan to tell your exercise goal to others not listed above?” If a participant answered, “yes,” the participant was prompted to fill-in-the-blank how many others he/she planned to share the exercise goal with. If a participant indicated she/he told or planned to tell 1 to 5 others, a score of 1 was assigned. If a participant indicated she/he told or planned to tell 6 or more others, a score of 2 was assigned. Items were summed to create a total publicness score where higher numbers indicated a more public goal commitment ($M=4.23$, $SD=2.52$).

Self-Efficacy. The Exercise Self-Efficacy scale (Renner, Knoll, & Schwarzer, 2000; Schwarzer & Jerusalem, 1995; Schwarzer & Renner, 2008) has participants indicate their level

of certainty in response to five statements and uses a 4-point response scale where 1=very uncertain, 2=rather uncertain, 3=rather certain, and 4=very certain. Each item finishes the sentence, “I can manage to carry out my exercise intentions...” Items include: (1) ...even when I have worries and problems, (2) ... even if feel depressed, (3) ... even when I am tense, (4) ...even when I am tired, and (5) ...even when I am busy. Items were summed creating an exercise self-efficacy score where higher scores indicated greater self-efficacy ($M=13.05$, $SD=3.36$). Cronbach’s alpha was 0.80, in line with past Cronbach’s alpha reported at 0.88 (Schwarzer & Renner, 2008).

Subjective Norms. The Exercise Norms Scale (Pender, 2011; Pender, Garcia, & Ronis, 1995) includes five items that measure subjective norms and asked participants, “How much do you think the following people expect you to exercise?” Identified persons included family members, a closest friend, 5-6 friends who participants spend the most time with, the instructor who the participant is closest to (this item was modified from “teacher” to be appropriate for the college setting), and the participant’s doctor. Participants chose their best response from three options: 0=not at all, 1=sort of, 2=and a lot. Items were added creating a sum score where higher scores indicated greater subjective norms ($M=5.21$, $SD=2.30$). The Exercise Norms Scale has a test-retest reliability of 0.76 (Pender, et al., 1995).

Locus of Control. Locus of control was measured using the Multidimensional Health Locus of Control Scale Form A (MHLC-A; Wallston, Wallston, & DeVellis, 1978). The MHLC-A scale consisted of 18 total statements that include 6 items that fall into one of three health locus of control dimensions: influence of internal self, influence of chance, and influence of powerful others. Participants indicated agreement based on a 6-point scale where 1=Strongly Disagree, 2=Moderately Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Moderately Agree,

6=Strongly Agree. Scale reliabilities were: (A) Cronbach's alpha was 0.77 for influence of internal self, (B) 0.62 for influence of chance and (C) 0.75 for influence of powerful others. These were comparable to past reported reliabilities for (A) influence of internal self (Cronbach's $\alpha = 0.77$), (B) influence of chance (Cronbach's $\alpha = 0.75$) and (C) influence of powerful others (Cronbach's $\alpha = 0.67$; as reported by Wallston, Wallston & DeVellis, 1978). However, given the unacceptable low reliability for influence of chance, results were interpreted with caution. Items within each dimension were summed to create a specific locus of control sum score for internal ($M=26.10$, $SD=4.69$), chance ($M=18.10$, $SD=4.55$), and powerful others ($M=17.42$, $SD=5.19$) dimensions.

Results

Preliminary Analyses

Correlational analyses were first conducted (see Table 4.1). Goal commitment was significantly correlated with achievement, self-efficacy, subjective norms, internal locus of control (MHLC-Internal), and publicness. External locus of control of chance (MHLC-Chance) was not significantly related to goal commitment, $r(250) = -0.08$, $p = 0.21$. External locus of control of powerful others (MHLC-Others) was close to significantly related to goal commitment, $r(250) = -0.12$, $p = 0.06$. Additionally, some independent variables were significantly correlated with each other as seen in Table 4.1. Therefore, multicollinearity was analyzed and tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern (see Table 4.2). Data met the assumption of independent errors (Durbin-Watson value = 2.11).

Power. A post-hoc power analysis was performed using G*Power 3 statistical program (Faul, et al., 2007). Assuming a criterion of $\alpha = .05$ (two-tailed), power to detect an effect equivalent to $R^2 = 0.15$ was equal to .99. Thus, power was sufficient.

Assumptions of Multivariate Regression. Analyses were next conducted to determine if the assumptions of multiple regression were met. An analysis of standard residuals was carried out that showed data contained no outliers (standardized residual minimum = -2.67 and maximum = 2.85). The histogram of standardized residuals indicated data contained approximately normally distributed errors. The normal P-P plot of standardized residuals revealed points that were not completely on the line, but close. The scatterplot of standardized predicted residuals did appear acceptable so that the assumptions of homogeneity of variance and linearity were met. The data also met the assumption of non-zero variances (variances were publicness = 6.35, achievement = 8.23, self-efficacy = 11.26, subjective norms = 5.31, internal locus of control = 21.98, external locus of control = 26.92 and goal commitment = 0.45). Based on these results, the assumptions of multiple regression analysis were met.

Table 4.1

Bivariate Correlations among Independent and Dependent Variables

Variable	1	2	3	4	5	6	7	8
1. Goal Commitment	-	0.22**	0.44**	0.30**	0.25**	-0.08	-0.12	0.32**
2. Achievement		-	0.28**	0.19*	0.12	-0.19*	0.03	0.16*
3. Self-Efficacy			-	0.31**	0.23**	-0.14*	-0.09	0.22**
4. Subjective Norms				-	0.13*	0.05	0.09	0.30**
5. MHLC – Internal					-	-0.20**	0.03	0.12
6. MHLC – Chance						-	0.42**	-0.03
7. MHLC – Others							-	0.09
8. Publicness								-

Note. Correlations marked with an asterisk (*) were significant at $p < 0.05$ and a double asterisk (**) were significant at $p < 0.001$.

Table 4.2

Collinearity Statistics for Independent Variables

Variable	Tolerance	VIF
Achievement	0.86	1.16
Self-Efficacy	0.80	1.25
Subjective Norms	0.82	1.22
MHLC – Internal	0.90	1.11
MHLC – Chance	0.74	1.35
MHLC – Others	0.79	1.27
Publicness	0.87	1.15

Test of Hypotheses

Using the enter method in a multiple regression analysis, the independent variables (publicness of goal, achievement, self-efficacy, subjective norms, internal locus of control and external locus of control [powerful others and chance]) were found to explain a significant amount of the variance in goal commitment, $F(7, 244) = 14.74, p < 0.001, R^2 = 0.30$). H1 was supported as publicness positively predicted goal commitment, $\beta = 0.20, t(251) = 3.48, p = 0.001$. H2 was not supported as need for achievement did not significantly predict goal commitment ($\beta = 0.08, t(251) = 1.44, p = 0.15$). H3 and H4 were supported as subjective norms, $\beta = 0.11, t(251) = 1.91, p = 0.05$, and self-efficacy, $\beta = 0.30, t(251) = 4.99, p < 0.001$, both positively predicted goal commitment. Finally, the results for locus of control (H5) were mixed. First, internal locus of control was a positive predictor of goal commitment supporting H5a, $\beta = 0.15, t(251) = 2.63, p < 0.01$. For H5b, external locus of control for powerful others negatively

predicted goal commitment, $\beta = -0.16$, $t(251) = -2.59$, $p < 0.05$; however, external locus of control for chance was not a significant predictor, $\beta = 0.07$, $t(251) = 1.15$, $p = 0.25$.

Next, discussion of results from Study 1 and Study 2 are presented in Chapter 5.

CHAPTER FIVE: DISCUSSION

This dissertation sought to demonstrate the utility of goal perception assessment in bolstering health intervention evaluation. While goals are regularly incorporated into health interventions, they are rarely systematically examined, thus the “expectancy theory model of antecedents and consequences of goal commitment” or the “goal commitment model” (GCM; Hollenbeck & Klein, 1987) was examined within two contexts: (1) a mandated on-campus alcohol-related risk behavior reduction intervention to test the relationships between goal difficulty, goal commitment and performance; and (2) exercise to test predictors of goal commitment. This dissertation is the first step in systematically examining goal perceptions within health intervention contexts where goal perception assessment provides utility by (1) predicting intervention outcomes and (2) integrating within existing health intervention evaluation frameworks.

Goal Difficulty

Prior research has confirmed a strong, positive linear relationship between goal difficulty and performance with large effect sizes (Locke & Latham, 1990; Latham & Locke, 2007). This *goal difficulty effect* relationship has historically been confirmed regardless of goal difficulty conceptualization and measurement as assigned (easy/moderate/difficult; see e.g., Wright & Kacmar, 1994), self-set (see e.g., Latham & Steele, 1983; Erez, Earley, & Hulin, 1985; Lozano & Stephens, 2010), self-referenced (see e.g., Ivancevich & McMahon, 1977a, 1977b, 1977c) or externally-referenced (Lee & Bobko, 1992; Kwan et al., 2012). While past research has confirmed this relationship, in this dissertation’s Study 1, Hypothesis 1, results do not confirm

the goal difficulty effect. Examining the simple correlations, goal difficulty and both measurements of performance were non-significant. It was only *after introducing commitment as a moderator* did goal difficulty affect performance. Why is the goal difficulty effect hypothesis not confirmed unless the moderating effect of commitment is considered while in prior studies these correlations were positive even when commitment was not in the model?

One explanation is that there was insufficient variance in the goal difficulty assessment. The goal difficulty-external measure had a mean of 3.41 on a 5-point scale with a standard deviation of 0.60 (see Table 2.4). Thus, perhaps this assessment of goal difficulty had a slightly truncated range. However, Lee and Bobko (1992) reported a very similar mean (3.61) and standard deviation (0.62), and their results supported a goal difficulty-performance relationship. Given that commitment significantly correlates with the performance measures (hours spent drinking and alcohol-related negative consequences; see Table 2.4), the outcome performance measures clearly have sufficient variance.

Another explanation of why the goal difficulty effect was not found may be due to the organizational versus health context. Within organizational settings, the existence of somewhat challenging goals is sufficient to promote performance but this is insufficient in health interventions or, at least, mandated health interventions. That organizational research has confirmed a goal difficulty to performance relationship is not surprising as these contexts require that an individual at least have a low level of commitment and exert some effort as their performance is tied to their livelihood: keeping one's job. When a supervisor sets a performance goal for an employee, the employee is expected to work toward that goal, even if his or her performance is subpar. Organizational literature suggests that the more difficult a goal, the better the performance as long as the goal is challenging and seen as attainable. In business, satisfying

one's supervisor (to keep one's job) and/or earning a paycheck provides motivation for *some* performance, yet that motivation is absent in most health interventions. Thus, it may be in the absence of motivation (operationalized in the present study as commitment), goal difficulty will not be an important predictor of performance in health interventions.

As previously mentioned, interventions frequently suffer from high dropout rates (Brorson, Ajo Arnevik, Rand-Hendriksen, & Duckert, 2013; Stark, 1992) and affect only a minority of participants (W. R. Miller, Walters, & Bennett, 2001), which reflects a lack of motivation and commitment to intervention goals. Thus, participants' motivation cannot be assumed within the health intervention context, as participants may have differing goals motivating their behavior. For example, an individual, especially one who is mandated to attend, may merely want to "attend each session until I'm done," with no real drive to actually engage in a positive behavior change (e.g., reduce alcohol-related risk behavior). Further, the participant could resent attending the intervention because he or she is forced to be there. Alternatively, a person may be very committed and engaged in positive behavior change up until the program is completed. Once the support and/or oversight of the intervention are/is eliminated, the individual is no longer dedicated to changing behavior.

The lack of support for H1 requires further research. Results from this study should be compared with results from other health interventions in other contexts to see if the lack of relationship between difficulty and performance was a function of the context (mandated alcohol counseling) or if the relationship is not significant in other health contexts. Additional research could shed light on whether a lack of support for the goal difficulty effect hypothesis was (1) an anomaly in this study, (2) due to mandated attendance for this intervention, or (3) a result of external forces (such as a supervisor or earning one's paycheck) that provided sufficient

incentive. Next, the moderating effect of goal commitment is discussed, as, in the GCM, increased levels of commitment are key to increased goal performance.

Goal Commitment

Commitment was a strong predictor of reduced alcohol-related risk behaviors. This dissertation confirmed that commitment is a critical component of behavior change, as higher levels of commitment increased goal performance or reductions in hours spent drinking and negative alcohol-related risks. This finding is consistent with past research that has found public commitments (e.g., stating or declaring one's commitment) were especially effective at producing long-lasting behavior change (Lokhorst, Werner, Staats, van Dijk, & Gale, 2013). In prior work, individuals were even able to resist persuasion attempts once a public commitment was made (Gopinath & Nyer, 2009). Commitment research and theory confirm that individuals seek to be consistent in their communication and behaviors. Thus, these findings and past research has found that commitments align with subsequent behavior. Interventions should therefore encourage the highest levels of commitment for the best performance outcomes.

While commitment had a significant relationship with the outcome measures, the contribution of this dissertation was demonstrating that commitment also interacts with goal difficulty perceptions for health outcomes. Specifically, commitment did not affect the relationship between goal difficulty and performance when goal difficulty was low. When goal difficulty was moderate or high, commitment moderated the goal difficulty-performance relationship. Under these conditions, the interaction predicted variance in performance beyond the main effect for commitment. Thus, while commitment is important, this dissertation's results also suggest that interventionists should consider measuring *what goal* participants are

committed to and *how difficult that goal is perceived as* to enhance knowledge of how commitment predicts intervention success.

Covariates

Two covariates, number of BASICS sessions attended and goal acceptance, affected performance. These are discussed below.

Number of BASICS sessions. While BASICS was successful in reducing alcohol-related risk behaviors, the three BASICS sessions' results (BASICS-3) had stronger effects than those seen in the two BASICS sessions' results (BASICS-2; Tables 2.1 and 2.2). Despite significantly higher goal difficulty perceptions and lower goal acceptance, the BASICS-3 participants also reported drinking significantly fewer hours than BASICS-2 participants. Thus, BASICS-3 was more successful than BASICS-2 in reducing hours spent drinking.

This raises the questions of whether the third BASICS session is necessary and who would benefit the most from this third session. In short, the two-session intervention is adequate to reduce alcohol-related risk behaviors. The third session increases the degree of the reduction, that is, three sessions result in a greater reduction in hours spent drinking. The third session heavily relies on communication as discussion focuses on goals using a motivational interviewing (MI) approach. This third session is especially important for students who experience ambivalence or conflicting thoughts or feelings toward changing their alcohol-related risk behaviors and/or students who struggle to create realistic, attainable goals.

BASICS' emphasis on using MI is particularly effective in confronting ambivalent attitudes and moving a person toward goal commitment. MI counselors encourage ambivalence, especially among resistant participants, as ambivalence signals an individual is more amenable to change (W. R. Miller & Rollnick, 1991, 2002, 2013). However, a counselor also seeks to move a

person through ambivalence toward positive behavior change through the use of “change talk” (e.g., I want to drink less, I want to stop fighting when I drink). This talk is elicited as the counselor develops discrepancies between the participant’s current behavior and positive health behavior change. For example, if a participant states, “I really love drinking because I can socialize with my friends, but I know I need to get my work done.” A counselor may respond, “So, how can you get your work done and still socialize with your friends?” The counselor’s query begins to help the participant create individual solutions to getting work done. From there, the counselor can continue to provide support and express empathy by guiding the conversation to focus on an individual’s goal to reduce alcohol-related risk and identify ways, or plans, for how that goal can be accomplished. Thus, these change talk statements and supportive, empathic discussion work to increase commitment (Amrhein, 2004).

Also, the third BASICS session could help participants create realistic, attainable goals. For example, if a student were to have the goal to “not drink a single drop of alcohol when out with my drinking friends,” this goal may not be realistic as it is incredibly difficult to abstain from drinking alcohol when out with friends who drink. If this goal were set during the second session, and the counselor could suggest the student try to reach the goal before the third session. Then the third session may focus on how successful the student was and whether the goal needs to be changed or adapted. Thus, a third session could highly benefit students who are setting extremely difficult goals that are potentially unrealistic as they have time between the second and third sessions to attempt the goal and understand just how difficult the goal is and then goal adjustments could be further made in the third session.

Goal acceptance. Goal acceptance also emerged as a significant covariate, indicating that goal acceptance should be considered in the context of a mandated health intervention.

While organizational goal theory literature emphasizes that goal acceptance is necessary for the goal difficulty effect to occur (Locke, 1968; Locke & Latham, 1990; Erez & Zidon, 1984), goal acceptance is rarely measured in the literature (for exception see Erez & Zidon, 1984; Erez et al., 1985) although it has been posited as a potential reason of why poor performance occurs (Oldham, 1975).

The organizational versus health context may determine differences in goal acceptance and provide a reason why acceptance is not commonly measured in organizational contexts. As mentioned earlier, the organizational context requires that an individual put forth at least minimal effort toward a goal to satisfy one's supervisor and earn a paycheck. Therefore, because the goal is tied to one's work, there may be at least minimal acceptance of the goal. Health interventions seek to inspire the individual to change, set a goal, and work toward goal success; accepting a health goal is not required of participants, although it is desired. Thus, measuring goal acceptance in health intervention contexts may provide health interventionists another tool to bolster evaluation by determining success in terms of goal acceptance.

Further, this research found a significant positive correlation between goal acceptance and goal commitment, $r(214) = 0.34, p < .01$. Logically, this relationship makes sense in that if goal acceptance is high, commitment would also be high, resulting in increased performance. However, further research is needed to understand this effect especially when considering the *more significant reductions in hours spent drinking and lower goal acceptance* among BASICS-3 participants when compared to BASICS-2 participants. This is counterintuitive in that there was lower levels of goal acceptance, yet better performance among BASICS-3 participants. Further, the goal to reduce alcohol-related risk behaviors was perceived as more difficult by BASICS-3 participants, yet commitment levels did not significantly differ between BASICS-3

and BASICS-2. Thus, the driving factor behind better performance between the BASICS-3 and BASICS-2 participants may be perceptions of goal difficulty as they related to similar commitment levels and *not* a high level of goal acceptance, as organizational goal theory would suggest. More research is needed to understand the minimal goal acceptance levels needed to drive performance, as the BASICS results indicate that high levels are not required for the best performance.

Thus, number of BASICS sessions and goal acceptance emerge as significant covariates which are interesting considerations for future research in terms of who benefits from the third BASICS session and understanding minimal levels of acceptance required for performance.

Summary for Study 1 and Implications for Further Tests of the GCM

In summary, in contrast to most tests of the GCM, goal difficulty was not a significant predictor of alcohol-related outcomes for either a two- or three-session BASICS' alcohol-related risk behavior reduction outcome. Commitment to changing alcohol-related risk behavior was a significant predictor of performance or reducing alcohol-related risk. Commitment interacted with goal difficulty such that when goal difficulty was moderate or high, those with highest levels of commitment outperformed those with lower levels of commitment. Goal acceptance was also a significant predictor of reduced alcohol-related risk behavior. These findings have implications for future research of the GCM. Specifically, time, goal specification, multiple and competing goals, testing in new contexts, and goal acceptance are discussed below.

Time. Future research should examine how goal difficulty perceptions and commitment change over time, before, during and after and intervention. Study 1 was limited to cross-sectional data collected post-intervention. Ideally, pre-intervention goal perceptions could be used to predict post-intervention outcomes. However, baseline goal perceptions may not

accurately reflect understanding of goals because tenants of BASICS are that counselors help students identify their alcohol-related risk behavior and set *realistic* goals in reducing their alcohol-related risk behavior. Thus, at the onset of BASICS, goals may be very different than at the end of BASICS. Future research may want to consider what the best strategies are to identify and change goal perceptions and provide information on incorporating those strategies into interventions.

Understanding how difficulty and commitment perceptions change and affect performance during and after an intervention is critical for managing chronic illnesses such as heart disease or diabetes. This knowledge could greatly enhance how medical professionals discuss and support patients' goals, help set new goals, and identify key times to emphasize commitment. Setting new goals are especially important in the context of chronic illnesses because these occur over a person's lifetime and take a host of behaviors (e.g., diet, exercise, and medication) to successfully manage. Setting new, moderately difficult goals and committing to those goals over time would continue to increase performance and encourage positive health behaviors. Understanding how goals and/or goal perceptions change over the course of the intervention will provide insight into how goals function within the individual during the intervention.

Goal specification. GCM health research should also explore ways that participants can concretely identify an individual goal. The assigned group goal directs development of an individual goal. MI research is clear that individuals, especially those who are ambivalent, may not be able to publicly declare a goal (W. R. Miller & Rollnick, 1991, 2002, 2013), and a counselor's role is to help a participant identify motivation to change and set a goal or a future

objective he or she wants to achieve. The GCM is dependent on an individual articulating his or her goal, as goal difficulty and commitment perceptions directly relate to a specific goal.

While some individuals may clearly articulate an individual goal when directly asked, others may only realize their health goal through internal processing and discussion with a counselor or via the processes within an intervention. Discussions that center on discrepancies between the participant's immediate behavior and what he or she wants to achieve in the future (e.g., goal) help identify the most salient goal. Further, MI counselors also rely on supporting self-efficacy to move a participant toward change. Thus, counselors often explore participant-identified barriers to change and help the participant realize solutions, supporting self-efficacy. For example, if a woman's goal is to be functional during the week, and she identifies socializing with her drinking friends (and, thus, ends up drinking) as a barrier to change, solutions could include: setting a drinking limit when going out, only socializing on the weekend, or volunteering to be the designated driver. Thus, identifying a goal is not always simply asking, "What is your goal?" but this may take several conversations until the participant can identify what he or she values the most in the future. In such cases, the most appropriate measurement for intervention success may be measuring goals immediate post intervention and then measuring behavioral outcomes (e.g., behavior change) three to six months post intervention. Multi-session interventions benefit the most from a goal assessment as allows opportunities for interventionists to tailor the intervention to help participants develop and discuss individual goals.

Multiple and competing goals. Future research could explore how a multiple and competing goals perspective could be incorporated into the GCM to help predict health intervention goal performance or further tailor the intervention to directly address multiple and competing goals. Currently, the GCM does not account for multiple goals, despite the

understanding that multiple goals are frequently pursued in health interactions (Smith-Dupre & Beck, 1996). Communication scholars have developed several multiple goal theories (e.g., Brown & Levinson, 1987; Caughlin, 2010; Dillard, 1990; 2008) that share the assumption that in an interaction, an individual pursues more than one goal simultaneously. Further, the multiple goals perspective suggests that communication is driven by more than the desire to exchange information (Sillars, 1998). When talking about health issues, individuals often pursue more than one goal such as seeking social support and information gathering. For example, Burke and colleagues (2006) found that during medical appointments, diabetes patients sought more information about gaining glycemic control, support of self-care practices, and opportunities to ask questions. Further, health research often considers multiple behavioral goals, such as exercising or spending time with family (Jung & Brawley, 2010).

While multiple goals may align (as seen in the previous example of aligning to manage diabetes; see also Riediger & Freund, 2004), goals may also conflict with each other, creating competing goals or where pursuit and achievement of one goal may impede the achievement of another goal. For example, transplant patients have identified goals of receiving support and managing uncertainty (Scott, Martin, Stone, & Brashers, 2011). Upon accepting and receiving support (e.g., families providing meals, assistance with physical tasks), transplant patients increased their uncertainty as new uncertainties were revealed by accepting assistance (e.g., self-reliant identity questioned by relying on others, relational uncertainty when support was not offered by expected others). Thus, transplant patients were unable to simultaneously receive support and manage their uncertainty.

A behavioral goal, the focus of health interventions, is often viewed as conflicting with other goals. For example, in exercise contexts, the goal to exercise is generally examined as

competing with non-exercise goals (e.g., socializing with friends; Li & Chan, 2008), as pursuit of other goals takes time and attention away from exercising. Multiple, and potentially conflicting, behavioral goals are common in interventions as many individuals begin an intervention ambivalent about change; they feel that changing their problematic behavior is both good and bad. They may envision themselves as changing their behavior or continuing to engage in the behavior. For example, if a student is trying to reduce his drinking, he may see this as beneficial as he would not get into fights and get up in time for class; however, he may also see reducing his drinking as unattractive because he would socialize less with his drinking friends. Thus, the student has multiple goals that align: (1) drink less, (2) get into fewer fights and (3) go to class, and a conflicting goal: (4) socialize with drinking friends.

The GCM measures only a single behavioral goal, and, in the example above, the goal is to reduce drinking. One way to account for competing goals is for the GCM goal to be considered a *superordinate* or overarching goal (Berger, 1997; Caughlin, 2010). In this sense, there may be multiple subgoals: get into fewer fights, go to class regularly, and socialize with friends. Research has shown that individuals should focus on the superordinate goal because then subgoal performance reinforces continued performance and commitment toward the superordinate goal (Fishbach, Dhar, & Zhang, 2006).

Thus, the intervention itself should help an individual cope with competing subgoals (reducing alcohol-related consequences versus socializing with friends) and direct a participant's thinking to determine ways that the competing subgoals can both be achieved to satisfy performance toward the superordinate goal. To extend the previous example, a student can work toward reducing his drinking by only having two drinks instead of his typical four or more drinks. By drinking less, he is less likely to get into fights, more likely to get up for class the next

day, and he can still socialize with his drinking friends. Thus, it becomes critical that the intervention help an individual identify and focus on a realistic, superordinate goal that incorporates an individual's competing goals. Doing so would allow subgoal success to then reinforce commitment to the superordinate goal.

By showing individuals how to achieve competing goals, individuals may actually reframe the goals as supporting one another. For example, Jung and Brawley (2010) found that those who frequently exercised framed traditionally conflicting goals (e.g., exercise, work, and family goals) as goals that positively enhanced one's motivation and commitment to accomplish all goals. Thus, helping an individual understand how to achieve competing goals may enhance motivation and commitment to not only the intervention goal, but also other goals the individual values.

However, competing goals may not always be resolved by emphasizing the superordinate goal or an individual may have the ability to envision how to accomplish all goals. When this occurs, the intervention should focus on emphasizing and moving an individual toward positive behavior change, a focus of motivational interviewing (W. R. Miller & Rollnick, 1991, 2002, 2013). While in the example of reducing alcohol-related risk and spending time with drinking friends, advice often given to individuals suffering from alcohol addiction is to "find a different playground and different playmates" (Alcoholics Anonymous, 1984). Thus, individuals need to have *more* motivation to change and work toward the positive health behavior goal (e.g., reduce alcohol-related risk by avoiding risky situations) so that the competing goal to engage in negative health behavior (e.g., socializing with drinking friends) is less salient.

Another way GCM researchers may cope with the challenge of competing goals might be to add space prior to measuring goal difficulty to ask, "What other goals do you have that may

affect reaching your [positive health behavior change] goal?” or, in the context of BASICS, the question may be, “What goals do you have that would make it difficult to meet your alcohol risk reduction goal?” Goal difficulty could then be measured for each identified goal. The more consistent goals one has (e.g., goals all consistent with a reduction in alcohol use), it is more likely the higher the commitment to change and thus more behavioral change.

Measuring competing goals individually would be challenging. An easier competing goals’ assessment may be to ask people to list obstacles or behaviors that might get in the way of achieving the health goals they had just written about. Such information would be helpful for the counselors working in programs such as BASICS as it gives the counselor a more realistic view of the student's challenges to positive behavior change.

Testing in new contexts. As noted previously, the GCM needs testing in other contexts. One useful place to test the GCM would be with diabetes patients who are having difficulty managing their diabetes with the performance measure of reducing blood glucose levels. Ideally, diabetic patients could identify their health goals prior to attending a group intervention, during a group intervention, and after the intervention so that changes in goal identification and goal difficulty perceptions occur over time. Specifically, this dissertation found that commitment affected performance. Further, commitment moderated goal difficulty’s affect on performance. Thus, patients, especially those who identify easy goals, should be encouraged to set and commit to goals that are at least moderately difficult. Once a moderately difficult goal is identified, then the interventionists should encourage the diabetic patients to have the highest levels of commitment to managing their diabetes.

Part of creating high levels of goal commitment would be to understand what other goals, potentially competing goals, each patient has in relation to the diabetes management goal. By

identifying competing goals, especially those that are barriers to diabetes management, the interventionist and participants could discuss ways to lessen competing goals and/or increase the motivation for attaining the diabetes management goal.

Thus, future GCM research would benefit from improved measurements of goals. Locke (1968) suggested that vague goals are not as effective in resulting behavioral action which matches that more specific, concrete goals and plans are more easily attained (Berger, 1997). Thus, goal measurement would be extended to code how *specific* a goal is as envisioned by participants. Specificity denotes concreteness that often entails more details and components. As described earlier, goal specificity ranges from abstract (e.g., eat better) to concrete and specific (e.g., eat 20% less sugar each day). Participants should indicate their goal for managing their diabetes immediately before, in the middle and post intervention. Further, this research supported past goal difficulty perception research that externally referenced goal difficulty perceptions are more accurate predictors of performance (see Lee & Bobko, 1992). Externally-referenced goal difficulty perceptions are especially important as this external measurement removes the confounds associated with self-referenced goal difficulty perception and self-efficacy. Thus, future goal measurement should include both specificity and externally-referenced goal difficulty perceptions.

Second, participants should write down not only their one major goal for the program but also participants should be encouraged to consider multiple goals to test whether having multiple goals results in stronger effects than single goals. Assuming individuals have more than one goal, commitment should be measured for each goal listed. Further, if they do not list the intervention's overall goal (e.g., manage diabetes), participants would complete a goal difficulty assessment of the overall intervention goal. Finally, participants would be queried regarding

other life goals that might act as barriers to achieving their goals for diabetes management. These goals, too, can be assessed for goal difficulty and specificity.

Goal acceptance. The test of the GCM with the BASICS program suggests goal acceptance should be considered in other contexts to confirm whether acceptance is critically important for health interventions. While it emerged as a significant covariate, the results were mixed on *why* acceptance was important, as it did not work as expected when comparing the 2 or 3 session BASICS. Thus, the effect of acceptance should continue to be measured in future health interventions. Specifically, goal acceptance should be measured in relation to the intervention goal (e.g., diabetes management) and for each goal that is identified by the participant. The same goal acceptance measure could be utilized, although a secondary study may want to consider the efficacy of a one-item goal acceptance measure.

In summary, future GCM research should be extended to other health contexts, and, specifically could be tested in a health intervention to manage diabetes. Identifying and measuring goals at the beginning, middle, and end of the intervention would extend understanding of how goals, goal difficulty and commitment perceptions function, and possibly change, over time. Further, this allows interventionists to tailor the diabetes intervention curriculum to encourage participants to adopt at least moderately difficult diabetes management goals *and* encourage the highest levels of commitment to those goals, thus encouraging the highest levels of performance. By specifying goals, the interventionists can also address creating *realistic* goals and also understanding what barriers exist and creating solutions with the participants to those barriers to diabetes management. The GCM could further be expanded to consider and account for multiple and competing goals and investigate the effects of goal acceptance in other health contexts. While the goal commitment model and goal difficulty and

commitment perception assessment show utility for predicting intervention outcomes and guiding intervention efforts, this dissertation also explored how assessment integrates within existing intervention evaluation by exploring the predictors of commitment in Study 2.

Goal Perception Assessment Integration in Existing Health Intervention Frameworks

Goal perception assessment also bolsters existing intervention evaluation as goal commitment assessment integrates within existing health intervention evaluation and theoretical frameworks. Many commonly used indicators of health outcomes, such as subjective norms and self-efficacy, are also predictors of commitment according to the GCM (Hollenbeck & Klein, 1987). Six of these predictors were tested in an exercise context in Study 2. Discussion below individually reviews each predictor and discusses implication for health intervention research.

First, publicness or telling others about one's exercise goal was found to positively predict commitment to exercise, confirming H1. Current health intervention leaders and participants frequently discuss goals (e.g., BASICS, Weight Watchers, AA, motivational interviewing), and thereby make goals public, integrating publicness as an existing strategy employed within many intervention frameworks. Further, while public statements about exercise do increase exercise behavior (McNamara, 1986), these results suggest that commitment may also be an important consideration in encouraging future exercise behavior. Future research may want to consider whether commitment has a moderating or mediating effect on the publicness to performance relationship. Thus, a commitment assessment complements existing intervention frameworks and provides avenues for future research to understand how commitment functions in relationship to publicness and health goal performance.

Second, subjective norms or the perceived social pressure to engage in exercise behavior positively predicted commitment to exercise, supporting H3. Because subjective norms is found

within the Theory of Planned Behavior (Ajzen, 1991), and this is used as the basis of many health interventions (see Albarracín et al., 2001), subjective norms are frequently incorporated and assessed as a theoretical concept within health intervention research. Further, subjective norms has successfully predicted exercise behavior (Okun et al., 2002). Because subjective norms also predicts commitment to exercise, interesting future research may want to consider the implications of commitment as a potential moderator or mediator of subjective norms and behavior. Thus, a commitment assessment complements existing theoretical subjective norms intervention frameworks and provides avenues for future research to understand how commitment functions in relationship to subjective norms and health goal performance.

Third, self-efficacy or one's belief in his or her skill and ability to exercise positively predicted commitment to exercise, supporting H4. Self-efficacy (Bandura, 1977) is frequently used and assessed in health interventions; therefore, a commitment assessment would complement this existing framework. Because self-efficacy positively predicts exercise behavior (Shin et al., 2006), future research may also want to consider, again, commitment as a moderator or mediator between self-efficacy and health goal performance.

Fourth, Study 2 examined locus of control as a predictor of exercise commitment. While locus of control is generally considered a stable personality trait, results here have implications on health intervention and commitment research as a higher internal locus of control is predictive of higher levels of commitment to exercise (H5a) whereas higher external locus of control is predictive of lower levels of commitment (H5b). Because past meta-analytic research has shown that internal locus of control is related to health-promoting behavior (Reeh & Reilly, 1995), interesting future research may want to explore how commitment may mediate or moderate this internal locus of control to performance positive effect.

Fifth, the GCM suggested that those high in need for achievement would have greater commitment levels. However, results did not support H2 in that need for achievement was not significantly related to commitment to exercise. Recall that in health, need for achievement has been investigated as *scholastic* achievement where it is associated with increased exercise (see Fiscella & Kitzman, 2009; Kristjánsson, Sigfúsdóttir, & Allegrante, 2010). More research is needed to fully understand how need for achievement may or may not be related to goal perceptions. Future research should especially pay attention to whether the need for achievement and relationship to better health is a spurious relationship and/or if there are lurking variables that may affect results.

In summary, the GCM predictors of commitment were largely supported (H1, H3-H5). Goal commitment perception assessment bolsters existing evaluation by providing a complement to existing theoretical frameworks and evaluations. Goal commitment provides a number of future research opportunities as a potential moderator or mediator of the selected predictor to goal performance relationships.

Limitations

Future research should consider testing the goal commitment model (GCM; Hollenbeck and Klein, 1987) in other health intervention contexts and populations as this research was limited to two contexts (reduction in alcohol-related risk behavior and exercise) and among college students. Understanding how goal perceptions and the GCM work with other interventions and populations would greatly expand understanding of the utility to bolster health intervention evaluation by including goal perception assessment. Another limitation of the present research is both studies used college students, so applying the GCM with non-college student populations in other health contexts would also be beneficial.

Social desirability may also have affected Study 1 results. While social desirability is often a concern in health interventions, this may be more of a concern for Study 1 because students' records are flagged until they complete BASICS. Thus, students may feel they have to show they want to participate and change their alcohol-related risk behavior so they can successfully complete BASICS. Thus, social desirability may have artificially raised commitment and acceptance levels. Despite this limitation, goal commitment did result in a main effect on performance and moderated the goal difficulty to performance relationship so that those with the highest levels of commitment spent the least number of hours drinking and experienced the fewest negative consequences. Thus, social desirability may have merely lessened commitment's moderating role.

Future research could also consider whether post-intervention goal perceptions may more accurately predict long-term effects than other commonly used health indicators. For the BASICS intervention, the health center also collects six-week and three-month post-intervention data, although response rates are poor (Walters, 2013).⁵ Especially in the BASICS context, the group goal is forced on the participant for the duration of the program. Therefore, post-intervention, the participant may have little incentive to continue to work toward lowering alcohol-related risk behaviors. This may affect goal acceptance and/or commitment post-intervention. Thus, level of acceptance and commitment may more accurately predict long-term intervention effects as these perceptions may change (especially in comparison to self-efficacy, a commonly used indicator) and should be examined further in future research.

Another limitation of Study 1 is that the BASICS intervention changed from three sessions (BASICS-3) to two sessions (BASICS-2) in the middle of data collection. This revealed

a significant effect that provided evidence that the composition of the intervention affected goal perceptions and outcomes.

Conclusion

Goals are key to motivating behavior and integral to health intervention success. Goal perception and commitment assessment has great utility in bolstering health intervention evaluation as these assessments may be used to (1) predict outcomes and (2) are complementary to and integrate within existing evaluation frameworks. Ultimately, in health contexts, commitment drove positive behavior change with both (1) a main effect on performance and (2) a moderating effect on the goal difficulty-performance relationship. Further, the highest commitment levels resulted in the best performance when goals were perceived as moderately or highly difficult. Thus, commitment and goal perception assessments emerge as beneficial tools that bolster existing health intervention evaluation.

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FOOTNOTES

- ¹ The antecedents of goal commitment are further explained in Chapters 3 and 4.
- ² Recall that specificity is a property of a goal (Locke & Latham, 1990). While both goal difficulty and specificity are goal properties, GCM research focuses on goal difficulty and the effect of goal specificity on performance has not been tested. Berger (1997) suggests that specificity leads to greater success (e.g., performance). Identifying subgoals would be one way to measure goal specificity. While health interventions *assign* goals, they leave it to participants to create or self-set their own subgoals within the context of the intervention's overarching goal (e.g., Fishbach, Dhar, & Zhang, 2006). Subgoals are "less abstract goals that must be achieved for superordinate [overarching] goals to be realized" (Berger, 1997, p. 21). For example, to prevent alcohol-related risk behavior, an individual must first realize what problematic drinking behaviors exist such as missing class or not fulfilling work obligations. Then, a subgoal is created such as drinking less so as not to be hungover and miss class or complete work before drinking. Therefore, an interesting goal theory test would be to consider the goal property specificity and its impact as another independent variable (along with goal difficulty) on performance.
- ³ While other analyses and/or estimators may be used to handle the skewed data (e.g., censored regression, Tobit), for ease of interpretation and application, Hayes' PROCESS model was used for data analyses. Other analyses (e.g., censored regression, Tobit analysis, maximum likelihood and Bayesian estimators) confirmed results, although with greater significance.

Additionally, other more skewed mediators (total number of drinks and drinks per hour) were also tested as mediators, and results were less significant than using total hours spent drinking as the mediator.

⁴ The PROCESS model results only provide unstandardized coefficients that are determined by the measurement scale of variables used in the model. Thus, because hours spent drinking ranges from 0 to 75, the goal difficulty and commitment coefficients are much higher than 1 in absolute value.

⁵ During Study 1, only 38 students completed the six-week post-BASICS survey. There were no significant differences in the immediate post survey performance compared to the six-week post-BASICS performance reported. This was not surprising given the small N.

APPENDIX A: BASICS POST-PROGRAM SURVEY

Please write your 810 (student ID) number:

810 _____

Please complete the following survey. Your answers are confidential.

1. In one sentence, what do you want to accomplish about your alcohol related risk right now?

Based on what you wrote above, please circle a number (1-5) to indicate your agreement with the following statements.

2. What I want to accomplish right now will require:

Very little

As much

attention and

attention and

effort

effort as I can

give

1

2

3

4

5

3. What I want to accomplish right now is generally:

Not challenging

Very challenging

at all

1

2

3

4

5

4. What I want to accomplish right now is something that I could:

Always attain

Often have to
push myself to

attain

1

2

3

4

5

5. What I want to accomplish right now is set at a level of difficulty:

Lower than my

Higher than my

past behavior

past behavior

1

2

3

4

5

6. How difficult is what I want to accomplish right now:

Not at all

Extremely

difficult

Difficult

1

2

3

4

5

From the program perspective, your goal during BASICS was to reduce your alcohol-related risk behaviors.

7. To what extent do you accept the goal to reduce your alcohol-related risk?

Do not

Completely

accept								accept
this goal								this
at all								goal
-4	-3	-2	-1	0	+1	+2	+3	+4

Think of the AVERAGE UGA student for the next items:

8. For the average UGA student, the goal to reduce their alcohol-related risk is:

Extremely						No challenge at
challenging						all
1	2	3	4	5		

9. For the average UGA student, the goal to reduce their alcohol-related risk takes:

Enormous effort					Almost no effort
1	2	3	4	5	

10. For the average UGA student, the goal to reduce their alcohol-related risk takes:

An extreme					Almost no effort
degree of thought					
and problem					
solving					
1	2	3	4	5	

11. For the average UGA student, the goal to reduce their alcohol-related risk takes:

An enormous					Very little
amount of					persistence and

persistence and

tenacity

tenacity

1

2

3

4

5

12. For the average UGA student, the goal to reduce their alcohol-related risk requires:

Very high

No standards of

standards of

performance at

performance

all

1

2

3

4

5

13. For the average UGA student, the goal to reduce their alcohol-related risk may result in:

Discovering

Never

better ways of

discovering

doing things

better ways of

doing things

1

2

3

4

5

Think of yourself for the following questions:

14. How committed are you to reducing your alcohol-related risks?

Not at all

Slightly

Moderately

Quite a bit

Extremely

1

2

3

4

5

15. To what extent do you care about reducing your alcohol-related risks?

Not at all	Slightly	Moderately	Quite a bit	Extremely
1	2	3	4	5

16. How dedicated are you reducing your alcohol-related risks?

Not at all	Slightly	Moderately	Quite a bit	Extremely
1	2	3	4	5

17. To what extent have you chosen to be committed to reducing your alcohol-related risks?

Not at all	Slightly	Moderately	Quite a bit	Extremely
1	2	3	4	5



Typical Week of Using Alcohol

Think of a **typical week** since **you started BASICS**. For each day of the week in the calendar below, fill in the **number of standard drinks typically consumed on that day** in the upper box and the **typical number of hours you drank** that day in the second box. **Enter "0" if you did not drink.**

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

of

drinks

hours

drinking

Heaviest Drinking Week

Think of the **heaviest drinking week** since **you started BASICS**. For each day of the week in the calendar below, fill in the **number of standard drinks you consumed on that day** in the upper box and the **number of hours you drank on that day** in the lower box. Enter "0" if you did not drink.

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

of

drinks

hours

drinking

Think of the time you drank the most since you started BASICS. Please fill in the number of “standard drink” of each type you consumed and the number of hours you spent drinking on that occasion.

Beer

Wine

Shots or Mixed Drinks

Hours

Please estimate how much money you spend on alcohol during a typical week: \$_____

The next questions are about alcohol. One thing to keep in mind is that when we say “a drink” we mean 1 can or bottle of beer (12 oz), a glass of malt liquor (8 to 9 oz), a glass of wine (4 to 5 oz) or one shot of liquor or spirits (1 to 1.5 oz). That’s our definition of “a drink”. Please select the response to each question that is correct for you. ***Remember that your answers are CONFIDENTIAL and will be kept PRIVATE.***

Circle your response to the following items

1. How often do you have a drink containing alcohol? *(If 1=1, skip to 3)*
 - a. Never
 - b. Monthly or Less
 - c. 2-4 times a Month
 - d. 2-3 times a Week
 - e. 4 or more times a Week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
 - a. 1 or 2
 - b. 3 or 4
 - c. 5 or 6
 - d. 7 to 9
 - e. 10 or more

Circle one of the following responses for following questions: never (1), less than monthly (2), monthly (3), weekly (4), daily or almost daily (5)

3. How often do you have six or more drinks on one occasion?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
1	2	3	4	5

4. How often during the last year have you found that you were *not* able to stop drinking?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
1	2	3	4	5

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
1	2	3	4	5

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
1	2	3	4	5

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

Never	Less than	Monthly	Weekly	Daily or almost
	monthly			daily
1	2	3	4	5

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

Never	Less than	Monthly	Weekly	Daily or almost
	monthly			daily
1	2	3	4	5

Circle one of the following responses for the following questions: Never (A); Yes, but not in the last year (B); Yes, during the last year (C)

9. Have you or someone else been injured as a result of your drinking?

- a. Never
- b. Yes, but not in the last year
- c. Yes, during the last year

10. Has a relative or friend, or a doctor or other health care worker been concerned about your drinking or suggested you cut down?

- a. Never
- b. Yes, but not in the last year
- c. Yes, during the last year

Below is a list of events that sometimes occur either during or after drinking alcohol. For each item below, please indicate whether each of the following has happened to you **since your first BASICS session**, either while you were drinking or as a result of your drinking.

Item	Yes	No
1. While drinking, I have said or done embarrassing things.		
2. I have had a hangover (headache, sick stomach) the morning after I had been drinking.		
3. I have felt very sick to my stomach or thrown up after drinking.		
4. I often have ended up drinking on nights when I had planned not to drink.		
5. I have taken foolish risks when I have been drinking.		
6. I have passed out from drinking.		
7. I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk.		
8. When drinking, I have done impulsive things I regretted later.		
9. I've not been able to remember large stretches of time while drinking heavily.		
10. I have driven a car when I knew I had too much to drink to drive safely.		
11. I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking.		
12. My drinking has gotten me into sexual situations I later regretted.		

13. I have often found it difficult to limit how much I drink.
14. I have become very rude, obnoxious, or insulting after drinking.
15. I have woken up in an unexpected place after heavy drinking.
16. I have felt badly about myself because of my drinking.
17. I have had less energy or felt tired because of my drinking.
18. The quality of my work or school work has suffered because of my drinking.
19. I have spent too much time drinking.
20. I have neglected my obligations to family, work, or school because of drinking.
21. My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents, or other near relatives.
22. I have been overweight because of drinking
23. My physical appearance has been harmed by my drinking.
24. I have felt like I needed a drink after I'd gotten up (before breakfast).

APPENDIX B: EXERCISE STUDY SURVEY

Section 1: Confirm Study Eligibility

1. Are you 18 years or older?
 - a. Yes
 - b. No
2. Are you enrolled in either COMM1100 Public Speaking or COMM1500 Introduction to Interpersonal Communication?
 - a. Yes
 - b. No
3. Do you wish to exercise **more** in the future?
 - a. Yes
 - b. No

Must answer “Yes” to both questions.

[Skip pattern to Section 2]

If answer “No”, a skip pattern will take the participant to this message:

Unfortunately, you are not eligible to take this survey. Thank you for your time. Please see the proctor for more information.

Section 2: Past Exercise Behavior

In the past, during a typical **7-day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time?

[short answer; fill in the blank]

1. Strenuous Exercise (Heart Beats Rapidly)
e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling
 - a. Times per week _____
 - b. How long (minutes) on average spent doing the activity per workout _____

 2. Moderate Exercise (Not Exhausting)
e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing
 - a. Times per week _____
 - b. How long (minutes) on average spent doing the activity _____

 3. Mild Exercise (Minimal Effort)
e.g., yoga, archery, fishing from river bank, bowling, horseshoeing, golf without using a cart, snow-mobiling, easy walking
 - a. Times per week _____
 - b. How long (minutes) on average spent doing the activity _____
-

Section 3: Exercise Goal

We would like to know more about how much you wish to exercise **more** in the future which we will call your “exercise goal.” Please answer the following items.

1. **In one sentence, what is your exercise goal?** [Fill in the blank]

In the future, during a typical **7-day period** (a week), how many times on the average would you like to do the following kinds of exercise for **more than 15 minutes** during your free time?

[short answer; fill in the blank]

2. **Strenuous Exercise (Heart Beats Rapidly)**
 e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling
- Number of times you would like to be doing this activity per week _____
 - How long in minutes on average you would like to spend doing this activity per workout_____
3. **Moderate Exercise (Not Exhausting)**
 e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing
- Number of times you would like to be doing this activity per week _____
 - How long in minutes on average you would like to spend doing this activity per workout_____
4. **Mild Exercise (Minimal Effort)**
 e.g., yoga, archery, fishing from river bank, bowling, horseshoeing, golf without using a cart, snow-mobiling, easy walking
- Number of times you would like to be doing this activity per week _____
 - How long in minutes on average you would like to spend doing this activity per workout_____

Section 4: Further information about exercise goal

For the following section, please think about your exercise goal.

[SELF]

1. The goal to exercise more requires:
1= Very little attention and effort to 5=As much attention and effort as I can give

2. The goal to exercise more is generally:
1=Not challenging at all, 5=Very challenging

3. The goal to exercise more is something that I was:
1=Always able to do, 5=Push myself to attain

4. The goal to exercise more is set at a level of difficulty that is:
1=*Lower* than my past behavior, 5=*Higher* than my past behavior

5. Exercising more is:
1=Not at all difficult to 5=Extremely difficult

6. To what extent do you accept your exercise goal?
-4=Do not accept this goal at all to 4=Completely accept this goal

[EXTERNAL: AVERAGE STUDENT]

Think of the AVERAGE UGA student for the next questions.

7. For the average UGA student, the goal to exercise more is:
1= Extremely challenging to 5=No challenge at all

8. For the average UGA student, the goal to exercise more takes:
1=Enormous effort, 5=Almost no effort

9. For the average UGA student, the goal to exercise more takes:
1=A lot of thought and problem solving, 5=Almost no effort

10. For the average UGA student, the goal to exercise more takes:
1=An enormous amount of persistence and tenacity, 5=Very little persistence and tenacity

11. For the average UGA student, the goal to exercise more requires:
1=Very high standards of performance, 5=No standards of performance at all

12. For the average UGA student, the goal to exercise more may result in:
1=Discovering better ways of doing things, 5=Never discovering better ways of doing things

Section 5: Goal Commitment

Please think about your exercise goal.

Using a 1 to 5 scale where 1=not at all, 2=slightly, 3=moderately, 4=quite a bit, and 5=extremely, please indicate your agreement with the following statements.

1. How committed are you to exercising more?
 2. To what extent do you care about exercising more?
 3. How dedicated are you to exercising more?
 4. To what extent have you chosen to be committed to exercising more?
-

Please think about your exercise goal.

There is a list of people below. For each person listed, please indicate whether you have told, plan to tell, do not plan to tell, or have not told and are unsure whether or not you will tell your exercise goal.

1=Have told that person

2=Plan to tell that person

3=Do not plan to tell that person

4=Have not told and unsure whether or not I will tell

5=Not applicable (e.g., I do not have a romantic partner, I do not see a doctor)

1. Romantic Partner
2. Close Friend
3. Relative (e.g., parent, grandparent, aunt, uncle, brother, sister, cousin)
4. Doctor
5. Instructor
6. Have you told or do you plan to tell your exercise goal to others not listed above?
 - a. No [skip 6; proceed to next section]
 - b. Yes [proceed to 6]
7. How many others do you plan to share your exercise goal to? _____ (#)

Section 6: Other Information

The Personality Research Form E, Achievement Subscale (PRF; Jackson, 1974) was located here. Due to scale copyright, the items could not be printed in this dissertation. More information is available from: SIGMA Assessment Systems.

-0707 Box 610757, P

Using a scale of 1 to 4 where 1=very uncertain, 2=rather uncertain, 3=rather certain, 4=very certain, how certain are you that you could overcome the following barriers?

I can manage to carry out my exercise intentions...

1. ...even when I have worries and problems.
 2. ...even if I feel depressed.
 3. ...even when I feel tense.
 4. ...even when I am tired.
 5. ...even when I am busy.
-

Use the following scale where 0=not at all, 1=sort of, and 2=a lot.

How much do you think the following people expect you to exercise?

1. Family members
 2. My closest friend
 3. 5-6 friends I spend most of my time with
 4. The instructor I am closest to
 5. My doctor
-

Using a 1-6 scale where 1=Strongly Disagree, 2=Moderately Disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, 6=Strongly agree, please indicate your agreement with the following statements.

1. If I get sick, it is my own behavior which determines how soon I get well again.
2. No matter what I do, if I am going to get sick, I will get sick.
3. Having regular contact with my physician is the best way for me to avoid illness.
4. Most things that affect my health happen to me by accident.
5. Whenever I don't feel well, I should consult a medically trained professional.
6. I am in control of my health.

7. My family has a lot to do with my becoming sick or staying healthy.
 8. When I get sick, I am to blame.
 9. Luck plays a big part in determining how soon I will recover from an illness.
 10. Health professionals control my health.
 11. My good health is largely a matter of good fortune.
 12. The main thing which affects my health is what I myself do.
 13. If I take care of myself, I can avoid illness.
 14. Whenever I recover from an illness it's usually because of other people (for example, doctors, nurses, family, friends) have been taking good care of me.
 15. No matter what I do, I'm likely to get sick.
 16. If it's meant to be, I will stay healthy.
 17. If I take the right actions, I can stay healthy.
 18. Regarding my health, I can only do what the doctor tells me to do.
-

Section 7: Demographics

1. How old were you on your last birthday? _____ years

2. What is your gender?

Male

Female

3. I consider myself (check all that apply)

___ American Indian or Alaska Native

___ Asian

___ Black or African American

___ Hispanic or Latino

___ Native Hawaiian or Other Pacific Islander

___ White

4. Please identify your year in school.

___ Freshman

___ Sophomore

___ Junior

Senior

Fifth Year

Graduate Student/Other

5. Did you take this survey to fulfill a course research requirement?

No [take to end of survey]

Yes [link to second survey that records name and instructor]

[This links to a new, separate online survey so that previous responses are not identifiable]

Section 8: Course Credit

1. What is your FIRST name?
2. What is your LAST name?
3. Indicate which class you are enrolled in (you may only receive research credit for ONE class for this survey):
 COMM1100 Public Speaking
 COMM1500 Introduction to Interpersonal Communication
4. What is your Section Number? _____[write in section number]
5. Who is your instructor?
 [provide list of all communication studies instructors/faculty]

END OF SURVEY

Thank you!

If you would be interested in our results, please email Laura M. Kollar at kollarla@uga.edu and let her know. We will be happy to send you a summary once we have finished examining the results.