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**The Influence of Procrastination on Implementation Intentions
and Goal Pursuits**

Anita Heavenor

**A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Master of Arts**

**Carleton University
Ottawa, Ontario
May, 2001**

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**The Influence of Procrastination on Implementation Intentions
and Goal Pursuits**

submitted by

Anita Heavenor

**In Partial fulfillment of the requirements
for the degree of Master of Arts**

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May, 2001

Abstract

The current research was undertaken to examine the moderating role of procrastination on implementation intentions in the goal pursuit process. Two studies were conducted over a two-week period. The first study was non-experimental, with 89 undergraduate Psychology students providing an easy and a difficult self-chosen goal that they intended to complete in the following two-week period, indicating whether they had formed an implementation intention or not for each of their goals. Participants completed the General Procrastination Scale, goal quality and follow-up questionnaires, and the Behaviour Inhibition/Behaviour Activation Scales. The second study was experimental, with 173 undergraduate Psychology students given a specific goal and being randomly assigned to one of three implementation intention conditions (general, task-facilitating or distraction-inhibiting) or a control condition. Those in an experimental condition were asked to form a certain type of implementation intention in order to examine their differential effectiveness on goal pursuits. These participants completed a writing task, a follow-up questionnaire, and the Behaviour Inhibition/Behaviour Activation Scales. While procrastination was not found to moderate the facilitating effects of implementation intentions on the participants' goals, a number of interesting and unexpected results related to both implementation intentions and procrastination emerged. In regards to implementation intentions, it was found that their facilitating effects were limited or removed by the fact that the studies took place in the middle of the academic term, by the predominantly academic goals of the participants and by competing goals. Easy goals, goals intended for completion in the first week of the two-week period and difficult academic goals, were completed with a significantly greater

frequency with or without implementation intentions. Difficult non-academic goals were completed significantly less frequently. Although procrastination was significantly negatively related to participants' goal actions, its inhibiting role was inconsistent. This inconsistency appeared to be based on the timing of the studies, the task enjoyment, the goal difficulty and the evaluative nature of the goal. Also, the affective, cognitive and behavioural components of procrastination were more or less evident depending on whether the goal was self-chosen (i.e., primarily academic) or assigned. These results are discussed in relation to the limited facilitating effects of implementation intentions in goal pursuits, and the difficulties associated with ameliorating the tendency to procrastinate due to its complexity.

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The Influence of Procrastination on Implementation Intentions and Goal Pursuits

The study of goals and problems associated with their achievement has become more widespread in the field of psychology (e.g., Locke, Latham & Erez, 1988; Cantor & Blanton, 1996; Dweck, 1996; Elliot, Sheldon & Church, 1997, Gollwitzer, 1996). This growing body of research indicates that moving from having a goal intention to goal completion can be problematic, such that forming a goal intention does not ensure that action toward goal completion will follow (Gollwitzer, 1997). In addition, self-regulation through initiation and persistence of goal-directed action is needed (Gollwitzer & Brandstatter, 1997).

Gollwitzer (1997) has argued that having a specific plan of how and when an action will be executed to achieve the goal is essential. However, if action is taken toward goal completion, it may still be hindered by distractions, competing goals or lack of motivation (Kuhl, 1984; Gollwitzer & Brandstatter, 1997; Gollwitzer, 1999). The failure to progress from having a goal intention to acting on it through completion is often referred to as procrastination, habitually putting off, or not acting upon, tasks until a later time (Lay, 1986; Ferrari, Johnson & McCown, 1995). Schaal and Gollwitzer (1999) have suggested that in addition to planning for goals, plans stated in such a way as to avoid the types of distractions that lead to procrastination, can help to overcome these roadblocks to goal completion. The focus of this research was to explore the interaction between goal-related planning and trait procrastination in the prediction of the initiation and completion of goals.

One proposed solution to a lack of progression from forming a goal intention to acting upon it is the development of an implementation intention, a type of planning that overcomes obstacles to the initiation and perseverance of goal directed behaviour (Gollwitzer & Brandstatter, 1997). Gollwitzer (1996) proposed that implementation intentions could both initiate and sustain action in goal pursuits. In forming implementation intentions, individuals decide on a situational context (when and where) in which to act, reinforcing the goal by bringing it into focus, and providing a means of achieving it. By forming implementation intentions, control of behaviour is given over to the environment. In a sense, implementation intentions mimic habitual behaviour by signaling a context in which to perform a certain act (Gollwitzer, 1997).

However, habitual behaviour can also have negative effects. If an implementation intention for the pursuit of a new goal rests on a situational context that is habitually associated with a competing goal, the new goal action may be suppressed (Gollwitzer, 1997). For example, if an individual habitually orders french fries at the cafeteria at work, this behaviour could conflict with the goal of reducing fat intake in order to lose weight. Schaal and Gollwitzer (1999) suggest that implementation intention statements that focus on avoiding distractions, distraction-inhibiting implementation intentions, as opposed to implementation intentions that focus on increasing effort toward the goal, task-facilitating implementation intentions, can help to overcome habitual behaviour, competing goals and distractions that arise in goal pursuits.

Inaction or choosing an alternative action due to habitual behaviour (Ellis & Knaus, 1977) has also been linked to procrastination, with individuals scoring high on a measure of procrastination, “procrastinators,” habitually not acting on goal intentions

(Lay, 1986). As a matter of convenience, the convention frequently used within the procrastination literature, “procrastinators”, will be used hereafter to denote those individuals scoring above the median on a measure of procrastination for a given sample (Lay, 1986; Ferrari, 1991). At least to some extent, procrastinators fail to act on a goal intention in light of the appropriate situational context due to competing action tendencies (habits) or due to decisional conflict (avoiding making a decision by procrastinating in order to avoid failure) (Beswick & Mann, 1994). With procrastinators, the habitual behaviour itself is not to take action toward goal intentions.

Although non-procrastinators can also experience difficulty in initiating action and persevering through goal completion, procrastinators routinely experience these difficulties. The question arises as to whether the incorporation of implementation intentions (Gollwitzer, 1996) by procrastinators could improve their action initiation and persistence, overcoming habitual inaction or delay of action. Another possibility, and the one that was studied here, was whether procrastination would moderate the effects of implementation intentions on the completion of goal pursuits. Also, it was of interest to examine whether Schaal and Gollwitzer’s (1999) distraction-inhibiting implementation intentions or task-facilitating implementation intentions would prove to be more effective for procrastinators than implementation intentions that were not formed specifically to avoid distractions or increase effort. In the current studies, it was expected that implementation intentions would be less effective in promoting the initiation and completion of goals for procrastinators than for non-procrastinators.

The following literature review begins by providing two proposed models of the processes, or steps, involved in goal pursuits. Problems associated with acting on goals

and how people identify with their goals, are also examined. Once the foundation of goal pursuits has been laid, implementation intentions, and then more specifically, distraction-inhibiting and task-facilitating implementations intentions, as possible solutions to inaction are discussed. Procrastination, the gap between forming a goal intention and acting upon it, is then considered with the association being made between implementation intentions and procrastination. The varied aspects of procrastination are presented in order to provide an understanding of the complexity involved in the association between procrastination and the breakdown in goal intentions. Finally, the specific hypotheses for the two studies are presented.

Literature Review

Goal Pursuits

It has been suggested that goal pursuits (i.e., a specific objective) involve a series of progressive steps (Little, 1983; Heckhausen & Gollwitzer, 1987). Little (1983; 1989; 1998) suggests that projects or goals can be seen as occurring in a series of stages from inception, to planning, to action through to termination. *Inception* is the initial awareness of a possible goal, a clarifying of the origin of the goal, the evaluation of its importance, and the acceptance of taking on the goal. *Planning* begins with a proposal or statement of intent, followed by the establishment of funding, supplies and space support, recruitment, and scheduling. This stage entails the social recognition (i.e., the goal is known by others as well as the individual who holds the goal) of a goal and the search for support (actual or symbolic) followed by the planning of action toward goal achievement. *Action*

involves engagement, control, motivation, continuity and postevaluation. Engagement is the initiating of action toward the goal. The successful interrelation of control, motivation and continuity over the course of action will determine successful goal completion. Postevaluation refers to the evaluation of whether there is a discrepancy between the completed goal and the original proposed goal. If the difference between the two is minimal, termination will occur. If the difference is maximal, a decision to continue or terminate will take place. The *termination* phase includes end-signaling (i.e., a signal that work on the goal is about to end), exit-barrier removal (e.g., ending a marriage through divorce), conclusion, publication, compensation and shutdown, all parts of completing a goal and moving on (Little, 1983).

Heckhausen and Gollwitzer (1987) also explain the goal process as proceeding through four phases. Heckhausen and Gollwitzer's four-step model of action phases distinguishes between goal selection (motivational) and goal achievement (volitional) as being qualitatively different. The first phase of the model (predecisional) is a motivational starting point where individuals consider their wishes (goals) based on both desirability (such as the expected costs and rewards) and feasibility (the likelihood of successful completion of the goal) (Gollwitzer, 1996; Blunt & Pychyl, 2000). The second phase (preactional) is volitional and occurs once an individual has decided to act on a goal. Volition refers to a postdecisional state where deliberation on whether to pursue the goal has terminated, and been replaced with consideration of how to implement the proposed course of action (Heckhausen & Gollwitzer, 1987). When goal-directed actions are not routine, planning is necessary (i.e. how, where and when to undertake the task and deciding on how long to spend on goal attainment). Once goal-directed behaviours have

begun, the third phase (actional/volitional) requires individuals to act upon situational demands and opportunities, promoting goal attainment. In the fourth phase (postactional/motivational) individuals assess their attained goal against their initial wish. Given that Gollwitzer's work in this area is more comprehensive, further discussion within this paper about the steps involved in goal pursuits, will be made in terms of phases (Heckhausen & Gollwitzer, 1987; Gollwitzer, 1996) as opposed to Little's (1983) stages.

The purpose of the model is to ascertain the types of problems individuals encounter in the process of moving from a wish (desire) to a completed goal (a committed objective brought to fruition). Problems can occur at any phase of the process, from goal setting through goal attainment. These problems are related to not acting on opportunities as they present themselves due to lack of clarity of the goal (Little, 1983), to conflicting demands, to lack of interest (Blunt & Pychyl, 2000), to lack of planning, and to not continuing with action through the completion of a goal (Gollwitzer, 1996).

Irrespective of which stage model of action is considered, the process of goal pursuits begins with a simple goal intention, the foundation on which goal action (i.e., purposeful behaviour) and attainment are based. However, as Heckhausen and Gollwitzer (1987) point out, the forming of a goal intention does not necessarily lead to goal behaviour. Many obstacles can interfere with successful goal pursuits. In an effort to comprehend how individuals progress more or less successfully from the formation of a goal to its commencement and completion, the component parts of goal intentions and goal action have been studied (e.g., understanding goal setting by examining the goal attributes of commitment and clarity, Latham & Locke, 1991; Vallacher & Kaufman,

1996). An overview of approaches taken to the study of goal pursuits is necessary in order to understand the direction that was taken in this body of research. Therefore, goal framing, action, goal attributes, and goal obstacles are presented next.

Goal framing and action. As well as considering the phases or stages of goal pursuits, volitional problems can be taken to a lower level of analysis, providing further understanding as to how goal pursuits can break down. The component parts of phases (Gollwitzer, 1987) include framing a goal (preactional phase) and acting upon it (actional/volitional phase). Framing a goal includes, among other things, clarity of intent, and deciding on the goal's feasibility and desirability. Acting upon a goal requires both control and dealing with situational demands and opportunities.

How people frame their goal pursuits affects the actions (or lack thereof) they take toward them (Gollwitzer & Moskowitz, 1996). Goal pursuits, although universal, differ in meaning and in effective completion. For example, Dweck (1996) found that goal completion is positively effected by the framing of goals as learning goals (i.e., mastering a task), as opposed to performance goals (i.e., pursuing a goal toward performance evaluation). Little (1989) suggests that framing a goal with a certain "spin" can result in greater social support for the goal intention, giving momentum to goal behaviour.

The question of whether individuals' goal pursuit actions accurately reflect goals being pursued has been studied by Vallacher and Wegner (1987). How people intend to act, how they actually act, and how they vary actions toward a specific goal changes according to the individual's needs or desires (Wegner & Vallacher, 1986). Wegner and Vallacher's theory of action identification suggests that an individual's current salient

mental representation (action identity; how they frame or clarify their goals) of an action determines action maintenance. From this perspective, a goal is identified hierarchically from high to low, with high identities representing the purpose for action and low identities representing specific ways to carryout an action (Vallacher & Wegner, 1987). Each individual may perceive action identities differently in a given situation and a given time. An individual may be able to successfully complete an act at a low level of identity (e.g., getting a book out of the library) allowing the individual to focus on a higher level identity (e.g., writing a term paper) (Wegner & Vallacher, 1986). However, low action identities are unstable and subject to change given the situation. If the lower level identity changes, there may be a discrepancy with the overarching higher level identity that the lower level identity originally served. When this happens, disengagement with the goal pursuit may ensue, resulting in the termination of action toward that goal or changing of the original higher level goal to an alternative goal. For example, while at the library researching a topic for a term paper, an individual may happen across information related to a competing term paper that is more of interest. Instead of pursuing the intended research, the individual may decide to follow the alternative line of research. As time no longer permits for the amount of research required for the original goal topic, the topic or breadth of the endeavour may change, or may not be completed at all. If both a high and low level identity are present, the high identity tends to be more salient, as individuals tend to identify with the larger goal and its implications. However, if the individual does not know how to proceed with the higher level identity (i.e., he or she does not know how to go about writing a term paper) he or she will revert back to a lower level identity or perhaps abandon the goal.

Vallacher and Kaufman (1996) suggest there is an optimal level of identification for performing any given act. Due to lack of experience or external pressure, individuals may not always choose or be aware of what that optimal level is which can lead to the breakdown of a goal pursuit. Easy actions tend to be identified at higher levels because individuals are well versed in the details of the act and need only think of the larger goal. Difficult actions require lower level identities in order to maintain action. Due to the fact that level of action identity is subject to change and that there is an optimal level for each goal, planning, the second phase of goal pursuits (Heckhausen & Gollwitzer, 1987) is needed to keep individuals on track through the goal pursuit process.

Dewitte and Lens (2000) have also studied levels of action identity, or goal framing, in relation to goal pursuits. In their research, they found that for tasks perceived to be easy, task persistence was decreased when individuals were identifying with higher levels of action. With difficult tasks, individuals' persistence was enhanced by identifying with higher levels of action. This appears to contradict the findings of Vallacher and Wegner (1986) that when individuals are unfamiliar with a task (i.e., therefore find it difficult) they resort to lower levels of identification. From their research, the question remained as to whether framing goals as high action identities causes volitional effort or simply reflects it.

As well as action identity, goal framing is similarly discussed in terms of goal attributes within the research literature. It has been suggested that the attributes of goal intensity and wording (similar to high or low level of action) can contribute to goal effectiveness (Latham & Locke, 1991). Intensity relates to both goal commitment and goal clarity. Goal commitment refers to how important the goal is to the individual and

how determined the individual is to complete it. Goal clarity refers to how specific, as opposed to vague, the goal intent is to the individual. The concept of intensity (i.e., commitment and clarity) is similar to importance and desirability in the predecisional phase of goal pursuits (Heckhausen & Gollwitzer, 1987). Being involved in the development of task strategies (planning) has been found to improve goal commitment through enhanced self-efficacy (i.e., an individual's perception of his or her ability to successfully complete the goal). Goals that are challenging and specifically stated (specificity of a goal is similar to the idea of low level of identity in Vallacher and Wegner's work) are more likely to be carried out to completion with a higher level of performance. Goals that are non-specific and that can be carried out in a number of ways are less likely to be acted upon (Sheeran & Orbell, 1999). Specifically stated goals are advantageous as they are more easily self-monitored and are proximal (i.e., action that can be taken in the near future), as opposed to distal (i.e., long ranging). Individuals with proximal goals perform more consistently than those with vague or distal goals.

In summary, the aspects of whether a goal is personal, is specifically framed, is important to the individual, is seen as attainable, and is achievable in the near future, can all play a role in successful goal completion. While the absence of these goal characteristics may play a negative role in the goal pursuit process, so can implementation problems encountered in the action phase.

Possible problems encountered in goal pursuits. Regardless of good intentions, many obstacles can interfere with successful goal pursuits. Interference with goal pursuits can occur when the action (i.e., the necessary behaviour) is difficult, is affected by the presence of others (e.g., peer pressure or distractions), is unfamiliar or is expected to

result in punishment (Vallacher & Wegner, 1987). The maintenance of a goal pursuit action that encounters obstacles can be affected by self-regulation (e.g., having a routine time to exercise) (Mischel, Cantor & Feldman, 1996), and difficult tasks where observable progress is lacking, leading to disengagement (Palys & Little, 1983). Mischel, Cantor and Feldman (1996) suggest that self-control is needed to ensure that habitual responses are not blocked in the face of adversity. Flexibility and resolve are required to ensure the completion of difficult long-term goals. For Mischel, Cantor and Feldman, flexibility is related to choosing a goal that is meaningful (i.e., individuals with important goals will be more open to change when a current course of action is not working) and results in commitment. Self-control is motivated by tasks that are encoded (mentally processed) as contributing to the realization of important outcomes. In agreement with Wegner and Vallacher (1986), Mischel, Cantor and Feldman suggest that conscious self-control may not be needed when necessary task actions are automatic. However, automatic actions can be maladaptive in some situations. In order for self-regulation to be adaptive, a feeling of control and efficacy need to be present. Individual differences exist in one's sense of having internal control or of being controlled by external events.

In summary, goal intentions can suffer from volitional problems at any stage of the process. Goals that have little meaning (e.g., are not very desirable), are unclear, have not been planned for and are therefore subject to change, lack control, are interrupted, are difficult or distal are at risk of volitional breakdown. Implementation intentions provide a structure for goal pursuits, by determining when and where goal action will take place (Gollwitzer & Brandstatter, 1997).

Implementation intentions in general, and specific types of implementation intentions have been studied in regards to the goal pursuit process. The following section examines how implementation intentions facilitate both the initiation and maintenance of goal action through a particular type of planning. More recently, specific types of implementation intentions, namely, distraction-inhibiting and task-facilitating implementation intentions have also been found to be effective in promoting goal attainment.

Implementation Intentions

Although having a goal intention stimulates a sense of commitment, it does not necessarily lead to goal completion. Regardless of having good intentions, goal commitment, and low level action identities, individuals still take on goals that they do not complete. Goal research has generally dealt with the processes of goal pursuits, bypassing the question of how action initiation takes place. Gollwitzer and Brandstatter's (1997; 1999) recent research on goal pursuits has concentrated on planning as a method of self-regulation and of overcoming impediments to goal-directed action, and more specifically, to overcoming the problem of getting started. They argue that planning, a cognitive strategy used to assist in the achievement of a goal, can help to overcome volitional problems such as distractions and difficulties encountered while working on a task (See also Little, 1983; Gollwitzer, 1996; Kuhl, 1984; Orbell, Hodgkins & Sheeran, 1997).

Goals are subject to volitional problems to varying degrees. Some goals that are easy to implement might not require planning and may be completed by performing

habitual responses (Gollwitzer & Brandstatter, 1997; Mischel, Cantor & Feldman, 1996; Wegner & Vallacher, 1986). In fact, the best predictor of behaviour, regardless of intentions, is past behaviour (Hogan, Johnson & Briggs, 1997). Unlike easy goals, difficult goals are more likely to encounter obstacles between the planning and action phases (Heckhausen & Gollwitzer, 1987), resulting in their delay or termination. For example, an individual may encounter the appropriate situational context for undertaking the goal, but not act because the given context is habitually used for a conflicting behaviour, or because the individual fails to attend to the contextual cues, being preoccupied by other demands. Gollwitzer & Brandstatter (1997) have also found that indecision on which course of action to follow in the situation may result in inaction. Although flexibility may be helpful for those facing failure from having pursued one course of action, flexibility can also lead to indecision (Gollwitzer, 1999). Pre-planning a course of action in a given situation can alleviate indecision. Often a situation to act arises only once, and if not acted upon will be lost.

Gollwitzer and Brandstatter (1997) have taken planning one step further. Forming implementation intentions of where, when and how to act can overcome obstacles through self-regulation effectively removing barriers to the initiation of goal-directed action (Gollwitzer & Brandstatter, 1997). This commitment to act on a given goal when the correct situation arises is similar to the stimulation of habitual behaviour. Habitual behaviour makes goal implementation (action) automatic, requiring little cognitive input (Gollwitzer, 1999; Mischel, Cantor & Feldman, 1996). In the case of implementation intentions, the strong links associated with habitual behaviour are thought to be prompted by the combination of goal commitment, as in the predecisional phase, and the

specification of a situational context in which to act (Gollwitzer & Brandstatter, 1997), as in the preactional phase (Heckhausen & Gollwitzer, 1987). Implementation intentions prompt initiation of action, and persistence, through goal completion.

Forming goal intentions without implementation intentions has been found to account for 20 to 30 percent of the variance in both health and social behaviours, such that approximately 75 percent of goal intentions without implementation intentions are not completed (Sheeran & Orbell, 1999). Forming goal intentions with implementation intentions has proven beneficial in health, addiction, and with a clinical population (Orbell, Hodgkins & Sheeran, 1997; Tiffany, 1990; Schmitt, 1997; cited in Gollwitzer, 1999). For example, in a study conducted by Orbell, Hodgkins and Sheeran (1997), it was found that 100% of women who wrote where and when they intended to perform breast self-examinations did so. Of the women who did not form implementation intentions, only 53% completed their goal. Similarly, a study by Orbell and Sheeran (2000) examining a novel behaviour, in this case undergoing cervical screening, produced comparable results. Without implementation intentions, only one-half of the women in the study who intended to undergo the procedure did so within one year of stating their goal. Building on this research, Sheeran and Orbell (1999) measured the perceived behavioural control (similar to feelings of self-efficacy), subjective norms (i.e., perceived support or non-support from others for a specific goal) and attitudes (i.e., an individual's positive or negative feeling about the specific goal) of study participants who were or were not instructed to form implementation intentions to take a daily vitamin C pill for three weeks. They found that despite a comparably high perception of behavioural control, and subjective norms and attitudes, those who had formed implementation

intentions acted on their intention to repeatedly take vitamin C pills more regularly than those who had not formed implementation intentions.

It is believed that when implementation intentions are formed, a mental image of the chosen situational context is highly activated, focusing attention and perceptions, thereby overcoming obstacles to action initiation (Gollwitzer, 1999). In effect, implementation intentions allow for detection, attention and retention of the important situational cues needed to initiate goal behaviour. No conscious intentions are required as action initiation becomes automatic and immediate (Gollwitzer, 1999). Gollwitzer and Schaal (1998) refer to this automatic action that is initiated from a single willful act, as strategic automaticity. Moreover, in situations where distractions are present, forming implementation intentions that are distraction-inhibiting are more effective, especially when they do not require the expenditure of effort (Gollwitzer, 1999). Also, obstacles in the form of unwanted habitual responses can be overcome by forming implementation intentions. For example, when an employee who normally responds emotionally to the demands of his employer forms the implementation intention to respond constructively instead, the unwanted habitual response is blocked (Gollwitzer, 1999). The situational cue no longer evokes the habitual response, instead triggering the response stated in the implementation intention.

Gollwitzer and Brandstatter (1997) conducted three studies related to the effects of implementation intentions on goal pursuits. The first two studies were designed similarly, with the first being non-experimental and the second being experimental. Both of these studies considered the rate of goal completion as affected by implementation intentions. The third study was conducted to verify that participants had acted

immediately to situational cues outlined in their implementation intentions (Gollwitzer and Brandstatter, 1997). To summarize their findings, the first two studies supported the hypotheses such that regardless of the goal, more participants equipped with implementation intentions, successfully completed their goals. Implementation intentions increased the completion rate of difficult goals but not easy goals. Gollwitzer and Brandstatter (1997) suggested that the almost perfect completion rate of easy goals might have removed the possibility of implementation intentions having an added effect. A further possible explanation was that participants rated easy goals as requiring only familiar simple actions. The vast majority of participants in Study 2 who had implementation intentions reported having undertaken their goal (i.e., initiated behaviour) at the time they had pre-specified they would do so, supporting the idea that having implementation intentions promoted immediate action initiation. The third study also provided expected results, finding that participants' implementation intentions were related to the commencement of goal-directed action as the correct situational context presented itself (Gollwitzer & Brandstatter, 1997). Implementation intentions served as a self-regulating strategy providing participants with a mechanism for focusing, and acting, on relevant opportunities for goal pursuits.

Building on this research, Gollwitzer (1999) has broken down implementation intentions into types, specifically, distraction-inhibiting and task-facilitating. He has found that the usefulness of these specific types of implementation intentions is affected by the level of task motivation and the required expenditure of effort (Gollwitzer, 1999).

Distraction-inhibiting and task-facilitating implementation intentions. Although forming implementation intentions in goal pursuits successfully results in the initiation of

goal action, there is still a possibility that insufficient goal commitment, conflicting habits, attractive diversions or alternative goals, can serve to derail a current goal intention (Gollwitzer, 1999). Some goals require additional shielding from possible distractions that can divert one's attention (Patterson & Mischel, 1976; Kuhl, 1994; Gollwitzer, 1999).

Building on the work of Patterson and Mischel (1976), Gollwitzer (1999) examined distraction-inhibiting and task-facilitating implementation intentions, and their respective effectiveness in shielding goal intentions from distractions. Distraction-inhibiting implementation intentions are phrased to avoid distractions (e.g., "When a distraction arises, I will ignore it!"), whereas task-facilitating implementation intentions are phrased to increase goal effort (e.g., "When a distraction arises, I will work harder at the task at hand!").

In researching the use of implementation intentions in general and distraction-inhibiting versus task-facilitating implementation intentions specifically as a means of overcoming goal distractions, Schaal and Gollwitzer (in press, 1999; cited in Gollwitzer, 1999) showed participants award winning commercials at random intervals, while having students complete arithmetic problems. The authors found that students who had no implementation intentions for their goal of completing the arithmetic problems, were less successful at avoiding the distracting commercials than were those who had formed implementation intentions. Further, the type of implementation intention that was formed affected the degree of usefulness of the implementation intention, in avoiding distractions. It was found that students whose implementation intentions were phrased to

avoid distractions, as opposed to being phrased to facilitate putting forth more effort toward the goal, were more effective.

Schaal and Gollwitzer (in press, 1999; cited in Gollwitzer, 1999) suggest that forming a task-facilitating implementation intention that requires the stepping up of effort toward the goal intention, can lead to excess motivation (or over-stimulation) when an individual's motivation is already high. Whereas, task-facilitating implementation intentions can ward off distractions when an individual's motivation is low or moderate, distraction-inhibiting implementation intentions are effective regardless of motivation level. This suggests that the use of distraction-inhibiting implementation intentions can be applied more effectively over a broader range of situations.

Moskowitz, Gollwitzer, Wasel and Schaal (1999) utilized this approach in their research on overcoming the destructive effects of automatic habitual stereotypical or prejudicial responses (emotional, cognitive or behavioural), by using inhibitory implementation intentions. The authors found that when participants formed inhibitory implementation intentions for stereotypical responses to the elderly (e.g., "When I come in contact with an elderly person, I tell myself: Do not stereotype!", p. 500), the habitual response no longer occurred. Similarly, when study participants' with the goal intention of not prejudicially judging homeless people, formed inhibitory implementation intentions (e.g., "When I come in contact with a homeless person, I tell myself: No prejudice!", p. 500), the negative feelings toward the homeless disappeared (Moskowitz, Gollwitzer, Wasel & Schaal, 1999). Finally, Gollwitzer (1998) also examined the effects of forming inhibiting implementation intentions on competing habitual goal pursuits. In support of his previous research, Gollwitzer found distraction-inhibiting implementation

intentions shielded a set goal intention (e.g., maintaining a specific driving speed on a simulated race course) from a competing habitual goal (e.g., driving as fast as possible).

Another differential aspect of distraction-inhibiting versus task-facilitating implementation intentions, is that the use of distraction-inhibiting implementation intentions was found to increase the strength of goal intentions and to enhance actual performance, more so than task-facilitating implementation intentions (Gollwitzer & Schaal, 1998). Also, participants in a task-facilitating implementation intention condition whose directive was to work harder in the face of distractions, failed to recognize when their efforts were ineffective, continuing to work harder toward their goal, and being unable to disengage from their implementation intention (Gollwitzer & Schaal, 1998). The implementation intention kept them on task, but it did not allow them the flexibility to recognize when their efforts were misplaced.

The incorporation of implementation intentions as a self-regulatory strategy in goal pursuits has proven to be an effective strategy. Further, inhibitory implementation intentions serve to protect goal intentions from distractions, habits and competing goals. However, for procrastinators who habitually put off or do not take action when opportunities present themselves, there is an added barrier in goal pursuits. Unlike an implementation intention that serves as an effective self-regulatory strategy, procrastination is seen as a self-defeating strategy. This suggests that procrastinators may be less susceptible to the positive effects of implementation intentions in general, and differentially susceptible to the positive effects of task-facilitating and distraction-inhibiting implementation intentions. On the one hand, given the low motivation of procrastinators at the time of the immediate experience (Pychyl, Lee, Thibodeau & Blunt,

2000), task-facilitating implementation intentions may help to increase goal effort. On the other hand, given Kuhl's (1994), work on competing intentions and managing them, distraction-inhibiting implementation intentions may be more effective. As procrastinators move closer to task initiation and completion, their motivation increases, and forming distraction-inhibiting implementation intentions may in fact prove more effective in their goal pursuits. The relation between procrastination, goal phases and implementation intentions is further developed in the following section.

Procrastination

The breakdown in volition or the gap between intention and action common to procrastination is not a new topic in psychology, although one whose history is seldom discussed. A salient early reference to this work can be found in the seminal publication of William James. Historically, when psychology and philosophy were basically indistinguishable (Myers, 1981), procrastinators, or those with an obstructed will to act, were seen as suffering from some mental illness as their behaviour deviated from the norm or moral majority (James, 1892/1981). For James (1981), the will to obtain some goal remains simply a desire unless we perceive it to be attainable, at which point it becomes "real." Once real, action can be taken toward goal fulfillment. A healthy state of the will requires a clear vision (i.e., focused goal) and the initiation of action based on that vision. The will becomes obstructed when focusing power is lost and action is inhibited, or when a focused goal is present but no action, or an alternative action, takes place. James suggested that those with an obstructed will have the desire to act, but are seemingly powerless to do so, as if action is blocked. The effort put forth to overcome

resistance (e.g., a more appealing task) is not large enough to reach the goal intention. Although the intention is there, the lack of an aid (i.e., planning, to propel volition) results in inaction and failure to complete goal intentions, as evidenced with procrastinators.

Procrastination is associated with dilatory behaviour. Dilatory behaviour involves delaying of action or not acting on opportunities to move toward goal completion. Lay (1986) defines general trait procrastination as “the tendency to postpone that which is necessary to reach some goal” (p. 475). In fact, procrastinators have the will or desire to obtain their goals, but for many reasons they do not act on them, speaking to the complexity of this self-defeating behaviour (Tice & Baumeister, 1997).

The complexity of procrastination lies in its multidimensional nature. Ferrari (1991) suggests that trait procrastination is more complex than simply being a tendency to put off goal action, in fact it involves cognitive, behavioural and affective elements. Cognitive elements refer to the thinking and reasoning processes used by procrastinators that manifest in such ideas as expectations of failure, low self-esteem, an inability to make decisions, and a concern for public image (Lay, 1986; Beswick & Mann, 1994; Vadonovich & Seib, 1997; Ferrari, 1991; Solomon & Rothblum, 1984). Behaviour, the most recognized element of procrastination, is evidenced by inaction and delay of action (Lay, 1986). Affective elements relate to the emotional responses found to be associated with procrastination, such as agitation, dejection and anxiety (Lay, 1994; Solomon & Rothblum, 1984). Together, these factors represent compound barriers to acting and sustaining action toward goal completion, leading to possible breakdowns in the predecisional, preactional and actional phases of goal pursuits.

It has been suggested by Flett, Blankstein and Martin (1995) that the cognitive, behavioural, and affective elements of procrastination evidenced by low self-esteem, dilatory behaviour, anxiety and expectations of failure, are due to anxious/ambivalent attachments in childhood. In addition, the authors have found procrastinators to have poor coping abilities (i.e., the use of distraction as a form of avoidance as well as emotion-oriented coping, as opposed to problem-focused coping) and poor psychological adjustment. As such, although procrastinators have the desire to obtain their goals, these debilitating factors may inhibit their progressing beyond the predecisional phase to the preactional phase, where consideration of how to implement a proposed course of action takes place (Heckhausen & Gollwitzer, 1987). Ruminating on one's feelings of inability and a fear of failure prohibit constructive thinking.

Lay (1994) provides further support for the debilitating effects of both the cognitive and affective components of procrastination on goal action. Lay suggests that the agitation and dejection felt by procrastinators may be due to focusing on their past habitual behaviour of avoiding taking action toward goal completion, to their past failures, and to the resulting social judgement. A breakdown during the preactional or actional phases of the goal pursuit process resulting in a lack of goal completion leads to low self-esteem, making the process of failure, negative affect and procrastination, cyclical in nature. Lay (1995) draws on Higgins' (1987) self-discrepancy theory suggesting that, for trait procrastinators, a discrepancy between their actual-ideal selves is more focal than a discrepancy between their actual-ought selves. The ideal self refers to attributes the self or others would like the individual to possess, while the ought self refers to attributes the self or others feel the individual ought to possess. The self-

defeating behaviour of procrastinators, and the unrealistic focus on the ideal self, contributes to their negative affect. Also, Tice and Baumeister (1997) found that as goal deadlines drew near, procrastinators suffered greater stress, physical symptoms and required more frequent health-care visits than non-procrastinators. Procrastination is associated with negative outcomes, evidenced by a lack of goal completion or failure, and by taking both an emotional and physical toll on individuals.

Over time procrastinators develop self-handicapping, an a priori strategy (before failure or success) individuals use to protect themselves from being seen by others as lacking in ability (Ferrari & Tice, 2000; Midgley & Urdan, 1995). Self-handicapping allows these individuals to avoid further damage to their self-esteem that comes from discovering self-deficiencies through social comparison with superior others. Interestingly, procrastination is a self-defensive coping strategy used to avoid appearing incapable, and at the same time serves to protect feelings of self-worth and temporarily reduces anxiety and stress (Ferrari, Johnson & McCown, 1995).

Unfortunately, although the use of self-handicapping may prevent temporary damage to one's self-esteem, it also results in the derailment of a procrastinator's volition. By averting their attention away from the goal at hand, moving from the preactional phase to the actional phase becomes problematic for procrastinators. Once procrastinators have moved into the actional phase, the act of procrastinating prevents them from maintaining the control, motivation and continuity needed during the actional phase of the goal pursuit process. By procrastinating, failure is expected and accepted because inadequate effort was put forth toward success. In this regard, Owens and Newbegin (1997) found that low grades led to greater procrastination, as opposed to

procrastination leading to lower grades. The authors suggest that procrastination reduced anxiety by helping students dissociate their poor grades from their feelings of self-worth.

Further understanding of the problems procrastinators face in moving through the phases of goal pursuits can be obtained from their lack of conscientiousness and its related facets. In fact, procrastination has been found to be negatively related to all facets of the Conscientiousness factor (of the Big Five factors; Lay, Kovacs & Danto, 1998), indicating that procrastinators lack order, dutifulness and self-discipline (Ferrari, Johnson & McCown, 1995). A lack of order, dutifulness and self-discipline, needed during the actional phase of goal pursuits, can result in poor performance (Ferrari, Johnson & McCown, 1995; Solomon & Rothblum, 1984; Owens & Newbegin, 1997; Tice & Baumeister, 1997). For example, in two longitudinal studies conducted by Tice and Baumeister (1997), those scoring above the median on procrastination were found to have lower grades on exams and term papers than those scoring below the median. Whether a lack of conscientiousness further allows procrastinators to dissociate their poor grades from their feelings of self-worth is not discussed in the literature.

Lacking conscientiousness is also related to a lack of goal commitment (Lay, Kovacs & Danto, 1998). A lack of goal commitment, and a fearful expectation of failure based on past experience, leaves procrastinators at additional risk of inaction and lack of perseverance once goal action has been initiated. Goal commitment needed in the predecisional phase (Heckhausen & Gollwitzer's, 1987), and conscientiousness needed in the actional phase are lacking in procrastinators, leaving them at a disadvantage in reaching their goal pursuits.

Related to a lack of goal commitment and conscientiousness, procrastinators are further disadvantaged in their goal pursuits as a result of poor self-control (Martin, 1995, cited in Tice & Baumeister, 1997) and poor self-regulation (Vodanovich & Seib, 1997). Lay (1986) found that procrastinators tend to spend more time on goals they enjoy and identify with (typical of themselves) and less time on goals they do not enjoy or do not identify with. In support of this finding, Blunt and Pychyl (2000) propose that boring tasks may inhibit an individual's capacity to remain focused, leading to action being focused on a more appealing task. Further, procrastinators appear to be unable to sustain priorities over a number of tasks, spending more time on unimportant goals than important ones (Lay, 1986). Lay found that when procrastinators are under pressure, they do not appear to accurately draw on past experiences, instead underestimating the amount of time needed to complete a given task. Vodanovich and Seib (1997) support Lay's findings, stating that procrastination is related to ineffective organization and time management. Once again there is a breakdown in the preactional and actional phases, through ineffective organization and poor time management. With poor planning and time management, situational opportunities could go unnoticed and subsequently result in a breakdown in volition.

Whether procrastination leads to failure or failure leads to procrastination is still unclear. What is clear is that procrastination is intimately related to delayed action and inaction in goal pursuits. Although procrastination is intuitively linked to inaction, only recently has a more direct link between procrastination and the action of goal pursuits been made. Beckmann and Kuhl (1984) propose that individuals are either action or state oriented. Individuals with an action orientation focus on both the present and future

states, the discrepancy between the two, and behavioural alternatives that could lead successfully from the present state to the sought after future state. State orientation refers to habitually focusing on either the past, present or future state, and the inability to focus on the action plan for the present goal intention. When focus is diverted to some alternative intrusive thoughts or emotions that are irrelevant to the present goal intention, volitional action toward a goal can be inhibited (Beswick & Mann, 1994). Kuhl's theory of action control (e.g. Kuhl, 1984) suggests that following through on an action can be aided by focusing on a complete action plan (Blunt & Pychyl, 1998).

Past attempts at dealing with procrastination have not focused on forming an action plan, instead focusing on strategies such as time management and study skill training. Solomon and Rothblum (1984) suggest that these strategies alone are not sufficient. As a result of not having anticipated the suitability of a situation for the initiation of action, procrastinators face indecision when an opportunity arises to act on a goal intention. Lay (1994) has found that procrastinators' lack of action initiation toward goals leads to negative affect. However, when university students have been asked to indicate their plans for completing assignments, their feelings of dejection subsided, indicating that their apprehension of looming failure based on their habitual procrastination was diffused (Lay, 1994). Goal planning resulted in more positive affect and reduced anxiety for procrastinators. In following the phase goal pursuit model, the planning component aided procrastinators by reducing indecision on how to act when situational cues presented themselves.

Although procrastinators do form goal intentions in the predecisional phase, their inability to maintain priorities over a number of tasks (Lay, 1986) and their fear of failure

(Beswick & Mann, 1994; Vadonovick& Seib, 1997) may result in not moving beyond this initial component of goal pursuits. Further, procrastinators' indecision (Solomon & Rothblum, 1984) due to a lack of planning (preactional), or an inability to focus on the action plan for the present goal intention (Beckmann & Kuhl, 1984) can also lead to inaction. Once action has been initiated, a focus on maintaining self-esteem (Flett, Blankstein & Martin, 1995), poor time management (Vodanovich & Seib, 1997), and poor self-control (Martin, 1995, cited in Tice & Baumeister, 1997) can cause further problems.

In summary, procrastination leads to a lack of directed, timely action in relation to goal intentions. When procrastinators have incorporated planning (Lay, 1994) into their goal pursuits, their anxiety has been reduced. What has not been studied is whether planning, and more specifically implementation intentions, can effectively overcome delayed action leading to goal completion for procrastinators. Also, the use of distraction-inhibiting and task-facilitating implementation intentions with procrastinators, aimed at aiding these individuals in maintaining focus on their present goal intention, or increasing effort, has not been examined. The following study rationale addresses these issues.

Rationale for the Two Studies Conducted

As documented in the preceding review of the research literature, successful goal pursuits involve many things, from an initial idea, to planning, to taking action, to goal completion (e.g., Little, 1983; Gollwitzer & Moskowitz, 1996; Orbell, Hodgkins & Sheeran, 1997). As demonstrated from a number of perspectives (e.g., Little 1983; Vallacher & Wegner, 1987; Gollwitzer & Brandstatter, 1997; Elliot, Sheldon, & Church,

1997), numerous obstacles can cause goal pursuits to break down before they are achieved. Gollwitzer and Brandstatter (1997; 1999) have recently examined the effects of implementation intentions, a type of planning that specifies when and where goal action will take place toward a goal pursuit, on goal completion. In addition, Schaal and Gollwitzer (1998; Gollwitzer, 1999) have studied the effects of distraction-inhibiting implementation intentions and task facilitating implementation intentions on the rate of goal completion. The authors have found implementation intentions, in general, to be effective in initiating goal behaviour, with distraction-inhibiting and task-facilitating implementation intentions having differential effects based on level of task motivation and expenditure of effort (Gollwitzer, 1999).

The effects of implementation intentions (general or specific) on the initiation of goal-directed behaviour and subsequent goal completion had not been studied with individuals who self-report problems with procrastination. Procrastinators can be seen as facing the same inaction problems as those individuals who do not report chronic task delay, along with additional obstacles. The cognitive, affective and behavioural components of procrastination that lead to such things as negative affect, fear of failure and attention being averted away from a goal pursuit, can result in the derailment of a goal in the predecisional, preactional or actional phases.

Due to the multidimensionality of trait procrastination, it was of interest to see if implementation intentions would be effective with procrastinators in the initiation and completion of goals. If the effects of implementation intentions on goal initiation or completion were moderated by procrastination, the personality literature would be advanced with the knowledge that procrastinators are not aided by this form of planning.

If implementation intentions were *not* moderated by procrastination, the volitional literature would be enhanced with the knowledge that implementation intentions serve both non-procrastinators and procrastinators alike. In addition, to the extent that implementation intentions increase the probability of task initiation and/or satisfactory goal completion, the procrastination literature would also be advanced with an effective treatment for the alleviation or amelioration of the negative affects of a troublesome personality trait.

It was proposed that the habits of procrastinators would interact with goal intentions such that general implementation intentions would be less successful in promoting goal completion, and the ability to work harder and to avoid distractions when distractions occurred for procrastinators than for non-procrastinators. Also, it was of interest to examine whether managing distractions using distraction-inhibiting, task-facilitating, or general implementation intentions, would be differentially effective for procrastinators.

The current studies followed a similar method and procedure used in the first two studies conducted by Gollwitzer and Brandstatter (1997). Both studies were conducted, in part, to strengthen the findings of Gollwitzer and Brandstatter (1997), and Schaal and Gollwitzer's (1999; Gollwitzer, 1999) research through replication and extension, and in part to utilize both an experimental and a non-experimental design, in order to determine if the moderating effects of procrastination held true in both types of situations. The first study was non-experimental and examined the facilitating effects of implementation intentions on easy and difficult self-generated goals. The second study was experimental and examined the facilitating effects of randomly assigned implementation intentions on

a particular writing task. In addition, in the second study distraction-inhibiting and task facilitating implementation intentions, and procrastination as a possible moderator of working harder and avoiding distractions as they occurred during the goal pursuit process, were examined. As procrastination has been found to inhibit goal completion, it was expected that procrastination would reduce the facilitating effects of implementation intentions in goal pursuits, thus rendering implementation intentions less effective in aiding participants efforts to work harder or avoid distractions as they occurred (Baron & Kenny, 1986). Further, both studies examined the relation between participants' sensitivities to rewards and punishments in their goal pursuits. Having a sensitivity to rewards has been found to be related to behaviour activation, and having a sensitivity to punishment has been found to be related to behaviour inhibition (Carver & White, 1994). As procrastinators fear failure (Beswick & Mann, 1994; Vadonovick& Seib, 1997) and social judgement (Lay, 1994), it was of interest to examine the sensitivities of non-procrastinators and procrastinators alike through the administration of the Behaviour Activation/Behaviour Inhibition Scales (BIS/BAS) (Carver & White, 1994).

The participants for the studies were university students. Although procrastination in the academic domain is commonly referred to as a form of situational procrastination (e.g., Ferrari & Pychyl, 2000) and it is often measured specifically with scales that assess academic procrastination (e.g., PASS, Solomon & Rothblum, 1984), a trait measure of procrastination was employed in the current studies because participants' general tendency to procrastinate across different types of goals was of interest.

The first study was non-experimental, and examined the role of procrastination on implementation intentions in the pursuit of participant supplied easy and difficult goals.

Participants were asked if they have formed implementation intentions or not for their easy and difficult goals. The following hypotheses were tested in relation to the frequency of goal completion for goals with and without implementation intentions, for the sample as a whole, and for those scoring below and above the median on the General Procrastination Scale. Also, participants' sensitivities to reward and punishment were examined as possible contributing factors in the goal pursuit process.

The frequency of goal completion with and without implementation intentions was examined in Hypotheses One and Two, and more specifically for procrastinators in Hypothesis Three.

- 1) As it has been found that implementation intentions facilitate the initiation and maintenance of goal-directed behaviour (Gollwitzer & Brandstatter, 1997), it was expected that a greater frequency of goal completion would occur for goals furnished with implementation intentions than for goals not furnished with implementation intentions.
- 2) As easy goals tend to be completed with less effort (Gollwitzer & Brandstatter, 1997), it was expected that implementation intentions would facilitate goal completion for difficult goals more so than for easy goals, such that the frequency of goal completion versus non-completion for difficult goals furnished with implementation intentions would increase significantly.
- 3) Procrastinators' poor self-regulation (Vodanovich & Seib, 1997), and tendency to put off goal action (Lay, 1986), have been found to inhibit goal completion. As such, it was expected that procrastinators would have a lower frequency of goal completion for their goals furnished with implementation

intentions than non-procrastinators whose goals were furnished with implementation intentions. Because implementation intentions were not expected to have the same facilitating effects on easy goal completion as difficult goal completion, it was of interest to determine whether easy and difficult goal completion would be differentially effected for non-procrastinators versus procrastinators with or without implementation intentions.

Participants' level of sensitivity to punishment and reward and subsequent behaviour inhibition or activation was examined in Hypothesis Four.

- 4) As procrastination has been found to be related to anxiety (Solomon & Rothblum, 1984), it was expected that procrastinators would display higher sensitivity to anxiety provoking stimuli in the goal pursuit process than non-procrastinators as measured on the Behaviour Inhibition Scale (BIS). The Behaviour Activation Scale (BAS) was also administered to non-procrastinators and procrastinators with undetermined expectations of behaviour activation.

The second study was experimental, and examined the moderating effects of procrastination on implementation intentions in the pursuit of an assigned goal. Participants were randomly assigned to one of three manipulation conditions or to the control condition. The following hypotheses were tested in relation to the level of satisfaction with goal completion, the latency in acting on implementation intentions, and the role of procrastination on implementation intentions relative to the ability to work harder and to avoid distractions, as distraction occurred during the goal pursuit process.

Also, participants' sensitivities to reward and punishment were examined as possible contributing factors in the goal pursuit process.

Participants' level of satisfaction with goal completion with or without implementation intentions was examined in Hypothesis One, and more specifically for procrastinators in Hypothesis Two.

- 1) Feelings of control, motivation and continuity have been found to assist goal completion during the actional phase of goal pursuits (Little, 1983; Heckhausen & Gollwitzer, 1987). As forming an implementation intention should provide both a sense of control and continuity, it was of interest to determine if the goal facilitating effects of implementation intentions would positively effect subjective feelings of goal satisfaction.
- 2) As procrastinators tend to put off goal action (Lay, 1986) and judge their accomplishments against those of others (Lay, 1994), it was expected that procrastinators with implementation intentions would have a lower level of satisfaction with goal completion compared to non-procrastinators, with implementation intentions.

Latency of acting on goal intentions related to procrastination for participants in an implementation intention condition was examined in Hypothesis Three.

- 3) As procrastinators tend to put off goal action (Lay, 1986), it was expected that procrastinators with implementation intentions would have a greater latency for the initiation of goal directed behaviour from when initiation was intended, than non-procrastinators with implementation intentions.

The role of procrastination on implementation intentions relative to working harder or avoiding distractions as distractions occur during the goal pursuit was examined in Hypotheses Four, Five and Six.

- 4) Procrastinators put off goal action (Lay, 1986), ruminate about their expectations of failure (Flett, Blankstein & Martin, 1995), have difficulty remaining focused during boring tasks (Blunt & Pychyl, 2000) and display an inability to sustain priorities over a number of tasks (Lay, 1986).

As such, the perception of having worked harder, and having been able to avoid distractions when goal distractions arose during the goal pursuit process, was expected to be less affected by having formed general implementation intentions for procrastinators than non-procrastinators.

Procrastinators' level of motivation has been found to change over the course of goal pursuits (Pychyl, Lee, Thibodeau & Blunt, 2000). Also, procrastinators have an inability to maintain focus in the face of competing goal intentions (Kuhl, 1994; Lay, 1986). As such, it was of interest to determine the relation between procrastination and both distraction-inhibiting and task-facilitating implementation intentions during the pursuit of an assigned writing task. These relations were examined in Hypotheses Five and Six.

- 5) It was hypothesized that forming a distraction-inhibiting implementation intention (i.e., stating an intention to avoid distractions) would be differentially effective for non-procrastinators and procrastinators in regards to perception of having worked harder, and having been able to avoid distractions, when distractions arose during the goal pursuit process.

- 6) It was hypothesized that forming a task-facilitating implementation intention (i.e., stating an intention to work harder when distractions arise) would be differentially effective for non-procrastinators and procrastinators in regards to perception of having worked harder, and having been able to avoid distractions, when distractions arose during the goal pursuit process.

Participants' level of sensitivity to punishment and reward and subsequent behaviour inhibition or activation was examined in Hypothesis Seven.

- 7) As procrastination has been found to be related to anxiety (Solomon & Rothblum, 1984), it was expected that procrastinators would display higher sensitivity to anxiety provoking stimuli in the goal pursuit process than non-procrastinators as measured on the Behaviour Inhibition Scale (BIS). The Behaviour Activation Scale (BAS) was also administered to non-procrastinators and procrastinators with undetermined expectations of behaviour activation.

Study 1

Method

Participants. The participants in Study 1 included 89 first-year students, 33 males (37.1%) and 56 females (62.9%), recruited from the undergraduate Psychology 101 subject pool. Compared with previous research (e.g., Blunt & Pychyl, 2000; Lay, 1986), this unequal gender split is not unusual among first-year study participants, even though in this study possible male participants were deliberately called by phone in an effort to provide a more equal gender balance in the sample. The age of the participants in this study was also similar to other studies using first-year university students, with the median age for the sample being 19 (47.2%) ($M = 22.2$, $SD = 7.32$) (e.g., Lay, 1994; Solomon & Rothblum, 1984). The minimum age of the sample was 18 and the maximum age was 60, with 8% of the sample being above the age of 30. Although 8% of the sample was above the age of 30, this was not considered a problem in the analyses.

Procrastination is a problem for individuals regardless of age. In fact, the oldest participant in the sample held the highest procrastination score (85). In regards to implementation intentions, studying the effectiveness of implementation intentions on goal pursuits is of interest at all ages. Also, the frequency of having formed an implementation intention or not for easy and difficult goals was no different for this 8% of the sample than from the rest of the sample. The mean age of the male participants was 22.61 ($Mdn = 20$, $SD = 8.55$), and the mean age of the female participants was 21.96 ($Mdn = 19$, $SD = 6.56$).

Materials

One of the scales used in the study, the General Procrastination Scale, was administered as a pre-measure during mass testing in order to select participants with a range of procrastination scores. The remaining measures were administered during the study. These measures included: a goal statement form, goal quality questionnaires (one each for participants' easy and difficult goals), follow-up questionnaires (one each for participants' easy and difficult goals) and the Behavioral Inhibition/Behavioral Activation Scales.

General procrastination scale. The mass testing process was used to obtain participants with a wide range of procrastination scores. In doing this, it reduced the possible bias of having overrepresentation of extremely low or extremely high procrastinators in the sample. On the one hand, it has been found in previous research that those who score high on procrastination put off getting involved in research and simply do not show up. On the other hand, those students that are high on conscientiousness may volunteer for the study early in the term. The systematic sampling across the spectrum provided the guarantee of a more normal distribution for the design. Also, as there is generally an overrepresentation of female participants in psychology research, systematic sampling was used in an effort to gain a more equal division of male and female students.

Lay's (1986) General Procrastination Scale (GP) was administered to students from the undergraduate Psychology subject pool (See Appendix A). This 20-item scale is uni-dimensional and measures trait procrastination.¹ Sample items include: "I generally

¹ A recent Masters thesis by Vestervelt (2000; Vestervelt & Pychyl, 2000) indicated that the GP Scale may in fact consist of 3 factors, however the first factor, which accounted for the majority of the variance in the

delay before starting on work I have to do”, and “I generally return phone calls promptly.” Scoring of each item is done on a 5-point Likert scale ranging from 1 = false of me, to 5 = true of me. Ratings are summed for a single-scale score, with ten of the items being reverse scored. Ferrari (1991) found the GP to have a Cronbach alpha coefficient of .78 and test-retest reliability of .80 (Ferrari, 1989), and Blunt and Pychyl (1998) found the scale to have a Cronbach alpha of .87.

Goal statement. On a provided form participants were asked to list one easy and one difficult goal that they held when they arrived to participate in the study. They were also asked to indicate whether they intended to complete each goal in the following first or second week (See Appendix D).

Assessment of goal qualities. An adapted questionnaire from Gollwitzer and Brandstatter (1997) was used to assess participants’ goals. Participants were asked to rate certain aspects of their easy and difficult goals on a 10-point scale, with 1 being not a lot, a little, or never and 10 being very, a lot, or very often. Gollwitzer’s original questionnaire was found to have a Cronbach’s alpha of .74 for easy goals, and .71 for difficult goals. The questionnaire was adapted in order to provide additional information about procrastination, and to alleviate difficulties within the existing questionnaire. Some of the questions used by Gollwitzer and Brandstatter were problematic for the following reasons:

- (1) The rating options do not relate clearly to the question asked.
- (2) The answer option is worded in such a way that participants may not comprehend the meaning.

items, clearly represented generalized behaviour delay or trait procrastination. Given the prominence of this single factor and research by Ferrari (1992) and Lay (1986), the scale has been adopted for this study as a uni-dimensional measure of trait procrastination.

- (3) The rating option is irrelevant in the question.
- (4) The answer options are limited.
- (5) The question only allows for one choice of answer, limiting the information to be gained from the question.

In this study, certain questions were adapted or added as follows. The possible answers for the question “Does goal completion require a single action or a sequence of actions?” were changed from: the three options of 1 = single action, 2 = in between, 3 = several different actions, to: the two options of 1 = single action, 2 = sequence of actions. Providing two options that related to the actual question made it clearer to the participants. Also, there seems to be little relevance to Gollwitzer and Brandstatter’s use of 2 = in between in the answer options. The question that asked “How likely is it that you will encounter possible obstacles”?, was changed such that participants were not simply given set obstacles to choose from, but were allowed to list as many possible goal obstacles as they perceived might occur. This provided additional information, as well as providing the option of assessing differences in the number of options chosen by procrastinators versus non-procrastinators. Also, the last four questions (listed as l, m, n and o) were added to capture further goal aspects, particularly focused on the procrastination literature. The questions used to assess goal qualities are provided below (See Appendixes E and F).

- (a) How long have you held this goal? (in number of days).
- (b) How close do you feel to goal completion? (choosing a number from 1 to 10).
- (c) Does goal completion require a single action or a sequence of actions? (with possible options of 1 = single action or 2 = sequence of actions).

- (d) Are you familiar with the necessary actions? (rated from 1 to 10).
- (e) How important is the goal? (rated from 1 to 10).
- (f) How much social pressure do you feel to complete your goal? (rated from 1 to 10).
- (g) How certain are you to achieve your goal? (rated from 1 to 10).
- (h) How much have you invested for goal completion so far? (rated from 1 to 10).
- (i) How likely is it that you will encounter distractions? (rated from 1 to 10).
- (j) List the possible obstacles or distractions you might encounter.
- (k) How many times have you tried unsuccessfully to complete your goal?
- (l) Have you failed to seize opportunities to complete your goal? (rated from 1 to 10) (Gollwitzer & Brandstatter, 1997).
- (m) Will you feel guilty if you do not complete your intended goal? (rated from 1 to 10).
- (n) How anxious are you about this goal? (rated from 1 to 10).
- (o) How interested in this goal are you? (rated from 1 to 10).
- (p) How much do you consider this goal to be of your own choosing as opposed to a goal someone else wants you to complete? (rated from 1 to 10).

Assessment of implementation intentions. In order to assess whether participants had determined where and when they planned on initiating goal-directed behaviour through the formation of implementation intentions, they received the following directive. The directive was adapted from the one given by Gollwitzer and Brandstatter in

order for the first year students to understand and relate to the instruction. The spirit of the original directive was intact.

In pursuing goals, people decide on certain behaviors that they will follow in order to achieve their goals. These behaviours relate to when, where and how (i.e., the type of action required) they will act. For example, a person may have the goal of controlling their pre-exam stress through exercise instead of over-eating, which is how they normally handle it. In order to achieve this goal, a person could decide that when she gets out of class on Wednesdays at 2:00 p.m. and goes to her locker, she will see her gym clothes and head to the gym, instead of the cafeteria. Please indicate whether you have by now committed yourself to a certain context for initiating specific actions toward your goal, in the sense of "When I find myself in the specified situational context y, I will perform behavior z!"

When participants had responded with a yes or no to the question of whether they had formed implementation intentions for their easy and difficult goal, they were asked to describe in writing the situational contexts and actions chosen in their respective goal pursuits. Those who had not formed implementation intentions for either goal were not expected to complete this directive (See Appendixes E and F).

Assessment of goal completion. Participants were asked to return after the two-week period during which their stated goals should be completed. At that time, they were asked to indicate with a yes or no whether their two goals were completed. They were also asked to what extent they had completed their goals to their satisfaction. These questions were embedded within a number of other rated questions related to their goals. Gollwitzer and Brandstatter embedded the questions of whether participants completed their easy and difficult goals within a questionnaire based on the goal quality questions. In the current study, the questions used in the follow-up questionnaire were chosen for their relevance to the students and to goal pursuits, including such things as effort spent, how busy they were and other aspects of their lives such as social engagement (See Appendixes G and H).

Assessment of tendency to behavioural inhibition and to behavioural activation.

Procrastinators are prone to negative affect expressed through anxiety and fear (Lay, 1994). This negative affect is related to delay of action or inaction in procrastinators. Carver and White (1994) have studied anxiety and impulsivity as personality dimensions, with their respective negative and positive affect. Their work draws on Gray's theory (Gray, 1972, 1981; cited in Carver & White, 1994) that these two dimensions refer to distinct components within the nervous system, one related to aversive motivation, the behavioral inhibition system (BIS), and one related to appetitive motivation, the behavioral approach system (BAS), with individual sensitivities to both. So one individual could display any combination of high and low scores on the two dimensions. Carver and White (1994) developed the BIS/BAS scale to measure these dimensions, paying particular attention to the expected role of the two systems in producing emotional reactions.

In regards to the BIS system, their focus was on questions that expressed concern over the risk of bad occurrences, sensitivity to them and how people respond to these possibly punishing events. Attention was given to the occurrence of anxiety in situations where punishment cues were present. In regards to the BAS system, their focus was on questions that reflect a strong desire to approach a goal, seeking out possibly rewarding situations and sensitivity to rewards. The measure of BIS is seen as uni-dimensional (i.e. punishment sensitivity), while the measure of BAS is related to three qualities, namely, reward responsiveness, fun seeking and drive.

Although convergent and discriminant validity tests showed some similarities with other measures (e.g., fun seeking from the BAS and extraversion from Eysenck &

Eysenck's (1985) 10-item scale), overall the BIS/BAS Scales were shown to measure somewhat different qualities from other scales (Carver & White, 1994). Also, the measure of BAS was found to be less ambiguous in determining a relation with positive affect than is the extraversion scale, such that positive affect is effected by sensitivities in the behavior activation system as opposed to extraversion in general.

As procrastinators tend to avoid or put off dealing with situations that provoke anxiety (Beswick & Mann, 1994; Vadonovick& Seib, 1997), and approach situations that they enjoy (Lay, 1986), it was useful to measure their sensitivities on the BIS/BAS Scales as compared to non-procrastinators. Although many contextual variables may come into play in the goal pursuit process, determining procrastinators' sensitivities was expected to provide an important link to their inability to initiate and sustain goal action. For this reason, the BIS/BAS Scales were administered to all participants (See Appendix U).

Procedure

Procrastination questionnaires were included in the Psychology Department mass testing process in October. The forms were evaluated such that possible participants were randomly chosen within the ranges of low and high scores, to ensure a normal distribution. Students were subsequently contacted by phone regarding possible participation in Study 1. Those who agreed to participate were asked to come to the university in one of two groups (to accommodate the number of participants) to participate in a study examining the goal pursuits of university students.

Following Gollwitzer and Brandstatter's study format, when each group of participants arrived at the prescribed classroom location, the experimenter informed them

that they would be completing a questionnaire regarding their personal goals, including their structure and implementation. The experimenter remained in the classroom at all times to answer questions that arose.

Participants were asked to write their student number on all forms for matching purposes with their mass testing information. This was explained in the informed consent form (See Appendix B). Participants received a questionnaire with a description of a personal goal or project written on the first page. The description, the same as the one provided in Gollwitzer and Brandstatter's (1997) first study, read as follows:

Personal goals can differ in many ways. They may be more or less difficult to implement; require only a few or a complex sequence of action steps; represent different areas of a person's life; and be more or less time consuming, attractive, or urgent (p. 188).

Participants were then asked to generate one easy and one difficult to implement goal. These goals must have been held prior to entering the study and participants should have intended to complete them during the following two-week period. Participants also indicated during which of the following two weeks they had intended to complete each goal.

The second part of the questionnaire, which assessed goal qualities as specified in the questions above (See assessment of goal qualities, Appendixes E and F), was then completed for both easy and difficult goals. Following this, participants answered the yes or no question as to whether they had formed implementation intentions for the two stated goals (See the paragraph stated above that was presented to participants under assessment of implementation intentions). To ensure participants had indeed formed implementation intentions, they were then asked to describe in written form the actions and situational context associated with their intentions.

At the end of the session, participants were asked to return in two weeks on a specific date and time to complete a follow-up questionnaire. Participants were offered two possible follow-up session dates and times (these dates were consecutive to avoid the possibility of confounding, as procrastinators might otherwise have chosen the latter of the two sessions due to their tendency to procrastinate). Participants were asked to leave their names and phone numbers in order for the experimenter to provide a reminder telephone call prior to the pre-arranged meeting date.

When they returned, they completed a short questionnaire, including a yes or no question indicating if they had completed each stated goal. The remaining questions, although used to conceal the experimenter's interest in whether they completed their goals or not, provided additional goal information. The BIS/BAS Scales were also completed at this time. Participants were then debriefed on the purpose of the study (See Appendix V). Participants signed a sheet indicating their name, professor's name (and course section) and student number in order to receive course credit.

Results

Study 1

The purpose of Study 1 was to examine the factors that contribute to, or hinder, goal completion. The theory of action proposed by Gollwitzer (1996) shows that although we have goal intentions, they do not always lead to goal completion. Implementation intentions, a specific type of planning, have been found to aid in the commencement and completion of goals. In the case of procrastinators, it was of interest to determine whether implementation intentions would be as effective in promoting goal completion.

In this non-experimental study, participants were asked to provide an easy and a difficult goal that they held prior to participating in the study and that they intended to complete in one of the following two weeks. Participants were asked if they had formed an implementation intention for each of their goals and to provide the specifics of their implementation intention if they had one, including in which of the next two weeks they intended to complete each goal. They were also asked to provide information regarding their goals (i.e., goal qualities), such as how long they had held the goal and how important it was to them. The completion rate for these self-chosen goals was examined in relation to implementation intentions, and the possibility of procrastination serving as a moderator of the effects of implementation intentions on goal completion was also explored.

The results for this study are presented in three sections. The first section provides descriptive and categorical information, such as a breakdown of the participants' easy and difficult goal categories. In the second section the results for the hypotheses of the study are presented, with attention given to the importance of the findings in relation to the expected findings. In the third section, the analysis of both Goal Qualities and Follow-up Questions are discussed.

Descriptive and Categorical Information

Following are the descriptive statistics for the General Procrastination Scale and the BIS/BAS Scales used in Study 1. For each, means, standard deviations, Cronbach alpha coefficient reliabilities, and comparisons with other relevant studies are provided. As well, a breakdown of the goal categories is presented.

Procrastination. The procrastination scale scores were examined in order to compare the current study scores to similar studies for reliability purposes, and in order to examine the role of procrastination in the goal pursuits of the study participants.

The central tendencies and standard deviations of the procrastination scale were found to be commensurate with previous studies. From a possible range of scores (20 to 100), the minimum score for the sample was 26 and the maximum score was 85 ($M = 52.83$, $SD = 13.25$). A higher score on the procrastination scale indicates a greater tendency towards procrastinating in general. A median split on the participants' procrastination scores was determined ($Mdn = 53.00$). Overall, 43 participants scored below the median and 43 scored above the median. Three of the participants' (all female) procrastination scores fell on the median. In analyses using the median split on procrastination, the data for these three participants were omitted.

A t test was conducted on the procrastination means (i.e., total procrastination scores) and a chi-square analysis was conducted on the procrastination median split in order to determine if there were gender differences on procrastination scores. No significant gender differences were found on the t test ($t(87) = -.82$, $p > .05$) or the chi-square analysis ($\chi^2 [1, N = 86] = 2.41$, $p > .05$). As no significant gender differences were found, gender was collapsed across in the procrastination analyses. For ease of presentation and continuity, when referring to analyses that utilized a median split on the General Procrastination Scale, those who scored below the median will be referred to as "non-procrastinators" and those who scored above the median will be referred to as "procrastinators".

The Cronbach alpha coefficient for the procrastination scale in the present study was $\alpha = .89$, which is comparable to previous studies using the General Procrastination Scale (GP), with alphas of $\alpha = .91$ (Lay, 1994) and $\alpha = .87$ (Blunt & Pychyl, 1998). This result indicates that the GP scale had acceptable reliability in this study.

BIS/BAS Scales. As with the procrastination scale, the BIS/BAS Scale scores in the current study were examined for reliability prior to being used for analysis purposes. The reliability of the scales was examined by calculating the Cronbach alphas. The obtained alphas were as follows: BIS was $\alpha = .77$, BAS reward responsiveness was $\alpha = .54$, BAS drive was $\alpha = .77$, BAS fun seeking was $\alpha = .78$ and the BAS total was $\alpha = .84$. Due to the fact that the BAS reward responsiveness subscale alpha fell below traditional standards (Kline, 1993; Nunnally, 1978) it was not included in the analyses. These alpha results were comparable to those of previous relevant studies using the BIS/BAS Scales. Alpha coefficients obtained for these scales previously were as follows: BIS ($\alpha = .76, .74$), BAS drive ($\alpha = .80, .76$), BAS fun seeking ($\alpha = .70, .66$), and BAS total ($\alpha = .83$, no BAS total score alpha was given in the second study). The alpha coefficient obtained for the BAS reward responsiveness subscale in the current study was low compared to previous studies ($\alpha = .65, .73$) (Jorm, Christensen, Henderson, Jacomb, Korten & Rodgers, 1999; Carver & White, 1994, respectively). These results indicate that the BIS scale, and the BAS drive, fun seeking and total scales, had acceptable reliabilities in this study.

In regards to the BIS scale, a higher score corresponds to less sensitivity to anxiety, and a lower score corresponds to more sensitivity to anxiety, leading to possible avoidance of a goal, or behaviour inhibition. In regards to the total BAS scale score and

the subscale scores (i.e., drive and fun seeking), a higher score corresponds to less motivation to approach, and a lower score corresponds to greater motivation to approach a goal, or behaviour activation. The means and standard deviation scores on the BIS and BAS scales for the sample as a whole, and broken down for non-procrastinators and procrastinators, are provided below (See Table 1 below). The mean scores presented below are indicative of differential motivations to approach and avoid for non-procrastinators and procrastinators. The means for procrastinators suggest a greater sensitivity to anxiety, lower drive and greater fun seeking than non-procrastinators.

Table 1

Means and Standard Deviation Scores for the BIS/BAS Scales

Sample	<u>n</u>	Scales			
		BIS	BAS(D)	BAS(FS)	BAS(Total)
Total	89				
<u>M</u>		13.36	8.73	8.12	24.25
<u>SD</u>		3.89	2.48	2.58	5.93
Non-procrastinators	43				
<u>M</u>		14.44	8.30	8.35	24.19
<u>SD</u>		4.02	2.74	2.35	6.21
Procrastinators	43				
<u>M</u>		12.47	9.09	7.86	24.26
<u>SD</u>		3.58	2.21	2.87	5.88
<u>Note.</u> (D) = Drive					
(FS) = Fun seeking					

Goal categories. All participants listed a self-generated easy and difficult goal that they hoped to complete in the following two-week period. It was of interest to determine if the types of goals held by participants varied based on their level of difficulty, in the event that their goal completion differed. The easy and difficult goals were broken down into categories. In order to establish inter-rater reliability of category classification, a random subset of twenty-five percent of participants' easy and difficult goals were examined by another rater. An inter-rater reliability of 0.92 was obtained (See Appendix X for a copy of the categorization scheme).

The same categories emerged for both easy and difficult goals. The six categories that emerged for both easy and difficult goals were: 1) academic, 2) organizational, 3) household, 4) health, 5) inter-personal, and 6) work (volunteer and paid). Typical easy goals mentioned under these categories were, *Academic*: "achieve a respectable grade on my psychology exam," and "go to all my classes;" *Organizational*: "getting to class on time," and "organize a more convenient study area;" *Household*: "redecorate my apartment," and "laundry;" *Health*: "begin scheduled exercise to get in shape for the winter," and "lose weight;" *Work*: "start as assistant coach of volleyball team at old school", and "starting my new job;" and *Inter-personal*: "go home next weekend to see my family," and "set up a reading program with my eight year old son."

Typical difficult goals mentioned under these categories were, *Academic*: "pass midterms," and "finish my lab reports and assignments;" *Organizational*: "determine a good set of times and schedule exam studying," and "start planning my time better;" *Health*: "get back into exercising," and "participate in physical activity and do abdominal workout everyday;" *Household*: "pack the entire house and move in two weeks," and

“buy groceries;” *Inter-personal*: “represent myself and my family very well at a high school dedication ceremony in my father’s memory,” and “perfect my trumpet playing for my sister’s upcoming wedding;” and *Work*: “finalize client contract for further consulting work,” and “complete 1999 PST report for work.” .

In Tables 2 and 3 below, the frequencies of easy and difficult goal categories are presented for the sample as a whole, by gender, and by non-procrastinators and procrastinators. This is followed by the frequency of completion versus non-completion of goals within each goal category.

Table 2

Frequencies of Easy Goal Categories

Sample	n	Easy Goal Categories					
		Academic	Organizational	Household	Health	Inter-personal	Work
Overall	89	41	16	11	10	6	5
Males	33	14	5	4	7	3	-
Females	56	27	11	7	3	3	5
Low	43	20	5	6	4	5	3
High	43	19	10	5	6	1	2

Note: Low = non-procrastinators
High = procrastinators

Table 3

Frequencies of Difficult Goal Categories

Sample	n	Difficult Goal Categories					
		Academic	Organizational	Household	Health	Inter-personal	Work
Overall	89	58	9	7	8	4	3
Males	33	21	3	2	2	3	2
Females	56	37	6	5	6	1	1
Low	43	27	3	5	3	3	2
High	43	29	6	2	4	1	1

Note: Low = non-procrastinators
High = procrastinators

Given that the specific goals within certain categories of non-academic goals varied greatly, it was of interest to determine the frequency of goal completion for each category of easy and difficult goals. The frequency of completion over non-completion was greater for each category of easy goals: *Academic* – 26 completed, 15 not completed; *Health* – 6 completed, 4 not completed; *Household* – 7 completed, 4 not completed; *Organizational* – 11 completed, 5 not completed; *Work* – 4 completed, 1 not completed; *Inter-personal* – 4 completed, and 2 not completed. Difficult goal completion versus non-completion by category was as follows: *Academic* – 38 completed, 20 not completed; *Health* – 2 completed, 6 not completed; *Household* – 1 completed, 6 not completed; *Organizational* – 2 completed, 7 not completed; *Work* – 0 completed, 3 not completed; *Inter-personal* – 2 completed, 2 not completed. Although the goals varied greatly within the categories, difficult academic goals were completed with a greater frequency than goals within any non-academic goal category. For easy and difficult goals the specific goals did not appear to affect the completion rates, whereas whether the goals were easy, academic or non-academic did appear to play a role (academic versus non-academic goal completion will be further discussed below).

The results of chi-square analyses indicated that in regards to goal type for the sample as a whole, there was a significantly greater frequency of academic goals (58) over non-academic (31) for difficult goals ($\chi^2 [1, N = 89] = 8.19, p < .01$). There was also a significantly greater frequency of academic goals (29) over non-academic goals (14) for procrastinators ($\chi^2 [1, N = 43] = 5.23, p < .05$).

Comparing this to Gollwitzer and Brandstatter's (1997) study where participants listed an easy and difficult goal they intended to complete over the Christmas break, the

authors found only 8.2% of easy goals to be career related (including academic), 55.3% to be lifestyle related (e.g., finishing a book), and 36.5% to be of an interpersonal nature (e.g., keep in contact with a friend). For self-generated difficult goals, the authors found 52.9% to be career related, 31.4% to be lifestyle related, and 15.7% to be of an interpersonal nature. It is somewhat difficult to compare categories from this study and Gollwitzer and Brandstatter's study, as they provided little in the way of a breakdown of what their categories included. What is apparent is that academic easy goals were more prominent in the present study. Perhaps the fact that Gollwitzer and Brandstatter conducted their study of goals over the Christmas break led to less variability in goal categories and a low frequency of academic goals.

Overall the academic category was most representative of easy and difficult goals even when broken down by procrastination. For the sample as a whole, academic goals represented 46.1% of easy goals and 65.2% of difficult goals. For non-procrastinators, academic goals represented 46.5% of easy goals and 62.8% of difficult goals. For procrastinators, academic goals represented 44.2% of easy goals and 67.4% of difficult goals.

When chi-square analyses were conducted on goal types in order to determine if there were significant gender differences, none were found (all easy goal categories - $\chi^2 [5, N = 89] = 8.41, p > .05$; easy academic versus non-academic - $\chi^2 [1, N = 89] = .28, p > .05$; all difficult goal categories - $\chi^2 [5, N = 89] = 4.38, p > .05$; difficult academic versus non-academic - $\chi^2 [1, N = 89] = .05, p > .05$). It should be noted that in the chi-square analyses for all easy and difficult goal categories, some of the cells had a count of less than 5. Goal completion was also analyzed for gender differences using chi-square

analyses (easy goal completion - $\chi^2 [1, N = 89] = .48, p > .05$; difficult goal completion - $\chi^2 [1, N = 89] = .33, p > .05$). As no significant differences were found, the analyses for the study were conducted on the sample as a whole.

Expected goal completion. Prior to the hypothesis testing, some additional information was analyzed in order to provide a greater understanding of participants' goal behavior, as this information might have been relevant to understanding the effectiveness of implementation intentions later in the analyses. Participants were asked to indicate during which of the following two weeks they intended to complete their easy and difficult goals, in order to determine if intended week of completion played a role in the frequency of goals completed.

A chi-square analysis conducted to determine if there was an interaction in frequency of having intended to complete easy and difficult goals by different weeks was significant ($\chi^2 [1, N = 178] = 34.25, p < .01$). For the entire sample, 62 of the 89 participants (69.7%) indicated they would complete their easy goal in the first week, and 27 (30.3%) indicated they would complete their easy goal in the second week. Twenty-three (25.8%) participants indicated they would complete their difficult goal in the first week, while 66 (74.2%) indicated they would complete their difficult goal in the second week. Breaking this down by goal type, there was a significant difference in frequency of intended week of completion for both easy ($\chi^2 [1, N = 89] = 13.76, p < .01$) and difficult goals ($\chi^2 [1, N = 89] = 20.77, p < .01$), with a significantly higher frequency of intended completion of easy goals in Week One, and a significantly higher frequency of intended completion of difficult goals in Week Two.

Having established when participants intended to complete their goals, attention was turned to a main variable of Study 1, namely implementation intentions. The formation of implementation intentions for easy and difficult goals for the sample as a whole, and by procrastination, was examined.

Chi-square analysis on implementation intentions for easy versus difficult goals.

Establishing whether participants had formed implementation intentions for their easy and difficult goals was necessary in order to determine whether implementation intentions played a role in goal completion. A chi-square analysis was conducted in order to determine whether the frequency of forming an implementation intention was independent of goal type. It was found that implementation intentions were formed more frequently than not for both easy and difficult goals. Fifty-one of 89 participants (57.3%) formed an implementation intention for their easy goal while 38 (42.7%) did not. Forty-seven participants (52.8%) formed an implementation intention for their difficult goal while 42 (47.2%) did not ($\chi^2 [1, N = 89] = 4.73, p < .05$).

In regards to procrastination, no significant interaction was found in having or not having formed implementation intentions for non-procrastinators versus procrastinators' goals overall, or when broken down by easy and difficult goals. Forty-eight of the non-procrastinators' goals were found to have implementation intentions and 38 were not. Forty-six of the procrastinators' goals were found to have implementation intentions and 40 were not. Overall, regardless of procrastination, more goals had implementation intentions than not.

For this sample, procrastination was not found to play a role in having formed or not formed an implementation intention for self-generated easy or difficult goals. In other

words procrastinators seem to form or use implementation intentions just as often as non-procrastinators.

Main Hypotheses for Study 1

Goal completion and implementation intentions. The expectation stated in Hypothesis One was that a greater frequency of completion would occur when goals were supplemented with implementation intentions than when not supplemented. For all goals of the participants (178 goals) there was a higher frequency of goal completion (103 (57.9%)) over non-completion (75 (42.1%)), and a higher frequency of having formed an implementation intention (98 (55.1%)) than not having formed an implementation intention (80 (44.9%)). The result of a chi-square analysis indicated that, for this sample, frequency of having an implementation intention versus no implementation intention was independent of overall goal completion versus non-completion. Hypothesis One was not substantiated. What was significant, was the frequency of goal completion overall, with 75 goals not completed, and 103 goals completed ($\chi^2 [1, N = 178] = 4.40, p < .05$). Examining the frequency of easy and difficult goal completion versus non-completion, it was found that easy goals were more frequently completed (58 easy goals completed; 31 easy goals not completed) ($\chi^2 [1, N = 89] = 8.19, p < .01$) than not completed. No significant difference in completion versus non-completion was found for difficult goals (45 difficult goals completed; 44 difficult goals not completed) ($\chi^2 [1, N = 89] = .01, p > .05$).

Easy and difficult goal completion and implementation intentions. Hypothesis Two stated that easy goals would be less affected by the presence of implementation

intentions than would difficult goals, such that difficult goals furnished with implementation intentions would significantly increase in frequency of completion, whereas the frequency of completion for easy goals would not increase significantly. The expected result was not substantiated for difficult goals ($\chi^2 [1, N = 89] = .56, p > .05$) or for easy goals ($\chi^2 [1, N = 89] = .31, p > .05$). The frequency of goal completion was not significantly increased by having an implementation intention.

Due to the unexpected findings related to implementation intentions the possibility of a temporal aspect of goal completion was examined. Two 2X2 chi-square analyses were conducted on goal completion and implementation intentions by week. No significant difference was found for Week One ($\chi^2 [1, N = 85] = .24, p > .05$), but fewer goals were completed if they were intended for completion in Week Two with or without implementation intentions ($\chi^2 [1, N = 93] = 3.87, p < .05$).

As implementation intentions were not found to play a role in goal completion Hypothesis Three was no longer useful. Instead, collapsing over implementation intentions, the relation between procrastination, easy and difficult goals, and goal completion was examined.

Procrastination and goal completion. Thirty-two (43.8%) goals of non-procrastinators were not completed, and 41 (56.2%) goals of procrastinators were not completed. Fifty-four (54.5%) goals of non-procrastinators were completed, and 45 (45.5%) goals of procrastinators were completed. A 2X2 chi-square analysis was conducted on non-procrastination versus procrastination and easy goal completion versus non-completion. No significant difference in frequency of completion was found (χ^2

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[1, $N = 86$] = 1.84, $p > .05$). The same analysis was run with difficult goal completion with the same non-significant result (χ^2 [1, $N = 86$] = .42, $p > .05$). Trait procrastination did not appear to play a role in goal completion.

Goal types. Implementation intentions were not related to greater goal completion, perhaps because a high frequency of participants' goals were academic, and the structured context in which students were operating may have limited variability in responses to these goals. In order to examine this possibility a 2X2 chi-square analysis was conducted on easy goal completion versus non-completion and academic goals versus non-academic goals. No significant difference in completion of easy academic versus non-academic goals was found, with more academic goals completed (26 completed, 15 non completed) and more non-academic goals completed (16 not completed, 32 completed) (χ^2 [1, $N = 89$] = .10, $p > .05$). When the same analysis was run on difficult academic versus non-academic goals, a significant difference in frequency of completion was found (non-academic – 24 not completed, 7 completed; academic – 20 not completed, 38 completed) (χ^2 [1, $N = 89$] = 14.90, $p < .01$). A significantly greater frequency of academic goals were completed than non-academic goals.

Difficult academic and non-academic goals. For difficult academic goals, a significantly greater frequency of goals were completed than not completed for the (χ^2 [1, $N = 58$] = 5.59, $p < .05$). In the case of difficult non-academic goals, there was a significantly greater frequency of non-completion over completion (χ^2 [1, $N = 31$] = 9.32, $p < .01$).

In summary, whether goals were easy and academic versus non-academic appeared to play a role in the frequency of goal completion. It appears that the contributions of implementation intentions and trait procrastination were eclipsed by the nature of the goal. Academic goals, particularly things like exams, hold the expectation of completion whether students are prepared or not. Given that in this study the majority of participants' easy and difficult goals were academic most likely accounts for a substantial frequency of goal completion over non-completion.

The procrastination results were not as expected. However, given the fact that the majority of participants' goals were academic, apparently leading to greater goal completion, the question remains as to why procrastinators completed more goals than were not completed, but not significantly more. One possible explanation is that the goal action of procrastinators was inhibited by anxiety. Procrastinators are prone to negative affect expressed through anxiety and fear (Lay, 1994). This negative affect is related to delay of action or inaction in procrastinators. As procrastinators tend to avoid or put off dealing with situations that provoke anxiety (Beswick & Mann, 1994; Vadonovick & Seib, 1997), and approach situations that they enjoy (Lay, 1986), it was useful to measure their sensitivities on the BIS/BAS Scales as compared to non-procrastinators.

Procrastination and behaviour activation/inhibition related to sensitivities.

Hypothesis Four stated that procrastinators would display higher sensitivity to anxiety provoking stimuli than non-procrastinators, with the expectation that procrastination scores would be negatively correlated with BIS scores. Also, BAS scale results were to be examined for possible differential sensitivities for procrastinators versus non-procrastinators.

Correlations were computed in order to determine if the BIS and BAS Scales were related to procrastination (analyzed as a continuous variable). The expected negative correlation between the BIS Scale scores and procrastination scale scores was found ($r = -.28, p < .01$; 1-tailed), with procrastinators being more sensitive to anxiety and behaviour inhibition than non- procrastinators.

In regards to the BAS Scales, procrastination was not found to be significantly related to fun seeking ($r = -.08, p > .05$) or BAS total score ($r = .07, p > .05$). However, a significant correlation was found between the BAS drive subscale and procrastination scores ($r = .25, p < .05$). Based on the way the BAS Scale is rated, this suggests that for this sample, higher procrastination is related to a lower drive motivation. Given that in this sample procrastinators were found to have lower drive motivation (i.e., low behaviour activation), to have higher sensitivity to anxiety, suggests that procrastination may have contributed to a lack of goal completion in Study 1.

Goal Qualities and Follow-up Questions

In order to provide further understanding of the factors contributing to or detracting from goal completion, participants were asked to provide additional information about their goals. The information collected for easy and difficult Goal Qualities were combined, and intercorrelations were calculated in order to see if the Goal Qualities were related to one another. Table 6 below presents the intercorrelations amongst fifteen combined easy and difficult Goal Quality variables (goal quality 3, regarding whether the goal required a single versus a sequence of actions, was omitted

here because it was not a continuous variable). Most of the Goal Qualities were continuous variables (See Appendixes E and F).

These data were reduced through principal components analysis. When a principal components analysis was conducted separately for easy and difficult Goal Qualities, the resulting factors were highly similar in their loadings and meaning. For this reason, the easy and difficult Goal Qualities were combined to come up with one set of factors (the mean of each participants' scores for easy and difficult goal quality questions were obtained). Four factors were extracted based on eigenvalues greater than 1 (See Table 6), on examination of the scree plot, and the theoretical association of variables within each factor. The four-factor solution was rotated with a varimax rotation so that the Goal Qualities would not be related (See Table 5).

Legend of the Goal Qualities presented in Table 4 below:

1. How long have you held this goal?
2. How close do you feel to goal completion?
4. Are you familiar with the necessary actions?
5. How important is the goal?
6. How much social pressure do you feel to complete the goal?
7. How certain are you to achieve your goal?
8. How much have you invested for goal completion so far?
9. How likely is it that you will encounter distractions?
10. List the possible obstacles or distractions you might encounter.
11. How many times have you tried unsuccessfully to complete your goal?

- 12. Have you failed to seize opportunities to complete your goal?**
- 13. Will you feel guilty if you do not complete your intended goal?**
- 14. How anxious are you about this goal?**
- 15. How interested in this goal are you?**
- 16. How much do you consider this goal to be of your own choosing as opposed to a goal someone else wants you to complete?**

Table 4

Significant Intercorrelations Between Goal Qualities

Qualities	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16
Sample size ($n = 89$)															
1	--	--	--	--	--	-.26*	--	--	--	.41**	--	--	--	--	--
2		--	--	.22*	--	--	.61**	--	--	--	--	--	.32**	.22*	.26*
4			--	--	--	--	--	--	.21*	--	-.22*	--	--	--	--
5				--	--	.22*	--	--	--	--	--	.39**	.42**	.35**	--
6					--	-.24*	.21*	--	--	--	--	.39**	.31**	--	--
7						--	--	--	--	--	-.38**	--	--	--	--
8							--	--	--	--	--	--	.29**	.23*	.23*
9								--	.31**	--	.26*	--	--	--	--
10									--	--	--	--	--	--	--
11										--	.28**	--	--	--	--
12											--	--	--	-.26*	--
13												--	.38**	--	--
14													--	.32**	--
15														--	.47**
16															--

Note. * Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 5

Varimax Rotated Component Matrix for Four-Factor Solution

	<u>Component</u>			
	1	2	3	4
1 Days held			.61	
2 Closeness to completion	.58			
4 Familiarity with necessary actions				.60
5 Importance of goal		.57		
6 Social pressure to complete goal		.69		
7 Certainty of achieving goal			-.67	
8 Investment in goal so far	.60			
9 Likelihood of encountering distractions				.51
10 Possible obstacles				.75
11 Unsuccessful attempts at goal			.59	
12 Failure to seize opportunities to complete goal			.67	
13 Guilt associated with not completing goal		.78		
14 Anxiousness about goal		.68		
15 Interest in goal	.75			
16 Self-chosen	.68			

Table 6

Eigenvalues and Variance Accounted For Using Principal Components Analysis on Easy and Difficult Goal Qualities

Component	Eigenvalues Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
Personal Salience	2.74	18.26	18.26
Negative Affect	2.11	14.04	32.30
Procrastination	1.69	11.24	43.55
Possible Goal Hindrances	1.54	10.27	53.81

Goal Qualities and easy goal completion. In order to test whether Goal Qualities played a role in goal completion, t tests² were conducted on each factor, grouped by easy and difficult goal completion versus non-completion. For easy goal completion, no significant mean differences were found for factor 1 ($t(87) = .66, p > .05$), 2 ($t(87) = .30, p > .05$), 3 ($t(87) = .31, p > .05$) or 4 ($t(87) = 1.42, p > .05$). Although none of the factors were significantly related to easy goal completion, it was of interest to further explore some of the Goal Qualities separately in order to gain additional insights into goal completion. It was found that easy goals were rated as requiring more familiar actions ($t(88) = 3.19, p < .01$), as having a higher subjective probability of completion ($t(88) = 6.52, p < .01$), and as being less important than difficult goals ($t(88) = -3.26, p < .01$).

² The frequent use of t tests in this research does provide for a potentially higher risk of Type I error, so results should be interpreted with caution. Given the potentially valuable nature of the research; however, it was deemed worthwhile to take this risk and to control for error through replication in the future.

Table 7

Means and Standard Deviations for the Four Goal Quality Factors Related to Easy Goal Completion Versus Non-completion

Factor		Mean	Standard Deviation
Goal completed			
Personal Salience	no	.009	.17
	yes	-.005	1.04
Negative Affect	no	.004	.21
	yes	-.002	.12
Procrastination	no	.004	.20
	yes	-.002	.12
Possible Goal Hindrances	no	.20	.22
	yes	-.11	.11

Further, as goal category played a meaningful role in the findings of Study 1, a t test was conducted on the Goal Quality related to goal importance to see if the means for academic versus non-academic goals differed. There was a significant difference, with academic goals being considered more important than non-academic goals ($t(87) = 3.13$, $p < .01$). While participants easy goals were considered less important than their difficult goals overall, the high frequency of academic goals that were considered more important than non-academic goals might have contributed to the frequency of easy goal completion.

Goal Qualities and difficult goal completion. In relation to difficult goals, no significant mean differences were found for factor 1 ($t(87) = .49, p > .05$), 2 ($t(87) = .48, p > .05$) or 4 ($t(87) = -.30, p > .05$). Factor 3 (procrastination) was found to have significantly different means for goal completion versus non-completion ($t(87) = 2.73, p < .01$). The longer the goal had been held, the greater the number of unsuccessful attempts to complete it, the failure to seize opportunities to complete the goal, and less certainty of achieving the goal (i.e., the questions loading on factor 3) were related to non-completion of difficult goals.

Means and Standard Deviations for the Four Goal Quality Factors Related to Difficult Goal Completion Versus Non-completion

Table 8

Factor		Mean	Standard Deviation
Goal completed			
Personal Salience	no	.005	.15
	yes	-.005	.15
Negative Affect	no	.005	.16
	yes	-.005	.14
Procrastination	no	.28	.17
	yes	-.28	.12
Possible Goal Hindrances	no	-.002	.14
	yes	.002	.16

Due to the volitional nature of the questions loading on the Goal Qualities Procrastination Factor, it was of interest to examine the relation of this factor to the General Procrastination Scale. The Goal Qualities Procrastination Factor was found to have a significant positive correlation with the General Procrastination Scale ($r(89) = .32$, $p < .05$).

In summary, easy goal completion was not found to be related to Goal Qualities. Difficult goal completion was related to the Goal Qualities Procrastination Factor. The finding that the Goal Qualities Procrastination Factor was related to the General Procrastination Scale and to difficult goal completion, although the General Procrastination Scale itself was not related to difficult goal completion, suggests that the Goal Quality Procrastination Factor is indicative of situational procrastination instead of trait procrastination as measured by the General Procrastination Scale.

Follow-up Questions. As well as examining the qualities of participants' goals, some Follow-up Questions were asked when participants returned for the final stage of the study. These questions provided information about such things as goal completion, competing tasks, and goal effort. A principal components analysis was conducted on the combined means of the easy and difficult Follow-up Questions, but as no clear relational or theoretical meaning was apparent in the factors that emerged, the questions were considered individually. Intercorrelations among the combined easy and difficult Follow-up Questions were examined. A number of the questions were found to be significantly correlated. Also, t tests were conducted on easy and difficult Follow-up Questions, grouped by both goal completion, and a median split on the procrastination scale.

Follow-up Question intercorrelations. Table 9 below presents the intercorrelations amongst seven combined easy and difficult Follow-up Questions. These Follow-up Questions were continuous variables, rated on a scale from 1 to 10, with 1 representing not at all busy, did not work hard at all, etc., and 10 representing very busy, worked very hard, etc. (See Appendixes G and H).

Legend of the Follow-up Questions presented in Table 9 below:

1. I worked very hard toward the completion of my goal.
2. I experienced problems in the pursuit of my goal.
3. The past two-week period has been busy for me academically.
4. The past two-week period has been busy for me socially.
5. I successfully completed my goal to my satisfaction.
6. I found myself trying to initiate action toward my goal on more than one occasion in the past two weeks.
7. My initial goal changed over the past two weeks.

Table 9

Significant Intercorrelations Between Follow-up Questions

Qualities	1	2	3	4	5	6	7
Sample size ($n = 89$)							
1	--	--	.45**	--	.54**	.36**	--
2		--	--	--	-.37**	.28**	--
3			--	--	--	.30**	--
4				--	--	--	--
5					--	--	--
6						--	--
7							--

Note. ** Correlation is significant at the 0.01 level (2-tailed).

Follow-up Questions 4 (The past two-week period has been busy for me socially) and 7 (My initial goal changed over the past two weeks) did not significantly correlate with any other questions. In regards to question 7, the mean was very low ($M = 2.25$, $SD = 1.46$), indicating that overall, participants' goals did not change from the time they entered the study until the time they completed the study, therefore seemingly not playing a role in goal completion.

Follow-up Questions and easy goal completion. A series of t tests were conducted on the Follow-up Questions and easy goal completion versus non-completion. As would be expected, those who completed their goals rated their level of satisfaction with goal completion significantly higher than those who did not complete their goals. There were significant differences in the means for two of the Follow-up Questions. It was found that those who completed their easy goals worked significantly harder toward the completion

of their goals than did those who did not complete ($t(87) = -3.53, p < .01$). Also, those who did not complete their easy goals experienced significantly more problems than those who did complete ($t(87) = 3.81, p < .01$).

Follow-up Questions and difficult goal completion. A series of t tests were also conducted on the Follow-up Questions and difficult goal completion versus non-completion. There were significant differences in the means for four of the Follow-up Questions. As with easy goals, those who completed their difficult goals worked significantly harder toward goal completion than those who did not complete ($t(87) = -4.96, p < .01$). As with easy goals, those who did not complete their difficult goals experienced significantly more problems than those who did complete ($t(87) = 3.30, p < .01$). Also, those who completed their difficult goals found the past two-week period to be significantly busier academically than did those who did not complete ($t(87) = -2.46, p < .05$). It is interesting to note that those who did not complete their difficult goals were less busy academically than those who did complete. Finally, those who completed their difficult goals tried to initiate action toward their goals significantly more often than those who did not complete ($t(87) = -3.30, p < .01$), suggesting a sense of perseverance.

As was the case above with the intercorrelations, questions 4 (The past two-week period has been busy for me socially) and 7 (My initial goal changed over the past two weeks) did not produce significant t test results either. It appears that for this sample, their easy and difficult goal completion was not related to changes in their goals, or to being busy socially. Both easy and difficult goal completion was related to working hard and not experiencing many problems. Only difficult goal completion was related to being

busy academically and to the initiation of goal action on more than one occasion. It may have been the case that the necessity of completing these goals lead to perseverance, especially in the case of difficult goals, which were primarily academic.

Follow-up Questions and procrastination for easy goals. The follow-up easy and difficult goal questions were also analyzed in regards to non-procrastination and procrastination. Follow-up Question 5 was included in these analyses, as it was of interest to determine if procrastination was related to level of satisfaction with goal completion. There were significant differences in the means for two of the Follow-up Questions. Non-procrastinators ($M = 7.77$, $SD = 1.89$) worked significantly harder toward completing their easy goals than did procrastinators ($M = 6.56$, $SD = 2.31$) ($t(84) = 2.66$, $p < .01$). Also, non-procrastinators were significantly more satisfied with the successful completion of their easy goals ($M = 7.49$, $SD = 2.77$) than were procrastinators ($M = 6.26$, $SD = 2.78$) ($t(84) = 2.06$, $p < .05$).

Follow-up Questions and procrastination for difficult goals. For difficult goals, there were no significant differences in the means of non-procrastinators versus procrastinators on any of the Follow-up Questions.

BIS/BAS and Follow-up Questions. In one final set of analyses, it was of interest to determine whether the BIS and BAS drive scales were related to the Follow-up Questions when grouped by procrastination. It will be recalled that a greater sensitivity to anxiety was related to higher procrastination scores, and that lower drive was related to higher procrastination scores. Based on the previous findings, it was expected that non-procrastination and low anxiety would be related to working harder and to greater

satisfaction with goal completion. It was also expected that lower drive would be associated with not working hard and with less satisfaction with goal completion.

For non-procrastinators, it was found that lower anxiety as measured on the BIS Scale was related to more satisfaction with goal completion ($r = .35, p < .05$; 1-tailed) for easy goals. Also, for non-procrastinators, lower anxiety was related to working harder ($r = .36, p < .01$; 1-tailed), having experienced fewer problems ($r = -.27, p < .05$; 1-tailed), and to more satisfaction with goal completion ($r = .51, p < .01$; 1-tailed) for difficult goals. There were no significant findings for procrastinators.

In regards to drive and procrastination, the only significant findings were related to procrastinators and difficult goals. For procrastinators, it was found that less drive (i.e., higher scores on the BAS drive subscale) was related to working less hard ($r = -.41, p < .01$; 1-tailed), to less satisfaction with goal completion ($r = -.26, p < .05$; 1-tailed), and to trying to initiate goal action less often ($r = -.26, p < .05$; 1-tailed).

These results provide support for the previous findings that non-procrastinators who worked harder completed their goals more often and with a greater level of satisfaction. It appears that as well as academic goals playing a role in goal completion, that lower sensitivity to anxiety helps to activate goal behaviour for non-procrastinators.

Summary of the Results

Implementation intentions were not found to significantly increase goal completion. In fact, regardless of implementation intentions or not, goals overall, and easy goals specifically, showed a significantly greater frequency of completion over non-completion, whereas with difficult goals the completion and non-completion rates were

virtually the same. In regards to easy goal completion, participants indicated that their easy goals required familiar actions to complete, and that they had experienced few problems during the goal pursuit process. No previous research has been conducted on the relations between implementation intentions and specific goal categories, or on the possible temporal aspects of implementation intentions (personal communication with Peter Gollwitzer, January 31st, 2001). It could be the case that implementation intentions and procrastination play less of a role with academic goals, as they tend to have a demand characteristic for completion irrespective of the individual's intentions or desires. In this respect, academic goals are highly salient in the life of a student, and they need to be completed.

Goal category appears to have played a role in goal completion. There was a significantly greater frequency of goal completion over non-completion for difficult academic goals, and a significantly greater frequency of non-completion over completion of difficult non-academic goals. Related to these findings, participants indicated that they considered their academic goals to be more important than their non-academic goals.

Another aspect that appeared to play a role in goal completion was situational academic procrastination. While procrastination as measured on the General Procrastination Scale (i.e., trait procrastination) was not directly related to goal completion, it was positively related to the length of time the goal was held, the number of unsuccessful attempts to complete it, the failure to seize opportunities to complete it, and less certainty of goal completion. Further, procrastinators in Study 1 were found to have a greater sensitivity to anxiety and lower drive. In contrast, non-procrastinators were found to work harder toward their goals, to complete more of their goals, to feel more

certain about goal completion, to feel more satisfaction with their goal completion, and to have lower sensitivity to anxiety.

In conclusion, the fact that participants' goals were intended for completion during the academic term seemingly reduced the effectiveness of forming implementation intentions, due to the demand quality of the goals. Also, the results suggest that although the role of procrastination was evident, the preponderance of academic goals and the timing of the study appeared to have overshadowed its role in the pursuit of the participants' goals.

Discussion

Study 1

The intent of Study 1 was to examine the relation between implementation intentions and procrastination as factors contributing to, or hindering, the completion of self-generated easy and difficult goals. Implementation intentions were expected to facilitate the initiation of goal action and subsequent goal completion. In the case of procrastinators, the effectiveness of this specific type of planning on self-generated goals was expected to be less effective, with procrastination hindering goal completion. Contrary to these predictions, it was found that the frequency of easy and difficult goal completion was not significantly related to implementation intentions. Therefore, the moderating role of procrastination on implementation intentions in the goal pursuit process could not be examined. The relation of procrastination to goal completion was subsequently examined independent of implementation intentions.

Although the main hypotheses of this study were not substantiated, other factors that may have contributed to, or hindered goal completion were revealed through the goal categories themselves, and through information gathered from Goal Qualities and Follow-up Questions. In order to understand the implications of Study 1, recent research on implementation intentions, the role of volition, the role of anxiety, and the role of self-regulation in goal completion must be explored.

Implementation Intentions and Volition

Recent research³ may provide some understanding of the non-significant findings regarding implementation intentions in the current study as this research indicates that

³ These results were not taken into consideration in the design of the study as they only came to light in February 2001, after the study had been run.

qualities of the goals can render implementation intentions ineffective. Owens, Dill, Levine and Goldfarb (2001) examined the mediating role of goal benefits and task interference on implementation intentions in goal completion. Participants were asked to rate three different academic assignments on a number of factors including perceived interference with leisure activities, perceived academic benefit, and perceived interference with other work. Participants were then randomly assigned to the experimental (i.e., implementation intention) or control group (i.e., no implementation intentions) and allocated one of the assignments to complete. The authors found that study participants in the implementation intention condition initiated goal action more consistently, and completed a greater percentage (i.e., goals were rated on completion by increments of 0%, 25%, 50%, 75%, 100%) of the assigned tasks, than those in the control condition. However, when perceived interference with leisure activities, perceived academic benefit, and perceived interference with other work were covaried out, the effects of implementation intentions were no longer significant. The authors suggest that although implementation intentions can reduce the distraction of competing stimuli, opposing activities that might not have been perceived at the time that the implementation intention was formed, the qualities of the goals themselves, and a lack of perceived benefit from the goal at hand, can render implementation intentions less, or completely ineffective.

Drawing on the findings of Owens, Dill, Levine and Goldfarb (2001), in the current study, on the one hand, the ineffectiveness of implementation intentions may have been affected by the perceived benefit of the academic goals, as evidenced by the greater frequency of completion over non-completion of difficult academic goals. On the other

hand, the lack of effectiveness of implementation intentions in the completion of non-academic difficult goals appears to suggest a lack of perceived benefit of these goals, given that it was the middle of an academic term and academic goals would have been the focus of the participants.

Considering the fact that both easy and difficult academic goals were considered more important to the participants and were completed more often than non-academic goals, it appears that goal prioritization might have been taking place on some level. In the preactional phase of goal pursuits, goal framing plays a role in whether goal action will follow goal volition (Gollwitzer, 1996; Heckhausen & Gollwitzer, 1987). The desirability and feasibility (including expected costs and rewards) of completing the non-academic goals most likely held a lower priority to the participants, regardless of level of procrastination, given the timing of the study.

Goal volition. Ferrari and Scher (2000) also speak to the prioritization of goals during the academic term and how this can affect goal volition. Ferrari and Scher examined procrastination and completion of academic versus non-academic goals in the second, and second to last week of two academic terms. The authors found differences in completion of the two types of goals dependent on time within the term. Academic goals were less likely to be completed at the beginning of the term if they were considered unpleasant, but unpleasantness did not affect completion at the end of the term. Pleasantness of the task was not a factor in the completion versus non-completion of non-academic goals at the beginning of the term, whereas pleasantness of the goal was important to completion at the end of the term. The authors suggest that by the end of the term, the necessity to complete academic goals whether they are pleasant or unpleasant is

more salient, whereas non-academic goals must be seen as highly appealing to be completed (Ferrari & Scher, 2000).

The current study took place during the middle of the academic term. Considering the research of Ferrari and Scher (2000), it can be suggested that the participants' awareness of the importance of their academic goals would have been increasing, and the importance of their non-academic goals would have been decreasing. This might explain why implementation intentions were ineffective in increasing the rate of goal completion, such that the importance of the academic goals of the participants provided the volition to take goal action without the addition of an implementation intention.

Self-regulation and volition. Poor self-regulation, which is related to procrastination (Vodanovich & Seib, 1997), might have played a role in Study 1 as well, with procrastinators not adapting as well as non-procrastinators to the situational demands of their academic goals and putting forth less effort, resulting in a lower completion rate, and less satisfaction with goal completion. Non-procrastinators, who were busier academically during the two-week period of the study, still managed to work harder and successfully complete more of their goals than did procrastinators who reported being less busy academically.

Self-regulation, which is acquired progressively through early and middle childhood, includes among other things, the ability to control affect and impulses, to delay gratification, and to adhere to social norms without external regulation, allowing for adaptation to situational demands (Kopp, 1991). Procrastinators have been found to be impulsive, preferring instant gratification from an enjoyable task to the long-term reward of an unpleasant task (Van Eerde, 2000). Indulging in short-term enjoyable tasks,

results in inadequate time left to work on the postponed tasks, leading to poor quality work or a failure to meet deadlines (Van Eerde, 2000). Also, procrastinators with poor self-regulation skills require external motivation to complete academic goals, as they have been found to lack the inherent satisfaction with academic tasks that non-procrastinators have (Brownlow & Reasinger, 2000).

In the current study, procrastinators' failure to seize opportunities to work on their goals, and the fact that they held their goals for long periods of time without completing them is suggestive of poor self-regulation. As the academic term progresses, and the fear of failure increases, procrastinators begin to work more diligently toward goal completion (Ferrari & Scher, 2000). This provides a possible explanation for the fact that procrastinators' level of goal completion was comparable to the level of goal completion of non-procrastinators.

In addition to self-regulation, intentional actions toward a desired goal require regulatory or volitional skills in order for the commencement and maintenance of goal action to take place (Heckhausen & Gollwitzer, 1987; Lutkenhaus & Bullock, 1991). Volitional skills, which are generally acquired in early childhood, allow a person to recall the desired goal, to remain on task, and to monitor progress toward the anticipated outcome (Lutkenhaus & Bullock, 1991). Putting volitional skills into play involves cognitive ability, motivation (including perceived relevance of the goal to oneself), a belief in one's ability as an active agent to attain the goal, and the subjective feelings of success and failure associated with a belief in one's own ability (Lutkenhaus & Bullock, 1991). If a person questions his or her ability or competence due to goal obstacles or past

failures, goal action can break down, producing negative affect (Lutkenhaus & Bullock, 1991).

In the current study, procrastinators failed to take volitional action by not seizing opportunities to work on their goals, they worked less hard toward their goals and they were less certain of achieving their goals. It could be the case that these participants recognize a lack of volitional skills in themselves that are necessary to remain on task and to monitor their progress, resulting in anxiety and negative affect, or personal dissatisfaction with their goal outcomes. This would support past research that has found that procrastinators ruminate before and after goal attainment; ruminating before because they want to obtain a goal, but they do not see themselves making progress towards it (Gold & Wegner, 1995; cited in Stainton, Lay & Flett, 2000), and ruminating after because they failed to live up to their ideal selves (Flett, Blankstein & Martin, 1995).

Affect and volition. Unlike the negative effects on volition associated with rumination, positive affect has been found to allow for the integrated regulation of the stimulus-response systems that control working memory (i.e., a process that is activated when difficult intentions that often require delayed responses are to be carried out) and the inhibition of behaviour output (Kuhl & Kazen, 1999). Kuhl and Kazen refer to the interaction of these two systems as “intention memory.” The authors have found that volitional facilitation of explicitly intended behaviours occurred with the presentation of positive affect, but not with negative or neutral affect. They tested this idea using Stroop (See Stroop, 1935) tasks where a correct behaviour response requires overcoming a competing stronger response tendency (MacLeod, 1991, cited in Kuhl & Kazen, 1999). The effects of positive affect on behaviour were only found for difficult tasks requiring a

sequence of actions. Kuhl and Kazen (1999) suggest that rumination, multiple difficult demands, and the tendency to not act on intentions when the opportunity presents itself (i.e., procrastination) are associated with volitional inhibition related to regular low levels of positive affect. This finding suggests that procrastinators who tend to act impulsively on competing tasks that are more interesting and who experience negative affect from delaying intended goal action, fail to act on their difficult goals that are unpleasant.

In the current study, procrastinators were found to have higher levels of anxiety related to behaviour inhibition. The negative affect associated with anxiety, the fact that procrastinators did not work as hard on their goals, and the fact that they were less satisfied with their goal completion than non-procrastinators, suggests that a lack of positive affect in these participants might have played a role in their volitional inhibition, resulting in their not acting on opportunities as they presented themselves.

Drive and volition. Anxiety may not be the only factor related to volitional inhibition. The procrastinators' failure to act, or volitional inhibition on the part of procrastinators in the current study, may be related to lower drive. Further, lower drive was found to be related to not working hard, to trying to initiate goal action less often, and to lower satisfaction with goal completion in the pursuit of difficult goals. Not working as hard and not trying to initiate goal action as often, is suggestive of poor self-regulation and to volitional inhibition. Perhaps these participants were unable to remain on task as they lacked motivational drive, which might have resulted in postponing their goals to the last minute. This last minute effort could help to explain their lower satisfaction with goal completion. These findings further support the idea that, on some level, procrastination played a role in goal completion for procrastinators. Whereas the

results for procrastinators help to explain a lack of goal completion coupled with negative affect, the results for non-procrastinators help to explain higher goal completion coupled with positive affect.

Finally, the finding that in the current study procrastination is related to increased sensitivity to anxiety, leading to behaviour inhibition, might have been compounded by the novelty of the situation. According to Gray (1978, cited in Carver & White, 1994), the BIS Scale is sensitive to novelty and punishment. For many participants, this study took place in their first semester in university, when professor expectations are not well established, and when students are questioning their abilities at the university level. A study by Wood and Palm (2000) found that although trait anxiety remained fairly constant over a period prior to, and following, a novel academic experience, state anxiety rose as the experience drew near. For the procrastinators in the current study who often experience anxiety, the novelty of the academic demands of their first term in university might have exacerbated their behaviour inhibition, contributing to the lower frequency of goal completion.

Summary and Conclusions

In Study 1 the facilitating effects of implementation intentions on the self-generated goal pursuits of the participants was not evident. It was argued that the necessity of completing the predominantly academic goals, the timing of the study, the qualities of the goals themselves, and the possible secondary nature of the non-academic goals to the academic goals, might have rendered implementation intentions ineffective. Although no past research on implementation intentions has compared academic to non-

academic goals, the findings of Owens, Dill, Levine and Goldfarb (2001) appear to provide support for the findings in the current study, such that the category of goal and Goal Qualities play a role in the effectiveness of implementation intentions and in goal completion. Speculatively, the academic nature of the goals, participant anxiety, and volitional factors related to procrastination, may have influenced goal outcomes and the level of satisfaction with goal completion.

These findings illustrate the complexity of initiating and sustaining goal action during the preactional and actional phases of goal pursuits. Although implementation intentions may contribute to goal completion in some situations, their usefulness appears to be restricted to certain situations and conditions.

The role of implementation intentions and procrastination on the pre-existing self-generated goals of participants were examined in Study 1. Although implementation intentions were ineffective in facilitating goal completion with participants' self-generated goals, it remained to be seen if assigned goals and different types of implementation intentions would facilitate goal completion. To expand on the findings of Study 1 and reduce the limitations of a non-experimental design, the role of implementation intentions and procrastination were examined through experimental manipulation in Study 2.

Study 2

Method

Participants. Utilizing a power analysis⁴, it was found that an adequate statistical power should be obtained (considering a medium effect size) with 189 participants. Although 189 participants were not recruited, the number recruited are considered to have provided adequate statistical power, and recruiting an additional 16 participants would not have changed the significance of any obtained results. The participants in Study 2, 173 students recruited from the undergraduate Psychology subject pool, included 50 males (28.9%) and 123 females (71.1%). As stated in Study 1, this unequal gender split is not unusual among first-year study participants (Blunt & Pychyl, 2000; Lay, 1986), even though possible male participants were deliberately called by phone in an effort to provide a more equal gender split. Similar to Study 1, the age split of the participants in Study 2 was comparable to other studies, with the median age for the sample being 19 (55.5%) ($M = 20.17$, $SD = 4.23$) (Lay, 1994; Solomon & Rothblum, 1984). The minimum age of the sample was 17 and the maximum age was 48, with 2.9% of the sample being above the age of 30. The mean age of the male participants was 20.72 ($Mdn = 19$, $SD = 4.03$), and the mean age of the female participants was 19.94 ($Mdn = 19$, $SD = 4.3$).

⁴ G-power was used to compute an adequate statistical power for the regression analyses conducted in Study 2.

Materials

The General Procrastination Scale was administered as a pre-measure (See Study 1). The remaining measures were administered during the study. These materials included: a general information sheet for all participants, an implementation intention form for participants assigned to one of three experimental conditions, a report form, a follow-up questionnaire and the Behavioral Inhibition/Behavioral Activation Scales.

General procrastination scale. See Study 1 for an explanation of this scale that measures a trait tendency to procrastinate (See Appendix A).

Manipulation of implementation intentions. Participants were randomly assignment to one of three experimental conditions (either the implementation intention condition, the distraction-inhibiting implementation intention, the task-facilitating implementation intention or the control condition). The participants in the general implementation intention condition received a sheet instructing them to develop an implementation intention indicating where (e.g., at the kitchen table) and when (e.g., at 2:00 p.m. next Tuesday) during the following two-week period they intended to complete the report. The participants in the distraction-inhibiting implementation intention condition were instructed to form an implementation intention (as above). Also, they were asked to specifically state an intention to ignore distractions (e.g., “Whenever a distraction arises, I will ignore it”). The participants in the task-facilitating implementation intention condition were instructed to form an implementation intention (as above). Also, they were asked to specifically state an intention to work harder on their report when distractions arose (e.g., “Whenever a distraction arises, I will increase my

efforts on writing the report”). Those in the control condition were not asked to form any implementation intention (See Appendixes K, L, M and N).

Assessment of goal completion. In order to assess goal completion, and whether participants in the implementation intention condition adhered to their stated action, they were asked to return their finished reports on one of two pre-arranged times following the two week period. Participants were asked to complete a short follow-up questionnaire. The follow-up questionnaire was incorporated to determine how successfully participants felt they had completed their goal, how hard they had worked, and if they were able to avoid distractions, as they occurred. The follow-up questionnaire also provided additional comparison information between procrastinators and non-procrastinators, as well as information such as how easy or difficult participants found the writing of the report. Most of the questions were answered on a 10-point rating scale (See Appendix T).

Assessment of tendency to behavioural inhibition and to behavioural activation. The BIS/BAS Scales were administered to all participants in order to determine their sensitivities related to approaching and avoiding situations. See Study 1 for an explanation of the psychometric properties of the scales (See Appendix U).

Procedure

Participants were recruited based on an adequate distribution of low, medium and high procrastination scores. These scores were obtained from the Psychology Department mass testing process. Students were called and asked to participate in Study 2. Those who wished to participate were asked to come to the university in one of two groups (to accommodate the number of participants) to receive instructions and goal project forms.

When participants arrived, envelopes with gender identification were distributed along with randomly assigned instruction sheets. Participants received an oral explanation of the supposed study purpose. It was explained that a study was being conducted to better understand the transitional changes students face when moving from high school or the workplace to university and how students' perceived the university campus.

Study instruction sheets were then randomly distributed. Participants in the control condition received a general instruction sheet, and participants in an implementation intention condition received an instruction sheet related to their particular type of implementation intention. Participants were asked to write their student number of all forms for matching purposes (See above). All participants were verbally instructed to write a thoughtful report on their transition from high school or the workplace to university, including their feelings about the process and whether the experience had been what they expected it to be, or on their feelings about the university campus. Moving from high school or the workplace to university, and how students' perceived the university campus, were two different writing tasks. Two different writing tasks were utilized in the event that one of the writing tasks proved to be unsettling to some participants. In the case that different results arose in the analyses between participants in the two writing tasks, these differences could be distinguished and assessed accordingly.

It was also stated that the length (up to two pages) and style of the report was up to the individual and that it must be typed. Participants were informed that they should complete the report during the first week of the following two-week period as their thoughts were now stimulated to the event in question and quick completion would aid in

clearer recollection of this past event, as memories continue to fade over time, or in the case of writing about campus facilities, as the question was fresh in their mind.

Following this, those who received instruction sheets that included implementation intention instructions, were instructed to form an implementation intention, providing a location and time when they would write the report. Those whose instruction sheet included distraction-inhibiting implementation intention instructions, were instructed to form an implementation intention (as above) and, to specifically state an intention to ignore distractions (e.g., “Whenever a distraction arises, I will ignore it”). Those whose instruction sheet included task-facilitating implementation intention instructions, were instructed to form an implementation intention (as above), and, to specifically state an intention to work harder on their report when distractions arose (e.g., “Whenever a distraction arises, I will increase my efforts on writing the report”). They were asked to record this information on the instruction sheet. Participants in the control condition did not follow these instructions. Participants were asked to record their student numbers on both the instruction sheet and the report sheet they received.

Participants were then asked to hand in the instruction sheets and were given forms on which to write their reports. The forms had written instructions reminding participants to write down their student number, and the date and time when they actually completed the report. Also written on the forms was a comment reminding participants to write thoughtful reports of no more than two pages. As a reminder to themselves, participants were given a piece of paper on which to write when they had stated they would complete their report, to be taken with them (See Appendixes P, Q and R). Those in the control condition simply signed the sheet as a form of commitment to the writing

task (See Appendix O). Participants were asked to place their completed reports in the envelopes they had been given and to return them at one of the two pre-set times and locations following the two-week period.

When participants returned in two weeks they handed in their envelopes with the reports enclosed. A brief follow-up questionnaire and the BIS/BAS Scales were completed at that time. Participants were asked to sign a sheet with their name, student number and professor's name (and course section) in order to receive their course credit forms. They were also debriefed at that time (See Appendix W). When the reports were received they were opened and compared for actual completion date and time versus the date and time specified on their instruction sheet.

Design for Main Hypotheses

In the current study the moderating role of procrastination on different types of implementation intentions in the goal pursuit process was explored. The outcome variables in each design examined participants' abilities to work harder, and to avoid distractions, as they arose while completing the assigned writing task. Each figure below depicts the relation between an implementation intention (general, distraction-inhibiting or task-facilitating) and the outcome variables, procrastination and the outcome variables, and the interaction between an implementation intention and procrastination in relation to the outcome variables (See Figures 1, 2 and 3 below).

Figure 1. General implementation intentions and procrastination (Hypothesis 4).

Figure 2. Distraction-inhibiting implementation intentions and procrastination (Hypothesis 5).

Figure 3. Task-facilitating implementation intentions and procrastination (Hypothesis 6).

Results

Study 2

The purpose of Study 2 was to build on the findings of Study 1, and to use an experimental design to examine the possible facilitating effects of implementation intentions, and the hindering effects of procrastination, on working harder, and on avoiding distractions, in the goal pursuit process. Unlike Study 1 where participants provided their own goals and indicated whether they had formed implementation intentions or not, participants in Study 2 were randomly assigned to one of three experimental implementation intention conditions or to the control condition, and assigned to complete one of two writing tasks. Also, in Study 2 participants were asked when they intended to begin goal action, and when they actually had begun goal action. This allowed for the analysis of whether goals furnished with implementation intentions were begun closer to when they had specified they would begin, than those not furnished with implementation intentions.

Since Study 1 did not find implementation intentions to play a significant role in the completion of self-generated goals, it was of interest to determine if implementation intentions (general or specific) aided in the initiation and maintenance of goal directed behaviour for assigned goals. Also, as the function of procrastination in Study 1 was evident but not as had been expected, in Study 2 it was of interest to explore whether procrastination played a moderating role on implementation intentions in whether participants were able to work harder, or were able to avoid distractions, as distractions arose during the goal pursuit process.

The results for this study are presented in three sections. The first section provides descriptive information, including the breakdown of participants by implementation and control conditions, and a breakdown of participants by procrastination scores. In the second section the results for the hypotheses, including those presented in Figures 1-3 are examined. In the third section, the analyses of Follow-up Questions are discussed.

Descriptive Information

Following are the descriptive statistics for the procrastination scores, the BIS/BAS Scales, and the implementation intention and control conditions. Means, standard deviations, and the Cronbach alpha reliability for the General Procrastination Scale and the BIS/BAS Scales are presented.

Procrastination. The procrastination scale scores were examined in order to compare the current study scores to similar studies for reliability purposes, and in order to examine the role of procrastination in the goal pursuits of the study participants. The central tendencies and standard deviations of the procrastination scale were found to be commensurate with previous studies.

From a possible range of scores (20 to 100), the minimum score for the sample was 26 and the maximum score was 97 ($\underline{M} = 56.81$, $\underline{SD} = 12.63$). In order to determine if there was a significant gender difference on procrastination scores, a chi-square analysis on frequencies (i.e., using a median split on procrastination scores) ($\chi^2 [1, N = 165] = .04$, $p > .05$) and a t test on means (i.e., using total procrastination scores) ($t(171) = .25$, $p > .05$) were conducted. As no significant differences were found, the study analyses were conducted on the sample as a whole.

The Cronbach alpha for the procrastination scale in the present study was $\alpha = .88$, which is comparable to previous studies using the General Procrastination Scale (GP), with alphas of $\alpha = .91$ (Lay, 1994) and $\alpha = .87$ (Blunt & Pychyl, 1998). This result indicates that the GP scale had acceptable reliability in this study.

BIS/BAS Scales. As with the procrastination scale, the BIS/BAS Scale scores in the current study were examined for reliability prior to being used for analysis purposes. The reliability of the scales was examined by calculating the Cronbach alpha coefficients. The obtained alphas were as follows: BIS was $\alpha = .76$, BAS reward responsiveness was $\alpha = .61$, BAS drive was $\alpha = .78$, BAS fun seeking was $\alpha = .70$, and the BAS total was $\alpha = .79$. As in Study 1, the BAS reward responsiveness subscale alpha was below traditional standards and therefore not used in the analyses (Kline, 1993; Nunnally, 1978). The remaining scale alphas were comparable to those obtained in previous studies (See Study 1). These results indicate that the BIS scale, and the BAS drive, fun seeking and total scales, had acceptable reliabilities in this study.

The mean and standard deviation scores on the BIS and BAS scales for the sample as a whole, and broken down for non-procrastinators and procrastinators, are provided below (See Table 10 below). The means below are indicative of the same pattern of sensitivities to approach and avoid as were found in Study 1, suggesting a greater sensitivity to anxiety, lower drive and greater fun seeking for procrastinators than non-procrastinators.

Table 10

Mean and Standard Deviation Scores for the BIS/BAS Scales

Sample	n	Scales			BAS(Total)
		BIS	BAS(D)	BAS(FS)	
Total	173				
<u>M</u>		13.54	9.14	8.16	24.57
<u>SD</u>		3.76	2.39	2.25	4.94
Non-procrastinators	81				
<u>M</u>		13.70	8.99	8.54	24.67
<u>SD</u>		3.68	2.33	2.15	5.31
Procrastinators	84				
<u>M</u>		13.37	9.31	7.88	24.57
<u>SD</u>		3.71	2.33	2.26	4.61
<u>Note.</u> (D) = Drive					
(FS) = Fun seeking					

Implementation intention and control conditions. For the sample overall, 45 participants were in a control condition, and 128 participants were in an implementation intention condition. In the writing task related to transitional changes from high school or the workplace to university, the number of participants in the control condition, general implementation intention condition, task-facilitating implementation intention condition and distraction-inhibiting implementation intention condition varied from 21 to 25. In the writing task related to campus facilities, the number of participants in the control condition, general implementation intention condition, task-facilitating implementation intention condition and distraction-inhibiting implementation intention condition varied from 20 to 22 (See Figure 4 below). The distribution of participants by condition was relatively equal and therefore not a problem in the analyses.

Figure 4. Participants in the transitional changes or the campus facilities writing task by condition.

In order to determine whether the two writing tasks played a different role in the study results, a MANOVA was conducted on the two dependent variables, working harder and being able to avoid distractions, as they occurred during the goal pursuit process (these are the two dependent variables used in the main hypotheses described below) with writing task as the independent variable. As no significant mean differences were found for the two writing conditions on either dependent variable, the two writing tasks were collapsed across in the study analyses ($F(2, 170) = 1.67, p > .05$).

Figure 5. Participants in the control condition, the general implementation intention condition, the task-facilitating implementation intention condition and the distraction-inhibiting implementation intention condition after collapsing across writing tasks.

The number of non-procrastinators and procrastinators per condition when collapsed across writing tasks were as follows: *Control* – non-procrastinators = 22, procrastinators = 21, *General Implementation Intention* – non-procrastinators = 21, procrastinators = 20, *Task-facilitating Implementation Intention* – non-procrastinators = 19, procrastinators = 22, and *Distraction-inhibiting Implementation Intention* – non-procrastinators = 19, procrastinators = 21. As the numbers of participants per condition

overall, and when broken down by procrastination, were fairly equal, it was not a concern in the analyses.

Findings of the First Three Hypotheses Related to Goal Satisfaction, Procrastination and Latency of Goal Action

In Study 1 differences in level of satisfaction with goal completion were evident between procrastinators and non-procrastinators. As the goals in Study 2 were assigned to participants as opposed to being self-chosen, it was of interest to see if there would be an association between implementation intentions and procrastination in level of satisfaction with goal completion.

For some of the following analyses, including determining level of satisfaction with goal completion for procrastinators, the procrastination scores were divided using a median split ($Mdn = 56.00$). Overall, 81 participants scored below the median and 84 scored above the median, providing very even groups. Eight participants' scores (4 male and 4 female) fell on the median. In analyses using the median split on procrastination, the data for the eight participants whose scores fell on the median were omitted.

Level of satisfaction with goal completion. In Hypothesis One it was of interest to determine whether forming an implementation intention would increase subjective feelings of goal satisfaction, and in Hypothesis Two it was expected that procrastinators with implementation intentions would express lower satisfaction with goal completion than non-procrastinators. A 2 (non-procrastinators versus procrastinators) X 4 (conditions) ANOVA was conducted to examine both hypotheses. The interaction result was non-significant ($F(3, 164) = 10.20, p > .05$), nor were the main effects of

implementation intentions ($F(3, 164) = 1.29, p > .05$) or procrastination ($F(1, 164) = 1.30, p > .05$). Contrary to Study 1, goal satisfaction was not related to procrastination, and in agreement with Study 1, it was not related to implementation intentions.

On the whole, the sample was relatively satisfied with their goal completion, with 66.5% of the sample rating their satisfaction as a 7 or higher ($M = 6.9, SD = 2.28$). In the current study, having an implementation intention did not appear to have promoted positive feelings or motivation toward the goal, such that satisfaction with goal completion was not greater for those in an implementation intention condition than those in the control condition.

Latency of goal commencement. At the first session of Study 2, all participants in an implementation intention condition stated the day and time when they intended to commence work on their goal. When they returned their completed report at the second session, the participants had indicated on their report form the day and time when they had actually commenced work on their goal. A difference score was computed and used in this analysis. As participants in the control condition were not asked to state when they intended to work on their goal, only when they actually worked on their goal, they were not included in this analysis. A 2 (procrastination versus non-procrastination) X 3 (implementation intention conditions) ANOVA indicated that contrary to Hypothesis Three, the main effect of procrastination was not significant (interaction – $F(2, 121) = .54, p > .05$; main effect of procrastination – $F(1, 121) = 2.95, p > .05$).

Although it was not possible to compare the mean difference in when participants in the control conditions stated they would initiate goal action and when they actually did, it was possible to examine the mean difference on the day within the two-week

period of the study when actual goal initiation took place between those in the control condition versus those in an implementation intention condition. For each participant, the day they initiated goal action out of all of the possible days within the two-week period of the study was used to determine latency in this analysis.

In order to examine whether goal initiation was later for those in the control condition versus those in an implementation intention condition, regardless of procrastination level, an omnibus 2 (procrastination versus non-procrastination) X 4 (conditions) ANOVA was conducted. A significant difference in means was found ($F(3, 164) = 6.23, p < .05$). Follow-up pairwise comparisons (using tukey's correction for family wise errors) indicated that participants in the control condition ($M = 12.02, SD = 4.41$) waited significantly longer in the two-week period to commence goal action than those in the general implementation intention condition ($M = 9.65, SD = 4.70; p < .05$) and the distraction-inhibiting implementation intention condition ($M = 9.90, SD = 4.41; p < .05$). There was no significant difference for those in the task-facilitating implementation intention condition ($M = 9.85, SD = 4.50$).

The main effect for procrastination was significant ($F(1, 164) = 6.45, p < .05$). To further explore the difference between non-procrastinators and procrastinators in when goal action was commenced within the two-week period of the study, two t tests were conducted.

For non-procrastinators, those in the control condition waited significantly longer in the two-week period of the study to commence goal action than did those in an implementation intention condition ($t(79) = 2.70, p < .01$). For procrastinators, no

significant difference was found in when goal action was taken for those in the control condition versus those in an implementation intention condition.

Table 11

Means on Goal Commencement for Non-procrastinators and Procrastinators by Condition

Condition	Procrastination	Mean
Control	Low	11.68
	High	12.41
General II	Low	9.43
	High	9.99
Task-facilitating II	Low	9.25
	High	11.39
Distraction-inhibiting II	Low	8.21
	High	11.00

Low = Non-procrastinator

High = Procrastinator

This finding appears to indicate that implementation intentions were more effective in initiating earlier goal action with non-procrastinators than with procrastinators. As non-procrastinators tend to commence their goals earlier than procrastinators, this finding is not unexpected. From the findings of this study, it appears

that implementation intentions would not be effective in facilitating the earlier initiation of goal action for procrastinators.

Main Hypotheses for Study 2

The analyses were conducted to assess the moderating role of procrastination on different types of implementation intentions in the goal pursuit process using an Attribute Treatment Interaction (ATI) design. The following steps were taken in order to conduct the ATI design. Under the GLM univariate program in SPSS, the conditions variable (nominal) was entered as a fixed factor, and the procrastination variable (continuous attribute) was entered as a covariate. Using the model options the interaction between the covariate and the categorical variable was assessed. As the sample sizes were not equal across all conditions, a sequential, or Type II approach to entering the variables was taken in order to deal with any shared variance among the conditions. This was analogous to conducting a hierarchical regression in which procrastination was entered on the first step. On the second step, the implementation intention conditions would be entered as three effect coded vectors, while the interactions between procrastination and the vectors would be entered on the third step. The dependent variables examined were whether participants worked harder on their goal, and whether participants were able to avoid distractions, as distractions occurred during the goal process.

Working harder when distractions occurred. It was of interest to determine if procrastination played a moderating role on implementation intentions in participants' ability to work harder on their reports when distractions occurred. Contrary to expectations, no significant interaction was found between procrastination and

implementation intentions ($F(3, 165) = 2.26, p > .05$). However, significant main effects were found for both procrastination ($F(1, 168) = 5.96, p < .05$) and implementation intentions ($F(3, 168) = 6.21, p < .01$).

The partial standardized regression coefficient for the main effect of procrastination was $B = -.003$. This indicates that procrastination had a small negative association with working harder during the goal pursuit process.

In order to determine the relation between each type of implementation intention and working harder on the report, the pairwise comparisons were examined using tukey's correction for family wise error. The control condition mean ($M = 3.94, SD = 2.22$) was significantly different from both the task-facilitating ($M = 5.61, SD = 2.33; p < .01$) and the distraction-inhibiting implementation intention condition means ($M = 5.02, SD = 1.77; p < .05$), such that participants in the control condition worked less hard when distractions occurred than did those in the other two conditions. Also, the general implementation intention condition mean ($M = 4.09, SD = 2.11$) was significantly different from both the task-facilitating ($p < .01$) and the distraction-inhibiting ($p < .05$) implementation intention condition means, with those in the general implementation intention condition working less hard than those in either of the other two implementation intentions conditions when distractions occurred.

These findings together suggest that more specifically stated implementation intentions (i.e., both task-facilitating and distraction-inhibiting implementation intentions) aided participants in their ability to work harder toward their writing task than no implementation intention or a general implementation intention. Also, as expected procrastination hindered participants' work effort.

Avoiding distractions when they occurred. It was also of interest to determine if procrastination played a moderating role on implementation intentions in participants' ability to avoid distractions when distractions occurred, while working on their reports. No significant interaction was found between procrastination and the relation between implementation intentions and avoiding distractions when they occurred ($F(3, 165) = 1.21, p > .05$). A significant main effects was found for procrastination ($F(1, 168) = 11.53, p < .01$). No main effect was found for implementation intentions.

The partial regression coefficient for the main effect of procrastination was $B = -.005$. As with working harder, this indicates that procrastination had a small negative effect on being able to avoid distractions during the goal pursuit process.

To further explore the finding that implementation intentions did not facilitate avoiding distractions when they occurred, qualitative data collected from the participants were examined. Participants were asked to list the types of distractions they faced while writing their reports, and how they handled these distractions when they occurred. Of the 173 participants, 20 (11%) indicated that they did not encounter any distractions while working on their report. Typical distractions listed for the remaining participants were, television, friends, family, surrounding noises, and the phone ringing. Unfortunately, not all of the participants indicated how they handled distractions when they occurred. For those who did, many reported such things as, not answering the phone, closing their door, asking people to come back later, and turning off the television. These comments suggest that participants in fact were able to avoid distractions, and chose to do so.

Procrastination and behaviour activation/inhibition related to sensitivities. In order to further explore the role of motivation in Study 2, the BIS/BAS Scales were

administered to all participants. These scales examine participants' motivational sensitivities to avoiding or approaching goals. As in Study 1, it was hypothesized that procrastinators would display a higher sensitivity to anxiety provoking stimuli than non-procrastinators as evidenced by procrastination scores being negatively correlated with BIS scores. The BAS Scales were examined for possible differential sensitivities for procrastinators versus non-procrastinators.

The only significant finding related to procrastination and the BIS and BAS Scales, was a significant correlation between the BAS fun seeking subscale and procrastination scores ($r = -.18$, $p < .05$; 2-tailed). For this sample, higher procrastination is related to a greater fun seeking motivation. The differential BIS/BAS findings in Study 2 from Study 1 support Gray's (1987, cited in Carver & White) findings that each individual can have any combination of behavioural inhibition and behavioural activation motivations. Given that procrastinators gravitate toward tasks they enjoy and avoid tasks they find boring (Lay, 1986; Blunt and Pychyl, 2000), the findings in Study 2 that procrastination was a contributing factor to not working harder and to not avoiding distractions, perhaps suggests that procrastinators were drawn to other activities they considered to be more fun than the writing task at hand.

Summary of results. In Study 2 it was found that procrastination was negatively related to both working harder and avoiding distractions during the goal pursuit process. Also, speculatively, it appeared that participants held low to moderate motivation toward the writing task, evidenced by the general sense of satisfaction with goal completion for the sample as a whole, and given the competing academic tasks they would have been facing given the time with the university term. Further, procrastination was found to be

related to fun seeking. Together these findings suggest that the nature of the goal may play a role in the effectiveness of implementation intentions. Also, a tendency toward procrastinating, perhaps by focusing on more enjoyable tasks, may have hindered procrastinators' ability to maintain focus through the goal process, reducing their ability to either work harder or to avoid distractions.

Follow-up Questions

In order to provide further information about the participants' goal pursuits, Follow-up Questions were asked when participants returned for the final stage of the study. These questions provided information about such things as competing tasks, and goal effort.

A principal components analysis was conducted in order to reduce the number of Follow-up Questions into broader factors. When a principal components analysis was conducted four factors emerged based on the scree plot and eigenvalues greater than 1 (See Table 14). However, three standardized factors were chosen based on the theoretical association of variables within each factor. The three-factor solution was rotated with a varimax rotation so that the factors would not be related (See Table 13).

Legend of the Follow-up Questions presented in Table 12 below:

1. To what extent did you find this task easy?
2. To what extent did you find this task difficult?
3. Did you experience problems in writing the report?
4. Was the past two-week period busy for you academically?

5. Was the past two-week period busy for you socially?
6. Did you enjoy writing the report?
7. When distractions occurred, did you work harder on your report?
8. Did you successfully complete your goal to your satisfaction?
9. To what extent did you procrastinate?
10. Were you able to avoid distractions while working on your report?
14. Did you complete it when you intended to?

Table 12

Significant Intercorrelations Between Follow-up Questions

Qualities	1	2	3	4	5	6	7	8	9	10	14
Sample size ($n = 173$)											
1	--	-.87**	-.60**	--	--	--	--	.23**	--	.15*	.18*
2		--	.64**	--	--	--	--	-.26**	.18*	-.21**	-.24**
3			--	--	--	-.18*	--	-.25**	.18*	-.25**	-.20**
4				--	--	--	--	--	--	-.16*	--
5					--	--	--	--	--	--	--
6						--	.37**	.37**	--	--	--
7							--	.23**	--	.16*	--
8								--	-.41**	.31**	.45**
9									--	-.18*	-.55**
10										--	.22**
14											--

Note. * Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 13

Varimax Rotated Component Matrix for Three-Factor Solution

	1	<u>Component</u> 2	3
1 Ease of task	-.92		
2 Difficulty of task	.92		
3 Problems experienced in writing report	.77		
4 Busy academically during past two-weeks			
5 Busy socially during past two-weeks			
6 Enjoyment in writing report			.80
7 Increased effort when distractions occurred			.78
8 Satisfaction with goal completion		.70	
9 Extent of procrastination		-.78	
10 Avoiding distractions while writing report		.51	
14 Completion when intended		.78	

Table 14

Eigenvalues and Variance Accounted For Using Principal Components Analysis on Follow-up Questions

Component	Eigenvalues Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
Task Difficulty	3.06	27.85	27.85
Task Efficacy	1.74	15.84	43.69
Task Enjoyment and Focus	1.30	11.81	55.51

The Follow-up factor analyses are presented in relation to implementation intentions and to procrastination. As procrastination was found to hinder both working harder and avoiding distractions during the goal pursuit process, the relation between the Follow-up factors, procrastination and the working harder and avoiding distractions variables was also explored. These analyses provided suggestive information about the effects of implementation intentions on participants during the writing task, and the role of task perception in how non-procrastinators and procrastinators portrayed their goal pursuits through their ratings on the Follow-up Questions.

Follow-up factors and implementation intentions. It was of interest to determine if any of the factors (Task Difficulty, Task Efficacy, and Task Enjoyment and Focus) were related to being in an implementation intention condition versus not being in an implementation intention. Using a series of ANOVAs, it was found that the Task Difficulty Factor was related to condition, such that being in an implementation intention condition was related to a greater sense of task difficulty ($F(3, 172) = 2.65, p = .05$). Neither the Task Efficacy ($F(3, 172) = .38$,

$p > .05$) or Task Enjoyment and Focus Factor ($F(3, 172) = 1.27, p > .05$) were related to condition.

In order to determine if this relation held for specific types of implementation intentions versus the control condition, the pairwise comparisons were examined (using tukey's control for family wise errors). Being in the control condition was found to be associated with less task difficulty in comparison to being in the general implementation intention condition ($M = .10, SD = 1.17; p < .05$), the task-facilitating implementation intention condition ($M = .13, SD = 1.07; p < .05$), and the distraction-inhibiting implementation intention condition ($M = .14, SD = .95; p < .05$).

In order to gain further understanding of participants' goal pursuits some specific questions were addressed. The BAS drive subscale was not found to be significantly related to procrastination, however it was found to be significantly associated with the Task Enjoyment and Focus Factor ($r = -.16, p < .05$, 2-tailed), such that as task enjoyment declined so did drive, or in other words, participants motivation to approach their writing task was reduced relative to their level of task enjoyment.

As procrastination has been found to be associated with enjoyment of the task, procrastination and the specific follow-up question related to task enjoyment was examined. For both non-procrastinators and procrastinators working harder when distractions occurred was significantly positively correlated with the enjoyment in writing the report question (non-procrastinators – $r = .44, p < .01$, 2-tailed; procrastinators – $r = .31, p < .01$, 2-tailed). When both non-procrastinators and procrastinators felt positively toward the writing task they found it easier to work harder on their goal.

One aspect of the writing task that may have played a role in the participants ability to avoid distractions and to work harder when distractions occurred, was the ease of the task. Utilizing two independent sample t tests, the two Follow-up Questions that asked participants if they found the task easy, or difficult, produced no significant differences for non-procrastinators versus procrastinators (task was easy - $t(163) = -.13, p > .05$; task was difficult - $t(163) = -.61, p > .05$). A paired sample t test on the means of the two questions produced a significant difference, with the participants finding the assigned writing task to be easy (easy - $M = 8.12, SD = 1.63$; difficult - $M = 2.70, SD = 1.63$; $t(172) = 22.61, p < .01$). Given that the task was considered easy, concentrating on this straightforward task might not have been problematic for participants. The fact that procrastination was negatively related to both working harder and avoiding distractions suggests that perhaps factors such as boredom and lack of interest might have played a role in their effort toward the task.

Summary of the Results

Having formed an implementation intention was not found to increase participants' level of satisfaction with goal completion, or to facilitate the initiation of goal action when participants had stated goal action would commence. However, having formed an implementation intention did facilitate earlier goal action in the two-week period of the study. Also, being in either the task-facilitating or distraction-inhibiting implementation intention conditions was found to facilitate working harder on the writing task when distraction occurred, than being in the control condition or the general implementation intention condition.

In regards to procrastination, as was found for the sample as a whole, non-procrastinators in an implementation intention condition versus those in the control condition

were found to initiate goal action earlier in the two-week period, but not so for procrastinators in an implementation intention condition. This finding suggests a possible organizational function of implementation intentions, but only for non-procrastinators. Also, as was expected, procrastination was found to be negatively related to both working harder and being able to avoid distraction as they occurred during the goal pursuit process.

In conclusion, speculatively, the facilitating effects of implementation intentions on participants goal pursuits may have been affected by a number of factors including the perceived ease of the goal, the level of motivation of the participants, the non-evaluative nature of the goal and the timing of the study. As well as the factors that appear to have affected the usefulness of implementation intentions, the role of procrastination also appears to have been affected by the level of task enjoyment.

Discussion

Study 2

The intent of this experimental study was to examine the relation between implementation intentions and procrastination as contributing to, or hindering, participants' efforts toward an assigned writing task in the face of distractions. It was expected that being in one of three types of implementation intention conditions would facilitate the initiation of goal action more so than being in the control condition, and that trait procrastination would hinder goal action across both implementation intention conditions and the control condition. Although the main hypotheses of Study 2 were not substantiated, the findings provide new insights and further support for the implementation intention and procrastination literatures. In order to understand the findings of Study 2, research on implementation intentions, the role of volition, and the role of self-regulation in goal pursuits are incorporated throughout the discussion.

Implementation Intentions

Implementation intentions were found to facilitate working harder for those in the task-facilitating and distraction-inhibiting implementation intention conditions, but not to facilitate avoiding distractions during the goal pursuit process. The timing of the study and the non-evaluative nature of the assigned goal might have played a role in the limited effectiveness of implementation intentions in Study 2. Although the intention of the current study was to provide participants with a relatively thought provoking and difficult goal, participants in fact generally found the non-evaluative writing task to be easy. Past research has shown that the effectiveness of implementation intentions in facilitating goal

action is limited when the goal is not considered to be difficult or unfamiliar (Gollwitzer & Brandstatter, 1997).

Further, as this study took place in the middle of the academic term, other evaluative and perhaps novel academic goals would most likely have been given more attention and importance than an assigned task with no evaluative component. While no clear evidence of the participants' level of motivation can be derived from the data, the fact that participants were generally satisfied with their level of goal completion, and that participants had competing evaluative academic goals, appears to indicate that level of motivation toward the non-evaluative assigned task would not have been high. It might be speculated further that, if the perceived benefit of the goal was low, motivation toward the goal might have been further reduced. To the extent that this is the case, this would help to explain why only task-facilitating and distraction-inhibiting implementation intentions were effective in facilitating working harder when distractions occurred, as these types of implementation intentions have been found to be effective with low to moderate motivation (Schaal & Gollwitzer, 1998).

Drawing on the volition literature, in the predecisional phase of goal pursuits the perceived lack of importance of and commitment to a goal can lead to inaction, and in the actional phase, a lack of engagement and motivation can lead to postponement or termination of action (Little, 1983; Heckhausen & Gollwitzer, 1987). With a lack of perceived importance and low motivation, forming an implementation intention might have been insufficient to consistently promote the facilitating effects of implementation intentions. In fact, past research has found that individuals need to be committed to their

goal and their implementation intention if the implementation intention is to be effective in initiating and sustaining goal action (Gollwitzer, 1999).

Apparently, other factors were playing a role in the goal pursuit process. Since the goal was non-evaluative, and the assigned writing task was only completed in order to obtain additional course credit, the perceived benefit and engagement with the goal might have been limited. Also, given the timing of the study, the writing task might have been perceived as interfering with other evaluative goals reducing goal commitment. The finding by Owens, Dill, Levine and Goldfarb (2001) that perceived benefit of an academic goal (in the current study, academic in the sense that it provided credit toward an academic course), and perceived interference with other goals plays a role in the effectiveness of implementation intentions, may help to explain the limited contribution of implementation intentions in Study 2.

The Follow-up Questions that participants answered after completing the writing task provided additional understanding of the implementation intention findings. The Follow-up Questions were reduced to three factors, namely: Task Difficulty, Task Efficacy, and Task Enjoyment and Focus. Having an implementation intention was found to be related to the Task Difficulty Factor, such that those with an implementation intention indicated experiencing greater task difficulty than those not having an implementation intention. Without further information, this finding suggests that, in the current study, having an implementation intention increased subjective feelings of task difficulty. This finding is interesting given that, generally, participants found the task to be relatively easy. This seems to suggest that forming an implementation intention somehow complicated an otherwise simple task. This non-evaluative, seemingly

straightforward writing task might have taken on a more complex nature when an implementation intention was added.

The effectiveness of implementation intentions in Study 2 may have been limited by a number of factors. However, an unexpected significant result related to implementation intentions was found, such that being in an implementation intention condition versus the control condition appeared to have promoted the earlier initiation of goal action for the sample as a whole, and more specifically for non-procrastinators. As all participants were instructed to write their goal in the first week of the two week study period, the finding that those in an implementation intention condition commenced goal action earlier suggests that having an implementation intention might have played a role in holding the goal intention in working memory (Kuhl & Kazen, 1999), leading to earlier goal action, as opposed to playing a role in facilitating goal commencement when it was stated. While past research has focused on the facilitating role on implementation intentions in initiating goal action when it had been stated that goal action would commence (Gollwitzer & Brandstatter, 1997; Orbell, Hodgkins & Sheeran, 1997), the findings of the current study suggest that implementation intentions may be used to serve an additional organizational function, although not apparently so for procrastinators.

In sum, implementation intentions appear to have played a minimal role in initiating and sustaining goal action in the preactional and actional phases of the goal pursuit process. The usefulness of implementation intentions in promoting volition in the goal pursuit process may be limited by a number of aspects. The finding that the different types of implementation intentions were differentially useful in the writing task implies that in choosing an implementation intention, the specific task, the desired outcome, and

the level of commitment to the goal should be taken into consideration. The task in the current study was non-evaluative, and was undertaken for the purpose of obtaining additional course credit. Although some participants might have enjoyed the writing topics and a break from concurrent academic goals, their level of motivation toward the task might have been limited, implying that the timing of the study and the relative importance of the goal affected the usefulness of implementation intentions. Also, in support of past research, the use of implementation intentions with easy goals does not appear fruitful.

Procrastination

It will be recalled that procrastination was negatively related to both working harder and avoiding distractions while working on the writing task. As with implementation intentions, the perhaps low perceived benefit of the writing task and its perceived interference with other academic goals may have played a role in the results related to procrastination. In the predecisional phase of goal pursuits individuals assess the expected cost and reward of a goal (Heckhausen and Gollwitzer (1987). If the perceived benefits are low, and the perceived costs are high, goal motivation and volition will be reduced. Low motivation has not been found to stimulate action in procrastinators, whose motivation tends to increase only as a deadline draws near (Pychyl, et al., 2000).

The role of procrastination was evident in both working harder and avoiding distractions as distractions occurred during the goal process, with procrastinators working less hard and not being able to avoid distractions as well as non-procrastinators.

Speculatively, some comments about the role of procrastination can be made. The writing task was probably not perceived as highly beneficial and might have interfered with other academic tasks, reducing procrastinators' motivation, focus and ability to work hard or avoid distractions as they occurred. For those who did find it difficult to work harder or avoid distractions while working on their writing task, the motivational tendency to seek an enjoyable alternative might have played a contributing role. Procrastinators have been found to undertake enjoyable tasks over boring tasks (Blunt & Pychyl, 1998; Blunt & Pychyl, 2000). As there was no real external motivation to complete the task other than receiving supplementary academic credit, procrastinators lack of self-regulation (Vodanovich & Seib, 1997; Van Eerde, 2000; Brownlow & Reasinger, 2000) could have resulted in putting off the task until it needed to be completed, supporting the finding that procrastinators initiated goal action later in the two-week period of the study. Also, for those procrastinators who did not enjoy the task, it could be that a lack of commitment (Latham & Locke, 1991) to the goal resulted in a breakdown in the preactional (volitional) phase of their goal pursuit, such that they intended to undertake the goal but put off acting upon that intention (Heckhausen & Gollwitzer, 1987).

For those procrastinators who enjoyed the writing task, working harder and avoiding distractions appeared to be less problematic as they found it easier to work harder when they enjoyed the task. Possibly for those procrastinators, the writing task was a distraction from a less enjoyable academic goal, supporting past research that has found procrastinators tend to gravitate toward goals or activities they enjoy over those they do not, and avoid tasks that result in anxiety or negative affect associated with a fear of negative social judgement (Lay, 1994; Blunt & Pychyl, 2000). As procrastinators have

difficulty in regulating their behaviour (Vodanovich & Seib, 1997), for some, choosing a relatively easy non-evaluative task would be more enjoyable than a difficult competing academic task that might have been looming considering the study took place in the middle of the academic term. The further finding that motivational drive was associated with the Task Enjoyment and Focus Factor suggests that for those who enjoyed the writing task, their behaviour activation, or motivational drive was stimulated resulting in their being able to focus on the task at hand.

In sum, in Study 2 implementation intentions appeared to have played a minimal role in initiating and sustaining goal action in the preactional and actional phases of the goal pursuit process. At the same time, procrastination served to inhibit goal action. As the procrastinators in the study did intend to complete the goal, it appears that procrastination had its affect on the goal pursuit process predominantly in the preactional phase where a decision to act had been made but action had not yet taken place, and perhaps in the actional phase where action had been commenced but was difficult to sustain.

General Discussion

Both Study 1 and Study 2 examined the moderating role of procrastination on implementation intentions in goal pursuits, with Study 1 examining easy and difficult self-chosen goals, and Study 2 examining assigned goals. Although neither study found procrastination influenced the strength or direction of the relation between implementation intentions and participants' goals, a number of interesting results emerged, providing new insights, and further support for the personality and volition literatures in relation to goal pursuits. Various past research was found to contribute to the explanation of the findings regarding implementation intentions and procrastination, and the theory of action related to level of action identity in goal pursuits (Vallacher & Wegner, 1987) was found to contribute to the explanation of the results for both the effectiveness of implementation intentions, and how non-procrastinators and procrastinators approach their goals. In the current research the findings related to the ineffectiveness and the effectiveness of implementation intentions, and the inhibiting role of procrastination on goal pursuits, provided evidence of the complexities of the goal pursuit process.

Implementation Intentions

What came to the fore in regards to implementation intentions in the current research was that their facilitating effects on goal pursuits may be limited by a number of factors. Discussing the ineffectiveness and the effectiveness of implementation intentions is important to understanding the current research and important to future research.

Whereas past research has found implementation intentions to facilitate both the initiation and maintenance of goal action in the goal pursuit process (Gollwitzer & Brandstatter, 1997), the current findings call into question whether the effectiveness of implementation intentions may be limited in some situations. Although the two studies conducted examined different types of goals, namely self-chosen and assigned, there were similarities across studies. Speculatively, the timing of the studies and the type of goals themselves may have reduced the usefulness of implementation intentions. As both studies took place in the middle of the university term, the academic goals of the participants would most likely have been highly salient. The predominantly academic self-chosen goals of the participants in Study 1 held the expectation of completion and involved predetermined deadlines. Regardless of how participants felt about their academic goals, both internal and external pressure most likely led to the higher completion rate of academic goals, regardless of having an implementation intention or not. In Study 2 the assigned writing task would have been in conflict with the participants competing evaluative academic goals.

Recent research has shown that the perceived academic benefit of a goal, and the perceived interference of other goals can remove the effectiveness of implementation intentions (Owens, Dill, Levine & Goldfarb, 2001). In the case of self-chosen academic goals, the benefit of achieving the goal is incentive to take goal action in an of itself. In the case of the non-evaluative assigned writing task, the interference of this task with competing academic goals might have reduced the effectiveness of implementation intentions that were focused on a seemingly interfering and less important goal.

Due to the unexpected non-significant findings in the current research, it may have been better to conduct the studies over three periods, the beginning of the term, the middle of the term, and the end of the term. With this approach, it may have been easier to explicitly determine if the temporal aspects of academic goals played a role in the effectiveness of implementation intentions. Also, changes in level of procrastination effected by increased anxiety, and changes in drive motivation as the academic term progressed might have become evident, allowing for more specific interpretation of the role of procrastination regarding implementation intentions and the goal pursuit process in general.

Other factors that might have played a role in the effectiveness of implementation intentions across studies were how easy the goal was perceived to be. In Study 1 participants provided an easy goal they intended to complete during the two-week period of the study. It was found that the participants' easy goals were completed with a significantly greater frequency than not completed regardless of having an implementation intention or not. In Study 2 the participants generally perceived the assigned writing task to be easy. As the study took place in the middle of the university term, other more pressing academic goals might have led participants to perceive the writing task as easy, relative to their other competing tasks. Past research regarding implementation intentions has found implementation intentions to be ineffective in facilitating the initiation and maintenance of easy goals. As the actions required to complete easy goals are familiar, the addition of an implementation intention apparently does not further facilitate volition or behaviour activation (Gollwitzer & Brandstatter, 1997).

Past volition research may provide a theoretical explanation for the limited effectiveness of implementation intentions on easy goal pursuits. According to Vallacher and Kaufman (1996), there is an optimum level of action identity for each goal. When a goal is considered easy, a higher level of action identity that provides a general understanding of the goal and its implications is adequate to stimulate goal action (Vallacher & Wegner, 1987). Lower level identities, that deal with specific ways to carry out goal action can be unstable, and serve to derail goal-directed behaviour. For the participants in Study 2 having a lower level action identity, i.e., by forming a specific implementation intention, might have been ineffective or even detrimental to the initiation and continuation of goal action. In support of the possible negative effects of forming an implementation intention on goal pursuits in some situations, in Study 2 it was found that having an implementation intention was associated with greater task difficulty. It could have been the case that having an implementation intention complicated a relatively easy task by having participants focus on a lower level of action identity.

As well as examining the ineffectiveness of implementation intentions in the current research, examining the effectiveness of implementation intentions also provided both support for past research and a new insight into the possible facilitating effects of implementation intentions in the goal pursuit process. In Study 2 it was found that participants with task-facilitating and distraction-inhibiting implementation intentions were able to work harder when distractions occurred during the goal pursuit process, than those with either general implementation intentions or no implementation intentions. Speculatively, given that the writing task was assigned as opposed to self-chosen, was

considered relatively easy, generally led to feelings of goal satisfaction, and was to be completed in the middle of the academic term when self-chosen evaluative academic goals were highly salient, would suggest that the participants' level of commitment and motivation toward the task might have been low to moderate as opposed to high. This would support past research that has found task-facilitating implementation intentions to be most effective with low to moderate levels of motivation, and distraction-inhibiting implementation intentions to be facilitating regardless of level of motivation (Schaal & Gollwitzer, 1998). It is unclear as to why general implementation intentions were not found to be effective in facilitating greater work effort when distractions occurred.

A new insight regarding the usefulness of implementation intentions was revealed in the current research as well. Although implementation intentions did not facilitate the initiation of goal action when intended in Study 2, implementation intentions did appear to facilitate earlier goal action in the two-week period of the study, suggesting implementation intentions may be used to serve an organizational function. Forming implementation intentions may facilitate the earlier initiation of certain types of goals in certain situations as opposed to facilitating the initiation of goals at a specified time. Implementation intentions may play a role in initiating earlier goal action by holding the intention in working memory (Kuhl & Kazen, 1999).

Given the findings of the current research and recent research by Owens, Dill, Levine and Goldfarb (2001), it is important to address both the apparent limitations of implementation intentions in their ability to initiate and sustain goal action, and the widespread support for the facilitating effects of implementation intentions in past research. Past research has, for the most part, failed to examine the relation of

implementation intentions to specific types of goals, and to other factors that may play a contributing role in goal pursuits in conjunction with implementation intentions. The findings of the current studies suggest that the type of goal, the timing of the research, and other undetermined factors may affect the facilitating role of implementation intentions on goal pursuits. Research by Owens, Dill, Levine and Goldfarb (2001) addresses a need to control other factors that are relevant to the initiation of goal-directed behaviour through goal completion in order to ensure that undue credit is not given to the effects of implementation intentions. In the current research, the finding that task-facilitating and distraction-inhibiting implementation intentions promoted greater effort when goal distractions occurred, but did not promote the ability to avoid distractions, calls into question both the reliability of implementation intentions across situations and whether other undetermined factors played an equal role in these findings. In other words, if the effects of some other factor or factors were controlled for, perhaps implementation intentions would not have produced significant results at all. This suggests that past research regarding the facilitating effects of implementation intentions that has failed to consider the contribution of other factors in the goal pursuit process, should be interpreted with caution. It appears that the facilitating effects of implementation intentions on goal pursuits may be limited to specific situations.

Further, although past research has found implementation intentions to facilitate goal action, the findings of the current studies suggest that forming an implementation intention may not only fail to promote goal-directed behaviour, but may actually inhibit it in some situations. In Study 2, having an implementation intention was related to a sense of greater task difficulty than not having an implementation intention. Also, in the case of

easy goals, and goals that are better served by holding a high level of action identity, specific planning may complicate an uncomplicated task. The finding by Schaal and Gollwitzer (1998) that forming a task-facilitating implementation intention may produce over-stimulation or motivation when motivation is already high, may also apply to forming an implementation intention in general. If this is the case, as Study 1 took place in the middle of the academic term, when motivation toward academic goals was seemingly high, the specificity of forming an implementation intention might have been detrimental.

The findings of the current research are suggestive of when, and under what circumstances, general or specific implementation intentions may be rendered ineffective or even prove to be detrimental. Although individuals may have a goal intention, goal action is not assured by the incorporation of an implementation intention. If the level of action identity, commitment, motivation, control and engagement with the goal (Little, 1983; 1989; 1998; Heckhausen & Gollwitzer, 1987; Vallacher & Wegner, 1987) are not optimal, goal action may not occur, or may be disengaged prior to goal completion. Also, although implementation intentions are designed to facilitate coping with situational demands by maintaining the individual's focus on the task (Heckhausen & Gollwitzer, 1987), other competing tasks perceived as more important or enjoyable may override the focusing effects of implementation intentions. Further, by forming an implementation intention when not needed, the flexibility needed to act on changing situational demands may be inhibited (Mischel, Cantor & Feldman, 1996).

Procrastination

Unlike implementation intentions that were expected to facilitate goal directed behaviour in the current research, procrastination was expected to hinder it. Generally speaking, the current research provided support for past research related to the negative role of procrastination in the goal pursuit process, as well as providing information about possible situations under which procrastinators may be differentially affected. Even though certain factors present in the two studies appeared to have reduced the tendency to procrastinate, the consequences of this habitual behaviour could not be overcome.

As with implementation intentions, patterns emerged in the results across studies for procrastination, such that in both studies the type of goals and the timing of the studies may have contributed to the results that were obtained. Past research has found that procrastinators' motivation and subsequent goal-directed behaviour are affected by both goal type and timing, such that as deadlines draw near for academic goals, both motivation and effort increase (Ferrari & Scher, 2000; Pychyl, et al., 2000). In Study 1, which took place in the middle of the university term, both motivation and effort toward their predominantly academic goals would have been increasing for procrastinators. As such, the dilatory behaviour of trait procrastinators was apparently reduced. This would help to explain the finding that procrastinators completed fewer goals than non-procrastinators, but not significantly fewer.

The timing of the study and the type of goal may have affected the procrastination results in Study 2 as well. The role of trait procrastination was evident in reducing participants' abilities to work harder and to avoid distractions as they arose during the goal pursuit process. Once again, the nature of the goal, and the level of motivation might

have contributed to the findings. On the one hand, for those procrastinators who did not enjoy the writing task or found the task to be boring, remaining focused might have been a problem, reducing their ability to work harder or avoid distractions as they arose. In support of past research, as procrastination was found to be related to greater fun seeking in Study 2, those who found working harder and avoiding distractions difficult while working on their writing task, might have chosen alternative more enjoyable goals to focus on (Blunt & Pychyl, 1998; Blunt & Pychyl, 2000). Also, as it was the middle of the university term when procrastinators' level of motivation toward academic tasks is higher, these participants might have turned their attention away from the non-evaluative assigned task to other evaluative academic goals with a demand characteristic. On the other hand, for those procrastinators who enjoyed the writing task, working on the report might have been a way of avoiding more threatening evaluative academic goals (Lay, 1994), aiding their ability to work harder and avoid distractions as they arose. However, even though the writing task was non-evaluative and was considered relatively easy, the behavioural component of procrastination was still in evidence for some procrastinators.

Although the focus of the current research was on trait procrastination, evidence of the role of situational academic procrastination was found in Study 1, most likely due to the predominance of academic goals of the participants. Many of the behaviour, cognitive and affective characteristics of trait procrastination are common to situational academic procrastination, including task avoidance, anxiety, lack of motivation, fear of failure and dissatisfaction with academic tasks (Brownlow & Reasinger, 2000; Ferrari, 1991). For participants in Study 1, a lack of difficult goal completion was related to having held the goal for a longer period of time, failure to seize opportunities to complete

the goal and a greater number of unsuccessful attempts to complete the goal. Further, procrastination was found to be related to higher sensitivity to anxiety, to lower satisfaction with goal completion, to experiencing more problems, to lower drive and to lower confidence in being able to complete goals. These findings, which have been supported by past research, address the affective, cognitive and behavioural components of situational academic procrastination, and the poor self-regulation common to procrastinators (Lay, 1994; Solomon & Rothblum, 1984; Vadonovich & Seib, 1997; Van Eerde, 2000; Ferrari, 1991).

Due to the timing of the studies it appears that utilizing a situational academic procrastination scale (e.g., PASS) would have been useful. As the studies took place during the middle of the university term, a tendency to procrastinate on academic goals was evident. Although this information was accessed in the current research, a direct assessment would have provided greater validity.

As the findings in the current research indicate, the tendency to procrastinate can be very difficult to overcome. Examining the different findings related to procrastinators and non-procrastinators provides some understanding of both the complexity of procrastination and reasons as to why it may be so difficult to overcome. Procrastinators' lower level of goal satisfaction, greater sensitivity to anxiety, greater number of unsuccessful attempts at goal completion, greater perceived uncertainty of goal completion, and inability to increase work effort or avoid distractions as they arose, indicates that goal completion was more problematic for procrastinators. The findings also suggest that procrastinators experienced a number of affective, cognitive and behavioural problems that appear to have played a role in their ability to remain focused,

and to initiate and sustain goal action. In contrast, non-procrastinators' lower sensitivity to anxiety, greater drive, greater perceived certainty of goal completion, and ability to increase work effort or avoid distractions as they arose, indicates that goal completion was less problematic for non-procrastinators. Although the procrastinators and non-procrastinators both had goal intentions, the procrastinators seem to have experienced numerous impediments while trying to initiate and sustain goal-directed behaviour that non-procrastinators did not experience (Beswick & Mann, 1994; Vadonovick & Seib, 1997; Ferrari, 1991; Solomon & Rothblum, 1984).

Further insights into the different ways in which procrastinators and non-procrastinators approach their goals more or less successfully may be obtained from the research of Carver and Scheier (1996) regarding self-regulation, and Vallacher and Wegner's (1987) theory of action. Carver and Scheier propose a hierarchical system of goal abstraction, suggesting that moving to a lower level of abstraction can serve one of two purposes. On the one hand, drawing on the work of Vallacher and Wegner (1987), a lower level of abstraction or identity can serve to overcome difficulties in the goal pursuit process by focusing on the specifics of how to obtain the goal. On the other hand, moving to a lower level of abstraction, or a different activity, can alleviate the aversive feelings associated with goal difficulty by refocusing on an easier or more enjoyable task (Carver & Scheier, 1996; Vallacher & Wegner, 1987). Carver and Scheier suggest that those who move to a lower level of abstraction in an effort to overcome goal difficulties do so because they are confident that they can overcome the problem by focusing on the details. For those who move to a lower level of abstraction to avoid negative feelings, the failure to self-regulate, or remain on task, involves a lack of impulse control, and a

perceived lack of confidence in one's ability to overcome anxiety and the temptation of an alternative goal or activity (Carver & Scheier, 1996). In other words, one action involves self-regulation, and the other action involves a failure to self-regulate. Although this failure to self-regulate provides temporary escape, negative affect and a sense of self-doubt will ensue. The authors suggest that self-regulation is not likely to be reinstated until circumstances change considerably. In the case of procrastinators, the change in circumstances may be that a goal deadline is drawing near.

Applying Carver and Scheier's (1996) ideas to the current research, a greater expectation of goal completion, a greater sense of satisfaction with goal completion, and less sensitivity to anxiety (i.e., greater behaviour activation) is suggestive of greater confidence in goal pursuits for non-procrastinators. A lower expectation of goal completion, a lower sense of satisfaction with goal completion, and a greater sensitivity to anxiety (i.e., greater behaviour inhibition) is suggestive of lower confidence in goal pursuits for procrastinators. It may be the case that procrastinators who habitually put off goal action, or choose an alternative action may fail to self-regulate their goal pursuits partially due to a lack of confidence. This lack of confidence may stem from a number of things, such as past failures and anxious/ambivalent attachment in childhood (Flett, Blankstein & Martin, 1995). Although little evidence of the effectiveness of implementation intentions was found in the current research, the goal literature supports the idea that specific planning (i.e., moving to a lower level of abstraction or identity) can aid those who are confident in their ability to overcome obstacles in the pursuit of their goals (low procrastinators).

Another approach to the issue of confidence in one's ability to overcome obstacles in the goal pursuit process for procrastinators versus non-procrastinators can be

taken from Taylor and Gollwitzer's (1995; Gollwitzer, 1999) research on mindset. The authors have found that individuals hold a deliberative mindset (i.e., a realistic appraisal of a goal intention) in the predecisional phase of goal pursuits, and an implemental mindset (i.e., positive illusions of control and optimism regarding goal outcomes) in the postdecisional phase of goal pursuits. Having a deliberative mindset allows individuals to carefully appraise the pros and cons of a proposed goal and competing goals in order to make an accurate decision on whether or not to undertake the goal (Gollwitzer, 1999). Once a decision has been made to pursue the goal, having an implemental mindset allows individuals to take goal action, focusing on the positive aspects of the goal and with the assumption that goal obstacles can be overcome (Gollwitzer, 1999). Drawing on the results of the current studies that found procrastinators were more sensitive to anxiety and felt less confident about achieving their goals, it can be suggested that instead of moving to an implemental mindset where they would feel optimistic about their goal pursuits, they instead appear to remain in a deliberative mindset focusing on what could go wrong during the goal pursuit process or worrying about possible goal failure. For procrastinators, remaining in a deliberative mindset appears to reduce their confidence in their abilities to successfully complete their goals. This lack of confidence may be one reason why procrastinators delay goal-directed behaviour and have difficulty maintaining goal action once commenced.

The findings of the current research supports past research that has found procrastination to be highly complex (Ferrari, 1991). With this complexity, finding ways to help procrastinators initiate and sustain goal action is highly problematic. As everyday life presents changing situational demands, procrastinators poor self-regulation

(Vodanovich & Seib, 1997), tendency toward rumination (Flett, Blankstein & Martin, 1995), negative affect (Ferrari, 1991) and dilatory behaviour (Lay, 1986), leaves them repeatedly vulnerable in the goal pursuit process. Past attempts to ameliorate habitual procrastination that have focused on study skills and time management have been largely ineffective (Solomon & Rothblum, 1984). As positive affect has been found to be positively related to goal action (Kuhl & Kazen, 1999), finding ways to promote positive affect with procrastinators could prove to be a useful starting place. Further, as confidence has been associated with greater self-regulation, improving procrastinators' confidence in their abilities to successfully complete goals may also help to remove barriers to their goal pursuits.

Directions for Future Research

The findings of the current research point to areas that could be given consideration for future research. As the timing of the current research played an important role in the findings, further research should examine whether implementation intentions could be effective at different times within the academic term and whether they are better suited for short-term goals or long-term goals. Also, as the role of procrastination on the participants' goal pursuits was affected by the timing of the studies, coupled with the temporal nature of procrastination found by Ferrari and Scher (2000), the relation between goal type, goal difficulty and time within the academic term, should be explored.

Another consideration for future research again stems from the timing of the current research. Many of the study participants were in their first term at university. As

such they were not very familiar with the academic expectations of the university or their professors. Latham and Locke (1991) suggest that when a new complex task is being undertaken for which specific training has not occurred, individuals may fall back on previously learned skills in an effort to achieve the task. These skills may prove to be inappropriate or insufficient to the task. As such, the participants in Study 1 might have formed implementation intentions that were not suitable for the academic goals they were undertaking. Further, given the limited effectiveness of implementation intentions in the current research across studies, calls into question whether the specificity of the wording of an implementation intention is important in and of itself. In future research, a mechanism for examining the facilitating effects of implementation intentions based on their specific content would provide a more in-depth understanding of whether the wording of an implementation intention is fundamental to its usefulness.

Also, given the limited variance accounted for by implementation intentions related to both working harder and avoiding distractions in the participants' goals, future research should investigate other factors that might be affecting the role of implementation intentions in goal pursuits. The exploratory findings related to the Goal Quality Questions and Follow-up Questions in the current research suggest that numerous other factors played a role in whether participants completed their goals and how successfully they were completed. As has been pointed out, without examining other factors that may be contributing to the effectiveness (or ineffectiveness) of implementation intentions, an accurate picture of the facilitating effects of implementation intentions on the goal pursuit process cannot be obtained.

Finally, another area of study that deserves attention is how implicit theories, i.e., individuals' basic assumptions about themselves and the world they live in (Dweck, 1996), and procrastination interact in goal pursuits. It has been found that entity theorists (i.e., those who believe that intelligence is a fixed trait) tend to prefer performance goals (i.e., goals concerned with judgement of ability), and that in the face of increasing difficulty in academic work, a feeling of inability leads to poor performance and negative affect (Dweck, 1996). Incremental theorists (i.e., those who believe that intelligence is malleable and dynamic) tend to prefer learning goals (i.e., concerned with developing ability), and in the face of increasing difficulty in academic work, increase their performance, dealing directly with the problem through problem solving and effort (Dweck, 1996). Self-handicapping (a strategy of procrastinators; Midgley & Urdan, 1995) has been found to be related to holding an entity theory of ability and to low self-esteem (Rhodewalt, 1994). Further research into the type of implicit theories held by procrastinators, and the function of these theories on self-chosen goals could provide insights into volitional problems faced by procrastinators, and what might help them overcome volitional breakdown in both the preactional and actional phases of goal pursuits.

References

- Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Beckmann, J. & Kuhl, J. (1984). Altering information to gain action control: Functional aspects of human information processing in decision making. *Journal of Research in Personality*, 18, 224-237.
- Beswick, G. & Mann, L. (1994). State orientation and procrastination. In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: Action versus state orientation* (pp. 391-396). Toronto: Hogrefe and Huber.
- Blunt, A. K. & Pychyl, T. A. (1998). Volitional action and inaction in the lives of undergraduate students: State orientation, procrastination and proneness to boredom. *Personality and Individual Differences*, 24(6), 837-846.
- Blunt, A. K. & Pychyl, T. A. (2000). Task aversiveness and procrastination: A multi-dimensional approach to task aversiveness across stages of personal projects. *Personality and Individual Differences*, 28, 153-167.
- Brownlow, S. & Reasinger, R. D. (2000). Putting off until tomorrow what is better done today: Academic procrastination as a function of motivation toward college work. In J. R. Ferrari & T. A. Pychyl (Eds.), *Procrastination: Current Issues and New Directions. A special issue of the Journal of Social Behavior and Personality*, 15(5), 15-34.

- Cantor, N. & Blanton, H. (1996). Effortful pursuit of personal goals in daily life. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 338-359). New York, NY: The Guilford Press.
- Carver, C. S. & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales. *Journal of Personality and Social Psychology*, 67(2), 319-333.
- Carver, C. S. & Scheier, M. F. (1996). Self-regulation and its failures. *Psychological Inquiry*, 7(1), 32-40.
- Dewitte, S. & Lens, W. (2000). Does goal awareness enhance self-control? Required effort moderates the relation between the level of action identity and persistence.
- Dweck, C. S. (1996). Implicit theories as organizers of goals and behavior. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (69-90). New York, NY: The Guilford Press.
- Elliot, A. J., Sheldon, K. M. & Church, M. A. (1997). Avoidance personal goals and subjective well-being. *Personality and Social Psychology Bulletin*, 23(9), 915-927.
- Ellis, A. & Knaus, W. (1997). *Overcoming procrastination*. New York: Institute for Rational Living.
- Ferrari, J. R. (1989). Reliability of academic and dispositional measures of procrastination. *Psychological Reports*, 64, 1057-1058.
- Ferrari, J. R. & Tice, D. M. (2000). Procrastination as a self-handicap for men and women: A task-avoidance strategy in a laboratory setting. *Journal of Research in Personality*, 34, 73-83.

- Ferrari, J. R. (1991). Procrastination and project creation: Choosing easy, nondiagnostic items to avoid self-relevant information. *Journal of Social Behavior and Personality*, 6, 619-628.
- Ferrari, J. R., Johnson, J. L. & McCown, W. G. (1995). *Procrastination and task avoidance: Theory, research and treatment*. New York: Plenum Press.
- Ferrari, J. R. & Scher, S. J. (2000). Toward an understanding of academic and nonacademic tasks procrastinated by students: The use of daily logs. *Psychology in the Schools*, 37(4), 359-366.
- Flett, G. L., Blankstein, K. R. & Martin, T. R. (1995). In J. R. Ferrari, J. L. Johnson, & W. G. McCown (Eds.), *Procrastination and task avoidance: Theory, research and treatment* (pp. 97-112). New York: Plenum Press.
- Gollwitzer, P. M. (1996). The volitional benefits of planning. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (287-312). New York, NY: The Guilford Press.
- Gollwitzer, P. M. & Moskowitz, G. B. (1996). Goal effects on action and cognition. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (361-399). New York, NY: The Guilford Press.
- Gollwitzer, P. M. & Brandstatter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology*, 73(1), 186-199.
- Gollwitzer, P. M. & Schaal, B. (1998). Metacognition in action: The importance of implementation intentions. *Personality and Social Psychology Review*, 2(2), 124-136.
- Gollwitzer, P. M. (1999). Implementation intentions. Strong effects of simple plans. *American Psychologist*, 54(7), 493-503.

- Heckhausen, H. & Gollwitzer, P. M. (1987). Thought contents and cognitive functioning in motivational versus volitional states of mind. *Motivation and Emotion*, 11(2), 101-120.
- Hogan, R., Johnson, J. & Briggs, S. (Eds.) (1997). *Handbook of personality psychology*. California: Academic Press.
- James, W. (1981). Will. In F. H. Burkhardt, F. Bowers & I. K. Skrupskelis (Eds.), *The principles of Psychology*. Vol. 2. (1098-1193). Cambridge, Massachusetts: Harvard University Press.
- Kopp, C. B. (1991). Young children's progression to self-regulation. In M. Bullock (Ed.), *The development of intentional action: Cognitive, motivational, and interactive processes* (38-54). New York: Karger.
- Kuhl, J. (1994). A theory of action and state orientations. In J. Kuhl, & J. Beckmann (Eds.), *Volition and personality: Action versus state orientation* (pp. 9-46). Toronto: Hogrefe and Huber.
- Kuhl, J. (1984). Volitional aspects of achievement motivation and learned helplessness: Toward a comprehensive theory of action control. In B. A. Maher, & W. B. Maher (Eds.), *Progress in experimental personality research*, Vol. 13. Normal personality processes (pp. 99-171). Toronto: Academic Press.
- Kuhl, J. & Kazen, M. (1999). Volitional facilitation of difficult intentions: Joint activation of intention memory and positive affect removes Stroop interference. *Journal of Experimental Psychology: General*, 128(3), 382-399.
- Latham, G. P. & Locke, E. A. (1991). Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes*, 50, 212-247.

- Lay, C. H. (1986). At last, my research article on procrastination. *Journal of Research in Personality, 20*, 474-495.
- Lay, C. H. (1994). Trait procrastination and affective experiences: Describing past study behavior and its relation to agitation and dejection. *Motivation and Emotion, 18*(3), 269-283.
- Lay, C. H. (1995). Trait procrastination, agitation, dejection, and self-discrepancy. In J. R. Ferrari, J. L. Johnson & W. G. McCown (Eds.), *Procrastination and task avoidance: Theory, research and treatment* (pp. 97-112). New York: Plenum Press.
- Lay, C., Kovacs, A. & Danto, D. (1998). The relation of trait procrastination to the big-five factor conscientiousness: An assessment with primary-junior school children based on self-report scales. *Personality and Individual Differences, 25*, 187-193.
- Little, B. R. (1983). Personal projects: A rationale and method for investigation. *Environment and Behavior, 15*(3), 273-309.
- Little, B. R. (1989). Personal projects analysis: trivial pursuits, magnificent obsessions and the search for coherence. In D. Buss & N. Cantor, *Personality psychology: Recent trends and emerging directions* (p. 15). New York: Springer-Verlag.
- Little, B. R. (1998). Personal project pursuit: Dimensions and dynamics of personal meaning. In P. T. Wong & P. S. Fry (Eds.), *The human quest for meaning: A handbook of psychological research and clinical applications* (pp. 193-212). Mahwah, N. J.: Lawrence Erlbaum Associates, Inc.
- Locke, E. A., Latham, G. P. & Erez, M. (1988). The determinants of goal commitment. *Academy of Management Review, 13*(1), 23-39.

- Lutkenhaus, P. & Bullock, M. (1991). The development of volitional skills. In M. Bullock (Ed.), *The development of intentional action: Cognitive, motivational, and interactive processes* (38-54). New York: Karger.
- Midgley, C. & Urdan, T. (1995). Predictors of middle school students' use of self-handicapping strategies. *Journal of Early Adolescence*, Nov. 15(4), 389-411.
- Mischel, W., Cantor, N. & Feldman, S. (1996). Principles of self-regulation: The nature of willpower and self-control. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 329-360). New York, NY: The Guilford Press.
- Moskowitz, G. B., Gollwitzer, P. M., Wasel, W. & Schaal, B. (1999). Preconscious control of stereotype activation through chronic egalitarian goals. *Journal of Personality and Social Psychology*, Jul. 77(1), 167-184.
- Myers, G. E. (1981) Introduction: The intellectual context. In F. H. Burkhardt, F. Bowers & I. K. Skrupskelis (Eds.), *The principles of Psychology*. Vol. 1. (xi-xl). Cambridge, MA: Harvard University Press.
- Orbell, S., Hodgkins, S. & Sheeran, P. (1997). Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin*, 23(9), 945-954.
- Orbell, S. & Sheeran, P. (2000). Using implementation intentions to increase attendance for cervical cancer screening. *U.S.: American Psychological Association*, May, 19(3), 283-289.

Owens, S. G., Dill, C., Levine, N. & Goldfarb, L. (2001, February). *Do goal benefits and task interference mediate the effect of implementation intentions on goal completion?*

Poster session presented at the 2nd annual conference of the Society for Personality and Social Psychology of APA, San Antonio, Texas.

Owens, A.M. & Newbegin, I. (1997). Procrastination in high school achievement: A causal structural model. *Journal of Social Behavior and Personality*, 12(4), 869-887.

Palys, T. S. & Little, B. R. (1983). Perceived life satisfaction and the organization of personal project systems. *Journal of Personality and Social Psychology*, 44(6), 1221-1230.

Patterson, C. J. & Mischel, W. (1976). Effects of temptation-inhibiting and task-facilitating plans on self-control. *Journal of Personality and Social Psychology*, 33(2), 209-217.

Pychyl, T. A., Lee, J. M., Thibodeau, R. & Blunt, A. (2000). Five days of emotion: An experience sampling study of undergraduate student procrastination. In J. R. Ferrari & T. A. Pychyl (Eds.), *Procrastination: Current Issues and New Directions. A special issue of the Journal of Social Behavior and Personality*, 15(5), 135-150.

Rhodewalt, F. (1994). Conceptions of ability, achievement goals, and individual differences in self-handicapping behavior: On the application of implicit theories. *Journal of Personality*, March 62(1), 67-85.

- Sheeran, P. & Orbell, S. (1999). Implementation intentions and repeated behaviour: Augmenting the predictive validity of the theory of planned behaviour. *European Journal of Social Psychology*, 29, 349-369.
- Solomon, L. J. & Rothblum, E. D. (1984). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology*, 31(4), 503-509.
- Stainton, M., Lay, C. H. & Flett, G. L. (2000). Trait procrastinators and behavior/trait-specific cognitions. In J. R. Ferrari & T. A. Pychyl (Eds.), *Procrastination: Current Issues and New Directions. Special Issue: Journal of Social Behavior and Personality*, 15(5), 297-312.
- Taylor, S. E. & Gollwitzer, P. M. (1995). Effects of Mindset on Positive Illusions. *Journal of Personality and Social Psychology*, 69(2), 213-226.
- Tice, D. M. & Baumeister, R. F. (1997). Longitudinal study of procrastination, performance, stress, and health: The costs and benefits of dawdling. *Psychological Science*, Nov. 8(6), 454-488.
- Vallacher, R. R. & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review*, 94(1), 3-15.
- Vallacher, R. R. & Kaufman, J. (1996). Dynamics of action identification: Volatility and structure in the mental representation of behavior. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 260-282). New York, NY: The Guilford Press.
- Van Eerde, W. (2000). Procrastination: Self-regulation in initiating aversive goals. *Applied Psychology: An International Review*, 49(3), 372-289.

- Vestervelt, C., Pychyl, T. A. & Blunt, A. (2000). Confirmatory factor analyses of four current measures of procrastination. *Canadian Psychological Conference Abstracts*, 41, 119.
- Vodanovich, S. J. & Seib, H. M. (1997). Relationship between time structure and procrastination. *Psychological Reports*, 80, 211-215.
- Wegner, D. M. & Vallacher, R. R. (1986). Action Identification. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of Social Behavior* (pp. 550-582). New York, NY: The Guilford Press.
- Wood, M. R. & Palm, L. J. (2000). Students' anxiety in a senior thesis course. *Psychological Reports*, 86(3, Pt. 1), 935-936.

Appendix A (Studies 1 and 2)**General Procrastination Scale**

Student Name: _____ Student # _____

Phone # (home) _____ Phone # (work) _____

General Tasks Questionnaire**Instructions**

On a scale of 1 (FALSE OF ME) to 5 (TRUE OF ME) please answer each of the items below by circling the number (i.e., 1, 2, 3, 4 or 5) that best describes you. These items are concerned with your opinions on different situations. No two statements are exactly alike, so please consider each statement carefully before responding. Answer as honestly as possible.

- 1 = False of me
 2 = Not usually true of me
 3 = Sometimes false and sometimes true of me
 4 = Mostly true of me
 5 = True of me
-

1. I often find myself performing tasks that I had intended to do days before.

False of Me				True of Me
1	2	3	4	5

2. I often miss concerts, sporting events, or the like, because I don't get around to buying tickets on time.

False of Me				True of Me
1	2	3	4	5

3. When planning a party or event of some sort, I make the necessary arrangements well in advance.

False of Me				True of Me
1	2	3	4	5

4. When it is time to get up in the morning, I often get right out of bed.

False of Me				True of Me
1	2	3	4	5

5. A letter may sit for days after I write it before I mail it.

False of Me

1

2

3

4

True of Me

5

6. I generally return phone calls promptly.

False of Me

1

2

3

4

True of Me

5

7. Even with jobs that require little else except sitting down and doing them, I find they seldom get done for days.

False of Me

1

2

3

4

True of Me

5

8. I usually make decisions as soon as possible.

False of Me

1

2

3

4

True of Me

5

9. I generally delay before starting on work I have to do.

False of Me

1

2

3

4

True of Me

5

10. When going somewhere or travelling, I usually have to rush in preparing to arrive at the appropriate time.

False of Me

1

2

3

4

True of Me

5

11. When preparing to go out, I am seldom caught having to do something at the last minute.

False of Me

1

2

3

4

True of Me

5

12. In preparing for some deadlines, I often waste time by doing other things.

False of Me

1

2

3

4

True of Me

5

13. If a bill for a small amount comes, I pay it right away.

False of Me

1

2

3

4

True of Me

5

14. I usually return an "R.S.V.P." request (invitation) very shortly after receiving it.

False of Me

1

2

3

4

True of Me

5

15. I often have a task finished sooner than necessary.

False of Me

1

2

3

4

True of Me

5

16. I always seem to end up shopping for birthday gifts at the last minute.

False of Me

1

2

3

4

True of Me

5

17. I usually buy even an essential item at the last minute.

False of Me

1

2

3

4

True of Me

5

18. I usually accomplish all things I plan to do in a day.

False of Me

1

2

3

4

True of Me

5

19. I am continually saying "I'll do it tomorrow".

False of Me

1

2

3

4

True of Me

5

20. I usually take care of all the tasks I have to do before I settle down and relax for the evening.

False of Me

1

2

3

4

True of Me

5

Appendix B

Informed Consent Form (Study 1)

The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Present Study: Achieving Personal Goals

Research Personnel: The following people are involved in this research project and may be contacted at any time: Anita Heavenor (Principal Investigator, 520-2600, ext. 2705); Dr. T. Pychyl (Faculty Sponsor, 520-2600, ext. 1403). Should you have any ethical concerns about this study then please contact Dr. M. Senechal (Chair, Dept. of Psychology Ethics Committee, 520-2600, ext. 1155). Should you have other concerns about this study then please contact Dr. K. Matheson (Chair, Dept. of Psychology, 520-2600, ext. 2648).

Purpose: The purpose of this study is to identify goals of university students, examining both the structure of the goals and how they are carried out to completion.

Task Requirements: Task requirements will be carried out in two sections, two weeks apart. In section one, participants will be asked to provide an easy and a difficult goal they held upon entering the study. A questionnaire regarding each goal will be completed. In two weeks a follow-up questionnaire will be completed for each goal.

Duration and Locale: Together, the two experimental sessions should take less than one hour and participants will receive 1 course credit for their participation. The times and locations of the testing will be as advised.

Potential Risk/Discomfort: There are no potential physical or psychological risks in this experiment.

Anonymity/Confidentiality: The data collected in this experiment are confidential. In order to match your responses from mass testing with the rest of your responses, we need you to provide your student number on all forms. These data will be held in confidentiality and never will your student number be used in connection with the data. In addition, the data are made available only to the researchers associated with this project.

Right to Withdraw: You have the right to withdraw from the experiment at any time without academic penalty.

I have read the above description of the Personal Goals study and understand the conditions of my participation. My signature indicates that I agree to participate in the experiment.

Participant's Name: _____ **Date:** _____

Participant's Signature: _____

Appendix C

Informed Consent Form (Study 2)

The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Present Study: Understanding University Transition

Research Personnel: The following people are involved in this research project and may be contacted at any time: Anita Heavenor (Principal Investigator, 520-2600, ext. 2705); Dr. T. Pychyl (Faculty Sponsor, 520-2600, ext. 1403). Should you have any ethical concerns about this study then please contact Dr. M. Senechal (Chair, Dept. of Psychology Ethics Committee, 520-2600, ext. 1155). Should you have other concerns about this study then please contact Dr. K. Matheson (Chair, Dept. of Psychology, 520-2600, ext. 2648).

Purpose: The purpose of this study is to gain an understanding of the transitional changes university students face when moving from high school to university.

Task Requirements: Task requirements will be carried out in sections. Section one will provide information and participants will be asked to answer a few questions. Section two will require participants to write a short report (up to two pages) at home on their transitional experiences from high school or the workplace to university. In two weeks participants will return to hand in their reports, complete a short questionnaire and receive study debriefing.

Duration and Locale: Together, the experimental sessions should take approximately one and one-half hours and participants will receive 1 course credit for their participation. The times and locations of the testing will be as advised.

Potential Risk/Discomfort: There are no potential physical or psychological risks in this experiment.

Anonymity/Confidentiality: The data collected in this experiment are confidential. In order to match your responses from mass testing with the rest of your responses, we need you to provide your student number on all forms. These data will be held in confidentiality and never will your student number be used in connection with the data. In addition, the data are made available only to the researchers associated with this project.

Right to Withdraw: You have the right to withdraw from the experiment at any time without academic penalty.

I have read the above description of the Transitional Changes study and understand the conditions of my participation. My signature indicates that I agree to participate in the experiment.

Participant's Name: _____ **Date:** _____

Participant's Signature: _____

Appendix D (Study 1)**Personal Goals**

Study 1 _____ Gender _____

Student # _____ Name: _____ Phone # _____

Personal Goal Description

Personal goals can differ in many ways. They may be more or less difficult to implement; require only a few or a complex sequence of action steps; represent different areas of a person's life; and be more or less time consuming, attractive, or urgent.

Please indicate one easy and one difficult to implement goal that you held prior to coming here today and that you intend to complete in the next two-week period. Also indicate (circle) during which of the next two weeks you intend to complete each goal.

Easy Goal

Intended completion: 1st week 2nd week

Difficult Goal

Intended completion: 1st week 2nd week

Please indicate which of the two possible return dates you will be attending?

Appendix E (Study 1)

Goal Qualities (Easy Goal)

Student # _____

Assessment of Goal Qualities of Easy Goal (indicate the goal on the line provided)

Please answer the following questions based on the scales provided.

1. How long have you held this goal? (in number of days) _____

2. How close do you feel to goal completion? (indicate by circling a number below; 10 represents goal completion)

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

3. Does goal completion require a single action or a sequence of actions? (circle the appropriate answer)

1
single action

2 sequence of actions

4. Are you familiar with the necessary actions? (circle the most appropriate number)

[illegible]

5. How important is the goal? (circle the most appropriate number)

1 2 3 4 5 6 7 8 9 10
not at all very important

6. How much social pressure do you feel to complete the goal? (circle the most appropriate number)

1	2	3	4	5	6	7	8	9	10
none at all									a great deal of social pressure

7. How certain are you to achieve your goal? (circle the most appropriate number)

[illegible]

8. How much have you invested for goal completion so far? (circle the most appropriate number)

[illegible]

9. How likely is it that you will encounter distractions?

[illegible]

10. In the space provided below, list the possible obstacles or distractions you might encounter. Distractions could be such things as competing goal intentions, friends asking you to go out or being bored with the goal. List as many as you can think of that seem relevant.

11. How many times have you tried unsuccessfully to complete your goal? _____

12. Have you failed to seize opportunities to complete your goal?

[illegible]

13. Will you feel guilty if you do not complete your intended goal?

[illegible]

14. How anxious are you about this goal?

1 2 3 4 5 6 7 8 9 10
not at all very anxious

15. How interested in this goal are you?

1 2 3 4 5 6 7 8 9 10
not at all very interested

16. How much do you consider this goal to be of your own choosing as opposed to a goal someone else wants you to complete?

1	2	3	4	5	6	7	8	9	10
not at all									very much of my own choosing

In pursuing goals people decide on certain behaviors that they will follow in order to achieve their goals. These behaviours relate to when, where and how (i.e., the type of action required) they will act. For example, a person may have the goal of handling their pre-exam stress through exercise instead of over-eating, which is how they normally handle it. In order to achieve this goal, the person could decide that when she gets out of class on Wednesdays at 2:00 p.m. and goes to her locker, she will see her gym clothes and head to the gym, instead of the cafeteria. Please indicate whether you have by now committed yourself to a certain context for initiating specific actions toward your goal, in the sense of "When I find myself in the specified situational context y, I will perform behavior z!"

Yes **No**

If yes, please describe the situational context and action you have committed to

Appendix F (Study 1)

Goal Qualities (Difficult Goal)

Student # _____

Assessment of Goal Qualities of Difficult Goal (indicate the goal on the line provided)

Please answer the following questions based on the scales provided.

1. How long have you held this goal? (in number of days) _____

2. How close do you feel to goal completion? (indicate by circling a number below; 10 represents goal completion)

1 2 3 4 5 6 7 8 9 10

3. Does goal completion require a single action or a sequence of actions? (circle the appropriate answer)

1 **2**
single action sequence of actions

4. Are you familiar with the necessary actions? (circle the most appropriate number)

[illegible]

5. How important is the goal? (circle the most appropriate number)

[illegible]

6. How much social pressure do you feel to complete the goal? (circle the most appropriate number)

1	2	3	4	5	6	7	8	9	10
none at all									a great deal of social pressure

7. How certain are you to achieve your goal? (circle the most appropriate number)

1 2 3 4 5 6 7 8 9 10
not at all very certain

8. How much have you invested for goal completion so far? (circle the most appropriate number)

[illegible]

9. How likely is it that you will encounter distractions?

[illegible]

10. In the space provided below, list the possible obstacles or distractions you might encounter. Distractions could be such things as competing goal intentions, friends asking you to go out or being bored with the goal. List as many as you can think of that seem relevant.

11. How many times have you tried unsuccessfully to complete your goal? _____

12. Have you failed to seize opportunities to complete your goal?

[illegible]

13. Will you feel guilty if you do not complete your intended goal?

[illegible]

14. How anxious are you about this goal?

1 2 3 4 5 6 7 8 9 10
not at all very anxious

15. How interested in this goal are you?

1	2	3	4	5	6	7	8	9	10
not at all									very interested

16. How much do you consider this goal to be of your own choosing as opposed to a goal someone else wants you to complete?

1	2	3	4	5	6	7	8	9	10
not at all									very much of my own choosing

In pursuing goals people decide on certain behaviors that they will follow in order to achieve their goals. These behaviours relate to when, where and how (i.e., the type of action required) they will act. For example, a person may have the goal of handling their pre-exam stress through exercise instead of over-eating, which is how they normally handle it. In order to achieve this goal, the person could decide that when she gets out of class on Wednesdays at 2:00 p.m. and goes to her locker, she will see her gym clothes and head to the gym, instead of the cafeteria. Please indicate whether you have by now committed yourself to a certain context for initiating specific actions toward your goal, in the sense of "When I find myself in the specified situational context y, I will perform behavior z!"

Yes No

If yes, please describe the situational context and action you have committed to

Appendix G (Study 1)

Follow-up Questionnaire (Easy Goal)

Follow-up (Easy Goal)

Student # _____

Please indicate the goal you are referring to in answer to the following questions:

Please indicate on the scale below each item, how much it describes your goal experience.

1. I worked very hard toward the completion of my goal.

1 2 3 4 5 6 7 8 9 10
not at all very hard

2. I experienced problems in the pursuit of my goal.

1	2	3	4	5	6	7	8	9	10
not at all									experienced many problems

3. The past two-week period has been busy for me academically.

1	2	3	4	5	6	7	8	9	10
not at all									very busy academically

4. The past two-week period has been busy for me socially.

[illegible]

5. I successfully completed my goal to my satisfaction.

[illegible]

6. I found myself trying to initiate action toward my goal on more than one occasion in the past two weeks.

1 2 3 4 5 6 7 8 9 10
not at all very much so

7. My initial goal changed over the past two weeks.

1	2	3	4	5	6	7	8	9	10
not at all									very much so

8. If yes, how? Please explain briefly.

9. Did you successfully complete your goal? Yes No

10. When you were here two weeks ago, some of you specified when, where and how you intended to work on your goal. If you did provide this information, did you in fact work toward your goal in the situation you had specified? Yes No

11. If yes, please note when, where and how you did it.

12. If no, what kept you from doing so? Explain briefly.

Appendix H (Study 1)

Follow-up Questionnaire (Difficult Goal)

Follow-up (Difficult Goal) Student # _____

Please indicate the goal you are referring to in answer to the following questions:

Please indicate on the scale below each item, how much it describes your goal experience.

1. I worked very hard toward the completion of my goal.

1	2	3	4	5	6	7	8	9	10
									very hard
not at all									

2. I experienced problems in the pursuit of my goal.

1	2	3	4	5	6	7	8	9	10
									experienced many problems
not at all									

3. The past two-week period has been busy for me academically.

1	2	3	4	5	6	7	8	9	10
									very busy academically
not at all									

4. The past two-week period has been busy for me socially.

1	2	3	4	5	6	7	8	9	10
									very busy socially
not at all									

5. I successfully completed my goal to my satisfaction.

1	2	3	4	5	6	7	8	9	10
									very satisfactorily
not at all									

6. I found myself trying to initiate action toward my goal on more than one occasion in the past two weeks.

1	2	3	4	5	6	7	8	9	10
									very much so
not at all									

7. My initial goal changed over the past two weeks.

1 2 3 4 5 6 7 8 9 10

not at all **very much so**

8. If yes, how? Please explain briefly.

9. Did you successfully complete your goal? **Yes** **No**

10. When you were here two weeks ago, some of you specified when, where and how you intended to work on your goal. If you did provide this information, did you in fact work toward your goal in the situation you had specified? **Yes** **No**

11. If yes, please note when, where and how you did it.

12. If no, what kept you from doing so? Explain briefly.

Appendix I (Study 2)**General Instruction Sheet 1**

Student # _____ Name _____

Gender _____ Telephone # _____

These data will be held in confidentiality and never will your student number be used in connection with the data. In addition, the data are made available only to the researchers associated with this project.

This paragraph was presented to half of the participants.

Understanding the Transition from High School or the Workplace to University

You are instructed to write a thoughtful report (length and style is up to you; it must be typed or word processed and should be no more than 2 pages) in 15 to 30 minutes on your transition experience from high school or the workplace to university. Indicate the date you completed the report in the space provided. Include your feelings about the process and whether the experience was what you expected it to be. Please complete this report during the following week as your thoughts are now stimulated to the event and quick completion will aid in clearer recollection (memories continue to fade with time).

Please indicate which of the two possible return dates you will be attending.

Appendix J (Study 2)**General Instruction Sheet 2**

Student # _____ Name _____

Gender _____ Telephone # _____

These data will be held in confidentiality and never will your student number be used in connection with the data. In addition, the data are made available only to the researchers associated with this project.

This paragraph was presented to half of the participants.

What You Think About the Campus Facilities

You are instructed to write a thoughtful report (length and style is up to you; it must be typed or word processed and should be no more than 2 pages) in 15 to 30 minutes on what you think about the Carleton campus. This can include such things as campus food, outdoor sitting areas, the theatre presentations in Southam Hall, the gym facilities etcetera. Include information about which aspects you enjoy the most. Please complete this report during the following week as your thoughts are now stimulated to the question.

Please indicate which of the two possible return dates you will be attending.

Appendix K (Study 2)

Instruction Sheet for Control Group

Student # _____

The following information was only presented to those in the control condition.

By signing below I indicate my commitment to the goal intention of completing the written report and returning it to you in two weeks time.

Signature: _____

Appendix L (Study 2)**Instruction Sheet (Experimental Condition 1)****Student # _____**

The following information was only presented to those with the general implementation intention instruction sheets.

Please form an implementation intention (how you intend to carry out your goal), providing a location (e.g., on the front porch) and time (e.g., this coming Tuesday at 2:00 p.m.) when you will complete this report. Enter this information in the space provided.

**I intend to complete my report (where) _____
on (day) _____ at (time/hour) _____.**

Appendix M (Study 2)**Instruction Sheet (Experimental Condition 2)**

Student # _____

The following information was only presented to those with the distraction-inhibiting implementation intention instruction sheets.

Please form an implementation intention (how you intend to carry out your goal) providing a location (e.g., on the front porch) and time (e.g., this coming Tuesday at 2:00 p.m.) when you will complete this report. Also, specifically state an intention to ignore distractions (e.g., “Whenever a distraction arises, for example, the neighbours children are playing on the porch, I will ignore it or move inside”). Enter this information in the space provided.

I intend to complete my report (where) _____

on (day) _____ at (time/hour) _____.

Whenever a distraction arises, such as, _____,

I will ignore it.

Appendix N (Study 2)**Instruction Sheet (Experimental Condition 3)****Student # _____**

The following information was only presented to those with the task-facilitating implementation intention instruction sheets.

Please form an implementation intention (how you intend to carry out your goal) providing a location (e.g., on the front porch) and time (e.g., this coming Tuesday at 2:00 p.m.) when you will complete this report. Also, specifically state an intention to work harder on your report when distractions arise (e.g., “Whenever a distraction arises, for example, the neighbours children are playing on the porch, I will increase my efforts on writing the report”). Enter this information in the space provided.

I intend to complete my report (where) _____

on (day) _____ at (time/hour) _____.

Whenever a distraction arises, such as, _____,

I will increase my efforts on writing the report.

Appendix O (Study 2)

**Goal Statement Form to be Retained by Students in
the Control Condition**

**By signing below I indicate my commitment to the goal intention of completing
the written report and returning it to you in two weeks time.**

Signature: _____

Appendix P (Study 2)
Goal Statement Form to be Retained by Students in
Experimental Condition 1

Please write down the intention you made to act on your goal as you stated it on the previous form. Retain this sheet so that you can recall your intention.

I intend to complete my report (where) _____
on (day) _____ at (time/hour) _____.

Appendix Q (Study 2)**Goal Statement Form to be Retained by Students in****Experimental Condition 2**

Please write down the intention you made to act on your goal as you stated it on the previous form. Retain this sheet so that you can recall your intention.

I intend to complete my report (where) _____

on (day) _____ at (time/hour) _____.

Whenever a distraction arises, such as, _____,

I will ignore it.

Appendix R (Study 2)**Goal Statement Form to be Retained by Students in****Experimental Condition 3**

Please write down the intention you made to act on your goal as you stated it on the previous form. Retain this sheet so that you can recall your intention.

I intend to complete my report (where) _____

on (day) _____ at (time/hour) _____.

Whenever a distraction arises, such as, _____,

I will increase my efforts on writing the report.

Appendix S (Study 2)

Report Form

Report Form (page 1 of 2)

Student # _____

Date Report Completed: _____ **Time (hour):** _____

Please write a thoughtful report of no more than two pages.

Report Form (page 2 of 2) Student # _____

Appendix T (Study 2)**Follow-up Questionnaire**

Follow-up Questionnaire Student # _____

1. To what extent did you find this task easy?

1	2	3	4	5	6	7	8	9	10
not at all								very easy	

2. To what extent did you find this task difficult?

1	2	3	4	5	6	7	8	9	10
not at all								very difficult	

3. Did you experience problems in writing the report?

1	2	3	4	5	6	7	8	9	10
not at all								experienced many problems	

4. Was the past two-week period busy for you academically?

1	2	3	4	5	6	7	8	9	10
not at all								very busy academically	

5. Was the past two-week period busy for you socially?

1	2	3	4	5	6	7	8	9	10
not at all								very busy socially	

6. Did you enjoy writing the report?

1	2	3	4	5	6	7	8	9	10
not at all								very much enjoyed writing the report	

7. When distractions occurred, did you work harder on your report?

1	2	3	4	5	6	7	8	9	10
not at all								worked much harder	

8. Did you successfully complete your goal to your satisfaction?

1	2	3	4	5	6	7	8	9	10
not at all									very satisfactorily

9. To what extent did you procrastinate?

1	2	3	4	5	6	7	8	9	10
not at all									procrastinated a great deal

10. Were you able to avoid distractions while working on your report?

1	2	3	4	5	6	7	8	9	10
not at all									very able to avoid distractions

11. If you had distractions, what were they and how did you avoid them?

1. _____
2. _____
3. _____
4. _____

12. What other competing tasks did you encounter while working on your report?
Indicate on the lines below, all of the competing tasks you encountered.

1. _____
2. _____
3. _____
4. _____

13. Approximately how long did it take you to write the report? (in minutes) _____

14. Did you complete it when you intended to?

1	2	3	4	5	6	7	8	9	10
not at all close to the time I intended to									exactly at the time I intended to

Appendix U

BIS/BAS Scale

Please rate the following statements as they apply to you. Use the following scale:

1	2	3	4
Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly

- _____ If I think something unpleasant is going to happen I usually get pretty “worked up”.
- _____ When I get something I want, I feel excited and energized.
- _____ When good things happen to me, it affects me strongly.
- _____ When I want something, I usually go all-out to get it.
- _____ I crave excitement and new sensations.
- _____ I worry about making mistakes.
- _____ Criticism or scolding hurts me quite a bit.
- _____ When I am doing well at something I love to keep at it.
- _____ It would excite me to win a contest.
- _____ I feel pretty worried or upset when I think or know somebody is angry at me.
- _____ I often act on the spur of the moment.
- _____ I’m always willing to try something new if I think it will be fun.
- _____ When I see an opportunity for something I like, I get excited right away.
- _____ I go out of my way to get things I want.
- _____ Even if something bad is about to happen to me, I rarely experience fear or nervousness.
- _____ I feel worried when I think I have done poorly at something.
- _____ I will often do things for no other reason than they might be fun.
- _____ If I see a chance to get something I want, I move on it right away.

_____ I have very few fears compared to my friends.

_____ When I go after something I use a “no holds barred” approach.

Appendix V

Debriefing (Study 1)

We would like to thank you for participating in this study. There is more to this study than I have told you about so far. Before I tell you exactly what it is, I would like to explain why it is necessary in some kinds of psychological studies not to tell people all about the purpose of the study at the very beginning. In some kinds of studies, if you tell people what the purpose of the experiment is and what we predict about how they will react under particular conditions, then they might deliberately do whatever it is they think that we want them to do, just to help us out and give us the results that they think we want. If that happened, their reactions would not be a good indication of how they might react in a situation in everyday life, where they did not think they were being studied or that a psychologist was predicting that they would react in a certain way. What would be influencing them is what they thought the purpose of our study was rather than the specific conditions that we are trying to investigate. It is also possible that the opposite might occur and that people might think that if we predicted that they would do a certain thing, they might deliberately make the results invalid, because again what people would be responding to is what they thought we were looking for rather than responding naturally as they would in everyday situations. This is not a problem in all studies. For example, in a study on learning, if you wanted to have people learn something and then test them, you might want them to know exactly what they were going to be asked to recall so that they would do their best and learn as well as they could.

Now I would like to explain exactly what we are trying to get at in this study, and why we could not tell you everything from the beginning. Today people find they have many competing goals in their lives. When this happens it becomes difficult to get started on these goals. Some psychologists have been studying ways of helping people to start and finish their goals. We are also studying this. It has been found that deciding when and where to begin a goal helps people get started. In this study we are examining differences in getting started on your easy and difficult goals. To study this, we are looking at the goal information you provided, and whether you had planned when to commence your goal or not. Remember we asked you if you had planned for your goals when you listed them at the first session. Another aspect of the study deals with procrastination (putting things off). We want to see if people who tend to procrastinate are less affected by planning for their goals than those who do not tend to procrastinate. In other words, does procrastination render planning less effective in starting and completing of goals? Your tendency to procrastinate was measured during the mass testing procedure.

There is a reason we did not initially give you complete information. We thought that you might have felt pressure to work on and complete the goals you stated, based on what we told you about the study. In order to see the effects of planning or not planning on goal commencement and completion, we wanted to ensure you were not biased by what we are studying. The same explanation applies to procrastination. We did not want you to be biased in whether you started and completed your goals based on what we are studying. Instead, we wanted you to act in a way you would under normal circumstances.

What we expect to find is that planning helps in the initiation and completion of goals. For those who procrastinate, we expect to find that planning is less effective in helping people to start and to finish goals they have set for themselves.

Thank you for participating in this study. Your time and effort are greatly appreciated. If you have any questions or comments about this research, then please feel free to contact Anita Heavenor (Principal Investigator, 520-2600, ext. 2705) or Dr. T. Pychyl (Faculty Sponsor, 520-2600, ext. 1403). Should you have any ethical concerns about this study then please contact Dr. M. Senechal (Chair, Dept. of Psychology Ethics Committee, 520-2600, ext. 1155). Should you have other concerns about this study then please contact Dr. K. Matheson (Chair, Dept. of Psychology, 520-2600, ext. 2648).

Resource

Procrastination Research Group: (www.carleton.ca/~tpychyl)

Reference Books

Burka, J. B. & Yuen, L. M. (1983). *Procrastination: Why do it and what to do about it*. Reading, P.A. Addison-Wesley.

Knaus, W. J. (1998). *Do it now: How to stop procrastinating (Revised Edition)*. New York: John Wiley & Sons.

Appendix W

Debriefing (Study 2)

We would like to thank you for participating in this study. There is more to this study than I have told you about so far. Before I tell you exactly what it is, I would like to explain why it is necessary in some kinds of psychological studies not to tell people all about the purpose of the study at the very beginning. In some kinds of studies, if you tell people what the purpose of the experiment is and what we predict about how they will react under particular conditions, then they might deliberately do whatever it is they think that we want them to do, just to help us out and give us the results that they think we want. If that happened, their reactions would not be a good indication of how they might react in a situation in everyday life, where they did not think they were being studied or that a psychologist was predicting that they would react in a certain way. What would be influencing them is what they thought the purpose of our study was rather than the specific conditions that we are trying to investigate. It is also possible that the opposite might occur and that people might think that if we predicted that they would do a certain thing, they might deliberately make the results invalid, because again what people would be responding to is what they thought we were looking for rather than responding naturally as they would in everyday situations. This is not a problem in all studies. For example, in a study on learning, if you wanted to have people learn something and then test them, you might want them to know exactly what they were going to be asked to recall so that they would do their best and learn as well as they could.

Now I would like to explain exactly what we are trying to get at in this study, and why we could not tell you everything from the beginning. Today people find they have many competing goals in their lives. When this happens it becomes difficult to get started on these goals. Some psychologists have been studying ways of helping people to start and finish their goals. We are also studying this. It has been found that deciding when and where to begin a goal helps people get started. When you initially came to participate in the study you were randomly assigned to one of two groups. Half of the participants were in the experimental condition, and were asked to plan when and where they would complete the report. The other participants were in the control condition, and were simply asked to write the report. While interesting, the content of the report is secondary to our interests. In fact, we want to see if there are differences in when the reports were written. Specifically, we want to know if planning when to begin your goal helped you do so. Another aspect of the study deals with procrastination (putting things off). We want to see if people who tend to procrastinate are less affected by planning for their goals than those who do not tend to procrastinate. In other words, does procrastination render planning less effective in starting and completing of goals? Your tendency to procrastinate was measured during the mass testing procedure.

There is a reason we did not initially give you complete information. We thought that you might have felt pressure to work on and complete the report, based on what we told you about the study. In order to see the effects of planning or not planning on goal commencement and completion, we wanted to ensure you were not biased by what we

are studying. The same explanation applies to procrastination. We did not want you to be biased in whether you started and completed your report, based on what we are studying. Instead, we wanted you to act in a way you would under normal circumstances.

What we expect to find is that planning helps in the initiation and completion of goals. For those who procrastinate, we expect to find that planning is less effective in helping people to start and to finish goals they have set for themselves.

Thank you for participating in this study. Your time and effort are greatly appreciated. If you have any questions or comments about this research, then please feel free to contact Anita Heavenor (Principal Investigator, 520-2600, ext. 2705) or Dr. T. Pychyl (Faculty Sponsor, 520-2600, ext. 1403). Should you have any ethical concerns about this study then please contact Dr. M. Senechal (Chair, Dept. of Psychology Ethics Committee, 520-2600, ext. 1155). Should you have other concerns about this study then please contact Dr. K. Matheson (Chair, Dept. of Psychology, 520-2600, ext. 2648).

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- Knaus, W. J. (1998). *Do it now: How to stop procrastinating (Revised Edition)*. New York: John Wiley & Sons.

Appendix X

Inter-rater Classification Scheme for Goal Categories

The inter-rater was given the following list of the Goal Categories with a brief description of the nature of the goals and examples of each.

- 1) **Academic.** Academic goals relate to tasks students are required to complete for course credit. Examples include such things as: finishing an essay and studying for an exam.
- 2) **Health.** Health goals relate to activities aimed at maintaining or improving physical health. Examples include such things as: exercising regularly and eating properly.
- 3) **Household.** Household goals involve the maintenance of the home and personal property. Examples include such things as: paying off bills, fixing the car and doing the laundry.
- 4) **Organizational.** Organizational goals involve arranging and managing things. Examples include such things as: setting up a neat study area and organizing a schedule for daily activities.
- 5) **Work (Volunteer and Paid).** Work goals are related to activities performed for established organizations that sometimes involve pay and sometimes do not. Examples include such things as: coaching a school team and meeting clients to sign a contract.
- 6) **Inter-personal.** Interpersonal goals involve dealings with friends, family and partners. Examples include such things as: asking someone out on a date and helping your child with homework.