ABSTRACT

Title of Thesis: THE WAY TO GO: CONSIDERING GOALS AND PLANNED BEHAVIOR

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The Theory of Planned Behavior offers a parsimonious and useful basis by which attitudes, subjective norms, and perceived behavioral control predict behavioral intentions and behavior. Often employed in fields across the social sciences, this model is highly influential for its relatively strong predictions and simple parsimony. On the other hand, there remain many limitations to the theory and directions for future improvement. Based on emerging theoretical work arguing for a new integrative TPB framework, three studies tested the impact of goal context on the TPB's predictions. The first study examined two hypothetical scenarios in which goals relevant to a particular behavior were manipulated, finding that goals did impact the relationship between attitudes and behavioral intentions in one vignette but not the other. A second study found evidence that goal activation (in the form of an upcoming deadline) affected some of the TPB's predictions, and that accounting for goal activation improved the overall utility of the model. Finally, a third study assessed the TPB variables for participant-generated behaviors. There was some evidence that commitment to goals and conflict between them helps predict behavior over time and may affect the relationship between intentions and behavior.

THE WAY TO GO: CONSIDERING GOALS AND PLANNED BEHAVIOR

by

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Chapter 1: Introduction

Decades of research projects have attempted to understand the way a person might go and what they might do. It is perhaps one of the greatest purposes that scholars have undertaken – to predict human behavior based on the only the simplest possible criteria. At the same time, motivational scientists have maintained that to predict behavior, we must also know about a person's goals. To-date, no empirical project has fully and successfully integrated both considerations.

Possibly the most influential platform for predicting behavior in the field of Psychology is Icek Ajzen's (1991) Theory of Planned Behavior (TPB). The TPB proposes that one can predict behavioral intentions (the decision to perform a behavior) from a person's attitudes towards that behavior, the normative attitude of referent others towards the behavior, and the person's perceived behavioral control (PBC) over undertaking the given activity. These three predictors (attitudes, norms, and PBC) have been regarded as one of the most parsimonious and sufficient models of human behavior in psychological science thus far.

Recent meta-analyses consistently find that the theory has significant predictive power and illustrate its applicability, even if its effectiveness varies somewhat depending on the situation (Armitage & Conner, 2001; Ajzen, 2011). The weight of the continued research program that surrounds the TPB also demonstrates its reach and influence. A simple Google Scholar search for "theory of planned behavior" yields almost 200,000 results. Ajzen's 1985 chapter introducing the concept has grown from 22 citations that year to over 23,000 in 2020. Including his seminal publication in 1991, this total rises to over 100,000 citations overall.

Despite this preponderance of TPB research, it has been argued that some critical facet is still lacking. That facet is goals, the motivational factor that drives people's behavior (Kruglanski

et al., 2015). In response, Ajzen and Kruglanski (2019) proposed that goal considerations could be integrated into the TPB through their nascent Theory of Reasoned Goal Pursuit. In the present project, I therefore aim to empirically explore the role of the goal construct in influencing behavior and behavioral intentions. I will build upon a growing body of evidence indicating that goals affect the way attitudes, norms, and PBC translate into behavioral intentions, and that goals intervene in the relationship between intentions and actual behavior. In particular, previous TPB studies either seem to presuppose that goals relevant to the particular behavior are active, or inadvertently activate those goals in the lab. What I am presently proposing is that the behavior itself must be considered within the context of goals that may be more or less active in a given context. I demonstrate that testing the TPB's behavioral predictions in this way is an essential step towards a more robust, goal-sensitive iteration of the model.

Chapter 2: Literature Review

2.1 Precursors to the Theory of Planned Behavior

Expectancy-value model

The TPB emerged from a late 20th century research stream concerning attitudes. Mid-century theorists had considered attitudes to be a multidimensional concept comprised of affect, cognition, and behavior (Rosenberg & Hovland, 1960). That was, at least, until Fishbein popularized the view that attitudes are unidimensional, defined as a "disposition to evaluate a psychological object with some degree of favorableness or unfavorableness" (Ajzen, 2012, p.11). Additionally, readily accessible beliefs about an object and its attributes lead to the formation of one's attitude towards the object. Fishbein and Ajzen then came to dominate the attitude-behavior domain with the development of their expectancy-value model (1975). According to this model, an attitude towards a behavior is comprised of 1) the value of the goal it serves and 2) the expectancy that the behavior will actually achieve that goal (Studer & Knecht, 2016).

The Theory of Reasoned Action

The expectancy-value model contained the building blocks of many future theories, and in particular it informed a line of research seeking to predict behavior. While some early empirical work criticizes attitudes alone as a predictor of actual behavior (Wicker, 1969), other evidence shows that there is some, if inconsistent, support for this relationship. When attitudes and their associated behaviors are made specific in research, they have been found to predict contraceptive use (Kothandapani, 1971), infant feeding (Manstead et al., 1983), and physical exercise (Terry & O'Leary, 1995) – to name just a few. Nearly a dozen meta-analyses of the attitude-behavior relationship have been conducted to date, and though they agree that the relationship exists, for attitudes alone to be predictive they must be easy to retrieve from memory, very stable over time, and highly behavior-relevant (Glassman & Albarracin, 2006).

Not only was this an issue of measurement, but by the 1980s scholarly consensus began to form that the effect of attitude on behavior was moderated by a broad range of situational and individual difference variables (Ajzen & Fishbein, 2005). It became apparent that attitudes were necessary for behavioral predictions, but not sufficient.

It was within this context that Ajzen and Fishbein (1980) developed the Theory of Reasoned Action (TRA). Through this model, the authors aimed to address the weaknesses of attitudes as a sole predictor of behavior by expanding on the attitude-behavior relationship. One of the two major steps they took was based on Donald Dulaney's (1968) decades-earlier proposal that a person's attitudes would not affect their response tendencies directly but would instead be mediated by more abstract mental processes. In actuality, people think not only about whether a premeditated action will accomplish their desired goal, but also about any number of intervening concerns which separate the idea of doing something from the reality of doing it. Attitudes towards a behavior, he argued, more proximally affect the formation of an intention to perform a behavior. This intention is, in turn, affected by concerns about behavioral norms. Fishbein and Ajzen (1975) began to formulate a more precise theory in which, rather than actual behavioral performance, it would be more accurate and relevant to predict the intention to perform a behavior.

Dulaney (1968) had also posited that the intention to perform a behavior had a normative component. Likewise, Ajzen and Fishbein's TRA (1980) accounted for the influence of the beliefs of others alongside one's own attitudes. They operationalized the influence of norms that are relevant to a given behavior as the extent to which referent individuals approve or disapprove of performing a behavior, weighted by the motivation to comply with each of those referents. In other words, the TRA predicts behavioral intentions from both an individual's own attitude

towards a behavior as well as the extent to which others would seem to support or oppose that behavior. This subjective norm comprises an overall social pressure that independently predicts to what extent an individual intends to behave in a particular way. It is worth noting that meta-analysis has affirmed consistently strong relationships between subjective norms and intention (Rivis & Sheeran, 2003). Rivis and Sheeran add that both injunctive norms (social pressure or the potential to gain/lose approval from significant others) and descriptive norms (perceptions of others' attitudes themselves) significantly predict intentions. The TRA reconceptualized the attitude-behavior relationship as one that was mediated by behavioral intentions, and which heavily involved subjective norms. This model synthesized earlier theories to improve the prediction of behavior and became the foundation for the even more influential models which followed.

2.2 The Theory of Planned Behavior

The next iteration of this model of behavioral intentions acknowledged that in many cases, actors realize that they have limited volitional control. There are fundamental differences in the degree to which any individual believes they can enact a given behavior and taking into account this variability in control beliefs improves behavioral predictions (Ajzen, 1985). Ajzen thus reformulated the TRA into the Theory of Planned Behavior in order to better account for this notion of perceived behavioral control or PBC (1991). It is worth noting that an actor's actual control over the behavior in question often only becomes apparent at the moment that they attempt to take action. In anticipation of this action, however, an actor can only refer to beliefs or perceptions about their degree of control when forming their behavioral intentions.

Perceived Behavioral Control is similar conceptually to self-efficacy, or "people's beliefs about their capabilities to produce designated levels of performance" (Bandura, 2010, p. 1).

Ajzen's (1980) concept of PBC expands on self-efficacy, however, to reflect beliefs about resources and other obstacles that could interfere with the behavior being considered, whether these obstacles are conceived of as internal or external limitations.

Together, the TPB's three predictors have provided arguably one of the most parsimonious and sufficient models of human behavior in motivational science to date. As the level of each predictor increases, so too will an actor's intention to perform the associated behavior, although the parsimony of the model does leave a substantial amount of variance in intentions unaccounted for. In its full version, then, Ajzen's TPB proposes that one can predict behavioral intentions from a person's attitudes towards that behavior, the normative attitude of referent others towards the behavior, and the person's perceived behavioral control over undertaking the given activity. Subsequently, these behavioral intentions then translate for the most part into actual behavior.

Criticism and Limitations

While decades of tradition and empirical work have made the TPB a pillar of attitude theory, there are several areas in which the model is still insufficient. Despite the overall utility of the model, its measures often leave much of the variability in observed behavior unaccounted for (Sniehotta et al., 2014). In addition, meta-analyses find that the amount of variance explained tends to differ widely depending on the type of behavior being studied (McEachan et al., 2005). The effectiveness of each individual predictor in the model also varies on a case-by-case basis. Perceived Behavioral Control, for example, is generally the strongest of the three predictors for exercise intentions, but the weakest of the three for dieting intentions. The TPB has also been largely unsuccessful as a theoretical foundation for behavior change interventions, suggesting that some motivational component is yet unexplained (Hardeman et al., 2002). There has long

been a call to answer these limitations by expanding the model in a vast number of ways, but perhaps too often by developing new, "Extended-TPB" models (Sniehotta et al., 2014, p.4).

In response to this criticism, the current project tests a broader conceptual shift within the model: the consideration of goals. For decades, scholars have suggested that constructs such as goal achievement and goal activation should be essential to the prediction of intentions (Conner & Armitage, 1998; Kruglanski et al; 2015). Armitage and Conner (1999), for example, conducted a straightforward, methodologically-standard TPB study and found that the three TPB predictors do significantly predict low-fat dieting intentions. Notably, however, participants were instructed that the study would be evaluating a low-fat diet and the dependent measure consisted of a general assessment of their intention to diet over the next month. It could be argued that this context and setting primed dieting goals and that the measure of intention was abstract enough so as not to capture situational influences.

Action identification theory suggests that situational context alters the salience of particular goals (Vallacher & Wegner, 1985) and research on goal shielding indicates that focal goals inhibit the pursuit of other goals (Shah, Friedman, & Kruglanski, 2002). If participants were asked about their dieting intentions without first priming relevant goal constructs and while going about their daily lives, they might, for instance happen to be preparing for a major exam. Their focal goal of studying would likely inhibit intentions to diet. Attitudes towards dieting may only predict intentions and behavior when an associated goal is relatively important in a given context compared to other goals which might suppress the behavior. In the laboratory setting, relevant goals are primed and made focal. Isolating a goal such as weight loss from the more realistic context of multiple goal pursuit ignores the competition for attentional resources that would drastically affect behavioral choices in daily life (Abraham & Sheeran, 2003).

It has long been well-established that constructs can be made more cognitively accessible via priming (Neely, 1977). When primed with a given semantic construct, people are able to more quickly read, successfully search for, or make judgements about related constructs (Forster & Liberman, 2007). Moreover, just as semantic concepts can be brought to attention, so too can motivational concepts. Bargh et al. (2001) have demonstrated that constructs which consciously or even non-consciously bring to mind a goal also greatly impact behavior – even beyond that which can be explained by semantic priming. Additionally, Chartrand and Bargh (1996) found that the goal to memorize material or form an impression of a target could be activated outside of awareness through priming. In a meta-analysis of the TPB alongside many other intention-behavior models, Webb and Sheeran (2006) found that behavioral change interventions that did not have significant effects on intentions still had an unexplained impact on behavior. They suggest that perhaps nonconscious goal activation occurs due to the empirical procedure which in turn produces an effect on behavior independent of any effect on intention. This suggestion lends considerable strength to the premise that in order to explain the unexplained, goal activation must be considered alongside the TPB.

Some of the TPB's mixed results across types of behaviors may also be explained by issues of goal activation. When used to prospectively predict future health behaviors, the TPB successfully predicted physical activity and dietary behaviors, but had a smaller effect for safe sex, detection, risk, and abstinence behaviors (McEachan et al., 2011). Meta-analyses of the TPB and condom use add that the model does not predict condom use well among lower risk populations (Albarracin et al., 2001). Suppose that these low-risk individuals are in stable, STD-free relationships with trustworthy partners who are taking contraceptive pills or trying for a pregnancy. No matter their attitudes, norms, and perceived behavioral control, one cannot

reasonably expect them to use condoms because there are no active goals that the behavior would satisfy. The TPB was simply not intended to account for situations in which a person's present goals or are simply incompatible with the behavior in question. Accounting for an actor's goal context would strengthen the TPB in these situations and would support the inclusion of participants who would otherwise produce inconsistent findings, as the condom use case demonstrates.

Another persistent weakness of the TPB has been the intention-behavior link (Hagger, Chatzisarantis, & Biddle, 2002). Researchers have sought moderators that might explain why the TPB may predict strong intentions that fail to manifest as behavior (e.g. temporal stability of intentions; Conner et al., 2000). Accounting for the many moderators that may explain this relationship, however, is not particularly parsimonious. Abraham and Sheeran (2003) highlight goal conflict and goal salience as the actual determinants of intention stability over time. In a study on dieting and exercise behavior, Hagger et al. (2006) found that global and contextual satisfaction of self-determination needs (Deci & Ryan, 1985) had an effect on the predictions of the TPB. Individuals with high psychological need satisfaction appeared less likely to consciously or unconsciously consult attitudes, PBC, or norms in forming behavioral intentions. This work and that of Abraham and Sheeran (2003) begins to tell the story of goals in TPB. Considering active goals more broadly thus stands to make the predictions of the TPB less context-dependent and more temporally stable.

2.3 Goal Systems Theory

Goal systems theory (GST) provides a strong framework for understanding how goals influence behavior and thus the TPB. GST does not focus on the relationship between attitudes and behavior; rather it takes as its premise that behavior is goal-directed (Kruglanski et al.,

2002). The theory concerns the relationships between a person's goals and the means that they employ to reach them. While the TPB predicts behavior from the bottom up (starting with attitudes), GST adds that goals supply top-down constraints on behavior. While the TPB is highly focused on behavior, and intentions to execute a given behavior, GST understands those behaviors as "means" in service of a larger goal. Under GST, behavior will only occur when it serves as a means to some goal, whether that goal is conscious or nonconsciously activated. Goal Systems Theory understands motivation as a process driven by the interconnectedness of these goals and means, and highlights the notion that having a relevant goal is a necessary precondition for any behavior.

Another important component of GST is that goal systems are dynamic and that distractions or temporary goal activations can lead to continuous fluctuations in one's system of related goals and means (Ajzen & Kruglanski, 2019). Means and goals are often thought to exist in a stable hierarchy, but goals are constantly activated, deactivated, or made irrelevant, resulting in a constant shifting of priorities. Ajzen and Kruglanski point out that even subtle semantic priming (Bargh et al., 2001) can alter one's goals and the means they employ to achieve them.

The strength and types of connections between each means and each goal may also depend both on individual and situational characteristics (e.g. Schumpe et al 2018; Kopetz et al., 2012). GST directs our attention to the many possible types of means-goal, means-means, and goal-goal relationships. In brief, these configurations are frequently described with terms such as equifinality, multifinality, counterfinality, and substitutability (Kruglanski et al., 2002). Equifinality entails a set of means that all serve the same goal. Substitutability occurs when an individual chooses to continue pursuing their goal but by another, equifinal means. Multifinality arises when one means serves multiple different goals. Finally, counterfinality describes the

reverse: the notion that a means may serve one goal but impede another. Each node in the goal system also has its own motivational properties and these properties may be transferred through the connections to one-another. Goal commitment, or the determination to pursue a particular goal, for instance, will likely entail commitment to its associated means. The transfer of this property is ameliorated, however, by the availability of alternate, substitutable paths to that goal. When choosing between equifinal means to a goal, an individual thinks about the expectancy of each, or the extent to which each means actually contributes to goal attainment.

To some extent, concepts related to GST can already be found within the TPB model. Perceived behavioral control, for example, is similar to but distinct from the notion of a goal's expectancy of attainment. PBC reflects the degree to which an individual thinks they have control over enacting some specific behavior, while expectancy involves the attainment of a higher order, more general objective. Getting grounded might significantly impair a teenager's PBC over going to a party that night without similarly impeding their goal of talking to friends. Goal systemic thinking helps distinguish expectancies related to a specific means, those related to an overarching goal, and the extent to which one affects the other.

Atkinson's fundamental Expectancy-Value Theory (1954) holds that motivation is the product of the value of a person's goal and the expectancy they have of attaining it. GST draws substantially from this logic. Should the value or expectancy of a goal increase, so too would the value or expectancy of any means associated with it – to the extent that they are associated. Considering the TPB, this suggests that temporal instability in attitudes towards a behavior may derive from the properties of sometimes-relevant goals with which they are linked.

In another vein, Ajzen has somewhat recently elaborated on the subcomponents of the TPB model in a way that may actually help accommodate goal systems concepts. Termed the

Reasoned Action Approach (RAA), one part of this elaboration acknowledges that attitudes towards a behavior are made up of both instrumental and experiential components (Ajzen et al., 2005). Experiential attitudes involve how pleasant or unpleasant, boring or interesting an action seems. To some extent, meta-analyses find that this aspect of attitudes more directly impacts behavior through an impulsive path (McEachan et al., 2016). Instrumental attitudes, on the other hand, involve how desirable, worthwhile, or useful a behavior seems. This aspect involves a more reflective, intentional process – and certainly appears to require some notion of a relevant goal. To judge the utility of a behavior, an individual must consider its effectiveness as a means to some end. The very principle of instrumentality is to select a means based on the likelihood that it leads to goal attainment (Kruglanski et al., 2015).

In goal systemic terms, both experiential and instrumental attitudes could be seen as the value of engaging in some behavior as a means to an end. It then becomes clear that attitudes at any given time would depend on the relationship at that time between the particular behavior and an actor's focal goal. Intensive exercising might be viewed as highly worthwhile when one's goal is to lose weight, but in a moment when one's goal is to relax, an actor may find that their attitude towards exercising is no longer worthwhile at all. Instead, experiential attitudes may determine behavior instead (if exercising is boring and unpleasant), or new, momentary instrumental attitudes intervene on one's intentions (if exercising is NOT useful for relaxation).

It is worth identifying, as well, that experiential and instrumental attitudes could also indicate overlap between goals and means. Goal Systems Theory depicts intrinsic motivation as means-ends fusion or the overlap between a behavior and the goal that it serves (Kruglanski et al., 2018). Under certain conditions, often related to the repeated and immediate pairing of a means and goal, the one becomes indistinguishable from the other. Jogging, for instance, may

make a person feel healthier and help accomplish any number of their goals. Over time, the experience of jogging may become so intuitively linked to positive outcomes that it because a desirable activity in and of itself. Under these circumstances, no extrinsic reward is necessary to motivate the behavior. In terms of the TPB, experiential attitudes may capture an element of intrinsic motivation. Perhaps the more pleasant, interesting, or exciting an activity is, the more it represents a goal of its own. Behavioral intentions, then, are their own goals.

GST, however, makes the case that complete fusion between means and end only occurs at the extreme end of a continuum. Instead, it is typically more useful to consider the association strength between a behavior and a goal, and the intermediate degrees of fusion. Most activities are undertaken in support of an extrinsic motive, even if they are goals unto themselves and are intrinsically motivating to some extent. The TPB's behavioral intentions, for instance, could be depicted as goals themselves. An actor might make it their goal to jog for a certain amount of time next month, and accomplishing this goal provides its own experiential rewards. Except in the rare case of total means-ends fusion, however, there is some overarching goal that jogging serves, whether it is more experiential or instrumental. Going on a jog could become more attractive if the actor becomes aware of relevant health concerns, or if they are preparing for a marathon. Conversely, their initial attitudes towards jogging could become less relevant if they must prepare for a huge test, suddenly very sick, or vacationing on a cruise ship on a given week. Goals hierarchically support other goals, and in most cases GST would depict behavioral intentions as means or sub goals depending on one's frame of reference. Intentions then, should reflect the properties of both intrinsic and extrinsic motivation depending on the structure of one's system of active goals.

The TPB, it seems, has been measuring attitudes loosely in terms of goal constructs all along. All that remains is to enter into the model some operationalization of the goal itself and more directly examine its goal systemic implications.

2.4 Integration

Much of the phenomena described earlier as limitations to the TPB can be explained by goal systemic properties and relationships. As an example, one such explanation relates to the finding that the utility of the TPB changes depending on how specific or discrete a behavior is (Povey et al., 2000). In Povey and colleagues' research the TPB predicted behavior better when specific dietary behaviors were considered (e.g. eating five portions of fruit per day) as opposed to more general behaviors like eating healthier or low-fat diets. The authors explain that perhaps more general behaviors are "open to a range of interpretations," whereas specific behaviors entail "implementation intentions" which better bridge the intention-behavior gap (see Gollwitzer, 1993).

A specific behavior or discrete plan of action firmly establishes the link between a particular behavior and the goal which it achieves. Attitudes, norms, and PBC are then representative of the goal as well as the behavior. More general behaviors may vary more over time in their association with a goal. If, for instance, one feels positively about low-fat diets, that attitude may actually represent both the experiential disposition toward the diet itself as well as its instrumental value for accomplishing a weight loss goal that the individual associates with it. Outside the lab, that individual may realistically be able to achieve the weight loss goal by exercising, controlling portion size, or even liposuction. Goal systems theory suggests that when "all roads lead to Rome," (i.e. many means are equifinal, associated with one goal), the means become substitutable for each other and commitment to any particular one decreases (Kruglanski

et al., 2011). Two things may be happening here: first, a participant's attitude towards a behavior presented by a TPB study actually represents attitudes towards both a means and a goal. Outside the study environment, these attitudes begin to separate and decompose. Only when the associated goal is activated and relevant does the originally-assessed attitude firmly apply, and even then only if the same means-goal association is present. Secondly, when behaviors are made more discrete and specific in the lab, researchers are actually manipulating the means-end link and increasing the strength of association. Behaviors that are more general or are weakly linked to a goal are more susceptible to the "all roads lead to Rome" effect. In other words, whenever the initial goal (e.g. weight loss) is activated, a number of equifinal behaviors compete to accomplish it. In essence, the above process represents just one of the many potential ways that GST helps explain phenomena related to the TPB.

Importantly, this project is not the first to suggest that integrating GST with the TPB would be fruitful. Ajzen and Kruglanski (2019) proposed to do just that under the banner of an extension of the TPB entitled the Theory of Reasoned Goal Pursuit. Their proposal echoed much of the above discussion and laid the foundation for this extended model to be tested. Their central and most relevant claim is that intentions to engage in behavior depend on the activation of desirable goals which the behavior is expected to bring about. By doing so, they emphasize that goal context has the potential to widen the scope of the TPB. GST better captures the dynamic fluctuations in an actor's behavioral priorities over time. The positive or negative consequences of any given behavior depend on that behavior's relationship with an individual's goals. Ajzen and Kruglanski argue that these consequences may in turn depend on a number of environmental factors, such as the shifting opinions of referent others, or the momentary activation of one goal over another.

In the Theory of Reasoned Goal Pursuit, accounting for the impact of goals on the TPB adds to its ability to explain nuances in human behavior. While they highlight the TPB's extensive empirical support over the years, Ajzen and Kruglanski (2019) note that these findings have been limited to contexts where a particular behavior is seen to support one's currently active goals. The TPB's ability to explain variance in behavior, they add, declines when behaviorally-relevant goals are less chronically active in a given context. The authors conclude by calling for empirical support for this expanded theory. In particular, they invite research comparing behavioral predictions when relevant goals are active or inactive or when conflicting goals override the goal that the focal behavior would have served. This project intends to answer their call by probing the specific effects that the activation of behaviorally-relevant goals has on the TPB's predictions. In doing so, a goal-contextualized TPB should be able to predict behavior in novel situations which would have been previously considered out of scope for the model.

Reviewing the persistent limitations of the TPB has made clear that assessing participants' goals could improve the model in a variety of ways. First, it appears that the notion of goal activation and the relationships between goals both play a major role. Conscious or non-conscious goal activation should serve as a necessary precondition for the TPB's predictions of intentions and behavior. Without the activation of a relevant goal, behavior does not follow – even if an individual's general attitudes, subjective norms, and PBC have not changed. Goal competition or goal shielding should also affect the way individuals consult attitudes towards a behavior when forming their intentions or initiating behavior. The constant day-to-day shifting of priorities could suppress the activation of competing goals, making certain actions likely or unlikely without interfering with general attitudes towards a behavior. Introducing GST concepts to the TPB situates these various notions within a broader theoretical framework. Goal

systemic properties of means-goals relationships also provide new potential mechanisms for heretofore unexplained TPB phenomena.

Chapter 3: The Present Research

Enhancing the scope of the Theory of Planned Behavior is a daunting theoretical premise. Nonetheless, the wealth of research on goal constructs offers an exciting opportunity to empirically strengthen the TPB in a way that has never quite been done before. The present research project aimed to begin this process.

Three operant questions drove the course of this research. Initially and perhaps most importantly, does goal activation in fact alter the predictions of the TPB? Are active goals a precondition for the operation of the theory – do attitudes predict intentions only when the particular behavior serves a salient goal? If the TPB would normally predict that a person fully intends to exercise, for instance, but for that person exercising is irrelevant or detrimental to a goal that is their main concern, what should the model predict instead?

Secondly, if goals indeed alter the course of the TPB, by what mechanism do they do so? The Theory of Reasoned Goal Pursuit makes the point that behaviors are goal-driven and are only initiated when they serve as the means for achieving an active goal (Ajzen & Kruglanski, 2019). When assessing behavior over time, the *activation* (or salience) of behaviorally-relevant goals would then be one such mechanism. Even if an actor intends to engage in a particular behavior initially, if the goal that the behavior serves is rarely active then it becomes easy to forget about one's former intentions. We typically eat food, for instance, when we feel hungry or at certain times of day. In the absence of clocks or hunger signals, even someone who truly intended to eat is likely to skip a meal.

Shah, Friedman, and Kruglanski's (2002) goal shielding paradigm illustrates this mechanism. They find that activating one goal should suppress the activation of non-primed goals. During a time when studying for a test is important and focal, one's goals related to

jogging, for example, may be suppressed. Moreover, if one's goals directly compete with one another, this conflict may do more than suppress the activation of behaviorally relevant goals. The goal systemic properties of multifinality and counterfinality suggest that the utility of one goal may depend on the activation of another. Thus, goal conflict could provide another mechanism by which goals affect the predictions of the TPB. A person who initially intends to jog may presume that jogging supports their goal of becoming fit. If their work hours prevent them from jogging during daylight, however, the same behavior may also compromise their safety goals. Being about to account for goal activation and the relationships between salient goals would better explain situations where the TPB falls short of predicting behavior.

What specifically can gained by adding yet another wrinkle to such a longstanding and well-evidenced paradigm? This integration of GST and the TPB could both deepen our understanding of attitude-behavior relationships and enhance our understanding of goal pursuit. Thus, the third operant question behind this research addresses the specific ways that these two theories can be harnessed together to expand the scope of the TPB's predictions for behavior.

This third question largely motivated the design for each of the three studies in this project. All three aimed to predict intentions and/or behavior under conditions which would have compromised the utility of the un-expanded TPB model. By accounting for goal context, I first intended to demonstrate that the traditional TPB predictors are unable to predict behavioral intentions when a behavior no longer supports one's active goals (Study 1). I then tested whether the chronic activation of a focal behavior could be modeled within the TPB, thereby explaining variance in intentions and behavior even when accounting for cases that have been excluded in prior TPB research (Study 2). Finally, my third design operationalized properties of behaviorally-relevant goals in order to make behavioral predictions across different types of

behavior simultaneously – a design that had thus far been entirely unfeasible in TPB research (Study 3).

Thus, in order to test the nascent Theory of Reasoned Goal Pursuit this project needed to investigate several basic facets and consequences of the expanded model. First, a relatively simple manipulation using vignettes examined the interaction between attitudes and active goals as they predict behavioral intentions. The second study followed from the first, a conceptual replication intended to demonstrate how changes in goal activation could affect the relationship between the TPB predictors and intentions and behavior. The third study deviated from the first two, focusing in particular on the relationship between intentions and behavior. It sought additional evidence for the advantages of the expanded TPB model, using repeated measures to probe the intention-behavior link across many different types of behavior simultaneously.

Chapter 4: Study 1

4.1 Overview

The first study used vignettes to activate goals that would influence the relationship between the TPB predictors and intentions. This initial test of the theory addressed the first two objectives of the research program: 1) to determine how the TPB's behavioral predictions are affected by the activation or inactivation of a relevant goal and 2) to test the two aforementioned mechanisms for this effect (goal activation and goal conflict). In particular, this study involved two hypothetical scenarios presented to participants. An academic vignette was intended to capture the subtle effect of activating the goal to study for an exam, while a health vignette was designed to test a situation where a strong goal to recover from an illness might conflict with a desire to exercise.

According to the Theory of Reasoned Goal Pursuit (Ajzen & Kruglanski, 2019) individuals should only form strong exercising or studying intentions when they see either activity as a means to an active goal. It is hard to imagine that a person who enjoys exercising and thinks it is good would still intend to engage in the behavior if their focal goal, for whatever reason, were irrelevant to or thwarted by exercising. As intuitive as this premise may be, it has not been empirically tested with regard to the TPB's predictions. Additionally, manipulating goal activation should produce an effect on the relationship between attitudes and intentions which is distinct from that relationship when goals are not accounted for.

For this first study, the use of vignettes will serve essentially as a proof of concept. Vignette studies are useful for ensuring internal validity by tightly controlling the hypothetical setting, and generalizability concerns can be mitigated by improving the realism of the stimulus (Aguinis & Bradley, 2014). Asking participants to imagine particular scenarios may not perfectly

represent the more subtle, non-conscious, or generally nuanced realities of goal activation. Such a manipulation does, however, allow for the depiction of contrasting goals *in extremis* which makes plain the purpose and operation of the Theory of Reasoned Goal Pursuit. This study will serve to provide a foundation upon which to build a more generalizable and naturalistic body of evidence.

4.2 Hypotheses

The primary aim of Study 1 is to provide initial support for the notion that goals affect the predictions that the TPB would make for behavioral intentions. In situations where an actor's goals are aligned with their attitudes towards a behavior, the TPB is likely to predict intentions. When an actor's goals and attitudes related to a behavior as misaligned, however, a strong enough goal to act or not act should render attitudes towards that behavior moot.

I felt that it would be useful initially to determine to what extent the design of this vignette study captures the traditional effects of the Theory of Planned Behavior. I hypothesized that under control conditions in which the participants' imagined goal is not manipulated, the three TPB predictors (attitudes, norms, perceived behavioral control) would each independently predict the behavioral intention to study for an exam (hypothesis 1a) and to exercise (hypothesis 1b). It is important to note here that while no goal would be explicitly manipulated in the "no-goal" control condition, all human behavior is goal-driven (see Kruglanski & Szumowska, 2020). That is to say that this condition would not remove the conscious or non-conscious influence of goals from behavior altogether, but rather would leave the participant to act under the influence of their own goals. This condition approximates the experience of participants who partake in traditional TPB studies, in which each individual's goals are typically not measured or manipulated.

The Theory of Reasoned Goal Pursuit holds that people should only form behavioral intentions when that behavior mediates an active, desirable goal (Ajzen & Kruglanski, 2019). At the same time, the TPB puts forth that attitudes about a behavior (along with subjective norms and PBC) determine behavioral intentions. But what would we expect to occur if an actor's active goal was inconsistent with their attitudes towards the focal behavior? The next set of hypotheses examine the extent to which the manipulation of goals interacts with the manipulation of attitudes as they predict intentions. For instance, even if a person held strong, positive attitudes towards studying for an exam they would be unlikely to imagine themselves studying if that goal were completely inactive. Similarly, someone with strong, negative attitudes towards studying might imagine themselves preparing for an exam despite their attitudes, if the goal of performing well on the exam is highly active.

I anticipated that assigning participants to goal conditions that are consistent or inconsistent with participants' manipulated attitudes towards studying for an exam would affect the relationship between their attitudes and intentions. In strong, hypothetical situations where an actor's active goals support or oppose studying, their intentions to study will be less driven by their attitudes (and by extension subjective norms and PBC) because it is instead the extreme activation of the goal that primarily motivates their behavior. In a non-vignette setting, supplying participants with a strong, behavior-supporting or behavior-opposing goal would likely create situational attitudes towards the behavior, making the contribution of goals difficult to detect. By manipulating attitudes independently from goals and asking participants to keep both thoughts in mind, I hoped to be able to engineer a purer conflict between goals and attitudes. I hypothesized that the relationship between attitudes and intentions to study will weaken in situations where studying is strongly opposed or supported by one's active goals, compared to a control in which

no such goal is explicitly activated (hypothesis 2a). Post hoc comparisons should indicate that the attitude manipulation increases or decreases studying intention only in the "no goal" control condition. I also anticipated a main effect of goal condition on studying intentions. In the supporting goal condition, participants should on average intend to study regardless of their manipulated attitude, and in the opposing goal condition, participants should not intend to study (hypothesis 2b).

I extended the same hypothesis to the health behaviors vignette as well. In general, exercise can be seen to either support one's health-related goals or, in dire situations, compromise one's health in severe ways. I designed a vignette that would ask participants about their exercise intentions in a situation where exercise clearly supported or opposed their goal to remain healthy, and health goals were emphasized to the detriment of any other conflicting goals. While it is possible that an individual who feels strong, positive attitudes towards exercise may even compromise their health in order to do so, a strong enough opposing health goal should outweigh other desirable goals around which the individual's attitude was formed. Similarly, a participant who is informed that exercise is existentially necessary for their health is likely to intend to exercise, regardless of any negative attitudes towards exercise, given a strong enough supporting health goal. I hypothesized that the relationship between the attitudes and intentions to exercise would weaken in situations where exercise was framed in support of or opposition to a strong health goal, compared to a "no goal" control (hypothesis 3a). As in the prior vignette, independently manipulating attitudes towards exercise should only affect exercise intentions in the control condition. In the supporting goal condition, participants should on average intend to exercise regardless of their manipulated attitude, and in the opposing goal condition, participants should not intend to exercise regardless of their attitude (hypothesis 3b).

4.3 Participants

A total of 150 participants completed the study. This number was selected based on previous Theory of Planned Behavior research which established that a similar number of participants was generally sufficient to detect effects with acceptable statistical power. Rashidian et al. (2006) discusses sample size considerations for Theory of Planned Behavior studies in the realm of health sciences research[1]. Using the Variance Inflation Factor method (Hsieh et al., 1998), they find that 148 participants is sufficient to detect effects at 80% power. Their estimate assumes that for the average TPB study the weakest correlations will be between subjective norm and intention (.3) and intention and behavior (.35).

This sample was recruited online via Prolific, which is a crowdsourcing platform allowing researchers to anonymously pay a diverse pool of participants to take part in research. The surveys were created and delivered through Qualtrics online questionnaire software and participants were compensated at a rate of $2 USD for 15 minutes of their time. The Prolific platform was selected in light of research demonstrating the comparatively high quality of its participant pool relative to other platforms such as Amazon's MTurk (Buso et al., 2021). I also implemented many of Buso and colleagues' data quality suggestions wherever feasible, such as pre-screening and attention checks. Participants were pre-screened for age over 18, English fluency, and residence in the United States or United Kingdom in order to ensure that the study materials would be relevant and well-understood. Furthermore, as these two nations represent the plurality of Prolific's participant pool their inclusion would ensure high rates of participation. Of

[1] No similar sample size analyses are available for other types of TPB studies. As the exercise vignette here involves a health behavior, and no similar work is available for other behaviors, the calculations by Rashidian and colleagues should be functionally applicable.

the 150 total participants, however, a number had to be excluded due to technical issues or inattention.

The first 20 participants viewed an incorrect version of the questionnaire, and many indicated that the instructions had been confusing. Thus, the sample was reduced to the 130 participants who received the corrected instructions. Additionally, three attention check items were included in the questionnaire. Per Prolific policy, participants who failed two or more attention checks would be excluded from the study. One participant (n=1) met that exclusion criteria. Of the 129 participants remaining, three participants failed a single attention check during the attitude manipulation (one during the studying vignette, and two at the exercise vignette). Those participants were excluded only from the analyses pertaining to the respective vignette whose attention check they failed.

Of the participants who were included in analyses (n=129), 77 participants indicated that they resided in the UK and the remaining 52 in the US. In terms of education, approximately 39% of participants reported having already obtained a college degree, 26% had some higher education, 15% held a graduate degree, 13% had no college experience, 6% were current undergraduates, and one respondent selected “other” for amount of education. The median age among participants was 35 years old, ranging from 18 to 72. 77 of the participants were female, 49 male, 2 non-binary, and one respondent declined to answer.

4.4 Procedure

Study 1 aimed to measure the effect of attitudes on behavioral intention in hypothetical scenarios where salient goals either opposed or supported the behavior in question. A two-by-three between-subjects design presented each participant with vignettes that manipulated two

independent variables: their attitude towards a behavior and their particular goal in that scenario. Participants were assigned at random to one of two attitude conditions (strongly positive or negative) and one of three goal conditions (no manipulated goal, opposing goal, supporting goal). The dependent variable in this study was the participants' intention to engage in the provided behavior, given the situation described in the vignette. The two vignettes were treated as independent, and the effects of the manipulations on behavioral intention were analyzed independently for the two behaviors.

Upon responding to the study description hosted on Prolific, participants followed a Qualtrics link to view the consent screen. If they chose to provide consent, participants confirmed via post-screening that they resided in the US or UK and were prompted to answer a number of demographic items (age, sex, sexual orientation, education, race, and social class). The survey then briefly introduced the studying vignette (vignettes described in detail in Appendix A). Participants were randomly assigned to receive an additional paragraph describing a goal that supported studying, opposed with studying, or a control in which no additional information appeared. Participants then answered a set of questions from the TPB paradigm asking about their genuine attitude towards studying, their subjective norms about studying, and their perceived behavioral control over studying. At this point, the second independent variable was manipulated by assigning participants at random to either the strong positive or strong negative attitudes conditions for the studying vignette. Participants viewed a survey item identical to the item measuring their actual attitudes towards studying, but with the instruction to choose either the leftmost or rightmost response to each of the statements (i.e. Very positive, Very negative).[2] They were then instructed to imagine that they really did feel that way about

[2] This item was treated as an attention check, and participants who followed these instructions incorrectly were excluded from analysis.

studying, and that they were a person with strong, positive/negative attitudes towards the behavior (manipulation shown in detail in Appendix B). The survey then displayed a reminder of the vignette, and a reminder of the imagined attitude towards studying and the goal condition narrative to which the participant had been assigned. Finally, participants indicated their behavioral intention to study, given these hypothetical circumstances. An identical procedure followed for the second vignette with the same items presented in the same order, but with reference to exercising instead.

4.5 Measures

TPB Variables (see Appendix B)

Actual Attitudes. Adapted from a measure by Leone and colleagues (1999), attitudes were captured using four semantic-differential items on 7-point scales. Participants were asked whether studying for this exam or exercising over the next seven days would be useful/useless, rewarding/punishing, wise/foolish, and positive/negative. Originally framed such that lower scores reflect more positive attitudes, the items were recoded -3 to 3, where -3 represents the most negative value (i.e. very useless) (see Fishbein & Ajzen, 2010). A composite measure of attitudes towards studying was then obtained by summing the four items (α=.878).

Subjective norms. Participants were asked to name three specific important others in their lives (e.g. parents, friends) and to rate the extent to which each would approve or disapprove of the individual's own studying or exercising behavior (Leone et al., 1999). Again, items were recoded -3 to 3, where -3 represents the most negative value (i.e. highly disapprove). The three items were summed to create a composite (α=.800).

Perceived behavioral control. PBC was measured with an item derived from Bagozzi and Kimmel (1995). The item asked participants to indicate how easy or difficult studying for this

exam or exercising would be on a 7-point scale from very easy to very difficult. Again, this item was recoded from -3 to 3 in order that a higher score would indicate greater ease.

Intention. Scores on two semantic differential items were averaged in order to measure behavioral intentions. Participants were asked to express the likelihood that they intend to study or exercise during the next seven days (7-point scale anchored by unlikely and likely). They were also asked to report whether they plan to study or exercise for a significant amount of time in the next seven days (7-point scale anchored by false and true).

4.6 Results

After viewing information about the studying scenario, including the randomly assigned goal condition, participants reported their actual attitudes towards studying, and their subjective norms and PBC. They were then instructed to imagine that they had either strong positive or negative attitudes towards studying, and then reported their hypothetical intentions. Across conditions, actual attitudes were largely positive (M = 5.29 out of a range from -12 to 12, SD = 5.1).[3] Subjective norms were almost exclusively positive (M = 6.39 out of a range from -9 to 9, SD = 3). PBC was well distributed across the possible values with a slight trend away from neutral values (M = 4.17 out of a range from 1 to 7, SD = 1.77). Studying intentions trended quite positive when averaged across conditions (M = 5.13 out of a range from 1 to 7, SD = 1.85).

After viewing information about the exercise scenario, including the randomly assigned goal condition, participants reported their actual attitudes towards exercise, and their subjective norms and PBC. They were then instructed to imagine that they had either strong positive or

[3] An independent-samples t-test was conducted to compare actual attitudes towards studying for participants in the positive versus negative attitudes vignette conditions, and when goal condition was not manipulated. There were no significant differences across condition ($M_{positive}$ = 7.6, SD = 3.8, $M_{negative}$ = 5.9, SD = 4.4), t (41) = 1.36, p = .18. Actual attitudes towards studying did trend higher under the positive attitudes manipulation, but this increase was not significant at p > .05.

negative attitudes towards exercising, and then reported their hypothetical. Across conditions, actual exercise attitudes were very positive (M = 6.46 out of a range from -12 to 12, SD = 5.68)[4]. Subjective norms were bimodally distributed with most participants choosing either the highest possible value or the lowest, suggesting that they may have been affected by the manipulation of goals (M = 2.36 out of a range from -9 to 9, SD = 7.43). PBC again showed a trend away from moderate values (M = 4.11 out of a range from 1 to 7, SD – 2.16). Exercise intentions were highly bimodal with most participants selecting the highest or lowest possible value, again suggesting that the manipulations had an effect (M = 4.13 out of a range from 1 to 7, SD = 2.49).

I had hypothesized that under the "no goal" control condition in which the participants' imagined goal was not manipulated, the three TPB predictors (attitudes, norms, perceived behavioral control) each independently predicted the behavioral intention to study for an exam (hypothesis 1a) and to exercise (hypothesis 1b).

In order to observe intercorrelations between the variables, I created correlation matrices for participants who were assigned to the "no goal" control condition in each vignette (see Tables 1 and 2). For the studying vignette, the correlations between actual attitudes and studying intentions ($r = .31$, $p < .05$) and between actual attitudes and PBC ($r = .31$, $p < .05$) were significant. No other correlation reached significance among the TPB predictors.

[4] An independent-samples t-test was conducted to compare actual attitudes towards exercise for participants in the positive versus negative attitudes vignette conditions, and when goal condition was not manipulated. There was a marginally significant difference across condition, indicating a slight carryover effect ($M_{positive} = 9.3$, SD = 3.1, $M_{negative} = 6.2$, SD = 5.6), $t(40) = 2.16$, $p = .04$. Actual attitudes towards studying did trend higher under the positive attitudes manipulation with a mean difference of 3.07 points on a scale from -12 to 12.

Table 1

TPB and Studying Correlations (control)

	Actual Attitudes	Subjective Norm	PBC	Intentions
Actual Attitudes	--			
Subjective Norm	-0.063	--		
PBC	.305*	0.084	--	
Intentions	.311*	-0.142	-0.257	--

Note: * p < .05, ** p < .01, *** p < .001

In the exercise vignette, the correlation between actual attitudes and exercise intentions was significant (r = .45, p < .01), as were the correlations between actual attitudes and PBC (r = .37, p < .05) and PBC and exercise intentions (r = .43, p < .01).

Table 2

TPB and Exercise Correlations (control)

	Actual Attitudes	Subjective Norm	PBC	Intentions
Actual Attitudes	--			
Subjective Norm	-0.049	--		
PBC	.370*	0.063	--	
Intentions	.450**	0.035	.434**	--

Note: * p < .05, ** p < .01, *** p < .001

I regressed studying intentions on participants' manipulated attitudes towards studying (dummy coded), subjective norms, and PBC (see Table 3). Measured variables were mean centered in order to standardize across scale differences. The model explained approximately 38% of the variance in studying intentions, F(3,39) = 8.12, P < .001. After accounting for the effect of each other term in the model, only attitudes remained as a significant predictor of intentions (β = .57, p < .001).

Table 3

Effects of Manipulated Attitudes, Subjective Norms, and PBC on Studying Intention (control)

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval	
	b	Std. Error	β	t	*p*	Lower Bound	Upper Bound
Constant	0.023	0.224		0.104	0.918	-0.429	0.476
Attitudes	2.038	0.464	0.572	4.387	0.000	1.098	2.977
Subjective Norm	-0.083	0.074	-0.141	-1.120	0.270	-0.232	0.067
PBC	-0.093	0.132	-0.092	-0.704	0.485	-0.360	0.174

I then regressed exercise intentions on participants' manipulated attitudes towards exercise (dummy coded), subjective norms, and PBC as they were measured during the exercise vignette (see Table 4). Again, these variables were mean centered. The model explained approximately 38% of the variance in exercise intentions, $F(3,38) = 7.64$, $P < .001$. After accounting for the effect of each other term in the model, attitudes ($\beta = .44$, $p < .01$) and PBC ($\beta = .43$, $p < .01$) independently predicted exercise intention.

Table 4

Effects of Manipulated Attitudes, Subjective Norms, and PBC on Exercise Intention (control)

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval	
	b	Std. Error	β	t	*p*	Lower Bound	Upper Bound
Constant	2.740	0.825		3.321	0.002	1.070	4.410
Attitudes	1.883	0.557	0.435	3.382	0.002	0.756	3.010
Subjective Norm	0.030	0.076	0.051	0.392	0.698	-0.124	0.183
PBC	0.470	0.140	0.431	3.355	0.002	0.186	0.754

To test the main theoretical contributions of this study, multiple regressions were used to examine the categorical interactions between the two manipulations. The second hypothesis for this study concerned the studying vignette. Studying intentions were regressed on attitudes (dummy coded; 0 = negative; 1 = positive), supporting goal condition (dummy coded; 0 = no; 1 = yes), opposing goal condition (dummy coded; 0 = no, 1 = yes), and product terms representing

the attitude by goal condition interactions (see Table 5). The model as a whole accounted for roughly 32% of variance in studying intentions, $F(5,127) = 11.66$, $p < .001$. The interaction itself, however, was not significant. Only the main effect of the attitudes manipulation was significant ($\beta = .57$, $p < .001$), indicating that compared to participants in the negative attitude, those who imagined positive attitudes towards exercise were more likely to express positive studying intentions. Because goal condition did not seem to have an independent effect on studying intentions for this vignette, no further analyses were conducted.

Table 5
Effects of Attitudes, Goal Condition and Attitude x Goal Condition on Intention (Studying)

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval	
	b	Std. Error	β	t	*p*	Lower Bound	Upper Bound
Constant	4.500	0.332		13.561	0.000	3.843	5.157
Attitude	2.119	0.475	0.573	4.463	0.000	1.179	3.059
Supporting Goal	-0.174	0.464	-0.045	-0.375	0.709	-1.093	0.745
Opposing Goal	-0.833	0.475	-0.209	-1.755	0.082	-1.773	0.107
Att x Supp Goal	-0.400	0.664	-0.082	-0.602	0.548	-1.714	0.915
Att x Opp Goal	-0.023	0.684	-0.004	-0.033	0.974	-1.377	1.332

To test the third hypothesis, exercise intentions were regressed on attitudes (dummy coded; 0 = negative; 1 = positive), supporting goal condition (dummy coded; 0 = no; 1 = yes), opposing goal condition (dummy coded; 0 = no, 1 = yes), and product terms representing the attitude by goal condition interactions (see Table 6) . This model accounted for roughly 41% of the variance in exercise intentions, $F(5,126) = 1.90$, $p < .001$. The joint effect of being in the positive attitude and opposing goal condition was marginally significant ($p = .054$). Individually, there was a significant effect of being in the positive attitude condition compared to negative attitudes ($\beta = .38$, $p < .01$), where those with positive attitudes were more likely on average to

express stronger exercise intentions. There was also a significant effect of being in the opposing goal condition, compared to the other goal conditions (β = -2.07, p = .001), where viewing the opposing goal vignette was on average associated with lower exercise intentions.

Table 6
Effects of Attitudes, Goal Condition and Attitude x Goal Condition on Intention (Exercise)

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval	
	b	Std. Error	β	t	*p*	Lower Bound	Upper Bound
Constant	4.136	0.416		9.938	0.000	3.312	4.960
Attitude	1.864	0.603	0.375	3.090	0.002	0.669	3.058
Supporting Goal	0.164	0.603	0.031	0.271	0.787	-1.031	1.358
Opposing Goal	-2.068	0.589	-0.394	-3.513	0.001	-3.234	-0.903
Att x Supp Goal	-0.050	0.853	-0.008	-0.059	0.953	-1.739	1.639
Att x Opp Goal	-1.646	0.848	-0.246	-1.942	0.054	-3.324	0.032

A visual inspection of a plot of the conditional effects indicated that, contrary to my initial hypotheses, the relationship between attitudes and intentions was significant under both the supporting goal and control conditions, whereas the relationship was substantially attenuated under the opposing goal condition (see Figure 1).

Figure 1
Conditional Effect of Manipulated Attitudes on Intention by Goal Condition

Post hoc comparisons using Tukey's HSD test indicated that mean behavior scores for participants in the supporting goal condition significantly differed across attitude conditions ($p < .01$). The mean scores in the "no goal" control also differed significantly by attitudes ($p < .01$). Most notably, there were no significant differences between attitude condition for participants who viewed the opposing goal vignette ($p = .71$), and their behavior scores were significantly lower overall (see Table 7).

Table 7
Means and Standard Deviations for Behavior Scores across Conditions

	Goal Condition					
	Supporting		Control		Opposing	
	M	*SD*	*M*	*SD*	*M*	*SD*
Positive Attitude	6.114	1.6828	6.000	1.9263	2.286	1.9272
Negative Attitude	4.300	2.1909	4.136	2.0597	2.068	1.9105

This pattern suggested that perhaps the latent goals that participants had in mind under the control condition were similar in effect to those that were manipulated in the supporting goal condition. Additionally, it seemed that the only situation strong enough to attenuate the relationship between attitudes and intentions was one in which exercising would explicitly compromise one's health. Perhaps while the supporting goal scenario motivated individuals with both positive and negative attitudes to exercise, the imagined negative consequences were not strong enough to compel those with negative attitudes to exercise anyway.

4.7 Discussion

The results of Study 1 indicate overall that it is difficult to capture the precise situations in which one's goals are inconsistent with their attitudes towards a behavior, but that there is a sufficient basis for further empirical work. There are a multitude of ways in which to test this theoretical integration. The approach taken here was to begin by independently manipulating

goals and attitudes in order to identity situations where attitude-inconsistent goals interrupt the TPB's normal predictions. In most cases in which the TPB is tested, participants are assumed to have goals that are consistent with their attitudes towards the behavior in question. A participant in a study on exercise behavior, for instance, brings with them to the lab a relevant and salient goal such as to lose weight or become healthier. It is natural, then, to find that their success depends largely on their attitudes, subjective norms, and PBC regarding exercise behavior. The contributions of GST discussed here, as well as those proposed in the Theory of Reasoned Goal Pursuit (Ajzen & Kruglanski, 2019) suggest that attitudes are formed with goals in mind. Those goals could then become less active in new situations or be replaced by directly contradictory goals, causing one's initial attitudes and present goals to become inconsistent. Could the TPB accurately predict behavioral intentions when attitudes and goals are inconsistent? This study aimed to disentangle and simplify this complex relationship and suggest a means to predict behavioral intentions under a higher diversity of conditions.

First, analyses determined that under control conditions approximating a standard TPB study, the attitudes manipulation indeed influenced behavioral intentions. For the studying vignette, however, the measured variables (subjective norm, PBC) were not significantly associated with intentions. It is possible that effect of the attitudes manipulation was strong enough to dilute any potential effects of the variables that were not manipulated.

For the exercise vignette, the attitudes manipulation also seemed to have a pronounced effect on intentions. PBC also emerged as a significant predictor within the multiple regression, while subjective norms again did not. This pattern is not entirely unexpected, given prior research on the TPB. Meta-analyses of adherence behaviors in chronic illness do find that subjective norms have the weakest relationship with intentions, compared to the other two

predictors (Rich et al., 2015)[5]. Meta-analyses of exercise behavior report that subjective norm had the lowest correlations with intentions across studies, and the smallest effects compared to the other predictors (e.g. Hausenblas et al., 1997). While these mixed results do not signal perfect consistency between this design and that of a typical TPB study, they do indicate that the attitudes manipulation was successful and that these vignettes did highlight the relationship between attitudes and intentions, justifying further analyses.

The next analyses investigated the primary thrust of this study – the interaction between attitudes and goals. My hypotheses on this point received mixed support. It should be noted that each vignette was analyzed individually. The logic for this decision was based on the notion that academic goals are very different motivationally from health goals. Differences in the effects of each vignette would be difficult to interpret, as they could be attributed to the behavior in question or to the specific conditions of the vignette.

In the studying vignette, participants in the supporting goal condition had the goal to do well on an exam emphasized, increasing the activation of that goal. In the opposing condition, a distracting goal was emphasized instead, signaling that another task should take priority. A model that included the attitude and goal condition to which a participant was assigned as well as the interaction between these conditions did explain a significant amount of variance in studying intentions. Only the main effect of attitudes, however, was significant. This suggests that the supporting or opposing goals manipulation did not cause participants to imagine that they would study any more or less than had no goal been specified. Because the goals manipulation did not seem to produce an effect in either attitudes condition, I was not able to detect an interaction.

[5] The authors reported that on average across 27 studies, PBC had the strongest sample-corrected zero-order correlation with intention ($r+ = .51$), followed by attitudes ($r+ = .41$), and lastly subjective norms ($r+ = .32$). They were not able to find that differences in the strengths of these relationships were statistically significant.

One explanation for the lack of significant results could be that the goals activated by the vignette did not differ widely from latent goals already active when a participant called to mind studying for an exam. For participants in the control condition, studying for an exam may have implicitly involved navigating competing priorities (as in the opposing goal condition). Similarly, while participants in the supporting goal condition were specifically told to imagine having a typical balance of other responsibilities, participants in the "no goal" control may have simply imagined the very same scenario. Future research following this design should make use of multiple vignettes and more demanding scenarios in order to avoid creating overly subtle dilemmas.

In the exercise vignette, the scenario was indeed more extreme. In this case, the goal of recovering from an illness was emphasized in all three goal conditions. In the control condition no additional information was added. In the supporting goal condition exercising was depicted in support of the overriding health goal. The opposing condition, however, made it clear that exercise would directly compromise the goal of recovering from illness. Analysis of the responses found that this manipulation was strong enough to produce a main effect of goal condition, alongside the main effect of the attitude manipulation. An interaction between the two conditions was more difficult to detect. While I had hypothesized that goal condition would substantially moderate the effect of the attitude manipulation on intentions, the interaction was only marginally significant. What did become evident, however, was that the response to the supporting goal condition was nearly identical to that of the control (see Figure 1 for a visualization).

It is possible that participants in this sample assumed that exercise would improve their recovery regardless of whether they received the supporting goal information or merely the

control vignette. On the other hand, when the opposing goal condition was compared across attitude conditions, it became quite clear that behavioral intentions no longer depended on attitude. Attitudes had a clear effect on intentions to exercise under the control and supporting goal conditions: participants who received the positive attitude manipulation indicated higher exercise intentions than those who imagined negative attitudes instead. This relationship was significantly attenuated in the opposing goals condition: intentions to exercise were low regardless of the attitudes manipulation.

The finding that goals can have an effect on intentions independent of the effect of attitudes provides key support for the integration of GST into the TPB. An awareness of the goals upon which upon which individuals constructed their attitudes would benefit researchers seeking to expand the applicability of the TPB and strengthen its predictions for behavioral intentions. However, this study traded ecological validity for the tight experimental control over variables that was provided by specific vignettes. The subtlety and unwieldiness of these scenarios made it difficult to have participants imagine goals that were truly at odds with their attitudes towards a behavior. The single point in time and hypothetical nature of the study also made it impossible to test longitudinal predictions about behavior. To compensate for the limitations of this design, Studies 2 and 3 utilized observational designs emphasizing naturalistic attitudes and intentions and actual behavior performed over time.

Chapter 5: Study 2

5.1 Overview

A second study attempted to conceptually replicate the finding that goal activation affects the predictions of the TPB. This time, however, it did so without relying on vignettes and by quasi-experimentally allowing environmental conditions to introduce variability in the activation of a behaviorally relevant goal. Due to time constraints, I decided to conduct this study using a cross-sectional sample of participants for whom a particular goal could be more or less active at a given point in time. Because university exams occur continuously throughout a semester, a random sample of university students taken mid-semester would yield a high variability in the activation of exam preparation goals. The TPB has proven capable of predicting studying and test-taking behavior in previous research, but these findings relied on the untested assumption that in order to decide to study for an exam, a student must possess an active goal that this behavior would mediate – namely performing well on the exam.

It has long been established that a goal becomes more motivating as it draws closer in time or "looms larger" (Lewin, 1935). It would follow that when a goal is more distant, it is less motivating. Relevantly, Steel and Konig's temporal motivation theory (TMT; 2006) illustrated the critical role that time plays in motivation – a role that helps further elucidate the connection between GST and the TPB. In this conceptualization, motivation is increased by a behavior's perceived expectancy and value and decreased by the actor's impulsivity and the amount of time remaining to complete the task. In terms of the Theory of Reasoned Goal Pursuit, expectancy and value account for the behavioral beliefs that constitute one's attitude towards a behavior. TMT, then, would suggest that attitude and time operate jointly to determine motivation. Here, time loosely operationalizes goal activation: a distant goal is rarely salient and an upcoming goal

becomes difficult to ignore. Expectancy and value concerns (operationalized by the TPB predictors) should help determine motivation to engage in a behavior when a relevant goal is salient but not overly so. The utility of these predictors, however, should wane as the task grows highly distant or highly proximate and goal activation (or inactivation) becomes the stronger determinant of motivation.

Stated in terms of studying behavior, even a determined, enthusiastic student would be less likely to devote their effort to preparing for a far-off grading opportunity. As a significant exam approaches, however, intentions to study for it should be more related to attitude, subjective norm, and perceived behavioral control. Then, if an exam looms too large, the predictive strength of the model should again subside in light of immediate necessity. Even students who are less enthused about studying will still rush to prepare for an important test if it is nearly upon them.

Vroom's (1964) expectancy theory would also add that the goal of performing well on an exam should only affect the TPB should certain conditions be met linking studying to performance. Test taking motivation can be represented as how much a student wants to do well in the class (value), how relevant this test is to that goal (instrumentality), and how likely they are to achieve that goal if they study (expectancy). It is important to consider not just to what degree each student is motivated by academic success, but also the extent to which a given test represents that goal and whether the action of studying is an effective means to that end. Though goal activation may have an effect on the predictions of the TPB in general, differences in each student's perceived relationship between means and goal will weaken that effect. Thus, I anticipated that a composite measure of test taking motivation that considers value,

instrumentality, and expectancy (VIEMS; Sanchez et al., 2000) must be accounted for in this model before goal activation has its moderating effect.

5.2 Hypotheses

For this study, the first two hypotheses were again intended to demonstrate consistency between this work and the wider TPB literature. I hypothesized that when students are told to think of an important exam, their attitude, subjective norm, and PBC related to studying for that exam will predict their behavioral intentions (hypothesis 1). Previous work has indeed found that the TPB is successful in predicting studying intention, but notably excluded participants whose exam dates were excessively proximal or distal (Leone et al., 1999). To replicate these findings while accounting for a wider range of temporal distances to exams would in itself represent a contribution to the field.

The next hypotheses address the main thrust of this study, namely that the temporal distance of upcoming exams does serve as a proxy for goal activation. The TPB's capacity to predict intention should change according to the level of goal activation. Exam proximity will moderate the relationship between all three predictors and studying intention, controlling for study habits and means-goal expectancy (VIEMS subscale). The TPB predictors will be significantly less associated with intentions when an exam is extremely pressing or highly distant as compared to when the exam is merely upcoming. The relationship between the TPB predictors and studying intentions should be strongest at moderate levels of exam proximity and weakest at high and low levels (hypothesis 2a). Note that the dependent variable for this hypothesis was operationalized using the traditional Likert TPB measure of intentions as well as a quantitative item asking about the number of studying hours. Additionally, I anticipated that merely

accounting for exam proximity in this way should improve the overall strength of the model, explaining significantly more variance in intentions than would the standard TPB model.

Lastly, I anticipated the same two-way interaction between the TPB predictors and exam proximity when actual studying behavior was the dependent variable (hypothesis 2b). Studying would be assessed one week later, and I expected that a model which included exam proximity as a moderator would explain more variance in behavior compared to that which would be explained by the standard TPB model alone. Actual studying behavior was operationalized objectively as the number of days on which a participant studied a significant amount of time, and subjectively as the amount of time they felt they spent studying.

5.3 Participants

As in Study 1, participants were recruited online using the Prolific platform. The only deviation from the prior protocol was that each participant was required to indicate that they were a current university student in order to participate. I again aimed to recruit 150 participants, following the work of Rashidian and colleagues (2006) and I accepted participants from both the US and UK according to the rationale referenced earlier in section 4.3.

A total of 150 participants took part in the main study (T1), 141 of whom returned at T2 to complete a follow-up survey about their studying behavior seven days later (94% follow-up rate). Of those who returned at T2, 35 participants had already taken their respective exams, while the remaining 115 were still engaged in studying. Two attention check items were included in the survey materials and, per Prolific protocol, participants would have been excluded from analysis if they failed both checks. No participant submitted incorrect responses to both attention checks and as a result none were excluded from the final sample. Participants were compensated

$2 USD for 15 minutes of their time on the initial survey, and an additional $0.67 if they completed the follow-up as well.

Of the overall sample (n=150), 124 participants indicated that they resided in the UK and the remaining 26 in the US. The sample was relatively evenly distributed by level of education. Most participants reported having already obtained a college degree (32%), followed by current undergraduates (29%), those with some higher education (27%), and those with a graduate degree (12%). Area of study among participants was also relatively even, with 32% in STEM fields, 25% obtaining professional degrees, 24% in Social Sciences, and 19% in the arts/humanities. Students mentioned a diverse array of upcoming exams and assignments, ranging from The median age among participants was 22 years old, ranging from 18 to 64. 105 of the participants were female, 43 male, and 2 non-binary or self-described.

5.4 Procedure

This study did not involve an experimental manipulation, and it was conducted via two short questionnaires. An initial questionnaire at T1 asked university students to complete a survey about their study habits and upcoming exams. A brief follow-up one week later (T2) asked participants to evaluate their studying behavior over the past week.

On the first survey, participants responded to a number of demographic items and were then prompted to think about "the next exam that you have to study for." In the event that the participant was enrolled in a course of study that did not involve standard examinations, the survey asked them to think about another type of major grading opportunity that they would need to prepare for, such as a research paper or final project. The participants described the exam or major assignment in brief and then indicated how soon it would take place or be due. Temporal proximity was accounted for in two ways. First, an item asked about the objective timeline (from

"within the next couple of days" to "more than a couple of months away;" see Appendix C). Second, an item asked more subjectively about how soon the exam or assignment feels (from "now or extremely soon" to "extremely far away"). Given that the exact nature of the exam was uncontrolled for in this study, I included the subjective item to account for differences in the significance of the exam as it relates to goal activation. A major exam such as an MCAT or LSAT may loom large even when they are objectively more distant than a less consequential midterm or term paper. These items would also match the way in which behavior was operationalized both objectively and subjectively.

To account for differences in study habits, I also included a section asking how soon each student thought they should begin preparing for this particular exam. Other research paradigms have used time sensitivity (Vancouver et al., 2010) or time perspective (Zimbardo & Boyd, 1999) to operationalize individual differences in responsiveness to an upcoming deadline. In this case, the matter at hand was not individual differences *per se*, but rather the particular nature of the test or assignment the participant had in mind. An item measuring participants' estimate for when they should begin studying for this test would control for these exam-specific differences, while the Time Perspective Inventory was included in Study 3 to examine individual differences in greater detail.

Additionally, the survey included an adapted measure of valence, instrumentality, and expectancy (see Appendix D). This measure determined 1) the relative weight of the academic success goal for each student and 2) the extent to which performance on the upcoming test relates to this goal. Of particular interest were the instrumentality and expectancy subscales, which included items addressing the means-goal relationship – here, the extent to which a participant believes that it is possible for them to do well in the class if they study for the test.

This scale will help control for cases similar to the Opposing Goal Condition in the exercise vignette above – where the means-goal link had been severed.

Next, several items assessed the TPB predictors as they related to exam preparation behavior. These were similar to the items from Study 1, adjusted to suit this context (adapted from Bagozzi & Kimmel, 1995; Leone et al., 1999). (See Appendix E.)

Lastly, at T2 (one week later) a very brief follow-up survey asked participants what their actual studying behavior was for the past week. As mentioned above, an objective item captured the number of days on which the individual studied for a significant amount of time, mirroring the operationalization by Leone et al. (1999). A subjective item asked overall how much the participant felt they had studied over the past week.

5.5 Measures

Predictor Variables

Attitudes. Adapted from a measure by Leone and colleagues (1999), attitudes were captured using four semantic-differential items on 7-point scales. Participants were asked whether studying for this test would be useful/useless, rewarding/punishing, wise/foolish, and positive/negative. Originally framed such that lower scores reflect more positive attitudes, the items were recoded -3 to 3, where -3 represents the most negative value (i.e. very useless) (see Fishbein & Ajzen, 2010). A composite measure of attitudes towards studying was then obtained by summing the four items (α=.825).

Subjective norms. Participants were asked to name three specific important others in their lives (e.g. parents, friends) and to rate the extent to which each would approve or disapprove of the individual's own studying (Leone et al., 1999). Again, items were recoded -3 to 3, where -3

represents the most negative value (i.e. highly disapprove). The three items were summed to create a composite (α=.820).

Perceived behavioral control. PBC was measured with an item derived from Bagozzi and Kimmel (1995). The item asked participants to indicate how easy or difficult studying for this test would be on a 7-point scale from very easy to very difficult. Again, this item was recoded from -3 to 3 in order that a higher score would indicate greater ease.

Note: attitudes (α=.915), subjective norm (α=.918), and PBC were all measured again at T2 by the same mechanism. Participants were instructed to think of their current attitudes. Those that had not already taken their exam also reported their intentions to study over the coming week.

Moderator Variables

Actual temporal distance. Participants were asked to think of an upcoming exam (or similar class assignment/project) that will be important for their course of study. They wrote a brief description of the exam and were then asked to report when it will take place on a 7-point scale. Anchors for the scale consisted of: within the next couple of days, in about a week, in a couple of weeks, in a month or so, in a couple of months, more than a couple of months away, so far away that I can not tell when it would be.

Subjective distance. Immediately following the actual temporal distance item, participants were asked to consider how soon or far this feels to them. This question aimed to control for differences in exam type or personal study habits, isolating the extent to which studying for this exam represented an active goal at that point in time. This 7-point scale was anchored at: now or extremely soon, very soon, somewhat soon, somewhat later, much later, extremely far away, so far away that I can not tell when it would be.

Control Variables

Study habits. Two 7-point items assessed how soon participants felt that they should be studying for the exam or assignment in question. These items mirrored the objective/subjective framing from the exam proximity items and were anchored at "within the next couple of days" to "more than a couple of months away" and "now or extremely soon" to "extremely far away" respectively.

Valence, Instrumentality, Expectancy Motivation Scale (VIEMS). I made use of Sanchez and colleagues' (2000) adaptation of this scale for the context of test taking. This was a 10-item, 5-point scale comprised of three subscales, anchored by "strongly agree" and "strongly disagree." The items were recoded in order that a higher score would indicate stronger agreement. The valence subscale included three items measuring the extent to which a participant valued the goal of doing well in class (α=.838). The instrumentality subscale included four items measuring the extent to which succeeding on the test or assignment would increase the chances of doing well in the class (α=.704). The expectancy subscale included three items measuring whether participants felt that the amount of effort they spent studying for the test would ultimately affect their score (α=.789). A VIEMS composite was created by taking the mean of the three subscale values for each participant (α=.866).

Outcome Variables

Intention. Scores on two semantic differential items were averaged in order to measure behavioral intentions. Participants were asked to express the likelihood that they intend to study during the next seven days (7-point scale anchored by unlikely and likely). They were also asked to report whether they plan to study for a significant amount of time in the next seven days (7-point scale anchored by false and true).

Behavior. At T2, participants reported their behavior in two ways. Following the procedure used by Leone et al. (1999), participants indicated the number of days in the past week during which they had studied for a significant amount of time. Their responses ranged from zero to seven days. A more subjective item captured how much participants felt they had studied over the past seven days. This was measured according to a 5-point scale ranging from very little to very much.

5.6 Results

Overall, participants reported highly positive attitudes towards studying (M = 6.85 out of a possible -12 to 12, SD = 4), highly positive subjective norms in favor of studying (M = 6.61 out of a possible -9 to 9, SD = 2.65), and moderate PBC (M = 4.05 out of a possible 1 to 7, SD = 1.6). Behavioral intentions were generally positive (M = 4.85 out of a possible 1 to 7, SD = 1.5). Actual behavior, in terms of the number of the past seven days on which a participant studied, trended lower (M = 3.79 days out of a possible 0 to 7, SD = 2). Further inspection of responses to the objective behavior item indicated that participants interpreted the question inconsistently. The 1-week follow-up questionnaire asked participants to "indicate in how many of the past 7 days you studied for this test or prepared for this assignment for a significant amount of time" (see Appendix E). Many participants, however, had completed their exam already at some point during that week. Some of participants may have interpreted the item as the total number of days spent preparing for the exam (including days preceding the T1 survey), while others as the number of days only out of the past seven that they spent studying. Out of 25 participants who completed their exam during the intervening week, 15 reported studying for more days than would have been possible. Because this item was problematic, I elected to feature subjective behavior as the outcome of interest in the majority of my analyses.

When measured subjectively, the distribution of behavior scores was quite bimodal. On average, participants felt that they either had not studied much or had studied a good amount (M = 2.57 out of a possible 1 to 5, SD = 1.31). Responses for objective exam proximity were tightly clustered between "in a couple of weeks" and "in a month or so" (M = 3.67 out of a range of 1 to 7, SD = 1.13). Subjectively, participants felt that their exams were on average "somewhat soon" (M = 2.79 out of a range of 1 to 7, SD = 1.04). Only 6% of participants felt that their exam was "much later" or "extremely far away."

When asked at T2 about their updated attitudes, subjective norm, PBC, and intentions, there were some notable changes. Attitudes decreased significantly, while still remaining positive overall (M = 4.09, SD = 6.2; t (114) = 4.1, $p < .001$; Cohen's d = .38). Subjective norms also decreased significantly while remaining largely positive (M = 4.88, SD = 4.32, t (114) = 3.42, $p < .001$; Cohen's d = .32). There was no evidence for meaningful differences in the T1 and T2 results for PBC (M = 4.06, SD = 1.6; t (114) = -.62) and behavioral intention (M = 4.84, SD = 1.6, t (114) = -.3).

Correlations between attitude, subjective norm, PBC, and intentions at T1 were each moderately positive and significant at $p < .01$ (see Table 8). Attitudes towards studying, compared to the other two predictor variables, had the strongest relationship with intentions (r = .498). This finding is consistent with other TPB research, in which attitudes are typically the strongest predictor of behavioral intentions, and subjective norm and PBC vary depending on the behavior in question.

Table 8
TPB and Studying Correlations: Intentions and Behavior

	Attitude	Subjective Norm	PBC	Intention	Behavior (objective)	Behavior (subjective)
Attitude	--					
Subjective Norm	.499**	--				
PBC	.181*	0.077	--			
Intention	.498**	.374**	.255**	--		
Behavior (objective)	.177*	.243**	.224**	.447**	--	
Behavior (subjective)	0.131	0.125	.282**	.398**	.825**	--

Note: * p < .05, ** p < .01, *** p < .001

Looking at correlations between attitude, subjective norm, PBC, and both operationalizations of behavior reveals some significant relationships (see again Table 8). These relationships were weaker overall than with intentions, and weaker still when behavior was measured subjectively (how much participants felt like they had studied) as opposed to reporting the number of days on which they had studied, though this could have been due to the problematic nature of the objective behavior item. Attitudes ($r = .18$, $p < .05$), subjective norms ($r = .24$, $p < .01$), and PBC ($r = .22$, $p < .01$) were significantly related to objective studying behavior. For subjective studying behavior, only PBC remained significantly correlated ($r = .28$, $p < .01$). TPB research does typically find that relationships between the predictors and actual behavior are weaker than with behavioral intentions.

I ran a hierarchical regression in order to test my hypothesis that the traditional TPB predictors (attitude, subjective norm, and PBC) predicted studying intentions at T1. This analysis follows early work by de Vries and colleagues (1988) who tested the TPB using hierarchical regression to predict smoking intentions.

Table 9 shows the results of a three-stage hierarchical regression analysis predicting studying intentions. Attitude was entered at stage one, with subjective norms and PBC entered stepwise at the next two stages. The results of the analysis show that a model including all three predictors accounted for about 30% of the variance in intention, $F(1,148) = 48.80$, $p < .001$. Attitude alone at stage one accounted for 25% of the variance in intention, $F(1,148)$, $p < .001$. At stage two, subjective norms explained an additional 3% and this change in R^2 was significant, $F(1,147) = 5.71$, $p < .05$. Adding PBC at stage three contributed an additional 2% and this change in R^2 was significant, $F(1,146) = 4.52$, $p < .05$. When all three predictor variables were included at stage three of the regression model, they each independently predicted studying intentions at $p < .05$ and the most important predictor continued to be attitudes.

Table 9
Summary of Hierarchical Regression Analysis for TPB Variables Predicting Studying Intentions

	Variable	Unstandardized Coefficients		Standardized Coefficients					
		b	Std. Error	β	t	*p*	R^2	ΔR^2	*p*
Step 1							0.248	0.248	0.000
	Constant	3.559	0.213		16.685	0.000			
	Attitude	0.188	0.027	0.498	6.986	0.000			
Step 2							0.276	0.028	0.018
	Constant	2.985	0.319		9.350	0.000			
	Attitude	0.176	0.027	0.467	6.547	0.000			
	PBC	0.162	0.068	0.170	2.389	0.018			
Step 3							0.298	0.022	0.035
	Constant	2.556	0.374		6.824	0.000			
	Attitude	0.144	0.031	0.382	4.705	0.000			
	PBC	0.164	0.067	0.173	2.450	0.015			
	Subjective Norm	0.097	0.046	0.170	2.126	0.035			

The second hypothesis for this study anticipated that exam proximity would interact with attitudes, subjective norms, and PBC to predict studying intentions – after accounting for study

habits and means-goal relations. Additionally, I proposed that this model which accounts for exam proximity would explain a significantly increased amount of variance in studying intentions. To test the hypothesis, I conducted a hierarchical multiple regression analysis. In the first step, the studying intentions outcome was regressed on attitudes, subjective norms, PBC, subjective exam proximity, study habits, and the VIEMS composite score (means-goal relations). These variables accounted for a significant amount of variance in intentions, $R^2 = .393$, $F(6,143) = 15.42$, $p < .001$ (see Table 10). After accounting for the effects of all other predictors in the model, attitudes ($\beta = .31$, $p < .001$) and PBC ($\beta = .22$, $p = .001$) had a main effect on intentions, while subjective exam proximity and subjective norms did not.

Next, curvilinear interaction terms between exam proximity and attitudes, subjective norms, and PBC were added to the regression model. My hypotheses anticipated a relationship between the three TPB predictors and intentions which strengthened at moderate exam proximity, weakened somewhat when exams were soon, and grew especially weak for distant exams. This expanded model accounted for approximately 40% of variance in intentions; however, R^2 change was not significant. No significant interactions were found, suggesting that subjective exam proximity did not affect the relationship between the TPB predictors and studying intentions as hypothesized.

Table 10

Summary of Hierarchical Regression Analysis for TPB Variables, Exam Proximity, and Interactions Predicting Studying Intentions

	Variable	Unstandardized Coefficients		Standardized Coefficients					
		b	Std. Error	β	t	*p*	R^2	ΔR^2	*p*
Step 1							0.39	0.39	0.00
	Constant	4.28	1.16		3.70	0.00			
	Attitude	0.12	0.03	0.31	3.82	0.00			
	Subjective Norm	0.08	0.04	0.14	1.85	0.07			
	PBC	0.21	0.06	0.22	3.29	0.00			
	Exam Prox (subj)	-0.20	0.13	-0.13	-1.49	0.14			
	Study Habits	-0.31	0.13	-0.22	-2.44	0.02			
	VIEMS	-0.10	0.25	-0.03	-0.41	0.68			
Step 2							0.41	0.02	0.43
	Constant	5.64	1.42		3.96	0.00			
	Attitude	0.14	0.05	0.37	2.55	0.01			
	Subjective Norm	0.05	0.07	0.09	0.71	0.48			
	PBC	0.12	0.11	0.12	1.09	0.28			
	Exam Prox (subj)	-0.79	0.46	-0.54	-1.74	0.08			
	Study Habits	-0.29	0.13	-0.21	-2.27	0.02			
	VIEMS	-0.13	0.25	-0.04	-0.52	0.60			
	Exam $Prox^2$	0.03	0.07	0.15	0.44	0.66			
	Exam $Prox^2$ x Att	0.00	0.00	-0.10	-0.56	0.58			
	Exam $Prox^2$ x Norm	0.00	0.01	0.12	0.61	0.54			
	Exam $Prox^2$ x PBC	0.01	0.01	0.28	1.26	0.21			

The final hypothesis anticipated that exam proximity would curvilinearly interact with attitudes, subjective norms, and PBC to predict subjective studying behavior, again after

accounting for study habits and means-goal relations. I conducted a hierarchical multiple regression analysis using the subjective items (exam proximity, study habits, behavior).

In the first step, subjective studying behavior was regressed on attitudes, subjective norms, PBC, subjective exam proximity, study habits, and the VIEMS composite score (means-goal relations). These variables accounted for a significant amount of variance in studying behavior (operationalized as a subjective judgment), $R^2 = .177$, $F(6,134) = 4.81$, $p < .001$ (see Table 11). After accounting for the effects of all other predictors in the model, only subjective exam proximity ($\beta = -.39$, $p < .001$) and PBC ($\beta = .30$, $p < .001$) had a main effect on intentions, while attitudes and subjective norms did not.

Next, interaction terms between exam proximity and attitudes, subjective norms, and PBC were added to the regression model. This expanded model accounted for approximately 25% of variance in behavior, a significant increase over the first step, $\Delta R^2 = .077$, $\Delta F(4,130) = 3.45$, $p < .05$. Only the curvilinear interaction between subjective exam proximity and PBC approached significance at $p = .07$. While this may provide a basis for future research examining the curvilinear effect of exam proximity on the relationship between PBC and behavior, the effect was not robust enough to be considered meaningful without replication.

Table 11

Summary of Hierarchical Regression Analysis for TPB Variables, Exam Proximity, and Interactions Predicting Subjective Studying Behavior

	Variable	Unstandardized Coefficients		Standardized Coefficients					
		b	Std. Error	β	t	*p*	R^2	ΔR^2	*p*
Step 1							0.18	0.18	0.00
	Constant	3.30	1.27		2.60	0.01			
	Attitude	0.00	0.03	0.01	0.06	0.95			
	Subjective Norm	0.04	0.05	0.08	0.80	0.43			
	PBC	0.25	0.07	0.30	3.68	0.00			
	Exam Proximity (subjective)	-0.49	0.14	-0.39	-3.59	0.00			
	Study Habits	0.26	0.14	0.21	1.89	0.06			
	VIEMS	-0.25	0.26	-0.08	-0.96	0.34			
Step 2							0.25	0.08	0.01
	Constant	4.71	1.43		3.29	0.00			
	Attitude	0.05	0.05	0.14	0.88	0.38			
	Subjective Norm	0.09	0.08	0.19	1.26	0.21			
	PBC	0.12	0.11	0.14	1.06	0.29			
	Exam Prox (subj)	-1.21	0.46	-0.97	-2.64	0.01			
	Study Habits	0.24	0.13	0.20	1.82	0.07			
	VIEMS	-0.36	0.26	-0.12	-1.40	0.16			
	Exam $Prox^2$	0.08	0.08	0.42	1.04	0.30			
	Exam $Prox^2$ x Att	-0.01	0.00	-0.21	-1.06	0.29			
	Exam $Prox^2$ x Norm	0.00	0.01	-0.14	-0.60	0.55			
	Exam $Prox^2$ x PBC	0.02	0.01	0.53	1.83	0.07			

5.7 Discussion

Results for Study 2 were mixed. I was able to demonstrate consistency between my design and previous TPB research, where attitudes, subjective norms, and PBC predicted intentions. I did not, however, find broad support in this design for the notion that expanding the

model to include curvilinear interactions with exam proximity would better predict intentions. With behavior as the outcome, on the other hand, there did seem to be some utility to including exam proximity in the model. Relationships between the predictors and intentions were dramatically different from their relationships with actual behavior. This suggests that the influence of goals on the TPB could best be seen on the gap between intentions and behavior, a premise that was investigated further in Study 3.

Overall, the particular behavior in question – studying for exams – appeared to elicit broadly positive attitudes. These attitudes appeared to be largely responsible for the sample's generally optimistic intentions to engage in studying behavior. Demand characteristics must be acknowledged as a potential cause of these attitudes, and are often confronted in other research on exam preparation behavior (e.g. Wachelka & Katz, 1999; Frattaroli et al., 2011). Students are well aware that studying for an exam is a positive, useful action and their responses at T1 seem to demonstrate this feeling. At time two a week later, however, reality may have set in – explaining the significantly decreased positivity in attitudes. While initial attitudes were strongly predictive of initial intentions, their effect tapered off for the prediction of actual behavior in favor of PBC instead. The pattern that emerged was that PBC may have been more robust to demand characteristics or naivete, while attitudes towards studying may have precipitated an initially rosy outlook on one's ability to prepare for an upcoming exam.

Looking at the influence of exam proximity on these predictions served as a proxy for the activation of behaviorally relevant goals. I had hypothesized that attitudes, subjective norms, and PBC would only successfully predict intentions when the goal to perform well on an exam was neither immediate nor extremely distant. Towards a midpoint where goals related to exam performance were active but not overly so, the design of the study approximated more typical

TPB research. Historically, participants at either extreme have been excluded from such research (see for example Leone et al., 1999). The results of this study did not explicitly provide support for this hypothesis. The TPB predictors alone (controlling for typical study habits related to the exam and means-goal relations) explained a substantial amount of the variance in intentions. The relationship between attitudes, subjective norms, PBC and intentions did not meaningfully change for exams which were closer or more temporally distant.

One explanation for this finding is that attitudes and PBC remained strongly associated with intentions due to the overall optimism within the sample. Participants either did not anticipate that they would not study when exam related goals were more distal, or, because all participants were actively engaged in coursework at the time of the study these goals were simply chronically active. It is possible that this operationalization of goal activation only captured situations in which students were actively working towards their academic goals. A similar measure of exam proximity delivered to night school students during their day jobs or taken by students during mid-semester breaks might have introduced greater variance in academic goal activation. Moreover, the distribution of exam proximity responses fell largely in the range of two weeks to two months away, leaving comparatively few participants excessively proximate or distant from their exams. The distribution for subjective exam proximity captured more urgency (roughly 75% of respondents felt their exam was “very soon” or “somewhat soon”), but very few responses from participants whose exam related goals may have been inactive (only 5% reported feeling that their exam was “much later” or “extremely far away”).

I had also hypothesized that initial attitudes, subjective norms, and PBC would be more related to actual behavior when the exam was not highly proximate or distant. In this case, a model that accounted for these interactions did produce an increase in variance explained,

compared to a model without the quadratic interaction terms. This finding suggests that if researchers want to predict behavior directly, without relying on intentions as a mediator, there may be some utility to including temporal distance in their model. In particular, there was a main effect of exam proximity on behavior, which could be seen to support Steel and Konig's temporal motivation theory (2006). As time to the exam decreased, studying behavior appeared to increase. Attitudes on the other hand, which had so strongly predicted studying intentions at time one, did not predict behavior after accounting for all other terms in the model. It could be seen, though, that PBC continued to play an important and nuanced role in the model. In fact, the possibility of an interaction between PBC and exam proximity indicates that perhaps an actor's perceived control over their ability to study would predict their actual studying behavior only when the exam is more temporally distant. For especially upcoming exams, there was no conditional effect of PBC on behavior. Future research should examine this relationship further; it may be that goal activation (with temporal distance as its proxy in this case) can compensate for low PBC when that goal looms large enough. This interpretation would be supported by research on procrastination. Freund and colleagues' work on goal focus (2012) found that as a deadline approaches, actors enter an urgent phase where outcomes become more salient. McCrea and colleagues (2008) found that actors are less likely to procrastinate when a task is more temporally proximate because this urgency induces a more concrete construal.

In order to further explore the impact of goals on the TPB, it is necessary to capture stronger goal effects and to look more closely at the impact of goals on the intention-behavior gap. The more subtle effect of goal activation may require better controlled circumstances in order to observe, but perhaps goal conflict is more evident in this type of observational design. Study 3 was intended to probe both goal activation and goal conflict simultaneously and focuses

on the impact that such goal considerations may have on actual behavior while accounting for initial behavioral intentions.

Chapter 6: Study 3

6.1 Overview

Ajzen's work on the TPB often instructs researchers that intention must be measured as temporally close as possible to behavior because day-to-day events can intervene at any point to change an actor's original intentions (e.g. Ajzen, 1985; Ajzen & Fishbein, 1980). Meta-analyses in multiple domains of behavior tend to support Ajzen's forewarning, finding a significantly stronger association between intention and behavior over shorter intervals (e.g. exercise, Downs & Hausenblas, 2005; condom use, Sheeran & Orbell, 1998). Sheeran and Abraham (2003) make a strong case that the temporal stability of intentions moderates this part of the intention-behavior gap. Intention stability was operationalized as the within-persons correlation between exercise intentions measured at two separate time points, and intention strength at time 1 moderated the intention-behavior relationship. By extension, if behavioral intentions are viewed as goal-driven then instability in intentions entails a goal systemic shift between time 1 and time 2 (see Kruglanski et al., 2015).

What GST indicates in this context is that intention stability would not be a product of more than just the strength of one's initial intentions. Stability over time would more specifically depend on the dynamic relationships among active goals driving or competing with the particular behavior (see Shah & Kruglanski, 2008 for a review of these dynamics).

One high profile solution to the problem of translating intentions into action has been implementation intentions. According to Gollwitzer (1999), creating a specific plan of action links a person's intended behavior to environmental cues. If-then plans like "if I get home from work before 6, I will exercise" improve upon vague statements of intention ("I intend to exercise") by externalizing acts of self-control, making the fulfillment of intentions almost

automatic when cued (Gawrilow et al., 2011). Meta-analysis finds that making if-then plans has a consistent and significant effect on bringing about behavior above and beyond that of setting the intention itself. What the effectiveness of implementation intentions makes clear is that the activating conditions for goal pursuit are essential to consider when translating intentions into action. An actor's plan to work out at 6pm increases the chance that they actually work out by reminding them of the exercise goal at that time. This suggests that predictions of actual behavior would benefit from an understanding of just how likely the intended behavior is to be cued situationally or cognitively in day-to-day life.

Fazio's MODE model (1990) also highlights how attitudes must be activated before they influence behavior. While Fazio discusses primarily spontaneous behavior, he often makes reference to Ajzen and Fishbein's work on more deliberative actions and suggests that both automatic and controlled components may still play a role (Fazio & Olson, 2014). In the MODE model, behavior is spontaneously activated by learned associations embedded in a situation. Strong enough attitudes will become chronically accessible in an actor's memory, and encountering anything associated with that attitude will trigger an automatic response. On the other hand, the MODE model holds that sufficient motivation and cognitive capacity can replace the need for chronically accessible attitudes. Under these conditions, an actor has the purpose and ability to deliberate and make a rational choice by effortfully consulting their attitudes. Ajzen and Fishbein (2005) suggest that this consultation is the core process by which attitudes become intentions in the TPB. Kruglanski (2015) and his collaborators point out, however, that attitudes towards a behavior (liking) will only translate into behavior if they serve a goal that an actor wants. A person who likes a product at a store, for example, will only purchase that product

if they do not already have enough of that product – there needs to be some active goal that the product will serve.

In light of the MODE model, then, an actor who lacks a strong desire for a goal is unlikely to deliberately consult attitudes towards behaviors which serve that goal. An actor with an active goal, on the other hand, may find those attitudes to be chronically accessible and more easily primed by situational cues and associations. Moreover, under this same premise an actor with an especially strong goal might even skip the deliberative process altogether and engage in goal-serving behaviors without consulting relevant attitudes.

In fact, in their Theory of Reasoned Goal Pursuit (2019), Ajzen and Kruglanski come to a similar hypothesis. They postulate that as the importance or desirability of the goal driving a behavior increases, so too does the stability of the behavioral intention over time. One mechanism for this may be that any time the goal is active and in focus for a person, it continuously cues them to enact supportive behaviors.

Conceptually, it's as simple an idea as the fact that one is more likely to eat when they are hungry. An active and dominant hunger state continuously prompts a person to seek out food, independent of attitudes toward food overall. Indeed, attitudes towards food are likely determined in a large part by one's hunger state. If the goal of reducing hunger waxes and wanes throughout a single day, consider its instability over the weeks and months that typify studies using the TPB model. In order to predict actual behavior over time, information about attitudes at one moment would seem insufficient. We would benefit from collecting information that would allow us to predict the extent to which the goals that helped determine that attitude are likely to be active over time.

As an example, the goal to lose weight is likely often associated with exercise intentions. If the weight loss goal is highly desirable, then it is more likely to remain in place on a day-to-day basis and out compete other, newly-activated goals – continuously prompting a person to engage in exercise behaviors. Further, if I could measure not just the importance of weight loss but also the extent to which other active goals tend to compete with it day-to-day, we would be able to make even more stable predictions about how exercise intention will translate into exercise behavior. Research from health psychology already suggests that competing goals have an effect on daily exercise behavior, even after accounting for PBC. Evaluating a TPB-inspired exercise intervention, Payne et al. (2010) found that job demands measured through a daily questionnaire moderated the relationship between exercise intentions and behavior. Though intention and PBC did predict behavior to some extent, it appears that competing goals related to work obligations disrupted this relationship significantly. Applied research such as this, however, has yet to be theoretically integrated with the TPB (Presseau et al., 2013).

Therefore, in order to bridge the TPB's intention-behavior gap, the first aim for this study is to examine the impact of active goals and competing goals on the relationship between an actor's intention and actual behavior over time. The overall dominance of a relevant goal – high commitment and low competition with other goals – should be associated with greater translation of intentions into behavior.

The second aim of this study is to also address the diversity of behaviors to which the TPB has been applied. The TPB has been described as a "content-free model" in that Ajzen intended its predictions to be relevant for a wide range of potential behaviors (Griva et al., 2010). The degree to which a relevant goal is active, then, should impact the TPB's predictions for a similar variety of behaviors. And while the studying behaviors examined in Study 2 represent

one domain that is highly relevant to college students, students will realistically be concerned with a multitude of other potential goals at any given time. To demonstrate that the same principle is involved irrespective of the specific behavior would greatly extend the previous results.

6.2 Hypotheses

As in Studies 1 and 2, my first hypothesis is intended to show that attitudes, subjective norms, and PBC should predict intentions in an initial survey (hypothesis 1). As detailed below in the Procedure section, this study involved multiple behaviors written in by each individual participant. It would demonstrate consistency with other TPB research to show that the basic model succeeds at predicting intentions even when the particular behaviors in question are not standardized across participants.

For this study, I also introduced a time perspective variable to capture individual differences in long-term thinking and goal-setting. As has been demonstrated in prior research (see section 6.5 for more detail), an orientation toward the future is hypothesized to moderate the relationship between intention and behavior (hypothesis 2). In other words, future oriented participants were expected to be more successful in translating intentions into behavior because they are more successful at keeping long-term goals in mind over time.

The next set of hypotheses introduce the study's novel moderators: goal conflict and goal commitment. For each goal and each participant, goal conflict (measured using the SIM procedure explained below in section 6.4 Procedure) should moderate the relationship between behavioral intention at time one and actual behavior a week later (hypothesis 3a). Including an interaction between intention and goal conflict in a model predicting behavior should explain a significantly increased amount of variance in behavior. Specifically, higher conflict with a focal

goal is anticipated to weaken the relationship between intention and behavior, while low conflict strengthens that link. The SIM procedure operationalized goal conflict symmetrically, such that it captured conflict between goals whether the focal goal was the cause or the victim of conflict with another goal. In other words, if an actor indicated that pursuing a particular goal was to some extent mutually exclusive with pursuing other important priorities, I expected they would be less likely to act on their intentions related to that particular goal.

Goal commitment should also moderate the intention-behavior relationship (hypothesis 3b). A strong commitment to pursuing a goal should indicate that behaviors relevant to that goal are more likely to be cognitively activated on a day-to-day basis. The Theory of Reasoned Goal Pursuit proposes that attitudes towards a behavior are determined by the value and expectancy of that behavior with regard to relevant goals. High commitment to those goals would logically suggest that attitudes remain more consistent over time, compared to attitudes around unimportant goals. When a behavior is seen to support a goal to which an actor is strongly committed, intentions at time one should prove more predictive of behavior one week later. For behaviors that mediate low-commitment goals, initial intentions may be called to mind less frequently as time passes and the intention-behavior gap should grow.

In order to explore the effect of individual differences, I also set forth to test a model where time perspective is included as a moderator of the intention-behavior relationship. I expected that hierarchical regression might show some benefit to including conflict and commitment alongside time perspective, but no a priori hypotheses were formed.

Lastly, I expected goal conflict and goal commitment to continue to address the gap between intentions and behaviors at a second follow-up after two weeks' time. According to the vast literature on the instability of intention over time, the intention-behavior gap grows when

behavior is assessed further from the initial declaration of intentions. I hypothesized that the interaction of goal strength and intentions and of goal conflict and intentions would again be evident, even if the intention-behavior gap would otherwise have grown (hypothesis 4a/4b).

6.3 Participants

Participants in Study 3 were again recruited on Prolific, using the same procedure as in Study 1. Adults in the US or UK were eligible to participate, and I aimed to recruit a total of 150 such individuals. Participants were also invited to complete a follow-up survey one week after the initial questionnaire, and a second follow-up another week later. Of the 150 participants who took part in the first survey (T1), 141 returned to complete the first follow-up (T2) and 132 completed the second follow-up as well (T3). Overall, this represents an 88% follow-up rate. As in the previous studies, two attention check items were included. No participant failed both checks, but two individuals had to be excluded from the analyses because they failed one attention check and their goal/behavior responses substantially deviated from the instructions (e.g. responding with the word "Positive" in lieu of a description of a behavior). A final total of 148 participants were included in analyses at T1, 139 at T2, and 131 at T3. All participants were compensated $2.67 USD for the estimated 20 minutes of their time needed to complete the first survey. Participants who completed the follow-up surveys as well were awarded an additional $0.67 USD for each.

Of the overall sample included in analyses (n=148), 141 resided in the UK and the remaining 7 in the US. In their levels of education, participants were similar to those in Study 1. Most participants reported having already obtained a college degree (39%), followed by those with some higher education (30%), a graduate degree (17%), current undergraduates (7%), and those with no higher education (6%). The median age among participants was 38 years old,

ranging from 18 to 71 (one participant seemed to have mistakenly recorded an age below 18, but committed no other evident errors and certified that they were an adult). 90 of the participants were female and 58 were male.

6.4 Procedure

The procedure for Study 3 was again purely observational with no experimental manipulation. Instead, the purpose was for participants to think of several of their own goals and behaviors that would help them reach those goals. They responded to items related to the TPB and to goal commitment and conflict. The follow-up surveys then provided an opportunity to assess the extent to which they had engaged in these specified behaviors over the previous week.

The initial survey began with a set of demographic items, followed by a section that asked participants to fill in five goals that they might pursue over the next month. The instructions clarified that they could be personal, professional, academic, short-term, long-term, approach, or avoidance goals. Paired with each of the five goals, they were also to include a behavior that would serve it – "one specific thing you could do this week that would be very helpful in getting you where you want to go." Participants listed a wide range of goals and related behaviors. Many participants mentioned health-related goals, such as losing or gaining weight. Participants with these goals listed behaviors such as "eat less sugar" or "eat more calories" (respectively). Some participants described broad, abstract goals such as to "regain my enthusiasm for being creative" for which the relevant behavior was to "start sketching again every day." Others mentioned specific, concrete goals, for instance "to improve my consistency with my golf driver." In this particular case, the participant said that in order to achieve this goal, one behavior would be to "practice not over swinging."

In the next section, participants responded to items from the Hawking, Williams, and Klein Goal Commitment Scale (HWK; Klein et al., 2001) detailed below in section 6.5 Measures. For each goal, participants were reminded of the phrase they had written. Afterwards, participants responded to TPB items related to each of the five specific behaviors they had listed. Again, they were reminded of what they had written for each.

The final two sections of the survey at T1 were the goal conflict matrix and the Zimbardo time perspective inventory. To assess conflict between goals, each of a participant's five goals was paired with each of the other goals in a set of ten pairwise comparisons (see section 6.5 Measures for more detail). For each comparison, participants were again reminded what they had written for each of the goals being compared. After completing this measure, participants completed the 22-item short form of the time perspective inventory (detailed in section 6.5 Measures).

One week after the initial survey, I contacted participants through Prolific with an invitation to complete a brief follow-up survey for additional compensation. This survey included a reminder of the five goals and behaviors each participant had written previously. It asked participants to think again about their commitment to each of the goals at this point in time and complete the HWK inventory for each goal. They were also instructed to think about their attitudes, subjective norms, and PBC for each behavior at this point in time. They completed the TPB scales with intention items focused on the week ahead and an additional two items asking about their behavior over the previous week. As in Study 2, behavior was measured in both in objective terms related to the number of days on which participants engaged in each behavior and subjectively in terms of how much they felt they had done. Lastly, this same follow-up questionnaire was repeated another week later for additional compensation.

6.5 Measures

TPB Variables (see Appendix H)

Attitudes. As in Studies 1 and 2, these items were adapted from a measure by Leone and colleagues (1999). Attitudes were captured using four semantic-differential items on 7-point scales. Participants were asked whether the behavior they had written in previously would be useful/useless, rewarding/punishing, wise/foolish, and positive/negative. The items were recoded -3 to 3 as before (see Fishbein & Ajzen, 2010). A composite measure of attitudes towards studying was then obtained by summing the four items.

Subjective norms. The same procedure was used to assess subjective norms as in Studies 1 and 2. The specific significant others that participants named for the first behaviors were carried forward by default for each of the other four behaviors for convenience, although participants were able to make changes if they desired. On the follow-up surveys, participants were able to write in new significant others. Again, items were recoded -3 to 3, where -3 represents the most negative value (i.e. highly disapprove). The three items were summed to create a composite.

Perceived behavioral control. PBC was measured with the same item as in Studies 1 and 2.

Note: attitudes, subjective norm, and PBC were all measured again at T2 by the same mechanisms and yet again at T3. At each point, participants were instructed to think of their current feelings about each behavior.

Intention. Intentions were assessed at T1 as in Studies 1 and 2; they were instructed to think about whether they intended to engage in each of the five behaviors over the next week.

Behavior. At T2 and T3, participants reported their behavior with two 7-point items. As in Study 2, participants indicated the number of days in the past week on which they had engaged in each behavior for a significant amount of time (zero through seven days) and how much they subjectively felt they had engaged in the behavior (very little to very much) (Leone et al., 1999).

Moderator Variables

Goal Commitment. Participants were asked to fill out the revised Hawkins, Williams, and Klein Goal Commitment Scale (HWK) for each of their five listed goals (Klein et al., 2001). The HWK has been demonstrated to be a psychometrically sound indication of one's determination to reach a particular goal. It includes five 7-point Likert items which presented respondents with statements anchored by "disagree very much" to "agree very much." Examples of these statements included "I am strongly committed to pursuing this goal" and "quite frankly, I don't care if I achieve this goal or not" (reverse-scored). (See Appendix G for more detail.) For each goal, a composite value was computed from the mean of the five items. Values were scored such that high values indicated strong goal commitment, and low values represented indifference towards the goal.

Goal Conflict. Goal conflict was assessed using an adaptation of the Striving Instrumentality Matrix (SIM; Emmons & King, 1988). Traditionally, the SIM would present a 5 x 5 matrix with all five goals presented as rows and columns. At each intersection, the participant would be instructed to answer whether success on one of these goals would have a helpful, harmful, or no effect at all on the other goal. This rating is made on a scale ranging from "very harmful" (-2) to "no effect" (0) to "very helpful" (2). My adaptation presented each paired comparison individually, in a randomized order to reduce the visual complexity of a matrix chart

and to control for potential ordering effects. Participants saw, for example, the goal of "Academic Success" displayed on the right side of the screen and the goal of "Being Social" on the left. They were instructed to consider whether pursuing either one of the goals would have a "helpful, harmful, or negligible effect on the other." After marking their rating, another paired comparison was shown until all 10 had been answered (see Appendix I). For each individual goal, four values ranging from -2 to 2 represented the relationships between that goal and the four others. These conflict values were summed to create a composite ranging from -8 to 8. Lastly, this value was reverse-scored such that high values indicated greater conflict (counterfinality), neutral values indicated no effect, and low values reflected goals that supported one another (multifinality or mediation of one by the other). This composite represented the degree to which each goal either caused or was affected by friction with the other goals in the list.

Time Perspective. Time perspective is an individual difference variable reflecting one's orientation towards the past, present, and future (Zimbardo & Boyd, 1999). People oriented towards the future tend to be good at setting goals and meeting long-term obligations, while they may neglect social relationships and fail to appreciate the moment. People oriented towards the present are less distracted by their anxieties, but may find it harder to delay gratification and plan for the future (Keough et al., 1999). The Time Perspective Inventory assesses the influence of this construct on a person's judgments, decisions, and actions. It has been shown to have an effect on the TPB's predictions for health-related behaviors in particular, and is implicated in a range of other behaviors as well (Crockett et al., 2009). It stands to reason that future-oriented individuals would have an easier time translating their intentions into behavior over time. Researchers studying the TPB and vaccination behaviors, for instance, have proposed this

measure specifically as a moderator of the intention-behavior gap (Griva et al., 2010). This variable was explored as a potential moderator of the intention-behavior relationship in order to demonstrate consistency with prior research.

To this end, the study included a 22-item short form of the inventory (see appendices of Keough et al., 1999; D'Alessio et al., 2003). 12 of the items belong to the future time perspective (FTP) subscale which was most relevant to the present concerns. The 5-point items asked participants to rate statements from "very untrue" to "very true." Sample statements included "meeting tomorrow's deadlines and doing other necessary work comes before tonight's play" (future orientation) and "I am able to resist temptations when I know that there is work to be done" (see Appendix J for more detail).[6] The mean of the responses to the items on the FTP subscale was calculated in order to create a composite score (α=.610).[7]

6.6 Results

At T1, participants briefly described five goals that they had and wrote in one behavior for each. On average across all goals, participants recorded a generally high commitment (M = 5.50 out of a range from 1 to 7, SD = .88). Conflict across all goals was overall low, with composite scores indicating slightly more support between goals than conflict (M = -2.01 out of a range from -8 to 8, SD = 2.81). Regarding the behaviors participants listed, attitudes were on average highly positive (M = 8.25 out of a range from -12 to 12, SD = 4.01). Subjective norms were quite positive as well (M = 5.91 out of a range from -9 to 9, SD = 3.05). PBC was generally positive (M = 4.42 out of a range from 1 to 7, SD = 1.80). Most people strongly intended to engage in the behaviors they had described (M = 10.10 out of a range from 1 to 14, SD = 2.94).

[6] Note: one item had to be removed from the FTP scale due to translation errors ("It gives me pleasure to think about my past")

[7] Though reliability was low for this subscale compared to other scales used in this study, it is reasonably consistent with D'Alessio and colleagues' own results (α=.67).

Participants reported an average value for future time perspective that was consistent with prior research (M = 3.40 out of a range from 1 to 5, SD = .47) (Keough et al., 1999). Finally, the average participant reported that one week after the initial survey (T2), they enacted their behaviors for a significant amount of time on approximately four of the previous 7 days on average (pooled across each of the five behaviors listed by each participant), M = 4.26 out of a range from 0 to 7 days, SD = 2.19. After two weeks (T3), they averaged a similar number of days out of the previous 7, M = 4.31, SD = 2.23.[8]

My first hypothesis anticipated that at T1, attitudes, subjective norms, and PBC should predict behavioral intentions. Because each participant repeated the TPB items for five different behaviors, I ran an unconditional means model to determine how much of the variance in behavioral intentions was explained at each level ($I_{1\text{-}148}$ = person, $J_{1\text{-}5}$ = each assessment). In other words, I measured how much of the total variance in behavioral intentions came from clustered differences between participants or from individual differences between each of the five assessments. Results indicated that differences between assessments ($r_{ij} = 5.69$, $p < .001$) were more important than between-person differences ($u_{0j} = 2.98$, $p < .001$). An ICC of .343 revealed that 34% of total variation in behavioral intentions was due to differences between participants. This suggests that a multilevel model would be necessary for further analyses (design effect = 7.37).

I ran a multilevel model to examine whether attitudes, subjective norms, and PBC were associated with behavioral intentions. The TPB predictors were disaggregated into their within-

[8] Behavior was also measured subjectively (how much the participant felt they had engaged in each behavior). The objective and subjective results were highly correlated ($r = .82$, $p < .01$ at T2, $r = .80$, $p < .01$ at T3). Hypotheses were tested using both outcome variables, and it was found that the objective item was generally the more conservative value of the two. Due to this strong correlation and a preference for the more conservative estimate, only the analyses with objective behavior as the outcome are reported here.

person (group mean centered) and between-person (group means) effects. All three predictors were significantly associated with T1 intentions both in terms of interpersonal and inter-behavioral differences at $p < .01$ (with the sole exception of between-person subjective norms, $p = .18$) (see Table 12 below for detail).

Table 12
Effects of Attitudes, Subjective Norms, and PBC on Intentions at T1

						95% Confidence Interval	
Parameter	b	Std. Error	df	t	*p*	Lower Bound	Upper Bound
Intercept	5.126	0.540	144	9.500	0.000	4.060	6.193
Attitude (bp)	0.357	0.048	144	7.377	0.000	0.262	0.453
Norm (bp)	-0.085	0.063	144	-1.349	0.179	-0.209	0.040
PBC (bp)	0.568	0.105	144	5.398	0.000	0.360	0.776
Attitude (wp)	0.188	0.030	589	6.244	0.000	0.129	0.248
Norm (wp)	0.104	0.039	589	2.654	0.008	0.027	0.180
PBC (wp)	0.755	0.055	589	13.709	0.000	0.647	0.863

Note: bp = between-person effects, wp = within-person effects

My next set of hypotheses involved the relationship between behavioral intentions and actual behavior. Each participant recorded their actual behavior over the past week pertaining to each of their five listed behaviors. Individual behavioral assessments were thus considered to be clustered under persons. These assessments were completed both one week and two weeks after intentions were recorded, amounting to two separate time points.

First, I tested the prediction that future time perspective at the person level would moderate the effect of intentions on actual behavior. Behavior at T2 and T3 was regressed on intentions (group mean centered) and future time perspective (grand mean centered), and a product term representing their interaction. A crossed multilevel model was used because time points (T2 and T3) were nested within the cells of the two-way cross-classification of behavior type by person. Contrary to predictions, the interaction between intentions and time perspective

was not significant, p = .194. There was a main effect of future time perspective on behavior such that people more oriented toward the future were significantly more likely to take action, b = .75, p < .01. There was no main effect of intention on behavior, regardless of the level of future time perspective, p = .356 (see Table 13).

Table 13
Effects of Intentions, Future Time Perspective, and Intention x Time Perspective Interaction on Behavior

						95% Confidence Interval	
Parameter	b	Std. Error	df	t	*p*	Lower Bound	Upper Bound
Intercept	4.275	0.117	137.741	36.464	0.000	4.043	4.507
FTP	0.750	0.255	137.876	2.940	0.004	0.245	1.254
Int	0.025	0.028	559.843	0.924	0.356	-0.029	0.080
FTP x Int	-0.089	0.069	562.298	-1.301	0.194	-0.224	0.046

The focal hypotheses for Study 3 concerned the interaction between goal commitment and intentions and between goal conflict and intentions, as they each predicted actual behavior. All three of these variables were disaggregated into their within- and between-person effects (entered into the respective model both group mean centered and as group means).

First, I had expected that goal conflict would moderate the relationship between intentions and T2 behavior (hypothesis 3a). Behavior at T2 was regressed on T1 intentions, goal conflict, and a product term representing their interaction. Contrary to predictions, the interaction between goal conflict and intentions was not significant, p_{wp} = .34, p_{bp} = .88. No relationship between intentions and behavior was detected, p_{wp} = .45, p_{bp} = .90. There was also no main effect of goal conflict, p_{wp} = .34, p_{bp} = .94 (see Table 14).

Table 14
Effects of Intentions, Goal Conflict, and Intention x Conflict Interaction on T2 Behavior

						95% Confidence Interval	
Parameter	b	Std. Error	df	t	*p*	Lower Bound	Upper Bound
Intercept	4.334	0.950	135.009	4.562	0.000	2.455	6.214
Conflict (wp)	0.048	0.050	553.241	0.952	0.342	-0.051	0.147
Intention (wp)	0.024	0.032	553.254	0.762	0.447	-0.038	0.086
Conf x Int (wp)	-0.012	0.023	638.509	-0.541	0.589	-0.058	0.033
Conflict (bp)	0.023	0.303	134.975	0.076	0.940	-0.577	0.623
Intention (bp)	-0.012	0.093	135.026	-0.131	0.896	-0.196	0.172
Conf x Int (bp)	-0.005	0.030	134.997	-0.154	0.878	-0.063	0.054

Note: bp = between-person effects, wp = within-person effects

I also examined the interaction between goal conflict and intentions for behavior at T3 (hypothesis 4a). T3 behavior was regressed on disaggregated intentions and goal conflict, and a product term representing their interaction, while controlling for the lagged effect of behavior at T2. The interaction between goal conflict and intentions did reach significance, $b_{wp} = -.04$, $p_{wp} < .05$ .73, $b_{bp} = -.05$, $p_{bp} < .05$ (see Table 15). There was no main effect of within-person goal conflict ($p_{wp} = .79$) or intentions $p_{wp} = .73$, $p_{bp} = .40$) on T3 behavior after accounting for the other terms in the model. There was some evidence that conflict between one's goals overall independently predicted T3 behavior, $p_{bp} < .05$. T2 behavior itself also had an effect on T3 behavior ($p < .001$).

Table 15

Effects of Intentions, Goal Conflict, and Intention x Conflict Interaction on T3 Behavior

Parameter	b	Std. Error	df	t	*p*	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Intercept	2.206	0.689	129.082	3.201	0.002	0.842	3.569
T2 Behavior	0.612	0.030	632.638	20.365	0.000	0.553	0.671
Conflict (wp)	0.011	0.041	508.607	0.265	0.791	-0.070	0.091
Intention (wp)	0.009	0.026	508.206	0.345	0.730	-0.042	0.059
Conf x Int (wp)	-0.042	0.018	608.373	-2.273	0.023	-0.078	-0.006
Conflict (bp)	0.495	0.216	120.502	2.292	0.024	0.067	0.923
Intention (bp)	-0.056	0.066	120.633	-0.848	0.398	-0.186	0.075
Conf x Int (bp)	-0.053	0.021	120.578	-2.499	0.014	-0.094	-0.011

Note: bp = between-person effects, wp = within-person effects

Figure 2

Conditional Intention x Goal Conflict Interaction, Behavior after 2 Weeks (Within-Person Effects)

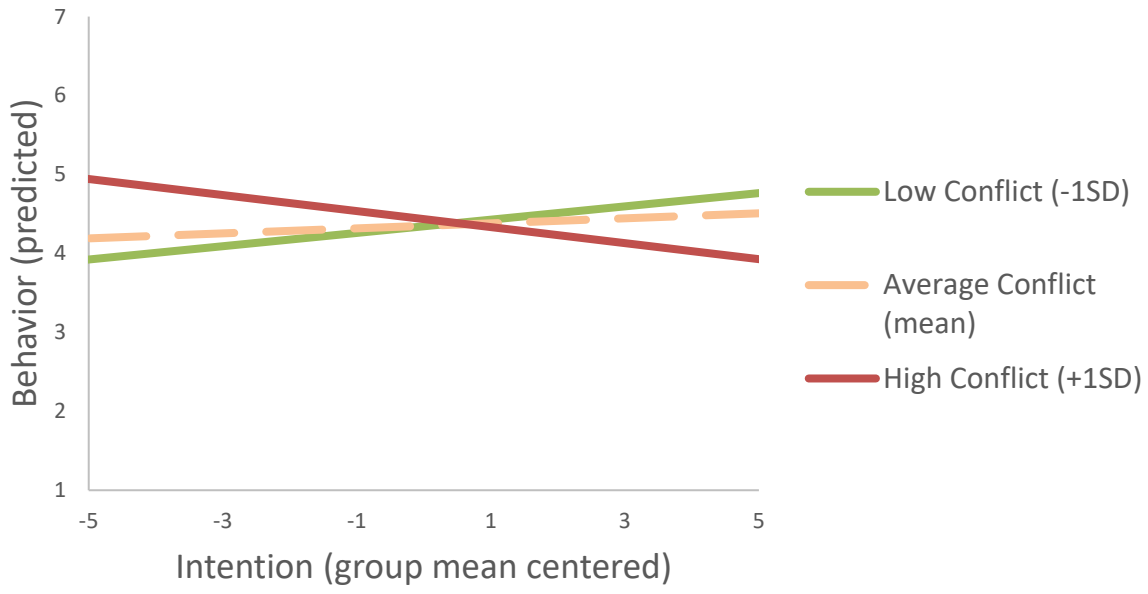
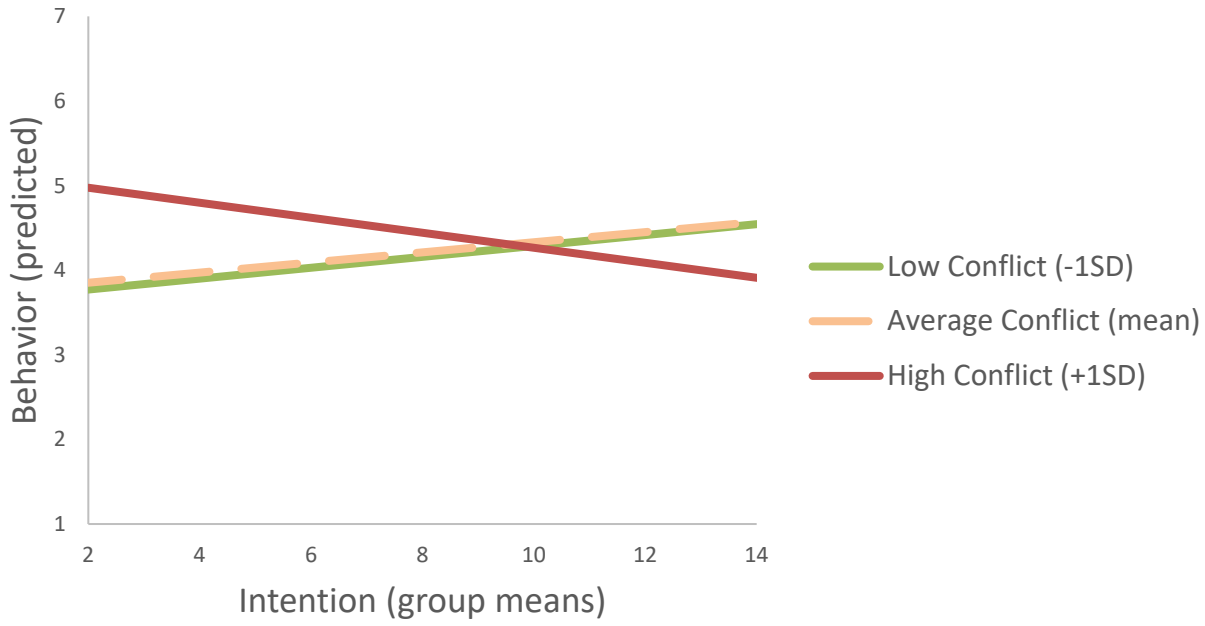


Figure 3

Conditional Intention x Goal Conflict Interaction, Behavior after 2 Weeks (Between-Person Effects)



Second, I had hypothesized that goal commitment would similarly moderate the relationship between intentions and T2 behavior (3b). Behavior at T2 was regressed on intentions, goal commitment, and a product term representing their interaction. Contrary to predictions, the interaction between goal commitment and intentions was not significant, p_{wp} = .41, p_{bp} = .45 (see Table 16). No relationship between intentions and behavior was detected after accounting for goal conflict, nor were there any other significant main effects. These results indicated that after one week, neither intentions, goal commitment, nor their interaction helped to predict behavior.

Table 16
Effects of Intentions, Goal Commitment, and Intention x Commitment Interaction on T2 Behavior

						95% Confidence Interval	
Parameter	b	Std. Error	df	t	*p*	Lower Bound	Upper Bound
Intercept	-1.127	4.323	134.980	-0.261	0.795	-9.677	7.423
Commitment (wp)	0.185	0.106	553.159	1.740	0.082	-0.024	0.393
Intention (wp)	-0.001	0.034	554.533	-0.022	0.983	-0.068	0.066
Comm x Int (wp)	-0.036	0.044	666.841	-0.827	0.409	-0.122	0.050
Commitment (bp)	1.119	0.822	135.179	1.361	0.176	-0.507	2.744
Intention (bp)	0.264	0.430	135.054	0.614	0.540	-0.586	1.114
Comm x Int (bp)	-0.061	0.080	135.197	-0.762	0.447	-0.219	0.097

Note: bp = between-person effects, wp = within-person effects

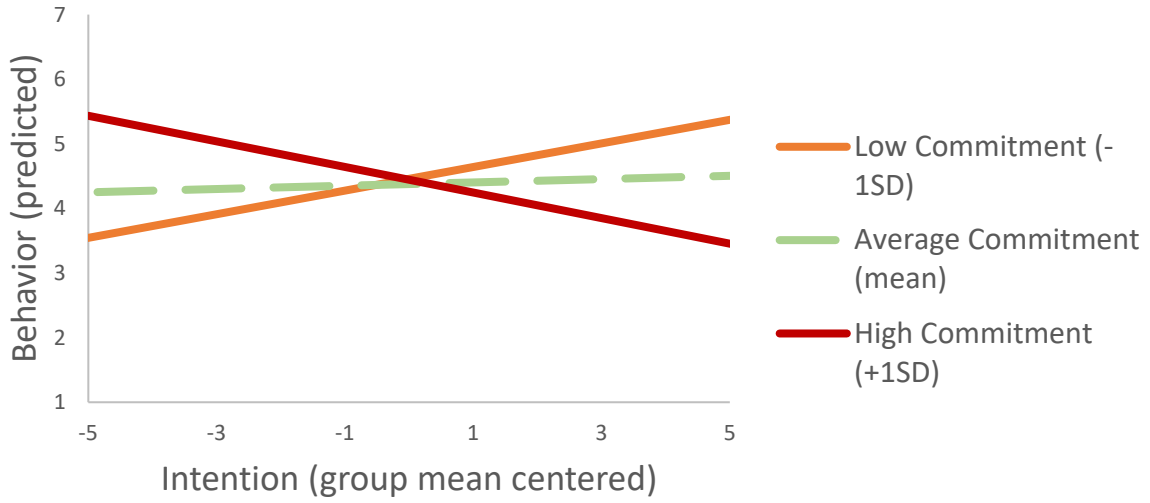
I then examined the same interaction between goal commitment and intentions for T3 behavior after two weeks. Behavior at T3 was regressed on intentions, goal commitment, and a product term representing their interaction (controlling for the lagged effect of behavior at T2). This analysis revealed a significant interaction between goal commitment and intentions, but only for within-person effects, $b_{wp} = -.11$ $p_{wp} < .01$ (see Table 17). There were no significant main effects of commitment or intentions. I then examined conditional effects of intentions at low (1 SD below the mean) and high (1 SD above the mean) levels of goal commitment. Counter to my hypothesis, when goal commitment was low, higher intention predicted increases in actual behavior at T3. When goal commitment was high, on the other hand, the relationship between intention and behavior weakened and trended negative (see Figure 4).

Table 17
Effects of Intentions, Goal Commitment, and Intention x Commitment Interaction on T3 Behavior

Parameter	b	Std. Error	df	t	*p*	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Intercept	1.075	3.251	121.036	0.331	0.741	-5.360	7.511
T2 Behavior	0.609	0.030	635.778	20.103	0.000	0.549	0.668
Commitment (wp)	-0.054	0.087	509.455	-0.618	0.537	-0.226	0.118
Intention (wp)	0.008	0.028	509.994	0.303	0.762	-0.046	0.063
Comm x Int (wp)	-0.105	0.035	628.210	-2.967	0.003	-0.174	-0.035
Commitment (bp)	0.072	0.620	121.653	0.116	0.908	-1.155	1.299
Intention (bp)	-0.050	0.317	121.175	-0.158	0.875	-0.678	0.578
Comm x Int (bp)	0.015	0.059	121.371	0.250	0.803	-0.102	0.132

Note: bp = between-person effects, wp = within-person effects

Figure 4
Conditional Intention x Goal Commitment Interaction, Behavior after 2 Weeks (Within-Person Effects)



6.7 Discussion

Study 3 was an ambitious test of the relationship between goals and the TPB which yielded several notable results. Compared to Studies 1 and 2, this design was able to test

predictions for actual behavior over time across a wide range of respondent-generated behaviors. I began by investigating the relationship between attitudes, subjective norms, and PBC and intentions reported on the initial questionnaire. As before, this analysis was intended to demonstrate consistency with the extant TPB literature. In this case, my design deviated from most other published TPB studies in that participants were able to freely report on behaviors that were relevant to them, rather than a single behavior standardized across respondents and selected a priori by the researcher.

Despite the substantial deviation from precedent, I found that attitudes and PBC were significantly related to intentions, even pooled across the many individualized behaviors each participant supplied. I did not find evidence of a relationship between subjective norms and intention, which reflects similar results obtained in Study 1 and referenced in TPB meta-analyses (e.g. Rich et al., 2015; Hausenblas et al., 1997). It is not entirely surprising, therefore, that across a multitude of various behaviors, subjective norms did not emerge as a significant predictor of intentions, and that attitudes did exhibit a strong such relationship. I interpret the results of this analysis as support for the methodology I employed, as it was able to produce – for the most part – the traditional results of a TPB study predicting behavioral intentions.

My focal predictions for this study related to goals and the gap between intentions and behavior. I examined time perspective as a potential moderator of the intention-behavior gap. Researchers have discussed time perspective in goal-related terms, suggesting that expectations, goal-setting, and behavior are influenced by the temporal frames through which people view the world (Zimbardo & Boyd, 2015). I anticipated that this variable may capture the effect of goals on intentions, such that an orientation toward the future may help individuals better act on their plans over time. Contrary to this expectation, analysis of the interaction between intentions and

future time perspective predicting behavior did not provide support for moderation in this sample. The relationship between future time perspective and behavior, however, was consistent with other extant research findings. A tendency to sacrifice short-term rewards in the pursuit of future goals has demonstrated an association with a variety of positive behaviors, especially in the domain of personal health (Griva et al., 2013). The behaviors listed by participants in this study often involved health goals or other long-term domains of self-improvement. This finding suggests that accounting for individual differences in goal pursuit helps explain behavioral outcomes, but it falls short of providing a mechanism for directly integrating goals into the TPB.

While future time perspective did not seem to interact with intentions, I did produce some evidence suggesting that goal conflict may well do so. I operationalized conflict as the extent to which each listed goal was easier or harder to pursue alongside each other goal a participant had listed. As opposed to the person-level differences captured by future time perspective (and many similar individual difference variables related to goal pursuit), this measure accounted for both person and goal-level differences. GST emphasizes the position of a goal in a hierarchy of many other competing or complementary priorities. A person may pursue goals that are multifinal with (supportive of) one another or counterfinal to (detrimental to) some other objective. A tendency to act on one's intentions does not specifically account for the interrelations between goals at the present moment that may make it more or less possible to act on those intentions.

At T2, one week after participants recorded their behavioral intentions, my analyses did not support an interaction between goal conflict and intentions. At this point in time, neither intentions nor goal conflict predicted behavior. This result echoes the wide intention-behavior gap identified in the analyses of the future time perspective interaction as well. I had hypothesized that intentions would translate into behavior to some extent after one week, but this

effect did not materialize. Nonetheless, I conducted the same analysis at T3, two weeks later. It was surprising, then, to find that after two weeks intentions did predict behavior – but only for behaviors associated with low-conflict goals. It was only after two weeks had passed that behavior began to reflect participants' initial intentions. Moreover, a traditional TPB study would not have been able to detect this effect without accounting for the level of conflict between individual goals. It is telling that in a study designed to track many different behaviors over time, assessing intentions alone would have been insufficient to predict behavior. An integrated understanding of GST and the TPB provided a mechanism for strengthening behavioral predictions, despite some caveats.

This pattern of results differed substantially from my initial hypotheses. Most notably, I had expected that this interaction would emerge at both time points. Why then was the interaction only significant when behavior was measured two weeks later? Perhaps the reminder provided by the assessment one week later spurred participants to action. One indication was the strong relationship between behavior at T2 and behavior at T3. Additional support for this interpretation comes from the participants themselves: a number of participants left comments on the follow-up surveys indicating that the surveys had themselves been helpful for holding themselves accountable. One such participant explained that after completing the follow-up surveys "although I am not achieving [my goals] in a way that I would like, I feel more aware of them and am constantly trying to push myself to do these things more." Another participant wrote plainly that "writing down my goals has helped me to focus." The one-week follow-up could have reminded participants of their initial intentions, activating goal pursuit as suggested by Gollwitzer's concept of implementation intentions (1999).

Several other participants explained that they had not progressed as much as they would have liked due to other competing priorities or life events. For instance, a participant wrote the "this week's results may not have been 'normal' for me as I have been off work quite unwell" and several others also reported having been ill. On the one hand, this suggests that the goal conflict measure captured only a small amount of conflict between goals. The near-infinite array of goals present in any one individual's goal system is likely impossible to fully account for. Future research may obtain more consistent results, for instance, if participants judged competition within a larger set of goals or responsibilities. On the other hand, the inclusion of only two time points, both of which involved only seven potential days to engage in the focal behaviors, may also have been insufficient. Future research that tracks behavior over longer periods of time may have a greater ability to detect an interaction between goal conflict and intentions.

Lastly, I tested the interaction between goal commitment and intentions. Again, I was unable to find a significant interaction when behavior was measured one week later. There was also no significant main effect of intentions or commitment, as had been the case for goal conflict as well.

To further investigate the potential interaction between intentions and goal commitment, I conduced the same analysis at T3, two weeks later. The commitment-intention interaction at T3 was indeed significant, but only when assessed at the within-person level. The shape of the relationship between intentions and behavior, however, was difficult to interpret. Intention was significantly and positively associated with behavior when a participant felt less committed to a relevant goal, compared to their other goals. When a participant was more committed to the goal, the relationship between intention and behavior weakened. The relationship seemed to be at its weakest when commitment was neither high nor low. Future research could determine whether a

curvilinear interaction would better represent these effects. Perhaps commitment did not properly operationalize goal activation, but rather the overall gravity of one's goals. Larger, high importance goals may have been more difficult to successfully approach, or participants may have felt they made less progress than they intended given higher initial expectations. Nonetheless, these results indicate that goal properties do interact with the TPB's behavioral predictions. Understanding the precise nature of this interaction will require further research.

Taken together, this study's findings highlighted the often-tenuous link between one's intentions and actual adherence to those plans over time. In order for its predictions to have consequential implications, the Theory of Planned Behavior relies heavily on the link between these initial intentions and behavior. When attitudes, subjective norms, and PBC are linked to intentions, and those intentions predict actual behavior, then measuring or even intervening on those variables can have a real-world impact in the future. If, however, the link between intentions and behavior is compromised or unreliable, then the utility of the overall model is called into question.

In this study, I observed that indeed the TPB predictors reasonably predicted intentions in an initial assessment. Behavior after one or two weeks, however, was another matter. I could not find support for the key intention-behavior link. It is possible that the uniquely open-ended nature of the behaviors in the present design was responsible for this wide intention-behavior gap, as the TPB measures typically focus on a single, a priori behavior at a time. Even so, when I accounted for some properties related to participants' goals it became possible to make behavioral predictions despite the gap. Future work to explore these findings could benefit from studying the TPB's full mediation path from attitudes through intentions to behavior in order to determine the precise model that best represents goal systemic contributions to the TPB. Though

results here were mixed, they nonetheless provide key support for the theoretical integration underlying this project, justifying future research on the subject.

Chapter 7: Future Directions and Conclusion

This research project followed many calls for the improvement of the Theory of Planned Behavior. Most recently, scholars have argued that goal context is essential to making any predictions of behavior and that goals have many implications for the TPB (Kruglanski et al., 2015; Ajzen & Kruglanski, 2019). The three studies outlined here put some of these theoretical contributions to the test and provided some of the first empirical evidence that the TPB's predictions for intentions and behavior are responsive to situations with high goal conflict or activation. Further, it is clear that incorporating goal systemic properties into the TPB can explain greater variance in intentions and behavior than before. The results obtained in this project suggest that accounting for conflict between one's goals can even forestall situations in which intentions would not otherwise predict behavior.

According to the first two studies, the activation of behaviorally relevant goals proved difficult to detect and manipulate. I collected some evidence that goal activation had an effect on the TPB's predictions, especially when high goal activation was in opposition to other relevant goals, or when high activation compensated for low levels of behavioral control. Having a strong, even existential goal (as in Study 1, vignette two) seems to determine behavioral intentions even when attitudes are inconsistent. In Study 2, accounting for goal activation (operationalized as temporal proximity to an exam) was able to improve the overall strength of the TPB model. Goal activation also helped explain behavior undertaken despite low PBC when a deadline was quickly approaching.

The third study added that accounting for individual goal systems helps clarify situations where intentions fail to predict behavior. Goal systemic competition between goals did appear to play a role in the TPB, though it was evident only after a certain amount of time had elapsed

between intentions and behavior. I found evidence that high levels of goal conflict were partially responsible for weakening the relationship between intentions and behavior. Results for the impact of goal commitment were more mixed, but nonetheless raised interesting opportunities for further study. Additional research would be necessary to clarify how goal commitment could best be incorporated into the TPB, but Study 3 did provide meaningful future directions for this type of research.

It is worth mentioning that this project tested only a handful of the hypotheses that could be generated by this theoretical framework. Ajzen and Kruglanski (2019) suggest that a number of goal relevant phenomena may occur in the TPB, including differential effects of procurement and approval goals on attitudes and subjective norms. The Theory of Reasoned Goal Pursuit suggests a number of hypotheses involving differential effect of different types of goals (i.e. procurement and approval goals). This project did not draw a distinction between different goal types, but rather looked at the effects of goal systemic properties overall. Many of the specific goals I investigated related to procurement goals (e.g. academic achievement, health) and attitudes, whereas further research could investigate the relationship between approval goals and subjective norms, for instance. Additionally, other techniques such as daily diary methods or EMA may provide more persuasive evidence for the effect of goals on behavior over time, and could help explain the mixed results of Study 3 after one week and two weeks. Semantic priming or other more subtle strategies for eliciting goal activation would probe the more nuanced effects of goal activation that were evident only in the strong, exercise vignette in Study 1. Similarly, Study 2's use of temporal proximity to exams to operationalize goal activation may be substituted for subtle academic achievement primes in order to better illustrate the effects of the TPB when goals are activated or inactivated.

Alternative designs may provide opportunities to explore some of this project's findings in greater detail. Study 2's cross-sectional design attempted to capture differences in temporal proximity by comparing participants with different deadlines, and this initial work may justify a more resource-intensive longitudinal approach that would operationalize goal activation through within-person differences. Likewise, the observational design of Studies 2 and 3 was useful as an initial test of the theory, and additional work could test similar hypotheses experimentally. Additionally, while Study 3 allowed for the inclusion of many different types of behaviors side-by-side, further research could explore more precise differences between types of behaviors or look at goal conflict in an experimentally controlled setting. This project aimed primarily to gather initial evidence for the benefits of integrating GST and the TPB, and was successful in identifying a number of paths for future investigation.

These findings may have been somewhat limited in scope, considering the far-ranging implications of this conceptual framework, but they allow the field to progress in essential new directions. The TPB has traditionally had limited applicability over long periods of time, unexplained differential effects across different types of behavior, and serious difficulty translating into strategies for intervention. A better understanding of goal context may finally allow researchers to make stronger and more versatile behavioral predictions without fundamentally changing the underlying model. Researchers should consider goal activation to be a necessary precondition for intentions and behavior and should anticipate situations in which goals relevant to the behavior under study may be more or less salient. Goal competition could similarly account for situations in which actors would appear to act unpredictably and neglect their reported disposition towards a behavior. By illustrating the relevance of goal systemic thinking to the Theory of Planned Behavior, this work has helped to strengthen and expand one

of Psychology's most influential theories of what people will do. Goals are, in more ways than one, the way to go.

Appendices

Appendix A: Study 1 Vignettes

Studying Vignette
Control condition:
For the following questions, please imagine that you are currently taking a college course or training program that is moderately demanding and particularly important for your education and/or career. Imagine that the final exam or project for this course/program is coming up in a week.
Supporting goal condition:
For the following questions, please imagine that you are currently taking a college course or training program that is moderately demanding and particularly important for your education and/or career. Imagine that the final exam or project for this course/program is coming up in a week.

Consider that it is an exam or project you know you would need to spend time preparing for in order to do well. **Looking at your schedule for the week, you have a typical balance of other responsibilities.**
Opposing goal condition:
For the following questions, please imagine that you are currently taking a college course or training program that is moderately demanding and particularly important for your education and/or career. Imagine that the final exam or project for this course/program is coming up in a week.

Consider that it is an exam or project you know you would need to spend time preparing for in order to do well. Looking at your schedule for the week, however, you realize that you have a major project due for a different internship or job that will likely decide the fate of your career. **Any time you spend preparing for one exam/project will definitely harm your preparations for the other.**

Exercising Vignette
Control condition:
For the following questions, please imagine that during a recent doctor visit you learned that you are suffering from a serious illness, but that if you take care of yourself you should be fully healthy again in several weeks.

Exercise is considered physical activity that you purposely engage in for a significant amount of time. For example, this would include activities such as aerobics, badminton, jogging, walking etc., but not activities which form part of your everyday life, such as walking to a bus stop or to your car.
Supporting goal condition:

For the following questions, please imagine that during a recent doctor visit you learned that you are suffering from a serious illness, but that if you take care of yourself you should be fully healthy again in several weeks.

Your doctor also mentions that engaging in physical exercise during the next week could seriously improve your condition and increase your chances of recovering during that time.

Exercise is considered physical activity that you purposely engage in for a significant amount of time. For example, this would include activities such as aerobics, badminton, jogging, walking etc., but not activities which form part of your everyday life, such as walking to a bus stop or to your car.

Opposing goal condition:

For the following questions, please imagine that during a recent doctor visit you learned that you are suffering from a serious illness, but that if you take care of yourself you should be fully healthy again in several weeks.

Your doctor also mentions that engaging in physical exercise during the next week could seriously hurt your condition and decrease your chances of recovering during that time.

Exercise is considered physical activity that you purposely engage in for a significant amount of time. For example, this would include activities such as aerobics, badminton, jogging, walking etc., but not activities which form part of your everyday life, such as walking to a bus stop or to your car.

Appendix B: Study 1 TPB Scale

Note: measures adapted from a TPB scale used to assess test preparation behavior by Leone et al. (1999)

Subjective norms:
Now think about three of the most important people to you right now and indicate how much each of them would approve or disapprove of you [studying/exercising] for a significant amount of time in the next seven days.

	Relationship to this person	Approval						
		Highly approve	Approve	Somewhat approve	Neither approve nor disapprove	Somewhat disapprove	Disapprove	Highly disapprove
Person 1	*text entry*							
Person 2	*text entry*							
Person 3	*text entry*							

Actual attitudes:
Now think about your actual attitude about [studying/exercising]:

Very useful								Very useless
Very rewarding								Very punishing
Very wise								Very foolish
Very positive								Very negative

PBC:

Please indicate how easy or difficult it would be for you to [study/exercise] for a significant amount of time in the next seven days.

Very easy								Very difficult

Attitudes manipulation:
Note: participants were instructed to select the rightmost or leftmost response depending on the attitudes condition to which they were randomly assigned.

Now, please select the **rightmost** response for each of the statements in this question (i.e. Very useless, Very punishing, Very foolish, and Very negative).
My attitude towards [studying/exercising] for a significant amount of time in the next seven days can be described as:

Very useful								Very useless
Very rewarding								Very punishing
Very wise								Very foolish
Very positive								Very negative

Intention:
Note: the instructions for this item instructed participants to imagine they held the attitudes that had selected on the previous item and reminded them of the scenario/goal condition. Below is an example of what a participant in the negative attitudes and opposing goal conditions would have viewed for the exercising vignette.

Imagine that in this scenario, you really did feel that way about exercising. In other words, imagine that you are a person who has **strong, negative attitudes** towards exercising.

Keep in mind the description of the scenario as well.

> Imagine that during a recent doctor visit you learned that you are suffering from a serious illness, but that if you take care of yourself you should be fully healthy again in several weeks.
>
> Your doctor also mentions that **engaging in physical exercise during the next week could seriously hurt your condition and decrease your chances of recovering during that time.**

Now think about what you would actually do. What is the likelihood that you would intend to exercise for a significant amount of time in the next seven days?

Very likely								Very unlikely

Would you plan to exercise for a significant amount of time in the next seven days?

Very true								Very false

Appendix C: Exam Proximity Questionnaire

Instructions:

In this section, you will be asked several questions about your study habits and upcoming exams. If the classes you are taking do not involve standard exams, instead please think about another type of major grading opportunity that you will have to prepare for (e.g. research paper, final project).

What is your next exam that you have to study for? (If your course of study does not involve exams, please write about a paper, project, or other major graded assignment.)
Please describe the exam (or other assignment) in a few sentences.

_____

Objective exam proximity:

When is this exam going to take place/assignment going to be due?

1. Within the next couple of days
2. In about a week
3. In a couple of weeks
4. In a month or so
5. In a couple of months
6. More than a couple of months away
7. So far away that I can not tell when it would be

Subjective exam proximity:

Thinking of that same exam or assignment deadline, how soon do you feel this is?

1. Now or extremely soon
2. Very soon
3. Somewhat soon
4. Somewhat later
5. Much later
6. Extremely far away
7. So far away that I can not tell when it would be

Study Habits (objective):

When should you start studying for this exam/preparing for this assignment?

1. Within the next couple of days
2. In about a week
3. In a couple of weeks
4. In a month or so
5. In a couple of months
6. More than a couple of months away

7. So far away that I can not tell when it would be

Study Habits (subjective):

Thinking again about studying/preparing, how soon do you feel this is?

1. Now or extremely soon
2. Very soon
3. Somewhat soon
4. Somewhat later
5. Much later
6. Extremely far away
7. So far away that I can not tell when it would be

Appendix D: VIEMS Value-Expectancy Scale

Note: adapted from Sanchez et al. (2000) Value Instrumentality and Expectancy Motivation Scale for Test-Taking
Instructions:

Please keep the same exam/assignment in mind as well as the class that it is for as you answer the following questions.

Do you agree or disagree with the following statements?[9]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I would like to do well in this class					
It would be good to have a good grade in this class					
I want to get a good grade in this class					
If I do well on this test, I will have a good chance of doing well in this class					
I think I will do well in the class or position if I get a high test score or a strong evaluation					
How well I do on this test will affect whether I get a good grade in the class					
The higher my test score, the better my chance of doing well in the class					
If I try to do my best on this test, I can get a good grade or a strong evaluation					
If I concentrate and try hard, I can get a high test score or a strong evaluation					
I can get a good score on this test or project if I put some effort into it					

[9] Items 1 – 3 belong to the Valence subscale, 4 – 7 belong to the Instrumentality subscale, and 8 – 10 make up the Expectancy subscale

Appendix E: Study 2 TPB Scale

Note: again, measures adapted from a TPB scale used to assess test preparation behavior by Leone et al. (1999)

Instructions:

Again, please think about studying for this test or preparing this assignment as you answer the following questions.

Attitudes:

My attitude towards doing this behavior for a significant amount of time in the next seven days can be described as:

Very useful								Very useless
Very rewarding								Very punishing
Very wise								Very foolish
Very positive								Very negative

Subjective norms:

Now think about three of the most important people to you right now and indicate how much each of them would approve or disapprove of you doing that behavior for a significant amount of time in the next seven days.

	Relationship to this person	Approval						
		Highly approve	Approve	Somewhat approve	Neither approve nor disapprove	Somewhat disapprove	Disapprove	Highly disapprove
Person 1	*text entry*							
Person 2	*text entry*							
Person 3	*text entry*							

PBC:

Please indicate how easy or difficult it would be for you to do this behavior for a significant amount of time in the next seven days.

Very easy								Very difficult

Intention:

Now think about what you will actually do. What is the likelihood that you intend to do this behavior for a significant amount of time in the next seven days?

Very likely								Very unlikely

I plan to do this behavior for a significant amount of time in the next seven days.

Very true								Very false

Behavior: (recorded one week later)

Last week, you completed the main survey for our project on goals. We asked you about an upcoming exam or important assignment for a class you are taking.
This brief follow-up will ask you several questions about that same exam or assignment deadline.
As a reminder, this is the description you wrote last week for the exam/deadline:
[piped text from T1 survey]
You also said that you would need to start studying or preparing for it:
[piped text from T1 survey}
Please indicate in how many of the past 7 days you studied for this test or prepared for this assignment for a significant amount of time:

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Thinking about how much you studied for this test or prepared for this assignment over the past 7 days, do you feel that you did a lot or a little?

1. Very little
2. A little
3. Neither very little nor very much
4. A good amount
5. Very much

Has this exam/deadline already happened?

1. Yes
2. No
3. Other

How many days ago did it happen? [if Yes on previous item]

- 1 day ago
- 2
- 3
- 4
- 5
- 6

- 7 or more days ago

Appendix F: Goal and Behavior Activity

Instructions:

On the next page, please write down five goals that you might pursue over the next month or so. They could be personal, professional, or academic goals. They could be easy, short-term goals or more difficult, long-term strivings. They could be desirable things that you are actively trying to achieve or undesirable outcomes you are trying to avoid.

Then list one behavior that would serve each goal – one specific thing you could do this week that would be very helpful in getting you where you want to go.

Please describe each of your five goals/behaviors in a couple words or a short phrase.

	Goal	Behavior
1	*text entry*	*text entry*
2	*text entry*	*text entry*
3	*text entry*	*text entry*
4	*text entry*	*text entry*
5	*text entry*	*text entry*

Appendix G: HWK Scale

Note: adapted from Klein et al. (2001), Hollenbeck, Williams, and Klein Goal Commitment Scale, short form

Instructions:

Now please answer a few questions about each of the goals you just listed.

For the [first, second, third, fourth, fifth] goal, you wrote: [text piped from the Goal and Behavior Activity]
Please indicate whether you agree or disagree with the following statements about this goal.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
It's hard to take this goal seriously. (R)					
Quite frankly, I don't care if I achieve this goal or not. (R)					
I am strongly committed to pursuing this goal.					
It wouldn't take much to make me abandon this goal. (R)					
I think this is a good goal to shoot for.					

Note: Items followed by "R" indicate that the item was reverse-scored before analysis.

Appendix H: Study 3 TPB Scale

Note: again, measures adapted from a TPB scale used to assess test preparation behavior by Leone et al. (1999)

Instructions:

Please answer the following questions about the **behaviors** that you listed earlier:

Attitudes:

Think about the [**first, second, third, fourth, fifth**] behavior you listed: [text piped from Goal and Behavior Activity]

My attitude towards doing this behavior for a significant amount of time in the next seven days can be described as:

Very useful								Very useless
Very rewarding								Very punishing
Very wise								Very foolish
Very positive								Very negative

Subjective norms:

Continue thinking about the following behavior: [text piped from Goal and Behavior Activity]

Now think about three of the most important people to you right now and indicate how much each of them would approve or disapprove of you doing that behavior for a significant amount of time in the next seven days.

	Relationship to this person	Approval						
		Highly approve	Approve	Somewhat approve	Neither approve nor disapprove	Somewhat disapprove	Disapprove	Highly disapprove
Person 1	*text entry*							
Person 2	*text entry*							
Person 3	*text entry*							

PBC:

Continue thinking about the following behavior: [text piped from Goal and Behavior Activity]

Please indicate how easy or difficult it would be for you to do this behavior for a significant amount of time in the next seven days.

Very easy								Very difficult

Intention:

Now think about what you will actually do. What is the likelihood that you intend to do this behavior for a significant amount of time in the next seven days?

Very likely								Very unlikely

I plan to do this behavior for a significant amount of time in the next seven days.

Very true								Very false

Behavior: (recorded one week and again two weeks later)

Last week, you completed the main survey for our project on goals. We asked you to list five goals that were important to you and a relevant behavior for each. This brief follow-up will ask you several questions about those same goals and behaviors.
As a reminder, here are the goals and behaviors you listed last week (if this list shows up as blank, please return to Prolific and message the survey administrator):
[piped text from T1 survey]
The following questions will involve the **behaviors** that you listed last week.
Think about the [**first**, **second**, **third**, **fourth**, **fifth**] behavior you listed: [piped text from T1 survey]
[participants completed the attitudes, norms, PBC, and intentions measures again here]
Thinking about the past week, in how many of the past 7 days did you actually do this behavior for a significant amount of time?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Still thinking about the past week, how likely did you think you would be to actually do this behavior for a significant amount of time?

Very unlikely								Very likely

Overall, does it feel like you did that behavior a lot or a little?

Very little								Very much

Appendix I: Goal Conflict Scale

Note: paired comparisons adapted from the Emmons & King (1988) Striving Instrumentality Matrix. Where [goal x] is indicated, the actual text of the respondent's T1 goal would be supplied. Ordering of the paired comparisons was randomized.

Instructions:

In this section, each of the five goals you listed earlier will be paired with one another. You will be asked to indicate whether pursuing either of the goals would have a helpful, harmful, or negligible effect on the other.

For example, if one of your goals was to make new friends and another was to improve your mental health, it is likely that pursuing either one of these goals would help you pursue the other.

As another example, if one goal was to get more sleep and another was to spend more time working, doing either of these things might leave less time for the other and be harmful.

You will see a total of ten comparisons.

__
[goal 1] x [goal 2]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 1] x [goal 3]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 1] x [goal 4]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__

[goal 1] x [goal 5]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 2] x [goal 3]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 2] x [goal 4]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 2] x [goal 5]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 3] x [goal 4]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 3] x [goal 5]

	Very harmful	Harmful	No effect	Helpful	Very helpful

Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

__
[goal 4] x [goal 5]

	Very harmful	Harmful	No effect	Helpful	Very helpful
Would pursuing one of these goals have a helpful, harmful, or negligible effect on the other?					

Appendix J: Short Form Time Perspective Inventory

Note: adapted from the Zimbardo time perspective inventory (Zimbardo & Boyd, 1999) short form as it appears in D'Alessio et al. (2003).

Instructions: For this section, please read each statement and, as honestly as you can, answer the question:

"How characteristic or true is this of me?"

Select an appropriate answer according to the scale.[10]

	Very untrue	Untrue	Neutral	True	Very true
I believe that getting together with one's friends to party is one of life's important pleasures.					
I believe that a person's day should be planned ahead each morning.					
If things don't get done on time, I don't worry about it.					
It gives me pleasure to think about my past.[11]					
When I want to achieve something, I set goals and consider specific means for reaching those goals.					
Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.					
I believe that my future is beautiful and well planned.					
I try to live my life as fully as possible one day at a time.					
It doesn't make sense to worry about the future since there is nothing to do about it anyway.					
When I have money I like playing and betting.					
It upsets me to be late for appointments.					

[10] Items 1, 3, 8, 10, 12, 13, 14, 17, and 19 were associated with the present time perspective subscale. Items 2, 4, 5, 6, 7, 9, 11, 15, 16, 18, 20, 21, and 22 were associated with the future time perspective subscale.

[11] Item 4 was written incorrectly on the survey due to a mistranslation from the source material (it should have read "it gives me pleasure to think about my future") and was excluded from analysis.

I do things impulsively and I take decisions at the moment.					
I feel that it's more important to enjoy what you're doing than to get work done on time.					
I feel that it's more important to enjoy what you're doing than to get work done on time.					
I don't do things that are important for me in the future if I don't like them now.					
I'm inclined to lose my self-control if someone provokes me.					
It upsets me when people are late for appointments.					
When I go to parties I get drunk.					
I complete projects on time by making steady progress.					
I take risks to put excitement in my life.					
I make lists of things to do.					
I keep working at difficult, uninteresting tasks if they will help me get ahead.					
I am able to resist temptations when I know that there is work to be done.					

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