Prioritizing Effort Allocation in a Multiple-Goal Environment

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ABSTRACT

This study replicated and extended existing research concerning task prioritization in multiple-goal scenarios. The theoretical perspectives on which hypotheses were based was a combination of Bandura's self-efficacy theory (1986) and rational models of control theory (Klein, 1989; Lord & Levy, 1994). Participants were 216 college students who received extra-credit points for their involvement. They performed six repeated trials on a computerized task consisting of two simultaneous sub-tasks. Participants pursued an assigned long-term goal on each task, and goal achievement was rewarded with additional extra-credit points as an incentive. Task prioritization was assessed with four separate measures of effort allocation, including the time spent on each task, the number of computer mouse-clicks made within each task, scores on a self-report assessment of exerted effort, and responses to a self-report task prioritization assessment. Results indicated that participants prioritized tasks on which they were closer to goal attainment, tasks on which they were more efficacious, tasks on which they were experiencing a faster rate of progress, and tasks on which they reported greater goal commitment. Results also indicated that the effect of goal-performance discrepancies (GPDs) on task prioritization was mediated by self-efficacy. Further the amount of time remaining before a deadline moderated the relationship between GPD and task prioritization, although the form of this relationship was not in the proposed direction. Achievement goals were examined as moderators of the relationship between GPDs and task prioritization, but results were non-significant. Overall, these findings provide additional evidence that expectancies are often central to understanding self-regulation in multiple-goal scenarios, as first asserted by Kernan and Lord (1990). The current study also

provides additional evidence concerning the importance of temporal factors in determining resource allocation in multiple-goal scenarios. Results from the current study point toward multiple issues for exploration in future research, such as an integrated model focusing in part on the pivotal role of self-efficacy or other expectancy-related constructs. Results also demonstrate implications for applied work, including clear evidence that employees should be expected to allocate their finite resources toward goals on which they believe success is most likely.

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In loving memory of C. C. Byrd, Jr., who taught me a lot about goal pursuit.

TABLE OF CONTENTS

List of Tables

List of Figures

Appendices

Prioritizing Effort Allocation in a Multiple-Goal Environment

Introduction

The influence of goals on task performance has been investigated for nearly four decades. During this time over 1,000 studies have been conducted in at least eight countries with no fewer than 40,000 participants (Latham & Locke, 2006). This line of research has demonstrated what has been called one of the most robust findings in the field of work motivation—the ability of specific, difficult goals to substantially improve human performance (Donovan, 2002).

Given the sheer number of goal setting studies conducted to date, the summative perspective afforded by meta-analytic results is uniquely valuable in understanding the influence of goals on performance. In meta-analytic studies, Tubbs (1986) and Wood, Mento, and Locke (1987) found that difficult goals led to greater performance than do-your-best goals and no goals (d = .82, d = .58, respectively). This demonstrates that difficult goals can have a stronger, positive effect on performance than easy or moderately challenging goals. Tubbs (1986) further examined the degree of specificity of difficult goals and found that specific, difficult goals were more effective than do-your-best and no goals (d = .50). While these studies show goal setting to be a simple yet powerful technique for leveraging maximum performance, goal setting research must be expanded in several directions in order to more fully understand how goals affect performance.

Expanding Goal-Setting Research

Despite a constantly increasing body of knowledge regarding the relationship between goals and performance, there remain substantial areas of inquiry to be explored. For instance, the majority of existing goal setting studies have examined goal pursuit during just a single performance episode. These studies have provided considerable knowledge regarding goal-

directed self-regulation and its outcomes on task performance, but they have not afforded insight into the dynamic process of repeated goal striving attempts. As a result, there exists a relative lack of knowledge concerning the ways in which individuals self-regulate over time in pursuit of goals. Because goal pursuit in the workplace is often characterized by repeated attempts at goals over time, research focusing on dynamic self-regulation remains particularly valuable. It should be noted that examinations of dynamic goal pursuit are being conducted with increasing frequency (e.g., Donovan & Williams, 2003; Ilies & Judge, 2005; Richard, Diefendorff, & Martin, 2006; Vancouver, Thompson, & Williams, 2001). The total number of such studies, however, remains particularly low. Currently one of the most valuable contributions to goal setting research, therefore, is a continued and expanded examination of dynamic self-regulation during goal pursuit.

Even more compelling than the need for research on dynamic goal pursuit is the need for research examining self-regulation in multiple-goal scenarios. The overwhelming majority of existing goal setting studies have focused on single-goal scenarios. In such scenarios, individuals pursue just one goal, which misrepresents the typical manner in which goal setting occurs in organizational contexts. In real-world situations, individuals often simultaneously balance multiple goals. In some instances, a single task may be associated with multiple goals (e.g., performing a task in a specified time and with no more than a specified number of errors), but most commonly the pursuit of multiple goals refers to situations in which individuals are engaged in two or more concurrent tasks, each of which is associated with a performance goal. Because examinations of such scenarios remain exceedingly rare, perhaps the greatest means to expand goal setting research is to focus on the simultaneous pursuit of multiple goals.

Purpose of the Present Study

Given the value of advancing our knowledge of the processes involved in the simultaneous pursuit of multiple goals, the current study focused exclusively on this issue. Specifically, the emphasis within the current study was on advancing our understanding of how individuals choose to prioritize one goal over another in a multiple-goal environment. At present, there is perhaps no more compelling topic for multiple-goals research.

Models of Self-Regulation

Self-regulation during goal pursuit involves a normative comparison of our performance with a personal standard or goal, which in turn influences our emotions, motivation, and future performance (Bandura, 1989, 1991; Klein, 1989; Carver & Scheier, 1998). The self-regulatory perspective is ideal for examining the dynamic pursuit of multiple goals because it draws attention to the allocation of finite resources toward goal achievement.

Self-efficacy theory (e.g., Bandura, 1986) and rational models of control theory (e.g., Klein, 1989; Lord & Levy, 1994) have arisen during the last two decades as the most prominent self-regulation frameworks, and both have demonstrated an appreciable influence on research during this period (Kanfer, 2005). Although self-efficacy theory and rational models of control theory are distinct from one another in some respects, the similarities between them are numerous and in some cases the differences are largely semantic (see Carver & Scheier, 1982; Kernan & Lord, 1990). While some researchers steadfastly insist that the two frameworks are distinct (e.g., Bandura & Locke, 2003; Locke, 1991), others have called for a melding of the two frameworks where possible (e.g., Donovan, 2002; Hyland, 1988, Klein, 1989). In accordance with this perspective, the self-regulatory framework adopted within the current study draws on both self-efficacy theory and rational models of control theory.

Self-efficacy theory and control theory both maintain that self-regulation consists of three distinct components (Bandura, 1991; Carver & Scheier, 1982; Campion & Lord, 1982; Klein, 1989). The first of these is the establishment of a goal. Following the commencement of goal pursuit, performance is assessed relative to the goal, resulting in a goal-performance discrepancy (GPD). The self-regulatory cycle concludes with a reaction to the observed GPD.

Self-efficacy theory and control theory adopt slightly different perspectives in explaining the motivation for engaging in the first step of the self-regulatory cycle—goal establishment. To varying degrees, however, both frameworks explain goal establishment by referencing the widely held conceptualization that goals are arranged in hierarchies of lower- and higher-order goals (e.g., Austin & Vancouver, 1996; Shah & Kruglanski, 2000). Higher-order goals are also referred to as distal goals, whereas lower-order goals are also referred to as proximal goals. Strict interpretations of control theory suggest that goals are established in order to propel ourselves toward achieving pre-existing higher-order goals (Klein, 1989; Hyland, 1988; Carver & Scheier, 1990). For example, imagine a student who has a goal of earning an 'A' in a particular course. To ensure they achieve this higher-order goal, the student may establish more proximal goals of performing highly on each of three tests in the course. Even more proximal goals may be established as the means by which high test scores will be obtained, such as studying for a specified number of hours each day. This hierarchical organization of goals is not unique to control theory, however, as self-efficacy theory also maintains that goals are arranged hierarchically (Austin & Vancouver, 1996). Just like control theory, self-efficacy theory maintains that goal establishment can occur as a means to achieve pre-existing higher-order goals. The greatest difference between the two frameworks, however, is the emphasis within self-efficacy theory on the desire for self-satisfaction. Specifically, self-efficacy theory suggests

that goal establishment is generally driven by the desire for self-satisfaction that stems from improving upon previous performance (Bandura, 1989). Self-efficacy theory further specifies that lower-order goals also serve as a potential source of self-satisfaction in and of themselves, which helps maintain perseverance toward the higher-order goal (Bandura, 1989).

While this discrepancy between self-efficacy theory and control theory may be compelling in a theoretical sense, it bears no directly observable influence on self-regulatory processes and appears infeasible to test. The two perspectives do, however, afford after-the-fact theoretical explanations for why individuals may have self-regulated in a certain manner. Such explanations may prove beneficial as research on multiple goals expands and may ultimately aid in the construction of a theoretical model of task prioritization during dynamic goal pursuit.

Following goal establishment is the second component of self-regulation – comparing one's current performance levels to the goal. Self-efficacy theory describes this stage as a self-evaluative process in which the individual simply considers how their current performance compares to their goal. Control theory expands upon this by further specifying that this comparison occurs via the activation of a feedback loop wherein a comparator mechanism evaluates the current state (i.e., performance) vis-à-vis the intended (i.e., goal) state. The comparator then generates a signal characterizing the evaluation (i.e., favorable or unfavorable), which is transmitted through the system (Carver & Scheier, 1981; Powers, 1973).

The final component of self-regulation involves a reaction to the performance evaluation. While traditional models of control theory suggest that reactions to performance evaluations are driven purely by the discrepancy between goals and performance, self-efficact theory suggests that reactions are primarily driven by self-satisfaction or dissatisfaction. When a task is favorable and we value the goal, failure to attain the goal is dissatisfying, causing us to react in some

fashion. Across both control theory and self-efficacy theory, reactions to performance evaluations can take a number of forms, including raising or lowering the original goal, altering the amount of effort exerted on the task, modifying performance strategies, or withdrawing from the task entirely (Carver & Scheier, 1982; Austin & Vancouver, 1996). Self-efficacy theory and control theory differ on which response will be selected in a given scenario, the strength of the response, and its underlying motivation.

Prior Research on Self-Regulation

Existing research on dynamic self-regulation has largely focused on goal revision. Although this highlights the need for research on task prioritization, the fact remains that the greatest strength of existing dynamic self-regulation research is the growing knowledge regarding goal revision. This research continues to provide increasing insight into discrepancy production and discrepancy reduction.

Discrepancy production. Discrepancy production refers to increasing the distance between current performance and a goal. Although not always the case, we commonly think of discrepancy production occurring after a goal has been obtained, at which point a new goal is set above the most recent performance level. Discrepancy production is fundamental to self-efficacy theory in which it is argued that we instinctively follow goal attainment – or approximate goal attainment – with an increase in goal level up to a point of diminishing returns or when ability reaches its threshold (Bandura, 1989). Cybernetic models of control theory approach the topic of discrepancy production from a different perspective (Powers, 1973). According to cybernetic frameworks, discrepancy production occurs purely as a means to achieve higher-order goals. That is, goals are set above current performance levels only when attaining those goals is instrumental to attaining higher-order goals. Rational, non-cybernetic models of control theory,

however, are more flexible in their explanation for discrepancy production. These models suggest that discrepancy production can be spurred not just by higher-order goals, but also by perceptions of situational factors related to attaining more immediate lower-level goals (Lord & Levy, 1994; Johnson, Chang, & Lord, 2006). For instance, Kernan and Lord (1990) demonstrated that discrepancy production can occur as a reaction to perceived expectancies and valences (Kernan & Lord, 1990). By accounting for expectancies and valences, rational models of control theory share substantial theoretical overlap with the self-efficacy theory model, further demonstrating the compatibility of the two frameworks.

Theoretical explanations aside, the observation of discrepancy production within the psychology literature dates back approximately 60 years, beginning with Lewin, Dembo, Festinger, and Sears' (1944) review of empirical work showing that the tendency to strive for ever-improving performance is not only characteristic of adults, but also of children as young as 12 years old. More recent research confirms that discrepancy production is a generally occurring phenomenon that occurs in any number of situations. For instance, Campion and Lord (1982) found that when college students were asked what their lowest acceptable grade would be on an upcoming test, student responses on average were one letter grade higher than they received on their most recent test. Campion and Lord (1982) also found that after reaching their goal, students most often set a more difficult goal for themselves, rather than renewing or lowering the goal. Further, Williams, Donovan, and Dodge (2000) examined the performance of college track and field athletes and found that the athletes set goals at higher levels than previous performance. Phillips, Hollenbeck, and Ilgen (1996) presented still further corroboration with evidence that students established goal levels that were higher than current performance levels on mathematical and vocabulary skills tests. Additional research has shown that when individuals

surpass a goal, they tend to set subsequent goals in proportion to the size of the discrepancy between performance and the goal (Donovan & Williams, 2003; Williams et al., 2000). Finally, Donovan and Haftsteinsson (2006) found that the manner in which individuals raised their goals following goal success was influenced by dispositional goal orientation.

Discrepancy reduction. Discrepancy reduction refers to the process by which individuals reduce the discrepancy that exists between performance level and goal level. Research indicates that discrepancy reduction is a more complicated process than discrepancy production. Although there is only one means by which individuals engage in discrepancy production – establishing/raising performance goals – discrepancy reduction can occur through at least four different methods (Austin & Vancouver, 1996).

Perhaps the most common method of discrepancy reduction is to exert greater effort in order to achieve the goal. This is often seen as the discrepancy reduction method to which individuals are most inclined, and it is the method implied by goal setting theory for why difficult goals are so effective at improving performance (Locke & Latham, 1990). As evidence, Bandura and Cervone (1983) found that participants who failed to achieve a self-set goal on a physical exertion activity subsequently put forth greater effort to achieve their goal. Interestingly, Campion and Lord (1982) found that the frequency with which individuals failed to reach their goals correlated positively with the amount of effort they exerted on subsequent performance attempts. Their results go beyond corroborating the claim that goal failure stimulates greater exertion of effort by suggesting that *repeated* goal failure can lead to increasingly greater effort exertion, so long as individuals perceive control over task outcomes.

Empirical evidence also suggests that individuals reduce discrepancies by lowering performance goals (e.g., Campion & Lord, 1982; Donovan, 2002). This is particularly true when

GPD's are perceived as too large or insurmountable to be attained through the exertion of greater effort (Williams et al., 2000). Campion and Lord (1982) found, for instance, that participants in their classroom-based study who missed a test goal by at least two letter grades were more likely to lower their subsequent goal than were participants who either met, exceeded, or missed their goal by only one letter grade. Similarly, Donovan and Williams (2003) found that track and field athletes who missed their goals by a wide margin were more likely to respond by lowering their goals. Research has further shown that individuals do not just lower their goals when faced with large, negative GPD's, but they often lower their goals in proportion to the size of the existing discrepancy. For instance, Donovan and Williams (1996) examined the performance of cross-country runners throughout a series of races. Their results indicated that when the athletes performed below their goal, they tended to revise their goals downward in relation to their existing GPD. That is, the greatest downward goal revision occurred among athletes who were the furthest from their goals.

Still another method of reducing discrepancies is to alter performance strategies. Mone and Shalley (1995) found that individuals modified their performance strategies to increase the likelihood of goal attainment. Examining performance on a simulated hiring task, they found that the assignment of specific and difficult goals was associated with greater strategy search than the assignment of either do-your-best goals or specific, easy goals.

A final method of discrepancy reduction is to simply abandon the goal. Several models of goal abandonment exist and a common theme is shared among them – a perceived inability to control the factors associated with goal success. Martin and Tesser (1989) propose a model of ruminative thought, which holds that after repeated goal failure, individuals tend to experience repetitive failure-related thoughts concerning the task. This leads to psychological distress,

ultimately giving way to learned helplessness and eventual abandonment of the task because the individual no longer perceives the agency to achieve their goal. Mikulincer (1994) also adopts a perspective based on learned helplessness to explain task abandonment. Mikulincer (1994) argues that, following a series of goal failures, individuals come to believe they cannot control performance outcomes and therefore adopt the perspective that goal success and goal failure occur largely independently of their effort. Accordingly, this state of learned helplessness leads to goal abandonment. Carver and Scheier (1982) explain goal abandonment from a control theory perspective. They maintain that goal abandonment occurs after a comparator mechanism evaluates performance relative to goal level, as well as goal importance and available skill. Task disengagement occurs when the comparator returns an unfavorable evaluation. Results from Carver, Blaney, and Scheier (1979) support this assertion. Although primarily a study of the effects of self-awareness on motivation, results indicated that participants disengaged from an intellectual task when experiencing weak expectancies for success.

Moderators of Discrepancy-Reduction Strategies

In addition to identifying different methods of discrepancy reduction, researchers have also identified numerous moderators of the discrepancy reduction process. This research has shown that individual difference variables and situational issues can influence an individual's choice of discrepancy reduction strategies and the extent to which such strategies are employed.

Self-efficacy. Bandura (1991) has claimed that self-efficacy affects nearly every aspect of self-regulation and consequently the construct is an essential component of self-efficacy theory. Empirical work supports the importance of self-efficacy. For instance, Bandura and Cervone (1983) found that the more efficacy an individual reported, the greater their persistence in the face of difficulty or goal failure. When individuals choose to reduce discrepancies through

downward goal revision, however, the role of self-efficacy in this process is not always clear. Donovan and Swander (2001) examined the exam performance of college students and found that participants who were more efficacious were less likely to revise goals downward in response to negative GPD's. Donovan and Williams (2003), however, failed to find a relationship between self-efficacy and downward goal revision in a study of track athletes. It is possible that, as college athletes, Donovan and Williams' (2003) participants had relatively high efficacy, resulting in restricted range of scores that limited the ability to detect a relationship between efficacy and goal revision. Overall, evidence suggests that greater efficacy inhibits any discrepancy reduction response other than increased effort exertion. Additional research is required, however, to provide a clearer understanding of efficacy's moderating role in the application of other discrepancy reduction strategies.

Task deadlines. Research has also indicated that the amount of time remaining before a task deadline can influence individuals' choice of discrepancy reduction strategies. For example, Williams et al. (2000) reported different goal revision tendencies depending on whether an individual was in the first or second half of a performance trial. Specifically, Williams et al. (2000) found that the track athletes they observed were not as likely to revise goals downward during the first half of their performance episode as they were during the second half. The authors suggested that the athletes believed any GPD's encountered during the first part of the performance episode could be reduced or eliminated with increases in effort. However, as the performance episode continued into the second half of the track season, they became increasingly aware that boosting effort alone would not align performance with goals. For that reason, the athletes engaged in greater goal revision during the second half of their competitive season. Donovan and Williams (2003) also found that the relationship between GPD size and

revision of both proximal and distal goals was stronger in the second half of a performance episode compared to the first part. Additionally, Schmidt and DeShon (2007) examined the amount of effort participants put forth on two concurrent tasks and found that during the first half of a performance trial, greater effort was generally exerted on the task with the larger GPD. During the second half of the performance trial, however, participants exerted greater effort on the task with the smaller GPD. Taken together, these studies highlight the role of temporality issues in self-regulation and specifically show that the amount of time remaining before a deadline can impact the choice of discrepancy reduction strategies.

Causal attributions. Research concerning the role of causal attributions for performance in goal striving scenarios, and in self-regulatory contexts more specifically, often adopts Weiner's (1985) attribution theory as a framework. Weiner's (1985) attribution theory holds that three common components underlie the attributions that individuals make for their performance: locus of causality, controllability, and stability. Locus of causality refers to whether the perceived cause of performance is seen as internal or external to the individual; controllability concerns whether or not the cause is perceived as controllable; and stability refers to the extent to which the cause is perceived to vary over time (Weiner, 1985). Research evidence suggests that all three of these components are relevant in goal-striving scenarios.

The majority of research on the influence of causal attributions on self-regulation has examined stability and controllability attributions. For instance, the influence of stability attributions on self-regulation are complex and seem to depend not just on the perceived stability of the causal factor, but also on the outcomes of previous performance attempts (Mone & Baker, 1992). In general terms, when individuals make stable attributions for performance, they tend to expect the same outcome from future performance attempts. That is, stable attributions for goal

success are often associated with expectations of future success, whereas stable attributions for goal failure are typically associated with expectations for subsequent goal failure. As evidence, Thomas and Mathieu (1994) found that college students in a classroom field study who made stable attributions for goal success experienced greater levels of self-efficacy, whereas students who made stable attributions for goal failure experienced lower levels of self-efficacy. In both cases, students' efficacy levels were indicative of their expectations for future performance. When unstable attributions are made, however, expectations for future performance are not so predictable. Donovan and Williams (1996) examined the influence of stability attributions on goal revision and found that individuals who attributed goal failure to stable causes were more likely to lower their goals than were individuals who attributed failure to unstable causes.

As stated, controllability concerns the extent to which an individual believes the factors affecting their performance are controllable (Weiner, 1985). When an individual attributes poor performance to a lack of effort, a high controllability attribution is typically made because effort is usually perceived as under the individual's control. If the same individual attributed their performance to bad luck, however, they would likely make a low controllability attribution since luck is almost always perceived as out of human control. Donovan and Williams (2003) assessed the influence of controllability attributions on goal revision and found that individuals who made strong controllability attributions were less likely to engage in downward goal revision in response to goal-performance discrepancies on both proximal and distal goals, relative to individuals who made weak controllability attributions.

A challenging characteristic of the literature concerning the influence of causal attributions on self-regulation is the inconsistent findings that have been observed. For instance, Byrd and Donovan (2003) found that controllability attributions moderated the goal revision

process, but that stability attributions did not. In contrast, Donovan and Williams (2003) found the opposite – stability attributions moderated goal revision processes, whereas controllability attributions did not. An additional difficulty causal attribution researchers face are high intercorrelations among the three attribution dimensions. Even Weiner (1985) acknowledged concern regarding this non-orthogonality and referenced a study by Anderson (1983) in which he noted that causal attribution ratings, "were highly intercorrelated, suggesting that the dimensions are not independent" (p. 554). These high intercorrelations are problematic in that they suggest either two or more of the underlying dimensions are not truly distinct from one another, or that the instrument used to measure the dimensions is not sensitive enough to account for these differences. In either scenario, high intercorrelations result in an inhibited ability to detect meaningful relationship among the dimensions and outcomes of interest.

Multiple-Goal Environments

As mentioned, a relatively small amount of research has examined self-regulation in multiple-goal scenarios. Existing work has shown that self-regulation in multiple-goal scenarios differs from that in single-goal scenarios (Kernan & Lord, 1990). Despite the infancy of multiple-goal research, increasing attention is being focused on investigating the unique characteristics of these scenarios.

Prioritization. Perhaps the greatest difference between single- and multiple-goal scenarios is the requirement of individuals in the latter to divide their resources (e.g., attention, time, effort) between tasks. That is, one must decide which task to focus on at any given moment. To some extent, most multiple-goal studies have focused on how participants allocate their resources among tasks. However, only half of these studies – Byrd and Donovan (2003), DeShon, Kozlowski, Schmidt, Milner, and Wiechmann (2004), Kernan and Lord (1990), and

Schmidt and DeShon (2007) – adopted the perspective that resources are finite and therefore limited, and attempted to examine resource allocation accordingly. While not a shortcoming, the remaining studies did not clearly emphasize differential allocation of resources between simultaneous goals.

Among the studies in which task prioritization has been investigated, multiple operationalizations for prioritization have been used. For instance, Kernan and Lord (1990) compared self-set goal levels between tasks as a proxy for prioritization. Specifically, prioritization was indicated by setting a higher goal on one task versus the other. This specific operationalization is problematic, however, in that it confounds task prioritization with goal revision. Byrd and Donovan (2003) and Schmidt and DeShon (2007) examined the amount of effort participants put forth on one task versus the other as a measure of prioritization. DeShon et al. (2004) examined whether participants performed in ways that benefited themselves (i.e., self prioritization) or benefited the team (i.e., team prioritization). Although task prioritization is simple to understand at the conceptual level, the variety of ways in which it has been operationalized makes it challenging to consider the collection of existing research on the topic and draw initial conclusions concerning prioritization. As task prioritization research accumulates in the future, it will be important to examine how various operationalizations of prioritization relate to different self-regulatory outcomes.

Number of distinct tasks. Existing multiple-goal studies differ in more than operationalizations for task prioritization. The number of distinct tasks examined in a multiple-goal study is another potential difference. Existing multiple-goal studies have observed participants performing anywhere from one (e.g., Hoy, 1986) to six or more tasks (e.g., Radosevich, 1999). In single-task multiple-goals studies, participants pursue two or more goals

pertaining to a single task, whereas in multi-task studies, participants generally pursue one goal for each task. Hoy (1986) used a single-task design. Specifically, participants pursued assigned goals pertaining to quality and quantity of performance on just one task – an inventory requisition task. Schmidt and DeShon's (2007) participants performed two concurrent – but identical – computerized scheduling tasks. This involved using the same electronic interface and task rules to create class schedules for students at two different fictional universities. Finally, DeShon et al. (2004) examined the simultaneous pursuit of multiple goals through a different design altogether. Their participants performed a simulated radar task and, in addition to pursuing self-set goals for their individual performance, they worked in teams to simultaneously pursue team goals, as well. As diverse as these three studies are in terms of the performance scenarios and goal systems, they all involve the pursuit of two goals pertaining to a single task.

The performance scenarios in multi-task studies are diverse, as well. In Kernan and Lord (1990), participants performed computerized scheduling and inventory requisition tasks in pursuit of a self-set goal on each. The performance scenario in Byrd and Donovan (2003) was similar in that participants performed computerized scheduling and inventory requisition tasks, although the content and functionality of the tasks were unique. Phillips et al. (1996) observed participants as they pursued a performance goal on each of four different skills tests (easy and difficult tests of verbal and mathematical skills). Donovan and Williams (2003), the first to examine multiple goals in a field study, observed participants striving for proximal and distal goals on varying numbers of activities. Their participants were college track and field athletes who set proximal goals for their upcoming competition and distal goals for their entire season for each of the events in which they competed. Finally, participants in Radosevich (1999) pursued proximal and distal goals in each college course in which they were enrolled.

Competing versus non-competing goals. Multiple-goals studies can also differ in their examination of either competing or non-competing goals. Competing goals are those in which the allocation of resources (e.g., time, effort) to one goal directly limits the resources available for allocation to other goals. A sales executive searching for new business who has a goal of making 25 cold calls a day and generating $15,000 dollars of new business a week faces largely non-competing goals since pursuing one goal coincides with the pursuit of the other. The sales executive would face competing goals, however, if his goals were to make 25 calls a day while also spending 10 hours a week studying for a professional certification program because the time and effort allocated to one goal would limit the available resources to allocate toward the other. Existing multiple-goals studies have largely examined competing goals. Participants in Byrd and Donovan (2003), Kernan and Lord (1990), Phillips et al. (1996), and Schmidt and DeShon (2007) were all forced to allocate available resources to one goal at the expense of the other.

Goal proximity. A final difference among existing multiple-goal studies is the amount of time during which participants pursue goals, often referred to as goal proximity. Goal proximity varies widely within the thousands of existing single-goal studies, and the repeated observation of the goal setting effect in these studies suggests that goal proximity is not a compelling issue in single-goal scenarios. It is quite possible that goal proximity will prove to be important in multiple-goal scenarios, however. For instance, consider that goal pursuit in Kernan and Lord (1990), Phillips et al. (1996), and Byrd and Donovan (2003) lasted between 10 and 20 minutes. In Donovan and Williams (2003), though, goal pursuit lasted eight weeks. No performance episode length is more appropriate than another because in real-world work contexts goal setting is equally applicable in both long- and short-term scenarios. However, the ways in which we self-regulate in the pursuit of multiple goals may differ substantially depending upon the amount

of time we have to pursue those goals. This possibility is made more apparent by the aforementioned research showing the effects of deadlines on goal-directed self-regulation (e.g., Donovan & Williams, 2003; Schmidt & DeShon, 2007).

Self-Regulation in Multiple-Goal Scenarios

The small number of existing multiple goal studies naturally means that we still know relatively little about goal-striving in multiple-goal environments. A strength of this small literature, however, is that all multiple goal studies have examined goal pursuit over repeated performance attempts. As a result, all multiple goal studies have contributed to our developing knowledge of self-regulation in multiple-goal environments.

Discrepancy production evidence. Several studies presented clear evidence that, when simultaneously working toward two or more goals, individuals set goals at higher levels than their previous best performance (Donovan & Williams, 2003; Phillips et al., 1996; Radosevich, 1999). These studies each reported a unique aspect of discrepancy production, as well. For instance, Donovan and Williams (2003) replicated the commonly observed tendency in single-goal situations to raise performance goals in proportion to the size of the existing positive goal-performance discrepancy. Radosevich (1999) found that discrepancy production can occur frequently in multiple-goal scenarios; 98 percent of participants in Radosevich (1999) engaged in discrepancy production at the start of the study. Additionally, Radosevich (1999) found that discrepancy production occurred more frequently on tasks (i.e., specific courses) that participants were performing well on, relative to other tasks. Complimenting Radosevich's (1999) results concerning the frequency of discrepancy production, Phillips et al. (1996) found that participants engaged in discrepancy production throughout a series of five performance trials. Interestingly, discrepancy production was less common in easy task conditions relative to difficult task

conditions. Forty percent of participants engaged in discrepancy production on the difficult verbal task, and 32 percent of participants did so on the difficult mathematical task in Phillips et al. (1996). That participants engaged in different amounts of discrepancy production on easy versus difficult tasks, however, lead Phillips et al. (1996) to caution that discrepancy production might not be a self-regulatory norm as it is sometimes considered. Their results specifically suggest that the process of discrepancy production may be moderated by task characteristics.

Discrepancy reduction evidence. Existing multiple-goal studies have also begun to examine discrepancy reduction. For example, Radosevich (1999) found that participants in a multiple-goal environment revised their goals downward when they encountered large, negative goal-performance discrepancies. Donovan and Williams (2003) and Williams et al. (2000) also noted that participants were sensitive to goal-performance discrepancies, specifically reporting that when participants engaged in discrepancy reduction by lowering their goals, they lowered them in proportion to the size of the existing negative discrepancy.

Goal hierarchies. Self-regulatory models of motivation typically maintain that goals are hierarchically organized (e.g., Austin & Vancouver, 1996; Klein, 1989; Shah, Kruglanski, & Friedman, 2003). This hierarchical organization has been referred to with varying terminology. In some instances, researchers refer to lower- and higher-order goals. In other instances, they refer to proximal and distal goals. These two sets of descriptive terms are generally interchangeable. Despite the broadly acknowledged hierarchical organization of goals, surprisingly few studies have examined the interrelationship among goals from different hierarchical levels.

Donovan and Williams (2003) found that participants employed proximal goals as a means to achieve distal goals. The track and field athletes they observed set goals for the season

(distal goals) that were greater than their previous best performance, and then used competition goals (proximal goals) to motivate themselves toward the attainment of season goals. Donovan and Williams (2003) found that participants lowered their proximal and distal goals as a function of current performance, and that distal goals had a distinguishable influence on the revision of proximal goals.

Radosevich (1999) also examined proximal and distal goals on multiple tasks. As discussed previously, participants in the Radosevich (1999) study set both proximal (biweekly) and distal (end-of-semester) goals for each of the courses in which they were enrolled. The results from this study were very similar to Donovan and Williams (2003), including the general tendency to set proximal and distal goals at levels slightly higher than current best performance. Most noteworthy was the fact that participants strategically established proximal goals in order to ultimately achieve their distal goals. Specifically, when participants failed to reach a proximal goal, they were willing to raise their goal (creating an even greater negative goal-performance discrepancy) in hopes that doing so would help achieve the distal goal.

Study Propositions

Although research on multiple goals remains relatively limited, it appears that the list of potential factors to be examined in this line of research is substantial. The focus within the current study was on task prioritization and the factors that predict such prioritization. The predictors of prioritization included GPDs, self-efficacy, rate-of-progress toward goal attainment, goal commitment, task deadlines, and achievement goals.

Task prioritization. As previously stated, the greatest difference between single- and multiple-goal environments is that, when pursuing multiple goals, individuals must choose which goal they intend to focus on at any given moment. Kernan and Lord (1990) were the first to

examine the factors that determine task prioritization in a multiple-goal environment. In part, they found that GPD size predicted task prioritization. Specifically, individuals placed greater goal priority on tasks for which there was a smaller GPD. This is in direct contrast to results from the most recent study to examine task prioritization in a multiple-goal environment. Schmidt and DeShon (2007) found that overall participants generally prioritized the task on which they were farther from goal attainment. Schmidt and DeShon (2007) drew upon traditional models of control theory to explain their results. Consistent with theoretical work by Powers (1973), Schmidt and DeShon suggested that their results support the idea that individuals allocate resources according to need, and that GPD size is a direct indicator of such need. Larger GPDs indicate greater distance from goal attainment, and therefore greater need for resources. Approximately 15 years earlier, however, Kernan and Lord (1990) suggested that traditional models of control theory are ill-suited to account for self-regulatory behaviors in multiple-goal frameworks. Kernan and Lord (1990) argued that a self-described "rational" model of control theory is a more theoretically appropriate framework when examining self-regulation in multiple-goal scenarios because, in addition to discrepancies, such a framework additionally takes into account goal expectancies and goal valences. According to Kernan and Lord (1990), expectancies and valences are of principal importance when dividing finite resources among competing goals because we are not inclined to allocate resources to tasks for which goal attainment is either too unlikely or not highly valued. Kernan and Lord (1990) argued that when these additional factors are considered, individuals generally end up putting greater emphasis on tasks with smaller discrepancies and less emphasis on tasks with larger discrepancies. Kernan and Lord (1990) further suggested that when negative GPDs were sufficiently large, participants would disengage from the task. This idea was based on a concept developed within current

models of control theory whereby individuals withdraw from a task when faced with large negative discrepancies in order to avoid negative affect associated with unattainable goals (e.g., Carver & Scheier, 1981; Hyland, 1988). Extending this line of thinking to a multiple-goal scenario, participants could be expected to prioritize the task on which they were closer to goal attainment because of the lessened risk of experiencing negative affect. In other words, individuals direct their attention and resources toward smaller discrepancies in an attempt to minimize the negative consequences associated with effortful pursuit of larger discrepancies. Results from Byrd and Donovan (2003) corroborated Kernan and Lord's (1990) findings. Specifically, participants put forth greater effort on tasks with smaller GPDs. It is interesting to again note that task prioritization was operationalized differently in the Kernan and Lord (1990) and Byrd and Donovan (2003) studies. In the Kernan and Lord (1990) study, the prioritized task was the one on which the participant set a more challenging goal, whereas the prioritized task in Byrd and Donovan (2003) was the task that received the greatest effort. That the same finding was observed under different operationalizations of task prioritization begins to establish the generalizability of this finding. Complicating matters, however, is the fact that the operationalizations used in Byrd and Donovan (2003) and Schmidt and DeShon (2007) were highly similar, yet opposite results were found. Additional research is clearly needed.

Kernan and Lord (1990) and Byrd and Donovan (2003) both examined proximal rather than distal goals. That is, although participants in both studies performed multiple trials, GPDs were calculated only in reference to individual trials. Further, the incentives in both studies were tied only to achievement of proximal goals. Multiple-goal research has yet to examine task prioritization as a function of distal-goal discrepancy size. The theoretical models drawn upon in Byrd and Donovan (2003) and Kernan and Lord (1990) do not apply specifically to proximal

goals, so the same relationship should hold when examining discrepancy size relative to distal goals. Given the relative lack of research that has exclusively examined distal goals, the current study will only concern self-regulation with respect to distal goals.

Scenarios in which individuals strive for both proximal and distal goals may lead to situations in which a smaller distal-goal GPD is associated with one task, but a larger proximal-goal GPD is also associated with that task. This would occur when an individual is closer to attaining their long-term goal on a task compared to a competing task, but they are farther from attaining an interim goal on the focal task compared to the competing task. In such an instance, aspects of the performance situation should determine whether the participant prioritizes tasks according to proximal or distal GPDs. Incentives awarded for goal attainment are powerful drivers of such prioritization. When an incentive system is in place, that incentive system should dictate which GPD receives prioritization (Kernan & Lord, 1990; Schmidt & DeShon, 2007). When incentives are tied to distal-goal achievement, as in the current study, individuals would be expected to form prioritization decisions based on distal-goal GPDs. For that reason, it was expected to find in the current study that individuals would prioritize the task with the smaller distal-goal GPD.

Hypothesis 1: Individuals will prioritize the task on which they experience the smallest distal-goal GPD.

Kernan and Lord (1990) also found that participants prioritized tasks on which they reported greater expectancies of achieving their goal. This fits a resource allocation model of self-regulation to the extent that individuals are expected to invest their resources on the task goal they believe is the most likely to be obtained. Results from Byrd and Donovan (2003) generally corroborated this finding, as well. Byrd and Donovan (2003) differed from Kernan and

Lord (1990) in that rather than examining general expectancies, self-efficacy (a narrowly defined expectancy) was examined. Results indicated that participants prioritized the task for which they were more efficacious. The fact that Byrd and Donovan (2003) examined a slightly different type of expectancy and used a different operationalization of task prioritization while still observing results that mirrored those from Kernan and Lord (1990) provides valuable evidence that task prioritization in multiple-goal scenarios can be explained by expectancy-type constructs. As already stated, neither of these studies examined expectancy or self-efficacy with respect to distal goals. However, the influence of these constructs on task prioritization would still be expected to hold whether the emphasis is on proximal or distal goal attainment. For that reason, it was hypothesized that individuals would prioritize the distal goal for which they experience greater self-efficacy.

Hypothesis 2: Individuals will prioritize the task for which they report the greatest self-efficacy with respect to distal goals.

Although previous research has demonstrated that both GPDs, expectancies, and self-efficacy exert direct effects on task prioritization (Byrd & Donovan, 2003; Kernan & Lord, 1990), existing theoretical and empirical work suggests that self-efficacy may at least partially mediate the relationship between GPDs and prioritization. This possibility makes intuitive sense because even if an individual is closer to goal attainment on one task, they may not prioritize that task if exceedingly difficult barriers to goal attainment are perceived. Bandura (1989) speaks directly to this point by saying that, "it is partly on the basis of self-beliefs of efficacy that people choose what challenges to undertake," suggesting that efficacy beliefs mediate the relationship between GPD size and task prioritization (p. 29). Although this relationship has not yet been tested in studies examining task prioritization, related studies have shown that efficacy can be an

important mediator in goal striving scenarios. For instance, Phillips and Gully (1997) found empirical support for a model in which self-efficacy mediated the influence of both goal orientation and locus of control on goal choice. Similarly, Breland and Donovan (2005) found that the relationship between goal orientation and goal choice was partially mediated by self-efficacy. While neither of these studies were concerned with GPD size and task prioritization, it is highly possible that the mediating role of self-efficacy found in these studies applies beyond goal orientation and goal choice. With respect to the current study, it was anticipated that self-efficacy would partially mediate the relationship between GPD size and task prioritization.

Hypothesis 3: Self-efficacy will partially mediate the relationship between GPD size and task prioritization.

Rate of progress. Results from Byrd and Donovan (2003) suggest that prioritization decisions reflect not only efficacy and goal-performance discrepancies, but also rates of progress towards goal attainment. Specifically, Byrd and Donovan (2003) found that participants put forth greater effort on the task on which they were experiencing a greater rate of progress toward goal attainment. These results fit with theoretical work by Carver and Scheier (1990) in which they proposed the existence of a higher-order feedback loop that monitors the rate at which an individual reduces discrepancies, rather than the absolute magnitude of the GPD encountered. When this meta-loop detects that an individual is reducing a discrepancy at a high rate, positive task-related affect occurs as a result. In contrast, negative task-related affect results when the meta-loop detects a slow rate of discrepancy reduction. Because negative task-related affect should be likely to lead to task disengagement (Hyland, 1988), it would be expected that individuals pursuing multiple goals would direct attention away from a goal that is producing negative affect due to a slower rate of progress, and towards goals where rate of progress and

positive affect are high. In other words, individuals would be expected to direct their attention to tasks on which they are experiencing a faster rate of progress, and prioritize tasks accordingly.

In the Byrd and Donovan (2003) study, distal goals were not assessed, so the rate-of-progress results pertained exclusively to proximal goals. Further, these proximal goals were self-set by participants. The relationship between rate-of-progress and task prioritization may be different under self-set versus assigned goal conditions because self-set goals afford individuals the ability to influence their rate of progress through the goal setting process, if they are so inclined (i.e, lowering goals can result in an "artificial" rate of progress). While the direction of the relationship between rate-of-progress and task prioritization would not be expected to change as a function of self-set versus assigned goals, the strength of the relationship might be stronger under assigned goal conditions. With these issues in mind, the current study sought to replicate the results from Byrd and Donovan (2003) by examining rate-of-progress with respect to assigned distal goals.

Hypothesis 4: Individuals will prioritize the task on which they are experiencing the greatest rate of progress toward assigned distal goals.

Goal commitment. The importance of goal commitment in the attainment of performance goals has been discussed throughout the history of research on goal setting theory (Locke, Shah, Saari, & Latham 1981; Latham & Locke, 2006). Although commitment is often assumed to be integral to goal attainment, existing research has shown that our operationalizations of goal commitment are not always strong predictors of goal achievement (Donovan & Radosevich, 1998). Because commitment has not yet been examined in multiple-goal scenarios, it is unknown how commitment relates to task prioritization. Whether or not commitment were to demonstrate a relatively weak relationship with performance in a multiple-goal scenario, goal commitment

might be expected to have a stronger relationship with task prioritization. While many factors can determine whether commitment translates to performance, the influence of commitment on task prioritization should be much more direct. Stated simply, individuals would be expected to focus on achieving the goal for which they are most committed. That is, we would anticipate that individuals would allocate their resources in such a way as to achieve the goal for which they report the greatest goal commitment. That logic formed the basis for the fifth hypothesis.

Hypothesis 5. Individuals will prioritize the task for which they report greater commitment toward the respective distal goal.

Deadlines. Kluger and DeNisi (1996) noted that the ways in which individuals respond to performance feedback can be influenced by cognitive and contextual variables. A growing line of research has shown that one such contextual variable is the amount of time remaining in a performance period. For instance, Williams et al. (2000) found that individuals were significantly more likely to lower their goals during the second half of a performance period than during the first half of the period. Williams et al. (2000) suggested that participants most likely responded initially to negative GPDs with greater effort, but as time progressed and greater effort appeared ineffective at delivering goal attainment, participants reduced GPDs through downward goal revision. Donovan and Williams (2003) expanded on this finding by examining the influence of deadlines on the revision of proximal and distal goals. Results mirrored those from Williams et al. (2000) in that a stronger relationship was found between GPD and goal revision in the second half of the performance period for both proximal and distal goals. Schmidt and DeShon (2007) were the most recent to examine the influence of deadlines in multiple-goal scenarios. Deadlines were yet again found to influence the manner in which individuals allocate

their resources. Specifically, Schmidt and DeShon (2007) found that as deadlines approached, participants dedicated increasingly greater time pursuing goals they were closer to attaining.

Taken together, results from these three studies suggest that the amount of time remaining in a performance period can be an important determinant of how individuals self-regulate over time in pursuit of goals. Evidence suggests that deadlines influence goal revision tendencies in both single- and multiple-goal scenarios, and also influences how individuals allocate their resources among simultaneous goals. Given these results, it was expected that as the end of a performance period looms, individuals simultaneously pursuing multiple goals would demonstrate an increasingly greater prioritization of the goal they were closer to attaining.

Hypothesis 6: The relationship between GPD and task prioritization will be stronger in the second half than in the first half of the performance period.

Achievement goals. Achievement goals have been described as a mid-level motivational construct, linking dispositional motivational tendencies and the specific behaviors an individual exhibits in an achievement situation (DeShon & Gillespie, 2005). Empirical work by Elliot and Church (1997) suggests that three dispositional factors drive achievement motivation – achievement motivation, fear of failure, and competence expectancy. These factors affect achievement behaviors via their influence on achievement goals, which therefore exert a proximal influence on achievement motivation. In this way, achievement goals in part reflect relatively stable dispositional achievement needs, while also reflecting situation-specific evaluations of the performance scenario.

Research concerning the goals individuals pursue in achievement settings has a long history, but work by Dweck (1986, 1989) and colleagues sparked the most current line of research on the topic. At present, the most commonly accepted conceptualization of achievement

goals consists of three dimensions – mastery, performance-approach, and performance-avoid (DeShon & Gillespie, 2005; Elliot & Church, 1997).

Mastery refers to a desire to increase both knowledge and task competence. As a result, individuals with stronger mastery goals can be expected to demonstrate behavior that allows them to achieve these desires. For example, Elliot, McGregor, and Gable (1999) found that mastery goals were significant, positive predictors of persistence and exerted effort while studying for an exam. Similarly, McGregor and Elliot (2002) found that college students with stronger mastery goals perceived an upcoming exam as a challenge opportunity. They further found that students with greater mastery goals were more mentally absorbed during exam preparation, and also reported greater calmness during an exam. The tendency for individuals with strong mastery goals to identify and create challenges for themselves was also reported by Donovan and Hafsteinsson (2006) who found that participants with a stronger mastery orientation raised their performance goals (i.e., created greater challenges for themselves) to a greater extent than did participants with weaker mastery orientations.

Because individuals pursuing mastery goals are primarily concerned with learning and task mastery, they would be expected to self-regulate in a manner that maximally allows them to increase their competence without fear of negative consequences. In a multiple-goal scenario, we might anticipate that an individual with stronger mastery goals would therefore focus on goals that they are farther from achieving because these goals indicate greater potential for improvement or increasing one's competence. For this reason, we might expect that when simultaneously pursuing multiple goals, individuals with stronger mastery goals will prioritize tasks with larger GPDs.

Hypothesis 7: Mastery goals will moderate the relationship between distal GPD and task prioritization. Individuals with stronger mastery goals will demonstrate a greater inclination to prioritize tasks with larger distal GPDs.

The performance-avoid dimension refers to a desire to avoid negative outcomes, whether such outcomes come from evaluations by others or from unsuccessfully demonstrating competence (Elliot & Church, 1997). One consequence of possessing stronger performance-avoid goals is a tendency to view performance situations as threatening. For instance, McGregor and Elliot (2002) found that college students with stronger performance-avoid goals construed an upcoming exam as a greater threat – and consequently experienced greater stress – than did other students. Participants with stronger performance-avoid goals in the McGregor and Elliot (2002) study also reported greater procrastination while preparing for the exam, and were less calm during the exam, as well. In a related vein, Elliot et al. (1999) found that performance-avoid goals were positively related to disorganization and surface processing (e.g., memorizing) of course material while studying.

Ultimately, strong performance-avoid goals lead individuals to primarily focus on avoiding negative assessments by others or of their competence. As a result, they would be expected to allocate their resources in such a way as to minimize the chances of receiving such negative evaluations. For that reason, we might expect that, in a simultaneous multiple-goal scenario, an individual with stronger performance-avoid goals would focus on tasks with smaller GPDs.

Hypothesis 8: Performance-avoid goals will moderate the relationship between distal GPD and task prioritization. Individuals with stronger performance-avoid goals will demonstrate a greater inclination to prioritize tasks with smaller distal GPDs.

The remaining dimension of achievement goals is the performance-approach dimension, which refers to an inclination to demonstrate competence, often through normative comparisons. Research concerning this dimension has generally produced inconsistent results (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Midgley, Kaplan, & Middleton, 2001). For example, McGregor and Elliot (2002) reported that performance-approach goals were associated with inconsistent results pertaining to the tendency to perceive an upcoming exam as a challenge versus a threat. They also found that the performance-approach dimension was the only dimension to fail to predict reported absorption or task involvement while studying for the same college exam. In an additional study, VandeWalle, Cron, and Slocum (2001) tested a model depicting the influence of three dimensions of goal orientation on task performance. Although goal orientation was examined rather than pure achievement goals, VandeWalle et al.'s (2001) three goal orientation dimensions mapped directly onto the three dimensions of achievement goals identified by Elliot and Church (1997); their *proving goal orientation* dimension shared direct conceptual overlap with the performance-approach dimension of achievement goals. In testing their model, VandeWalle et al. (2001) actually hypothesized no effect (i.e., the null) for the influence of the *proving* dimension on any of the four endogenous variables in the model. With respect to the current study, it is important to note that participants were be largely unaware of how other participants perform and received no performance feedback evaluating their performance relative to normative standards, thus the performance-approach dimension would have had minimal opportunity to influence self-regulation. Therefore, no hypothesis was made regarding this dimension.

Method

Participants

Participants consisted of 220 undergraduate students in psychology courses, all of whom earned extra course credit for participating. Data from four participants was excluded because they either failed to complete the study or their responses clearly demonstrated they did not take the study seriously. Analyses were therefore based on a final sample of 216 participants. Hypotheses in the current study were tested with hierarchical linear modeling (HLM). Power analytic techniques for determining adequate sample sizes for traditional applications of HLM are being developed at present. However, determining adequate sample sizes for less common HLM applications – such as the dichotomous outcome HLM application used in the current study – do not currently exist outside of dichotomous outcomes in factorial designs. Therefore, the identified sample size was determined by reviewing published studies involving repeated-measures HLM. Specific attention was given to goal setting and motivation studies, particularly studies that examined variables similar to those in the current study in anticipation that similar effect sizes will be observed for such variables. For instance, Vancouver and Putka (2000) examined 32 participants across 15 trials. Vancouver, Thompson, Tischner, and Putka (2002) examined 87 participants across 10 trials in study one, and 104 participants across 10 trials in study two. Vancouver, Thompson, and Williams (2001) examined 56 participants across eight trials in study one, and 185 participants across six trials in study two. Each of these studies by Vancouver and colleagues used factorial designs (necessitating a greater number of participants than non-factorial designs) with the exception of study one in Vancouver et al. (2001). Schmidt and DeShon (2007) used a more complicated factorial design than did any of the studies by Vancouver and colleagues, and 252 participants were examined across five trials in that study.

The current study was not based on a factorial design, suggesting that a relatively large number of participants was not vital. It is important to note that adequate sample sizes for HLM analyses are also influenced by the number of level one observations per participant, which was on the smaller side in the current study (i.e., six trials). This suggests a larger sample would be needed than some of the comparison studies referred to immediately above. A remaining issue relevant to the necessary sample size in the current study is that several interaction hypotheses were made, which demands larger sample sizes regardless of the intended statistical technique (Jaccard, Turisi, & Wan, 1990). Considering all of these factors, it was felt that a sample size of 216 participants in the current study surpassed the threshold required to adequately test the hypotheses in the current study.

Tasks

Participants performed a modified version of the computerized application from Byrd and Donovan (2003), titled Media Manager. This application requires participants to assume the role of manager of a media center that shows films in a theater, and also rents out various forms of entertainment (e.g., DVDs, CDs, video games). Media Manager is comprised of two subtasks: creating weekly schedules of films to be shown in the media center's theater, and processing electronic requests from hypothetical individuals from the community who wish to rent movies, music, or video games from the media center's archive (Figures 1 and 2 contain screenshots from the film-scheduling and media-request tasks, respectively).

Data from the current study suggests that participant motivation to perform the Media Manager tasks was maintained for the duration of the study. The number of computer mouse-clicks that participants made during a performance trial can be seen as an indicator or the amount of effort participants exerted during that trial. Examining data from the current study indicated

that participants made an increasingly greater number of mouse-clicks on each successive trial. This provides strong evidence that motivation to perform the Media Manager tasks was maintained throughout the entire study.

Scheduling task. The film-scheduling task presented participants with a series of blank, one-week calendars in which they scheduled films from a list of available titles, abiding by a set of scheduling rules. More specifically, the list of available titles also included each film's genre, run-time in minutes, and the cost for showing the respective film a single time. The scheduling rules required participants to schedule at least one film to be shown each day of the week, and at least one title representing each of six genres had to be represented in all weekly schedules. The final scheduling rule stipulated that participants could not go over a weekly budget of $2,000. These rules were displayed onscreen anytime a participant performed the film-scheduling task. Each weekly schedule submitted by a participant that abided by these scheduling rules constituted one completed schedule. When a participant submitted a schedule that violated one or more of these rules, an error message appeared indicating that the schedule contained an error that must be corrected; the specific error was not identified, however.

Form-processing task. The media-request task required participants to check an electronic list of products owned by the media center in order to indicate whether each of a continuous series of fictitious requests from community members was available to rent. Each media-request form contained three products the participant had to check to determine its availability. Further, participants were also required to confirm method of payment (cash, debit, credit card) and obtainment (either delivered to or picked up by the requestor) before completing any given media-request. Each media request that satisfied these rules constituted one completed media request. A submitted media request that violated one or more of these requirements

resulted in an error message indicating the media request was not completed properly; the specific source of the error was not identified, and the participant had to resolve the error in order to complete the media request.

Although only one task could be displayed onscreen at a time, participants were free to switch between the film-scheduling task and the media-request task as they chose. Switching between tasks was easily accomplished by clicking on the respective folder-like tab displayed onscreen. Additionally, particular information was constantly presented onscreen to participants while performing the Media Manager tasks. This information included a) the remaining time in the current trial, b) the participant's assigned goal on each task, and c) the GPD for each task (i.e., discrepancy between performance and goal level).

Procedure

After participants arrived at the lab and provided their informed consent to participate, they completed an approximately five-minute self-paced computerized tutorial on performing Media Manager. After the tutorial, participants then practiced each of the two tasks independently for five minutes. They then completed a measure of achievement goals (assessed once during the entire study).

Participants then completed six performance trials, each lasting eight minutes. A cyclical process was followed in which five steps were repeated for each trial. In order, those steps were: 1) participants were reminded of their performance goal and their current progress toward that goal, 2) participants completed goal commitment and self-efficacy measures, 3) the eight-minute performance trial occurred, 4) participants completed five self-report items assessing perceived effort exertion and a single forced-choice 'prioritization' item, and 5) participants received computerized feedback indicating their performance on the most recent trial, as well as their

updated GPD. After this cycle concluded at the end of the final performance trial, participants responded to a six-item measure that assessed interest in the Media Manager tasks, and they were then debriefed and dismissed from the study.

Additional extra credit as performance incentive. To encourage realistic goal-striving behavior within the current study, participants were able to earn up to two additional extra-credit points based on their performance relative to their assigned goals (i.e., their combined performance on each trial throughout the entire study). More specifically, participants received one bonus extra-credit point for achieving the assigned distal goal associated with either of the two tasks; participants who achieved the distal goal associated with *both* tasks received a total of two bonus points (one bonus point per task). In order to determine the goal level for each task, data from Byrd and Donovan (2003) were examined to identify goal levels that would be potentially challenging, yet achievable for the participants in this study. Based upon this inspection of the data, it appeared that a goal of 39 weekly schedules and 39 media requests represented a challenging performance goal for each of the two tasks. These goal levels were then used as preliminary performance goals for a pilot study in which 25 participants completed the focal tasks in the present study. Examination of the data from these pilot participants suggested that 44 weekly schedules and 44 media requests represented a challenging, but attainable goal for each of the tasks. These goals corresponded to the performance level associated with the 90^{th} percentile on each task observed during pilot testing. Twelve participants earned the bonus point associated with *both* tasks, which represented six percent of all participants. One hundred fifty participants earned the bonus point associated with one of the two tasks, representing 70% of all participants.

Measures

Task prioritization. Four separate measures were used to assess task prioritization. First, the amount of time each task was displayed on-screen was recorded, as in Schmidt and DeShon (2007). Second, the number of computer mouse-clicks made within each task was recorded, as in Byrd and Donovan (2003). Third, participants responded to 10 self-report Likert items after each trial that assessed the amount of effort they feel they exerted on each task (Appendix A). Five of the items referred to the film-scheduling task, and yielded internal consistency estimates ranging from .93 to .97 across the six trials. The remaining five items referred to the media-request task, and yielded internal consistency estimates ranging from .93 to .96 across the six trials. The final measure of effort was a single forced-choice item to which participants responded at the end of each trial. The item specifically asked, "Which task did you prioritize during the performance trial that just ended?" Participants chose between the film-scheduling task and the media-request task (Appendix B).

Performance. Performance was measured independently within each task. Within the film-scheduling task, one unit of performance equaled one week of correctly scheduled films. One unit of performance within the media-request task equaled one correctly completed electronic request. At the end of each trial participants were informed of how they had performed during that trial. They were also informed of their cumulative performance, which referred to summing performance on all completed trials within each task.

Goal-performance discrepancies. Goal-performance discrepancies were calculated by subtracting goal level from cumulative performance level. GPD values greater than zero therefore indicated goal success and GPD values less than zero indicated goal failure.

Self-efficacy. Previous research has indicated that composite measures of self-efficacy demonstrate significantly greater reliability than single-item self-efficacy measures, as well as

greater convergent validity with self-set goals than do single-item measures (Lee & Bobko, 1994). In light of these findings, self-efficacy was assessed in the current study using a self-efficacy composite consisting of items addressing self-efficacy strength and magnitude (Appendix C). More specifically, this composite was formed by asking participants to indicate self-efficacy magnitude by providing yes/no answers to items addressing whether they believed they could attain specific levels of performance (e.g., "Will you be able to correctly process 4 requests, 6 requests, 8 requests?"). Similarly, self-efficacy strength was assessed by requiring participants to indicate on a 100-point scale the degree to which they were confident they could achieve each of the specified levels of performance for each of the upcoming tasks (e.g., "How confident are you that you will correctly process 10 requests, 12 requests, 15 requests, 20 requests?"). The final self-efficacy composite for each participant was created by first retaining only the magnitude items participants answered with a 'yes' response. The strength-item counterpart for each of these retained magnitude items was then used to calculate a composite score by summing individuals' raw scores on these strength items to produce a self-efficacy composite score (Lee & Bobko, 1994).

An additional self-efficacy measure was also included because of difficulties sometimes associated with the strength and magnitude method of measuring efficacy. Specifically, in some studies participants have provided illogical responses to the strength and magnitude measures, either due to misunderstanding how to properly use the scales or out of carelessness. However, examination of participant responses in the current study to the primary self-efficacy measure based on the strength and magnitude assessment indicated the primary efficacy measure worked as desired. Since participants generally appeared to have no problem understanding and

responding to the primary efficacy measure, results below concerning self-efficacy are based on responses to the primary strength and magnitude measure.

Rate of progress. In general terms, *rate* often refers to the relative speed of progress or change. It can be thought of more specifically as magnitude or frequency with respect to time. In the current study, rate-of-progress referred to the speed at which a participant approached a goal over a specified period of time. As such, rate-of-progress was calculated by subtracting the current GPD from the previous GPD and dividing that difference by the previous GPD:

$$\frac{GPD_{previous} - GPD_{current}}{GPD_{previous}}$$

Rate-of-progress values therefore were non-negative numbers with larger values indicating faster rates of progress.

Goal commitment. Goal commitment was assessed with a single forced-choice item (Appendix D). Specifically, the item asked participants, "Which goal are you more committed to achieving?" Participants chose either the film-scheduling task goal or the media-request task goal before continuing within the software.

Achievement goals. Mastery and performance-avoid achievement goals were assessed using a modified version of Elliot and Church's (1997) achievement goals measure, shown in Appendix E. The original measure assesses three dimensions of achievement goals (mastery, performance-approach, and performance-avoid) with six items per dimension for a total of 18 items on the instrument. Only the mastery and performance-avoid dimensions were of interest in the current study, and the wording of Elliot and Church's (1997) original items were modified slightly to be more applicable to the current study. One item from each of the mastery and performance-avoid dimensions was omitted because of an inability to adapt the items to the current study. Elliot and Church (1997) reported internal consistency estimates of .89 and .77 for

the mastery and performance-avoid dimensions, respectively. The internal consistency estimates obtained in the current study for the slightly modified mastery and performance-avoid scales were .81 and .71, respectively.

Task interest. Degree of interest in each Media Manager task was assessed with three seven-point Likert items. These three items assessed the general level of interest in each task, the enjoyment resulting from performing each task, and the degree to which participants would enjoy performing this task in the future (Appendix F). Examining responses to these items revealed that participants found neither task noticeably more interesting or enjoyable than the other. The mean score on the film-scheduling task items was 12.22 (SD = 4.73), and the mean score on the media-request task items was 11.40 (SD = 4.84). Internal consistency estimates were .90 for the film-scheduling task items and .92 for the media-request task items.

Dichotomization of Variables

All variables directly related to hypothesis testing in the current study were dichotomized if not already in binary form. The following variables were therefore dichotomized: GPD, self-efficacy, rate-of-progress, time spent onscreen, mouse-clicks, and self-reported effort. These variables were all dichotomized through dummy coding, such that a value of 1 indicated a smaller GPD on the film task, greater efficacy on the film task, a faster-rate-of-progress on the film task, more time on the film task, more mouse-clicks on the film task, and greater self-reported effort indicated on the film task. Dichotomizing continuous data is associated with potential disadvantages including reduced statistical power to detect meaningful relationships among the data, a potentially increased Type I error rate, and the lack of differentiation between the closest and farthest data points relative to the cut-point between groups. Variables were nonetheless dichotomized in the current study because it afforded the best means to test the

hypotheses. That is, each hypothesis referred to the prioritization of one task over another. The hypotheses sought to predict a *single* task as being prioritized, and the emphasis was on a discrete occurrence, rather than the *degree* to which an occurrence was observed. Therefore, dichotomizing predictor and outcome variables to precisely indicate, say, the task with a smaller GPD and the prioritized task allowed the hypotheses to be assessed fully and directly. Figures 3 through 36 display the distribution of the data that were dichotomized. The values shown in the tables are frequencies of between-task difference variables for each variable. In other words, for the GPD variable, the GPD on the media task was subtracted from the GPD on the film task. Similarly, for the mouse-clicks variable, the number of mouse-clicks within the media task were subtracted from the number of mouse-clicks within the film task. Consequently, values of 0 indicate no difference between tasks (i.e., identical GPDs or equal number of mouse-clicks across tasks).

Results

Analysis Overview

Hypotheses were tested using hierarchical linear modeling techniques (HLM). HLM was selected in the current study because of its ability to properly handle the non-independence of data from repeated trials, while also allowing the simultaneous assessment of between-subjects relationships. The term 'HLM' more specifically refers to a class of related analyses, and the first six hypotheses in the current study were tested using random coefficients models, a specific instance of HLM. The final two hypotheses were tested using a different instance of HLM – intercepts-and-slopes-as-outcome models. The intercepts-and-slopes-as-outcomes model resembles a random coefficients model, but it adds a level-two predictor (of level-one intercepts and slopes), which is required to test the final two hypotheses in the current study. In terms specifically relevant to this study, both types of models allow for varying relationships among outcome and predictor variables, not just between individuals, but also within individuals over time.

Hypotheses in the current study have been intentionally worded in such a way as to indicate which of two tasks will be prioritized. As such, all hypotheses refer to a dichotomous outcome. In order to test these hypotheses, all variables have been dichotomized through dummy coding. The software used to test these hypotheses was version six of the HLM statistical package (Raudenbush, Bryk, & Congdon, 2007). Using the HLM software to test dichotomous outcomes involves an extension of HLM named *generalized* HLM (GHLM), which transforms non-normal dependent variables and adjusts error distributions accordingly (Luke, 2004). These transformations and adjustments occur through the application of a specific estimation technique – higher-order Laplace approximation – that is incorporated within version six of the HLM

software (Raudenbush & Bryk, 2002). For simplicity, the term ‘HLM’ is used throughout this document instead of ‘GHLM,’ but all results in the current study involving a dichotomous outcome were obtained using GHLM.

HLM with dichotomous outcomes is highly similar to logistic regression in that output from such HLM analyses is in the form of log-odds. Log-odds can be converted to odds ratios by taking the exponent of a log-odds value. Odds ratios are often considered easier to interpret than log-odds. In turn, odds ratios can be converted to probabilities using the following equation, in which *x* is a log-odds value:

$$\frac{1}{1+\exp(-x)}$$

When using dichotomized outcomes in HLM, different symbols are used than are commonly reported in HLM analyses. The level-one outcome variable is represented by η, and level-one intercepts and predictors are indicated by π. For HLM equations with dichotomous outcomes, there is no error term in the level-one equation because all error is captured in the intercepts and predictors (Luke, 2004). Because level-two outcome variables are the level-one intercepts and/or slopes, level-two *outcome* variables are indicated by π. Level-two predictor variables are indicated by β, and level-two error terms are indicated by *r*. Level-one intercepts and predictors reported below with the results of each hypothesis test are in the form of log-odds. That is, π values noted below indicate log-odds. These log-odds values have also been reported in the form of odds-ratios as an indicator of effect size. The symbol ‘OR’ denotes an odds-ratio.

Four dependent variables are tested below, one at a time for each hypothesis. As previously indicated, these four dependent variables refer to the time spent on each task, the number of mouse-clicks made on each task, the amount of self-reported effort on each task, and the task that participants indicated they prioritized. Each of these dependent variables was

dummy-coded so that a value of 1 indicated the film-scheduling task was prioritized. That is, the 'time-spent' variable was coded as 1 when greater time was spent on the film-scheduling task, the 'mouse-clicks' variable was coded as 1 when more mouse-clicks were made on the film-scheduling task, the 'self-reported effort' variable was coded as 1 when participants reported exerting greater effort on the film-scheduling task, and the 'self-reported prioritization' variable was coded as 1 when participants indicated they prioritized the film-scheduling task. Table 1 shows the degree to which one task was prioritized over the other during each trial. The table contains mean values for each dependent variable within each trial, excluding the self-reported prioritization variable. This variable is excluded because it was based on a single forced-choice item, and as such, it had not been transformed into a dichotomous format as had the other three variables.

Support or lack of support for each hypothesis was determined by considering results from all four dependent variables. Table 2 indicates the correlations among the different dependent variables. The table presents aggregated correlations in the sense that the displayed values were obtained by averaging across the six performance trials for each participant. This table indicates that within each task the amount of time spent, the number of mouse-clicks made, the amount of self-reported effort, and responses to the forced-choice prioritization item all correlated with one another at a moderately high level.

The extent of agreement among the four variables was also examined in order to determine how frequently the dichotomous variables coincided with one another. In order to do so, a total of 1,296 instances were examined (216 participants x 6 trials each). A total of 268 instances were removed, however, resulting in a total of 1,028 instances that were ultimately examined. The 268 instances that were removed represented 264 instances in which participants

self-reported equal amounts of effort on both tasks. Similarly, in four other instances there were an equal number of mouse-clicks on both tasks. After removing these 268 instances, results indicated that the four dichotomous variables demonstrated perfect agreement 79.69% of the time. Further, there was agreement among three of the four variables in 12.74% of the remaining instances, indicating that at least three of the four variables demonstrated agreement approximately 93% of the time. When considering the percent of agreement and the correlations among the four dichotomous outcome variables, it is apparent that the variables assessed prioritization in a largely consistent fashion.

Correlations and means for all variables are shown in Tables 3 through 8. There is one table for each of the six trials. Correlations between variables have been reported separately within each trial because of the repeated-measures aspect of the current study. An alternative method of reporting correlations among variables would have been to create an average value on each variable across all six trials for each participant, and calculate correlations among variables using these aggregated values. While there are advantages to both methods, correlations among variables were ultimately reported separately within each trial in order to capture the greatest amount of fluctuation possible in the relationships among variables.

It is interesting to note that Tables 3 through 8 demonstrate a pattern that is also initially apparent in Table 2 regarding the self-reported prioritization dependent variable. Although the four dependent variables correlated with one another at a high level, in a relative sense some of the weaker correlations among these variables pertained to the single forced-choice self-report measure of prioritization. However, more closely examining correlations with the self-reported prioritization variable indicates that some of the largest correlations among the dependent variables in Tables 3 through 8 were between this variable and the self-reported effort variable.

In other words, some of the strongest correlations among the dependent variables were between the two self-report measures of prioritization. Interestingly, the two remaining prioritization measures – time-spent and mouse-clicks – were both more objective and nature, and tended to demonstrate higher correlations among themselves than with the two self-report measures.

Hypothesis Tests

Hypothesis 1

Hypothesis 1 proposed that individuals would prioritize the task on which they experienced the smaller GPD. To test this hypothesis, a separate random coefficients model was run for each of the four dependent variables. GPD was entered as a level-one predictor in each model. All four models indicated that GPD significantly predicted which task was prioritized, and results from all four models were in the same direction; each analysis indicated that participants prioritized the task with the smaller GPD. Specifically, the task with the smaller GPD was also the task on which participants spent more time ($\pi = .72$, $t = 5.19$, $p < .001$, OR = 2.05), made more mouse-clicks ($\pi = .75$, $t = 5.23$, $p < .001$, OR = 2.13), reported exerting greater effort ($\pi = 1.24$, $t = 7.97$, $p < .001$, OR = 3.46), and reported prioritizing ($\pi = .88$, $t = 6.01$, $p < .001$, OR = 2.42). These results indicate that Hypothesis 1 was supported.

In order to interpret the size of these effects, it is informative to consider the values upon which odds-ratios are based. Odds-ratios in the current study represent the odds of prioritizing the film-scheduling task over the odds of prioritizing the media-request task. Therefore, odds-ratios equal to 1 indicate the absence of an effect and lack of support for the hypothesis. Odds-ratios greater than 1, however, indicate the independent variable is associated with a greater likelihood the outcome will occur, and the larger the odds-ratio is than 1, the larger the hypothesized effect. Odds-ratios less than 1 would indicate the independent variable is associated

with a decreased likelihood of the outcome occurring; larger negative odds-ratios would indicate increasingly greater reduction in the likelihood of the outcome occurring. With respect to Hypothesis 1, odds-ratios ranged from 2.05 to 3.46. This indicates that participants with a smaller GPD on the film-scheduling task had between two to nearly three and a half times the odds of prioritizing the film-scheduling task than prioritizing the media-request task.

Hypothesis 2

Hypothesis 2 proposed that individuals would prioritize the task on which they reported the greatest self-efficacy with respect to their performance goals. Results indicated that self-efficacy was a significant predictor of the task that participants prioritized. Specifically, results indicated that the task on which participants reported greater efficacy was also the task on which they spent greater time ($\pi = .98$, $t = 7.39$, $p < .001$, OR = 2.66), made more mouse-clicks ($\pi = 1.01$, $t = 7.14$, $p < .001$, OR = 2.75), reported exerting greater effort ($\pi = 1.37$, $t = 9.27$, $p < .001$; OR = 3.92), and reported prioritizing ($\pi = 1.27$, $t = 9.41$, $p < .001$, OR = 3.57). The odds-ratios associated with these analyses indicate that the odds were between two and a half to nearly four times greater for participants to prioritize the task on which they reported greater efficacy. Based on these results, it is clear that the hypothesis was supported.

Hypothesis 3

The third hypothesis proposed that self-efficacy would partially mediate the relationship between GPD size and task prioritization. The Sobel test was used to examine this hypothesis because – as a product-of-coefficients technique for testing mediation – it has several advantages over the more widely used "causal steps" technique (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon & Fairchild, 2009; Sobel, 1982). In addition to demonstrating greater power to detect a mediated relationship than the "causal steps" technique, another advantage of

the Sobel test is its ability to provide a test of statistical significance of the mediated effect. Based on the standard error of the relationship between the independent variable and the mediator and the standard error of the relationship between the mediator and the dependent variable, the Sobel test generates a standard error for the mediated effect (or indirect effect). The indirect effect is then divided by the square root of this standard error, yielding a value that can be interpreted as a *z*-test for purposes of statistical significance (Fritz & MacKinnon, 2007; MacKinnon et al., 2002; Preacher & Hayes, 2004). The use of dichotomous predictor and outcome variables in the current study required an additional step in applying the Sobel test. MacKinnon and Dwyer (1993) noted that when a mediation analysis includes a dichotomous mediator, coefficients within the series of regression equations end up being on different scales (i.e., the scaling of the mediator variable differs depending on whether it is an outcome or a predictor). This problem can be addressed by scaling the coefficients so they can be compared across equations. To do so, coefficients are multiplied by the standard deviation of the predictor variable, and then divided by the standard deviation of the outcome variable (Herr, 2006). The resulting coefficients are then used as input within the Sobel test.

Results from the Sobel test within the current study yielded statistically significant results in support of the mediated relationship. Specifically, Sobel test results indicated that self-efficacy mediated the relationship between GPD and the task on which participants spent greater time ($z = 6.82$, $p < .001$), the task on which participants made more mouse-clicks ($z = 6.58$, $p < .001$), the task on which participants reported exerting greater effort ($z = 7.93$, $p < .001$), and the task that participants indicated they prioritized ($z = 7.89$, $p < .001$). Taken together, these results clearly indicate the presence of a mediated relationship, yet they do not necessarily indicate the form of that relationship. Although the “causal steps” approach was not used to determine the

presence of a mediated effect (Baron & Kenny, 1986), the logic behind this method can be used to indicate whether the form of the mediated relationship was as hypothesized. In other words, the Sobel test was used to determine the presence of a significant mediated relationship, and the reasoning behind the "causal steps" approach was used to determine whether the exact nature of that relationship matched the hypothesized relationship. Following the logic of the "causal steps" approach, results from Hypothesis 1 indicated that GPDs predicted prioritization in the expected direction (i.e., participants prioritized the task on which they faced a smaller GPD). Additional results showed that GPDs predicted self-efficacy in the expected direction, such that participants reported greater efficacy for the task associated with a smaller GPD ($\pi = 3.04$, $t = 16.34$, $p < .001$, OR = 20.92). Finally, results from Hypothesis 2 indicated that self-efficacy predicted task prioritization in the expected direction. Therefore, it was concluded that the mediated relationship was in the hypothesized form.

In order to determine whether the relationship between GPD and task prioritization was fully or only partially mediated by self-efficacy, a process similar to the final step in the "causal steps" method was used. Results indicated that GPD became a non-significant predictor of each task prioritization variable when entered along with self-efficacy. Specifically, analyses indicated that efficacy was a significant predictor of the task on which participants spent more time ($\pi = 1.04$, $t = 4.96$, $p < .001$, OR = 2.82), and GPD was a non-significant simultaneous predictor ($\pi = .10$, $t = .47$, *ns*). Efficacy also predicted the task on which participants made more mouse-clicks ($\pi = .98$, $t = 4.56$, $p < .001$, OR = 2.67), and GPD was again a non-significant simultaneous predictor ($\pi = .21$, $t = .99$, *ns*). Efficacy significantly predicted the task on which participants reported exerting greater effort ($\pi = 1.26$, $t = 5.29$, $p < .001$, OR = 3.51), and GPD was a non-significant, simultaneous predictor ($\pi = .44$, $t = 1.82$, *ns*). Efficacy was also a significant

predictor of the task that participants said they prioritized ($\pi = 1.28$, $t = 5.95$, $p < .001$, OR = 3.61), and GPD was a non-significant, simultaneous predictor ($\pi = .14$, $t = .66$, *ns*). The fact that GPD became a non-significant predictor of task prioritization when entered simultaneously with self-efficacy provided evidence that efficacy fully mediated the relationship between GPDs and task prioritization. Hypothesis 3 specifically indicated that self-efficacy would *partially* rather than fully mediate the GPD-prioritization relationship, but the intention with the hypothesis was to specify that some degree of mediation would occur. Therefore, the results indicating that self-efficacy fully mediated the GPD-prioritization relationship were taken as support for Hypothesis 3.

Hypothesis 4

Hypothesis 4 proposed that participants would prioritize the task on which they experienced a faster rate of progress toward goal achievement. Results indicated that the task on which participants were experiencing a faster rate of progress was also the task on which they spent more time ($\pi = .36$, $t = 3.01$, $p = .003$, OR = 1.43), exerted greater effort ($\pi = .47$, $t = 3.89$, $p < .001$, OR = 1.61), and reported prioritizing ($\pi = .30$, $t = 2.82$, $p < .01$, OR = 1.36). Results indicated that the rate-of-progress variable failed to predict the task on which participants made more mouse-clicks ($\pi = .17$, $t = 1.54$, *ns*). Considering the results from analyses of all four dependent variables, Hypothesis 4 is generally supported. Although the size of the odds-ratios were relatively small, three of the four dependent variables yielded statistically significant results in the anticipated direction.

Hypothesis 5

The fifth hypothesis proposed that individuals would prioritize the task for which they reported greater goal commitment. Results indicated that the task on which participants indicated

greater goal commitment significantly predicted the task on which they spent more time (π = 2.25, t = 16.06, p < .001, OR = 9.5), made more mouse-clicks (π = 2.53, t = 15.85, p < .001, OR = 12.53), exerted greater effort (π = 2.65, t = 16.05, p < .001, OR = 14.12), and reported prioritizing (π = 2.48, t = 16.94, p < .001, OR = 11.91). As indicated, analyses based on all four dependent variables yielded significant results in support of the hypothesis. Therefore, Hypothesis 5 was supported.

Hypothesis 6

Hypothesis 6 proposed that the amount of time remaining in the study would moderate the relationship between GPD and prioritization. Specifically, it was hypothesized that the relationship between GPD and prioritization would be stronger in the second half of the study, such that participants would show an even greater prioritization of the task with a smaller GPD. In order to test this hypothesis, a 'time remaining' variable was created, which grouped trials one through three into the first half of the overall performance period and trials four through six in the second half of the performance period. Each of the four dependent variables was simultaneously regressed onto a set of three independent variables: the dummy-coded GPD variable, the 'time remaining' variable, and a cross-product interaction variable representing GPD and 'time remaining.' Results indicated that the GPD x 'time remaining' interaction term was a significant predictor of the task on which participants spent more time (π = 0.95 t = 3.30, p < .01, OR = 2.58), made more mouse-clicks (π = 1.16, t = 4.44, p < .001, OR = 3.18), and reported prioritizing (π = .79, t = 3.12, p < .01, OR = 2.20). Table 9 indicates that the specific form of this interaction was the opposite of what had been hypothesized, however. Results based on these three dependent variables revealed that the log-odds of prioritizing the task with the smaller GPD were smaller in the second half of the overall performance period compared to the

first half. In other words, in the second half of the study the task with the larger GPD was prioritized.

Testing Hypothesis 6 with the final dependent variable – self-reported effort – indicated that the HLM software was unable to compute starting values to begin the likelihood iteration process; no solution was obtainable. Error messages indicated that all predictor matrices were near singular, suggesting that linear dependence among predictors prohibited the software from analyzing the model. It is interesting to note that the same set of predictors were used with the other dependent variables, yet this near-singular error message resulted only when examining the self-reported effort variable. The most likely reason concerns the number of instances in which participants reported exerting equal effort on the two tasks; this occurred in 20% of all instances. These instances were not included in the analysis, and it is likely that excluding these cases from the analysis also excluded valuable variance among the predictors that had been included in analyses of the other outcome variables. In responding to this error message, there are two commonly applied solutions for this problem in HLM. The first is to center one or more of the predictors. Centering variables impacts interpretation of those variables, however, and if the dummy-coded predictors in the current study were centered, their interpretation would be nonsensical relative to the meaning of their original values. Further, centering the dummy-coded predictors would merely indicate the number of participants in one of the categories (e.g., number of participants who have a smaller GPD on the film task), rather than an average predictor value across all participants. For these reasons, centering the dummy-coded predictors would inhibit the ability to test the specific research questions posed in the current study. The second solution involves treating one or more random effects as fixed effects. Fixing a random effect for this hypothesis would more simply mean – to use the GPD variable as an example –

restricting the model so that the relationship between GPD and prioritization is exactly the same across all participants. This solution is also undesirable because all other analyses in the current study use the same model *without* fixing any random effects. If just one single hierarchical linear model were being developed in the current study, rather than testing individual hypotheses with separate analyses, this solution would be suitable. Given the methods used to test individual hypotheses in the current study, however, converting random effects to fixed effects in order to obtain results to a single analysis is not a favorable solution.

Considered together, the results from analyses based on three of the four dependent variables were in concordance. Although a moderated relationship was detected, the nature of that relationship was opposite of what had been hypothesized. This is clearly taken as lack of support for the hypothesis. Combined with the inability to obtain results based on the remaining dependent variable (self-reported effort), it was concluded that Hypothesis 6 was not supported. It is interesting, however, to examine the percent of time within each trial that participants spent on the task with the smaller GPD, as shown in Table 10. It is apparent from Table 10 that it was not until the final trial that participants demonstrated a tendency to spend a greater proportion of time on the task with the larger GPD.

Hypothesis 7

Hypothesis 7 proposed that mastery goals would moderate the relationship between GPD and task prioritization. The specific form of this proposed relationship was such that participants with stronger mastery goals would demonstrate a stronger inclination to prioritize the task with the larger GPD. As previously mentioned, mastery goals were measured at level-two. They were also grand-mean centered so that the intercept would depict the expected outcome for a participant whose level of mastery goals was equal to the overall participant average. Because

GPD was measured at level-one, the method used to test the hypothesis was a cross-level interaction. Specifically, the level-one HLM equation was identical to the equation used to test Hypothesis 1. That is, GPD was the sole predictor of task prioritization. But at level-two, mastery goals were entered as a predictor of the level-one intercept and the level-one slope for GPD. As with cross-level interactions in HLM, a statistically significant coefficient for mastery goals on GPD slope would indicate support for the hypothesis. Results of analyses based on all four dependent variables indicated non-significant results. Mastery goals failed to moderate the relationship between GPD and the task on which participants spent more time ($\pi = 0.01$, $t = 0.04$, *ns*), made more mouse-clicks ($\pi = -0.13$, $t = -0.87$, *ns*), reported exerting greater effort ($\pi = -0.07$, $t = -0.50$, *ns*), and reporting prioritizing ($\pi = -.18$, $t = -1.15$, *ns*). Given these results, Hypothesis 7 was not supported.

Hypothesis 8

Hypothesis 8 proposed that performance-avoid goals would moderate the relationship between GPD and task prioritization. The nature of this proposed moderated relationship was such that participants with stronger performance-avoid goals would show a stronger inclination to prioritize the task on which they faced a smaller GPD. Similar to mastery goals from the previous hypothesis, performance-avoid goals were a level-two variable, and they were grand-mean centered. This hypothesis was also assessed through a cross-level interaction between GPD at level-one, and performance-avoid goals at level-two. Specifically, performance-avoid goals were used to predict the intercept and slope from the level-one equation in which the four dependent variables were separately regressed onto GPD. Results based on all four dependent variables yielded non-significant results. Performance-avoid goals failed to moderate the relationship between GPD and the task on which participants spent more time ($\pi = 0.09$, $t = 0.71$,

ns), made more mouse-clicks ($\pi = 0.16$, $t = 1.13$, *ns*), reported exerting greater effort ($\pi = 0.02$, $t = 0.12$, *ns*), and reported prioritizing ($\pi = -0.09$, $t = -0.72$, *ns*). This pattern of results indicated that Hypothesis 8 was not supported.

Additional Analyses

Results presented above were based on data from all trials for all participants. It is interesting to ask whether the observed results would change if data from participants were removed subsequent to achieving either of the two performance goals. The focus of this study is on prioritizing one performance goal over another in a multiple-goal scenario. When one goal is achieved, the multiple-goal scenario effectively becomes a single-goal scenario, potentially making the issue of prioritization less compelling. This assumes, however, that participants primarily performed the tasks because they were motivated by the performance goals (or the incentives associated with them), and they would cease to perform a task after achieving the goal associated with that task. Data from the current study supports this assertion, as shown in Figures 37 and 38. These figures indicate a tendency among participants to cease working on a task after achieving the goal associated with that task. Given this tendency, it was decided that it would be informative to re-run all analyses, but excluding data for participants subsequent to achieving one of the performance goals. All original hypotheses were re-tested below using exactly the same methods and techniques as above, except data was omitted for any participant subsequent to achieving either of the two goals. That is, once a participant achieved one of the performance goals, all subsequent data from that participant was omitted. For simplicity, the phrase "modified data file" will be used to refer to the file in which data was removed subsequent to achieving either goal.

Testing the first hypothesis with the modified data file indicated that Hypothesis 1 was again supported. Results indicated that the task on which participants faced a smaller GPD predicted the task on which they spent more time ($\pi = 1.32$, $t = 7.68$, $p < .001$, OR = 3.73), made more mouse-clicks ($\pi = 1.31$, $t = 7.53$, $p < .001$, OR = 3.70), reported exerting more effort ($\pi = 1.85$, $t = 9.44$, $p < .001$, OR = 6.38), and reported prioritizing ($\pi = 1.43$, $t = 7.90$, $p < .001$, OR = 4.19). Re-examination of Hypothesis 1 therefore concurs with earlier analyses in support of Hypothesis 1. It is worth noting that the odds ratios increased once participant data was removed subsequent to goal achievement, which indicates that the effect of GPD on prioritization became more pronounced.

Results from re-testing the second hypothesis corroborated results from the earlier analyses. It was again found that the task on which participants reported greater efficacy was also the task on which they spent greater time ($\pi = 1.32$, $t = 8.81$, $p < .001$, OR = 3.73), made more mouse-clicks ($\pi = 1.37$, $t = 9.02$, $p < .001$, OR = 3.92), reported exerting greater effort ($\pi = 1.63$, $t = 9.30$, $p < .001$, OR = 5.12), and reported prioritizing ($\pi = 1.48$, $t = 9.64$, $p < .001$, OR = 4.39). The odds ratios were all larger than they had been in the original analyses.

Re-examination of Hypothesis 3 yielded results that coincided with the earlier analyses in support of the hypothesis. Specifically, the Sobel test results indicated that self-efficacy significantly mediated the relationship between GPD and the task on which participants spent greater time ($z = 7.69$, $p < .001$), the task on which participants made more mouse-clicks ($z = 7.91$, $p < .001$), the task on which participants reported exerting greater effort ($z = 7.86$, $p < .001$), and the task that participants indicated they prioritized ($z = 8.38$, $p < .001$). Further, the form of the mediated relationship matched what had been hypothesized. Specifically, results from reanalyzing Hypothesis 1 indicated that GPDs predicted prioritization in the expected

direction. Additional results showed that GPDs predicted self-efficacy in the expected direction ($\pi = 3.01$, $t = 15.78$, $p < .001$, OR = 20.28). Finally, results from reanalyzing Hypothesis 2 indicated that self-efficacy predicted task prioritization in the expected direction. Therefore, it was concluded that the significant mediated relationship was in the hypothesized form. To determine whether self-efficacy fully or only partially mediated the GPD-task prioritization relationship, the significance of the GPD variable was examined when entered as a simultaneous predictor along with self-efficacy. For all four task prioritization dependent variables, the GPD coefficients dropped in value, but did not become non-significant. This therefore provided evidence that efficacy partially mediated the relationship between GPDs and task prioritization. These results supported Hypothesis 3. It is interesting to note that re-examination of Hypothesis 3 based on the modified data file indicated partial mediation, whereas the original examination of Hypothesis 3 based on the full data file indicated full mediation.

Re-examination of Hypothesis 4 continued the trend in which stronger and more consistent results were obtained using the data file in which participant data was omitted subsequent to achieving one of the goals. Using the modified data file, results indicated that the task on which participants were experiencing a faster rate of progress toward goal attainment predicted the task on which they spent greater time ($\pi = 0.47$, $t = 3.32$ $p < .01$, OR = 1.60), made more mouse-clicks ($\pi = 0.24$, $t = 2.15$ $p < .05$, OR = 1.27), reported exerting greater effort ($\pi = 0.51$, $t = 3.91$ $p < .001$, OR = 1.66), and reported prioritizing ($\pi = 0.33$, $t = 2.87$ $p < .01$, OR = 1.39). In the original analyses, the results for the ‘mouse-clicks’ dependent variable were non-significant, and therefore not in support of the hypothesis. Results based on the modified data file differed in that a consistent pattern was seen across all dependent variables, including the mouse-

clicks variable. These results demonstrated support for the hypothesis and a larger effect size than had been observed in the original analyses.

Results based on re-examining Hypothesis 5 using the modified data file indicated consistent support for the hypothesis across all dependent variables, thereby coinciding with the original results. However, the sizes of the effects seen in the results based on the modified data file were not as large as seen in the original analyses. Re-examining Hypothesis 5 with the modified data file indicated that the task on which participants indicated greater goal commitment was also the task on which they spent greater time ($\pi = 2.03$, $t = 14.89$, $p < .001$, OR = 7.64), made more mouse-clicks ($\pi = 2.19$, $t = 15.28$, $p < .001$, OR = 8.90), reported exerting greater effort ($\pi = 2.48$, $t = 14.81$, $p < .001$, OR = 11.91), and reported prioritizing ($\pi = 2.19$, $t = 14.97$, $p < .001$, OR = 8.89). Although the size of the effects obtained in the re-examination of Hypothesis 5 were not as large as in the original analysis, consistent support was seen across all four dependent variables.

Hypothesis 6 proposed that the time remaining in the study would moderate the relationship between GPD and prioritization, and results based on the modified data file were noticeably different than the original results. In short, re-examining Hypothesis 6 using the modified data file indicated a consistent lack of support for *any* moderated relationship. While the original analyses indicated a moderated relationship in the opposite form than had been expected, re-examining the hypothesis with the modified data file indicated non-significance for any moderated relationship. As in the original analyses, each of the four dependent variables was regressed onto a set of three predictors (GPD, 'time remaining,' and a cross-product interaction of GPD and 'time remaining'). The interaction term failed to predict the task on which participants spent more time ($\pi = -.09$, $t = -.37$, *ns*), made more mouse-clicks ($\pi = -.06$, $t = -.25$,

ns), and reported prioritizing (π = -.37, *t* = -1.58, *ns*). As in the original analyses, the HLM software was unable to generate a solution based on the 'exerted effort' dependent variable, and the same error messages were given. Considered as a whole, these results are similar to the original results in indicating a lack of support for the hypothesis. These results are unique, however, in that they failed to yield statistically significant results.

The remaining two hypotheses concerned achievement goals, and re-examination of both hypotheses yielded non-significant results, as had the original analyses. Results from re-examining Hypothesis 7 indicated that mastery goals failed to moderate the relationship between the GPD variable and the task on which participants spent more time (π = 0.01, *t* = 0.09, *ns*), made more mouse-clicks (π = -.09, *t* = -.50, *ns*), reported exerting greater effort (π = -.13, *t* = -.71, *ns*), and reported prioritizing (π = -.24, *t* = -1.19, *ns*). Results from the re-examination of Hypothesis 7 therefore coincided with the original results in that the hypothesis was again unsupported.

Results from re-examining Hypothesis 8 indicated that performance-avoid goals also failed to moderate the relationship between the GPD variable and the task on which participants spent more time (π = 0.08, *t* = 0.53, *ns*), made more mouse-clicks (π = 0.14, *t* = 0.91, *ns*), reported exerting greater effort (π = -.04, *t* = -.26, *ns*), and reported prioritizing (π = -.15, *t* = -.96, *ns*). Therefore, re-examination of Hypothesis 8 based on the modified data file lead to the same conclusion as did the original analyses – Hypothesis 8 was not supported.

Discussion

The purpose of the current study was to contribute to the small yet growing body of research concerning self-regulation in multiple-goal scenarios. The value in expanding our goal setting knowledge in this way lies in the fact that the nature of real-world work is often characterized by such situations. In the process of shifting focus from single- to multiple-goal scenarios, an issue emerges that is not applicable to single-goal scenarios. That issue concerns the fact that, when pursuing multiple goals, we generally must focus on one goal at the exclusion of others at any point in time. This is a matter of resource allocation in which the question is how we choose to divide our resources between multiple or competing goals. In examining this question, results from the current study generally replicated results from previous multiple-goal research. Results also showed that previously unexamined constructs can be valuable predictors of resource allocation in multiple-goal scenarios.

The hypotheses explored in the current study were largely based on Bandura's (1986) self-efficacy theory and rational models of control theory (Kernan & Lord, 1990). Results from the supported hypotheses provide new evidence in favor of theoretical perspectives emphasizing the role of cognitive evaluations in self-regulation. This is most clearly seen in the results concerning GPD, self-efficacy, and rate-of-progress. Results concerning each of these variables provide updated support for a primary conclusion made by Kernan and Lord (1990): when forced to divide resources between competing goals, individuals consider not just the distance from goal achievement, but also the perceived likelihood of success on each task. That is, resource allocation decisions in multiple-goal scenarios are not simple reflections of GPDs. GPDs are important, of course, but allocation decisions are often based on a more complex evaluation of the performance scenario.

GPDs and prioritization

In building a body of research concerning multiple goals, one of the initial issues to examine is whether individuals tend to prioritize goals they are closer or farther from achieving. Results from the current study coincide with results from two existing multiple-goals studies in demonstrating a tendency to focus on goals we are closer to achieving. More specifically, results from the current study concur with those from Kernan and Lord (1990) and Byrd and Donovan (2003) in that participants prioritized tasks with smaller GPDs. However, these results directly conflict with those from Schmidt and DeShon (2007), in which participants prioritized the goal they were farther from achieving. It is intriguing that this collection of four relatively similar studies would produce inconsistent results with respect to such a straightforward research question. This naturally leads to the question of what factor(s) can explain the inconsistencies.

In exploring the potential source(s) of the inconsistency, one noteworthy difference between the Schmidt and DeShon (2007) study and previous research was their use of distal assigned goals. Another characteristic that stands out regarding these four multiple-goal studies is that task prioritization was operationalized in multiple ways across the studies. In fact, excluding the current study, the most likely explanation for the discrepancy among studies is the fact that Schmidt and DeShon (2007) used a different operationalization compared to earlier studies. Schmidt and DeShon (2007) operationalized prioritization as the task on which participants spent more time, whereas Kernan and Lord (1990) operationalized it as the task on which participants set a more challenging goal, and Byrd and Donovan (2003) operationalized it as the task on which participants made more mouse-clicks. One might therefore posit that Schmidt and DeShon's (2007) results conflicted with results from preceding studies because of the unique operationalization that was used in that study. The way in which the outcome variable

was operationalized could be expected to have a more immediate effect on the nature of the results simply because they could be measuring very different things. Results from the current study, however, rebut that interpretation. Specifically, the operationalization used by Schmidt and DeShon (2007) was also one of the four operationalizations used in the current study (i.e., the amount of time spent on one task versus the other). Despite the identical operationalization, results from the current study opposed those from Schmidt and DeShon (2007). This direct contrast in results is noteworthy given that the current study and Schmidt and DeShon (2007) demonstrated a degree of similarity not shared among preceding multiple-goal studies. These two studies differed from previous studies in that they were focused on distal goals, and those distal goals were assigned, rather than self-set. Both studies also included a separate incentive for each task. As already stated, both studies operationalized prioritization (either entirely or in part) as time-spent on each task. In contrast, previous studies focused on scenarios in which participants pursued self-set, proximal goals, and prioritization had not previously been operationalized as the amount of time spent on competing tasks.

Given the degree of similarity between the current study and Schmidt and DeShon (2007), the fact that they yielded opposing results likely suggests the presence of one or more additional factors that would account for the discrepancy. Although both studies used highly similar goal structures, a subtle difference existed between them. In the current study, participants had a goal of completing 44 units on both tasks. That goal level was established at the beginning of the study, and did not change for the duration of the study. Therefore, it was possible for participants to achieve one goal and then focus entirely on the other goal without having to return to the other task. In the Schmidt and DeShon (2007) study, however, goal achievement was never certain until the study concluded. Participants were not able to achieve

one goal and focus exclusively on the remaining goal. Participants in that study played the role of an employee in the registrar's office of a fictitious university, and they were responsible for creating class schedules for students. The software used in the study indicated to participants that two different lines of students were waiting to receive completed schedules, and the goals were to have zero students in line A (goal 1) and line B (goal 2) at the end of the study. Participants decreased the number of students in each line by creating class schedules, but other students could join either of the lines at any point in time. Therefore, it was not known until the end of the study whether participants would have zero students in each of the two lines (i.e., whether either/both of the goals were met). This is an interesting methodology in that it constrained the amount of feedback participants received, given that we know the role feedback plays in goal-striving scenarios (Kluger & DeNisi, 1996). It is further interesting in that this design may have lead to a greater focus among participants on balancing their division of resources between tasks than in other multiple-goal studies. That is, in the Schmidt and DeShon (2007) study, if participants ignored one of the lines of students in order to focus exclusively on the other, then the ignored line of students could become so long that achieving the goal associated with that line may become impossible. As a result, that may have lead participants to self-regulate in such a way as to prioritize the larger GPD until it became the smaller GPD, and so forth until the performance period concluded. Therefore, the conflicting results may reflect requirements of the experimental tasks as much or more than the degree of feedback participants received.

With respect to the current study, it is relatively easy to understand why participants would generally focus on the goal with the smaller GPD, since doing so would allow them to more quickly achieve one goal and focus exclusively on the remaining goal. In contrast, participants in the Schmidt and DeShon (2007) study were never able to completely achieve

either of the goals during the study, so it is not surprising that they self-regulated in a different manner. It is important to recall, however, that in the second half of that study, participants focused primarily on the task with the smaller GPD (i.e., 'time remaining' moderated the relationship between GPD size and prioritization). Although the results concerning the overall relationship between GPD and prioritization conflict with those from the current study, the conflicting results between studies only pertains to the first portion of the performance period in the Schmidt and DeShon (2007) study.

Even at this relatively early stage of research concerning the influence of GPDs on prioritization decisions, it is possible to identify initial trends regarding the relationship between these variables. Available evidence has begun to suggest that a goal characteristic exclusive to multiple-goal scenarios may be particularly important. Specifically, whether a performance scenario allows individuals to achieve one goal and then focus exclusively on the remaining goal(s) may be a valuable predictor of whether individuals prioritize larger or smaller GPDs. That is, when afforded the opportunity to work toward goals in series (i.e., achieve one goal before focusing on the next, and so on), some individuals may be more inclined to focus on the goal they are closer to attaining, compared to scenarios in which goals can not be achieved in series. This would be a higher-order self-regulatory strategy that would apply only to multiple-goal scenarios, and is a perspective from which additional results from the current study can be interpreted.

Self-efficacy and prioritization

The second hypothesis specified that participants would prioritize the task on which they reported greater self-efficacy. The theoretical basis for this proposition was Bandura's (1986) self-efficacy theory, which maintains that our efficacy beliefs shape most of the behaviors in

which we engage, and that they color the interpretations we make in performance situations. The evidence in support of Hypothesis 2 not only replicated results from Byrd and Donovan (2003), but also extended those results by demonstrating the efficacy-prioritization relationship using three additional operationalizations of prioritization. Support for this hypothesis also coincides with results from Kernan and Lord (1990). Although Kernan and Lord (1990) examined expectancies for performance rather than the more narrowly defined self-efficacy, the two constructs share great conceptual overlap. Taken together, results from these studies provide increasing evidence that, when faced with competing task goals, individuals can be expected to invest greater resources on the task on which they believe their efforts are more likely to be successful. It bears repeating that this had been one of the primary conclusions from the Kernan and Lord (1990) study – the idea that our perceived expectations are important determinants of our prioritization decisions. Continued support for this idea coincides with a resource allocation perspective in that we should not be expected to squander finite resources on endeavors that are unlikely to conclude favorably. Instead, the resource allocation perspective suggests that we evaluate the likelihood of success on competing demands before prioritizing them. Building on the idea discussed above whereby individuals may be driven to convert multiple-goal scenarios to single-goal scenarios, individuals would be expected to prioritize the task on which they report greater efficacy because doing so would be the most efficient means to reduce the number of goals to be pursued.

The evidence that has begun to accrue concerning these types of expectancy-related constructs indicates that the role of expectancies and/or efficacy is likely one of the more proximal determinants of prioritization decisions. In fact, by proposing that self-efficacy would at least partially mediate the relationship between GPDs and task prioritization, Hypothesis 3

asserted that efficacy was a more proximal predictor than were GPDs. The rationale behind this hypothesis was that GPD size generally determines the degree of confidence that individuals have regarding their ability to achieve a given goal, and the degree of confidence that individuals have in turn determines the task on which they focus. All things being equal, we would be expected to have greater confidence in achieving a goal with a smaller GPD than a larger GPD. For that reason, we would prioritize the task on which we faced a smaller GPD. In this way, self-efficacy would mediate the relationship between GPD size and task prioritization. It was therefore not surprising to find that self-efficacy both fully (full data file) and partially (modified data file) mediated the relationship between GPDs and task prioritization, supporting Hypothesis 3. This coincides well with existing research demonstrating the mediating role of efficacy in self-regulation. In single-goal settings, Breland and Donovan (2005) and Phillips and Gully (1997) both found that efficacy partially mediated the relationship between individual difference variables and goal choice. The current results provide evidence that this mediator role for self-efficacy extends to multiple-goal scenarios by determining the task that individuals prioritized. As with the first two hypotheses, results for Hypothesis 3 also provide additional evidence for the resource allocation perspective in that, when dividing resources between competing tasks, individuals should be expected to prioritize tasks on which they are more confident in goal achievement.

Rate of progress and prioritization

The findings concerning the rate-of-progress hypothesis corroborate results from Byrd and Donovan (2003), while offering additional evidence in support of Carver and Scheier's (1990) theoretical claims. That is, the current results yield new evidence in favor of Carver and Scheier's concept of a meta-loop that evaluates the rate at which a discrepancy is being reduced.

It is important to note that while the current study and Byrd and Donovan (2003) both supported the rate-of-progress concept, the two studies were based on different goal structures. The Byrd and Donovan (2003) study found support for the rate-of-progress variable in a situation where participants set their own goals, and the rate of progress toward those goals was assessed only within individual trials. In contrast, the current study was based on assigned goals only, and these goals were distal in the sense that they pertained to cumulative performance across the entire performance period (i.e., the entire duration of the study). For the two studies to incorporate such different goal structures while still yielding evidence in support of the rate-of-progress effect suggests the effect applies across multiple goal structures.

Another noteworthy difference between the current study and Byrd and Donovan (2003) was that the goal structure used in the prior study allowed participants to create what was referred to as an 'artificial' rate of progress toward goal achievement. That is, because goals in Byrd and Donovan (2003) were self-set, participants could experience a boost in rate-of-progress simply by lowering their goals, rather than by improving their performance. In the current study, however, the use of assigned goals made it impossible for participants to experience 'artificial' rates of progress.

The theoretical basis for this hypothesis came not from Bandura's (1986) self-efficacy theory, but from work by Carver and Scheier (1990) that was grounded in control theory. As previously mentioned, however, strong similarities exist between the control theory models that Carver and Scheier have developed and self-efficacy theory, or social-cognitive theory more generally. Incorporating the concept of rate-of-progress into control theory yields a more complex model than the simple cybernetic frameworks that are driven solely by discrepancy size. The greatest similarity between more complicated control theory models like this and Bandura's

self-efficacy theory is that both perspectives suggest that self-regulation is based on complex, ever-shifting evaluations of performance situations. Moreover, the rate of progress effect found in the current study is conceptually linked to the self-efficacy effect from Hypothesis 2. The conceptual link concerns the fact that individuals are most likely to focus on tasks on which the expectations for success are high. Greater efficacy and a faster rate of progress are both indications of more likely goal success than weaker efficacy or a slower rate of progress.

The rate-of-progress variable can be thought of as an indicator of how task performance is progressing, similar to GPDs. Given the conceptual link between rate-of-progress, coupled with results showing self-efficacy mediated the relationship between GPDs and task prioritization within the current study, it is interesting to ask whether self-efficacy would also mediate the relationship between rate-of-progress and task prioritization. Post-hoc exploratory analyses were conducted to explore this mediated relationship for three of the four task prioritization dependent variables; the 'mouse-clicks' dependent variable was excluded because the rate-of-progress variable failed to predict the 'mouse-clicks' dependent variable in Hypothesis 4. Sobel test results indicated that self-efficacy mediated the relationship between rate-of-progress and the task on which participants spent more time ($z = 4.78$, $p < .001$), the task on which participants reported exerting greater effort ($z = 5.12$, $p < .001$), and the task that participants indicated they prioritized ($z = 5.11$, $p < .001$). The form of this relationship matched what would be expected. First, rate-of-progress predicted task prioritization in the anticipated direction (for three of the four indicators of prioritization; H4). Second, rate-of-progress predicted efficacy in the anticipated direction. Finally, efficacy predicted prioritization as expected (H2). The coefficient for the rate-of-progress variable dropped to a non-significant level when entered along with self-efficacy to predict the three task prioritization dependent

variables, providing evidence that self-efficacy fully mediated the relationship between rate-of-progress and three of the four task prioritization variables. Therefore, these results further indicate the critical role of self-efficacy as a mediator of the relationship between performance-related predictors and task prioritization decisions.

Finding that participants prioritized the task on which they experienced a faster rate of progress toward goal achievement emphasizes the dynamic aspect of self-regulation. The dynamics of self-regulation include more than the cyclical process through which individuals set goals, pursue and achieve those goals, and then establish new goals. Indeed, results from Hypothesis 4 provide new and updated evidence that self-regulation models can more accurately account for the ways in which we pursue goals when they focus in part on how relationships among variables unfold over time. In the current study it was found that task prioritization was predicted by the rate at which GPDs were reduced. However, it is possible that changes over time in additional variables can be equally informative. For instance, fluctuations in goal commitment over time – particularly the *rate* at which goal commitment increases or decreases – may be a significant determinant of the ways in which individuals self-regulate.

Goal commitment and prioritization

One way in which the current study forged new ground was by examining goal commitment in a multiple-goal scenario. While the relative strength of the goal commitment variable was not entirely expected, the nature of the goal commitment results were not unanticipated. After all, we would expect participants to prioritize the task on which they felt greater commitment. From a resource allocation perspective, we would not expect individuals to invest finite resources in pursuit of a goal to which they are uncommitted. Even in a multiple-goal situation where there is strong commitment to more than one goal, individuals could only be

expected to prioritize the goal on which they feel more committed, even if the difference in commitment between goals were slight.

It is interesting to examine characteristics of the tasks on which participants reported being more committed in the current study. For instance, in 70% of all instances, the task on which participants reported greater commitment was also the task on which they faced a smaller GPD. This percentage applied equally to both the film-scheduling and the media-request tasks. This suggests that participants were more committed to tasks with smaller GPDs, which would be expected given that smaller GPDs generally indicate that goal success is more imminent than do larger GPDs. Further, this directly coincides with previous research showing that expectancy related constructs are highly related to goal commitment (e.g., Hollenbeck & Klein, 1987; Locke, Frederick, Lee, & Bobko, 1984; Wofford, Goodwin, & Premack, 1992). Although these earlier studies were focused on single-goal scenarios, they each found that the greater the perceived expectancy of goal success, the greater the level of goal commitment. In light of these findings, we would also expect participants in the current study to report greater efficacy for the task to which they indicate being more committed. Indeed, in 72% of all instances, participants in the current study reported greater efficacy on the task to which they also reported being more committed. Although previous research has not examined the relationship between goal commitment and rate-of-progress toward goal achievement, the aforementioned results concerning expectancy-related constructs are particularly relevant. The more rapidly a discrepancy is reduced, the more likely goal achievement would be on that task. Therefore, it was not surprising to find that approximately 64% of the time in the current study, the task on which participants experienced a faster rate of progress was also the task on which they reported greater goal commitment. Overall, results from the current study concerning goal commitment

correspond closely with previous research in single-goal scenarios, while also extending the findings from that previous work to a multiple-goal scenario.

At this point, it is possible to reflect on results concerning the first five hypotheses and to postulate an integrative model. This model would include GPDs and rate-of-progress as performance-related variables that lead to self-efficacy, which in turn would lead to goal commitment, with goal commitment ultimately leading to task prioritization. A series of post-hoc exploratory HLM equations were examined to assess whether data from the current study would support these individual relationships. Results indicated that the GPD ($\pi = 2.93$, $t = 14.89$, $p < .001$, OR = 18.66) and rate-of-progress ($\pi = 0.49$, $t = 3.18$, $p < .01$, OR = 1.64) variables were significant simultaneous predictors of the task on which participants reported greater self-efficacy. In turn, results also indicated that the self-efficacy variable predicted the task on which participants indicated greater goal commitment ($\pi = 1.77$, $t = 11.56$, $p < .001$, OR = 5.86). Finally, results from Hypothesis 5 indicate that goal commitment predicted task prioritization. When considered together, these results provide initial evidence that an integrated model combining these variables may be possible. It is important to note, however, that these analyses were exploratory post-hoc analyses and, as such, should be interpreted with caution.

Time-remaining as a moderator of the GPD-prioritization relationship

Perhaps the most surprising outcome from the current study was from Hypothesis 6, which specified that the amount of time remaining in the study would moderate the relationship between GPD and prioritization. Previous research examining the time-remaining variable found that individuals self-regulated differently in the second half of a performance period than they did in the first half. Donovan and Williams (2003) and Williams et al. (2000) found that individuals were more likely to revise their goals in the second half of a performance period.

Schmidt and DeShon (2007) found that participants shifted their focus from larger GPDs to smaller GPDs toward the end of a performance period. Analyses based on the original data file in the current study found that the amount of time remaining in the study moderated the GPD-prioritization relationship, but the results were in the opposite direction than anticipated based on previous research. As time wound down, participants prioritized the task on which they were farther from goal attainment, conflicting with results from Schmidt and DeShon (2007).

This makes sense, however, for the following reason: Once participants achieved the goal on one of the tasks, they would be expected to switch their attention to the remaining goal. However, shifting their focus like this would mean focusing on the task with the larger GPD later in the performance period. This tendency likely made it seem as though participants were forgoing progress toward a goal they were closer to, in order to pursue a goal they were farther from attaining. It is entirely possible, however, that they were not ignoring the goal they were closer to, but that they had already achieved that goal. Once data was removed from the data file subsequent to goal attainment for each participant, however, the moderated relationship no longer occurred. Specifically, after removing data concerning performance subsequent to goal achievement, the results changed more drastically for this hypothesis when data was removed subsequent to goal attainment than for any other hypothesis.

Hypothesis 6 was unsupported in the current study. After the original test of the hypothesis, the form of the relationship was in the opposite form from what had been hypothesized. When data was removed subsequent to goal achievement for each participant, no significant moderated relationship was detected, further contributing to the conclusion that Hypothesis 6 was not supported. These points notwithstanding, it is worth referring again to Table 10. This table indicates that participants spent the most amount of time on the task with the

smaller GPD, and that it was only in the sixth trial that participants shifted their focus away from the task with the smaller GPD. An interesting detail from Table 10 is that participants spent increasingly greater time on the task with the smaller GPD for the first two-thirds of the study (i.e., trials one through four). It was not until the final two trials (trials five and six) that the percentage of time spent on the task with the smaller GPD began to decline. This finding highlights the relevant fact that the 'time remaining' variable was created by dividing the study at the midpoint of the performance period; the first three trials formed the first half of the study, and the remaining three trials formed the second half of the study. Given the perceived trends in the GPD-prioritization relationships across trials just described, it seems possible that there is a "breaking point" at which point people switch strategies and that this point is not necessarily the midpoint in the performance period as was operationalized in this study.

The overall lack of support for Hypothesis 6 indicated the current study was unable to replicate previous research results concerning the influence of temporality issues on self-regulatory behaviors. Although the hypothesis was not supported, the statistically significant results still indicated that temporal factors can shape task prioritization. It is also worth noting that two of the three studies in which this hypothesis was grounded were focused on goal revision over time, rather than task prioritization over time (i.e., Donovan & Williams, 2003; Williams et al., 2000). The other previous study was similar to the current study in its focus on the changing relationship between GPD and prioritization over time (i.e., Schmidt & DeShon, 2007). Therefore, the lack of support for Hypothesis 6 in the current study primarily failed to replicate results from Schmidt and DeShon (2007). Ultimately, although the current results do not replicate previous research, they should not diminish interest in further exploration of this topic. To be certain, clear self-regulatory patterns occurred with respect to time in this study. For

instance, the previously discussed pattern of results in Table 10 appear to contradict the results found in Schmidt and DeShon (2007). Although this pattern of results did not yield a statistically significant outcome in the current study, it will be valuable to further explore the way in which the passage of time influences the relationship between GPDs and task prioritization. Furthermore, the current study's focus on issues of temporality were only concerned with the relationship between GPDs and task prioritization. Examining other independent variables like self-efficacy and rate-of-progress that may influence the relationship between time-remaining and task prioritization will be valuable. In the same way, outcome variables other than task prioritization may yield more consistent results than have been demonstrated by studies of task prioritization.

Achievement goals as moderators of the GPD-prioritization relationship

It is interesting to note that neither of the hypotheses in the current study concerning achievement goals were supported. Hypothesis 7 proposed that mastery goals would moderate the relationship between GPDs and prioritization, such that participants with stronger mastery goals would be more likely to prioritize the task with the larger GPD. Support for this hypothesis would be expected both on the basis of theoretical assertions and existing research. For example, in a recently published study, Schmidt, Dolis, and Tolli (2009) found that mastery orientation *did* significantly moderate the relationship between GPD size and task prioritization, and the nature of the observed interaction matched what had been hypothesized in the current study. Both studies used incentives associated with assigned goals, and the incentives in both studies were separate for each task (i.e., participants could achieve one or both incentives, as in the current study). Even the achievement goals measure was administered at the same point in both studies (prior to the first performance trial). Although Schmidt et al. (2009) used a different instrument

to assess mastery goals than was used in the current study, other existing studies found significant results in single-goal scenarios using the same instrument as in the current study (e.g., Donovan & Hafsteinsson, 2006). Range restriction was also considered as a potential reason for the current study's null results, but this did not appear to be the case. Lastly, intra-class correlations were also examined to determine the percent of between- versus within-subjects variance within this analysis, in case the null results were perhaps due in part to insufficient between-subjects variance to detect a moderator of this type. However, results generally indicated there was ample between-subjects variance to detect a moderated relationship. As indicated in Table 11, the 'time-spent' dependent variable had by far the least amount of between-subjects variance, but even this amount of variance was not particularly small (Raudenbush & Bryk, 2002).

It is possible that characteristics of the performance scenario ultimately lead to the null results concerning Hypothesis 7. As previously mentioned, participants in the current study knew at the beginning of the first trial what level of performance was required to achieve each of the two goals when the study concluded. One of two experimental conditions in Schmidt et al. (2009) – in which mastery goals moderated the relationship between GPD and prioritization – resembled Schmidt and DeShon (2007) in that participants knew their goal was to have zero students in each line at the end of the study, but the level of performance associated with each goal was never fully known until the final trial concluded (i.e., students could join each line at any point in the study, ratcheting up the performance level). It is possible that in a more ambiguous performance scenario like this, the effects of mastery goals may be more pronounced. In contrast, the relative lack of ambiguity in the current study regarding the ultimate performance level associated with each goal may have minimized the opportunity for mastery orientation to

exert itself. More simply, when individuals know what they want, but are unclear on exactly what it will take to achieve it, individual difference variables like mastery orientation may shape behavior to a greater extent than when ambiguity is absent. That is, when individuals are unsure of the specific performance level required for goal achievement, they may look to other factors to determine their behaviors, including individual difference constructs like mastery orientation. When the exact performance level associated with each goal is known from the outset, however, individual difference constructs may be less important because individuals can narrow their attention and focus on propelling themselves to goal achievement without looking to other factors to shape their behaviors. It is also possible that low task valence may have minimized or suppressed the moderating role of mastery goals. That is, participants' personal interest in the MediaManager tasks may have been relatively minimal, and as a consequence, participants may not have experienced a sufficiently strong desire to learn how to perform the tasks at a high level. A lack of interest in learning to perform a task at a high level would likely suppress any effects due to mastery goals, potentially leading to non-significant results.

Hypothesis 8 proposed that participants with stronger performance-avoid goals would be more likely to prioritize the task with the smaller GPD. This hypothesis, however, was also unsupported. As with Hypothesis 7, range restriction was again explored as a potential explanation for the lack of support of this hypothesis in light of other research and theoretical support, but results of additional analyses did not indicate the this contributed to the null results. Intra-class correlations were also examined, yet results indicated the existence of ample between-subjects variance to detect a moderated relationship of this type (see Table 12).

Individuals with strong performance-avoid goals are highly focused on demonstrating competence and avoiding the appearance of incompetence. However, performance within the

current study was not public. Thus, it is possible that the lack of support for Hypothesis 8 suggests the performance situation did not lead participants to feel threatened by poor performance, even those with strong performance-avoid goals. Participants were unaware of how other participants performed, and likewise, they also knew that no other participants knew how they were performing. It is also possible that the thought of potentially performing poorly on the MediaManager tasks was not perceived by participants as a threat to their competence. That is, perceptions of competence among participants with even the strongest performance-avoid goals may have been relatively impervious to the influence of potentially poor performance in the current study. It is worth noting that Schmidt et al. (2009) also hypothesized that performance-avoid goals would moderate the GPD-prioritization relationship in the same manner. However, their results indicated only conditional support in that descriptive data demonstrated the general hypothesized pattern, yet a statistically significant interaction was not detected. Further, the conditional support for the hypothesis was only found within the experimental condition in which exact performance levels required for goal achievement were not known until the performance period concluded. A second experimental condition resembling the performance scenario in the current study (i.e., exact performance levels required for goal achievement were known from the outset) failed to yield even conditional support for the hypothesis. As with Hypothesis 7, it is also possible that the valence associated with the MediaManager tasks was not strong enough to lead to an effect associated with performance-avoid goals. In other words, participants may not have been interested enough or perceived sufficient value in the tasks to allow performance-avoid goals to influence behavior. In this way, it is possible that greater task valence would have afforded a greater likelihood of observing an effect due to performance-avoid goals.

Limitations

The use of dichotomous variables in the current study is both an extension of existing research as well as a limitation. As previously discussed, the straightforward nature of dichotomous predictor and outcome variables is inherently appealing when the question is on *which* task will participants focus. Being able to indicate in a discrete rather than relative way whether the film task or the media task had a smaller GPD, for instance, provides a simple clarity that is desirable. That point notwithstanding, converting continuous data to a dichotomous form potentially reduces our ability to detect interesting patterns in useful information. It can restrict the amount of variance in the outcome that can be explained by the predictor(s) and can reduce the statistical power to detect significant relationships among the data (Cohen, 1983; Cohen & Cohen, 1983; Irwin & McClelland, 2003). In addition to statistical considerations, dichotomizing continuous data necessarily shifts our focus in the direction of discrete thinking (yes/no, all-or-nothing), when the true nature of the underlying phenomena may be a matter of degrees. Several main-effect predictor variables were converted from a continuous form to a dichotomous form, including GPD, self-efficacy, and rate of progress. Similarly, three of the four dependent variables were also transformed from continuous to dichotomous form, including time-spent, mouse-clicks, and self-reported effort. Having multiple dichotomized variables may have influenced the core findings in this study.

Two of the dichotomized variables in the current study were not converted from a continuous form into a dichotomous form. Although both could have been measured in a continuous fashion, both constructs were intentionally assessed in dichotomous form. These variables were the goal commitment independent variable and the self-reported prioritization dependent variable. Goal commitment was measured with a single forced-choice item primarily

due to concern that too many respondents would indicate equal commitment to both goals; these instances would not be usable in the analyses. Therefore, it was decided to require participants to indicate which goal they were more committed to, without regard to the difference in commitment between the two goals. The self-reported prioritization dependent variable was assessed in a dichotomous fashion because it was felt that the three other dependent variables – which were continuous in their original form – indirectly assessed prioritization. It was seen as valuable to directly ask participants which task they had prioritized, and to use this measure in concert with the other three prioritization measures.

Second, a common limitation to laboratory studies is that participants may not have been as personally invested in the current study's goals as they would have been if the goals pertained to tasks or activities that were more central to participants' lives. The negative consequences of poor performance in the study were relatively less substantial in terms of impact to participants' lives. As such, the goals may not have been quite as engaging for participants as goals pertaining to things that impacted their lives and/or livelihoods more directly. For instance, the outcome of goal failure in the current study was not receiving bonus extra credit for a college course (compared to, for example, receiving a substantial monetary bonus for achieving a work goal). This is not to say that participants appeared unmotivated. Evidence of their motivation was apparent in the fact that participants made an increasingly greater number of mouse-clicks in each successive trial. This is also not to suggest that results from the current study would have been more valuable had this been a field study. Laboratory studies like this one are immensely valuable in their ability to identify patterns or relationships that can occur in non-lab settings. Laboratory studies are also effectively used to lay the groundwork in research concerning novel topics, such as prioritization in multiple-goal settings. Rather, the point of emphasis here is that

participants may not have been quite as personally invested as they are compared to other goals in their lives. Ultimately, the implication is that the effects seen in the current study could be stronger in situations where participants are more personally invested in their goals. It is also possible, of course, that individuals may self-regulate in slightly different ways when pursuing goals that have varying levels of personal relevance. Although this study did assess goal commitment, using a single forced-choice item to assess goal commitment precluded the ability to examine whether self-regulatory patterns and engagement in the tasks differed depending on participants' level of goal commitment.

Implications and Suggestions for Future Research

Of the conclusions Kernan and Lord (1990) made regarding self-regulation in multiple-goal scenarios, one of the most compelling findings concerned the role of expectancy-type constructs. Nearly 20 years later, one implication from the current study is support for Kernan and Lord's (1990) assertion that expectancy-related constructs are valuable predictors of task prioritization. By finding that self-efficacy predicted the task that participants prioritized, and that it also mediated the GPD-prioritization relationship, results from the current study indicate that prioritization decisions are based in part on expectations that individuals hold regarding future performance. Future research that continues to explore the role of expectancy-type constructs would be particularly valuable to this stream of research. Given the body of evidence for the importance of expectancies and self-efficacy in multiple-goal scenarios, it will be informative to investigate potential boundary conditions to this relationship. That is, although expectancies and efficacy have demonstrated reliable utility in predicting self-regulation in multiple-goal scenarios, there surely are situations in which expectancies and efficacy exert more or less influence. For instance, the influence of efficacy may vary depending on the novelty

versus familiarity of a performance scenario. Identifying and understanding such situations would be a valuable contribution to multiple-goals research.

A related implication from the current study is that self-efficacy will likely play a key role as an intervening variable in future models concerning task prioritization in multiple-goal scenarios. As previously discussed, one such model could be specified based on results from the current study considered along with existing theoretical assertions. In this model, performance-related variables like GPDs and rate of progress would be exogenous predictors linked to the self-efficacy that an individual experiences. Efficacy would then be linked to goal commitment, which would in turn determine task prioritization decisions. Such a model suggests that individuals' level of performance determines their level of confidence in achieving a high level of performance. This confidence then leads to the degree of commitment that individuals feel regarding their goals. Prioritization decisions are ultimately based in large part on the degree of commitment that individuals experience toward goals, because individuals would not be expected to prioritize tasks to which they are not committed, regardless of confidence and performance on the task.

A third implication from the current study is that characteristics of study methodology may ultimately prove to be strong determinants of task prioritization, including factors that may have initially been considered inconsequential. For instance, several studies have now reported evidence that individuals prioritize smaller GPDs over larger GPDs. However, Schmidt and DeShon (2007) generally found the opposite. As already discussed, a characteristic of the Schmidt and DeShon (2007) study very well may explain why larger GPDs were prioritized. That study was the only existing multiple-goal study to not allow participants to achieve goals in series; instead, participants pursued goals for the duration of a performance period and goal

success was only determined when the period concluded. This characteristic of whether or not goals can be achieved in series had not been identified as a promising predictor of task prioritization until recently, and it is an example of a characteristic of multiple-goal scenarios that may move to the foreground in understanding self-regulation in multiple-goal scenarios. Such characteristics will best be identified by examining inconsistencies of results from future studies with existing research and through careful research design.

A fourth implication from the current study is that time-related constructs are important in multiple-goal scenarios. Results indicated that the relative speed at which GPDs were being reduced predicted task prioritization. This finding replicated results from Byrd and Donovan (2003), indicating that individuals are inclined to focus on goals they are more rapidly approaching. No other multiple-goal studies, however, have examined the rate-of-progress variable. Self-regulation studies examining issues related to time and the dynamic nature of goal pursuit would be particularly beneficial to furthering this area of study. A natural direction for this focus on temporality to expand is the rate of progress toward goal attainment. Results from Byrd and Donovan (2003) and the current study indicated that the rate-of-progress variable was a comparatively strong predictor of task prioritization, yet future research is needed to determine how widely applicable these results are. It would also be valuable to explore whether "artificially" derived rate of progress results in the same behavioral and affective outcomes that Carver & Scheier appear to indicate should result from non-artificial rates of progress (i.e., increasingly stronger performance). An additional topic for further exploration concerning rate-of-progress is the extent to which individuals potentially create artificial rates of progress as a method of motivating themselves to achieve larger goals. In other words, artificially boosting the rate of progress may be a subtle method of self-regulation that individuals engage in to propel

themselves toward goal attainment. This would resemble Bandura's assertion that an effective method of driving oneself toward a distal goal is setting proximal goals that when achieved creates the positive momentum necessary to ultimately achieve the distal goal (Bandura, 1986).

Although clear support was found in the current study for the rate-of-progress hypothesis, results failed to indicate that time-remaining moderated the GPD-prioritization relationship (Hypothesis 6). Previous studies have found support for this relationship including Donovan and Williams (2003) and Schmidt and DeShon (2007), however, and it is expected that future research will allow a better understanding of the situations in which time before deadlines affects self-regulation most strongly.

A worthwhile topic for future research not addressed above concerns the duration of performance period. For instance, the performance period in the current study lasted 48 minutes. Although individuals often pursue short-term goals in life, they also pursue goals that have far longer durations than approximately 45 minutes. When pursuing longer-term goals, individuals may base prioritization decisions on different factors than when pursuing short-term goals; even if the factors determining prioritization decisions do not change, the relative influence of each factor may vary. For these reasons, there is value in examining prioritization decisions in performance situations with varying amounts of time before goal deadlines.

The majority of multiple-goal studies have been laboratory-based studies. As previously discussed, laboratory studies can be tremendously beneficial, particularly in the early stages of developing knowledge on a novel topic. Self-regulation in multiple-goal scenarios remains a novel topic at this point in time, and therefore laboratory studies remain particularly useful. However, the comparative lack of field studies of multiple-goal scenarios is apparent. Several conclusions regarding multiple-goal scenarios have been repeatedly replicated in laboratory-

based studies at this point, and it is becoming increasingly interesting to find out the extent to which these results generalize to field settings.

Finally, most multiple-goal studies have also focused on competing goals. As already discussed, competing goals are those in which the allocation of resources to one goal means fewer resources remain to be allocated to other goals. In other words, resources are allocated at the exclusion of other goals. Realistically, the extent to which simultaneous goals compete for resources is on a continuum. The current study is an example of simultaneous goals that are directly competing with one another. An example of non-competing goals would be a student who has a goal of earning an A in a particular class and also has a goal of earning an A on an upcoming exam in the same course. Truly non-competing goals likely exist in goal hierarchies as in this example. Regardless, relatively little is understood about self-regulation in pursuit of non-competing goals. Task prioritization is likely to be irrelevant in such situations, but compelling research questions still apply to non-competing goal scenarios. For instance, it would be interesting to examine whether pursuit of multiple, non-competing goals was associated with greater motivational force than in single-goal scenarios or in competing multiple-goal scenarios. In addition, it would also be interesting to examine situations in which a combination of competing and non-competing goals were pursued.

Applied Implications

The current study yields applied implications pertaining to the ways in which individuals self-regulate in pursuit of goals at work. First, individuals can be expected to prioritize tasks to which they are most committed. Even if they possess the requisite resources and ability to achieve a goal, employees should not be expected to prioritize the associated task unless they are committed to the goal. This indicates that great value lies in ensuring employees are committed

to the most crucial goals they are asked to pursue. As a strategic human resource management practice, supervisors may find advantages in techniques that generate maximum commitment to activities or goals the organization most values, including communicating the alignment between organization, business-unit, team, and individual-level goals, as well as ensuring alignment between individual skills, abilities, and preferences and goal requirements.

Secondly, individuals will prioritize tasks on which they feel it is possible to succeed. In other words, regardless of the preference of supervisors or senior leaders regarding the activities that employees prioritize, employees can only be expected to focus on activities they feel are the most likely to lead to success. Management practices that increase employees' confidence in their ability to achieve the most valued goals would be a worthy consideration. Helping employees prioritize the most critical organization goals therefore will involve ensuring they have the confidence and ability to achieve those goals, including having sufficient resources and support to achieve them.

Conclusions

The single, overarching conclusion from the current study is that the resource allocation perspective provides an effective framework for predicting and understanding task prioritization decisions in multiple-goal scenarios. Results largely coincided with previous research concerning multiple-goal scenarios. According to the resource allocation perspective, individuals prioritize tasks in such a way as to maximize available resources. In order to most effectively leverage their resources, individuals tend to focus on the goal they are closest to attaining. They also tend to prioritize the goal they are approaching most rapidly because it generally represents the greatest likelihood of success. The current study also found that individuals tend to prioritize the task to which they are most committed and for which they have the greatest efficacy, as well.

Self-efficacy is an expectancy-related construct and, as such, plays a particularly influential role in determining task prioritization.

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Table 1

Degree of Prioritization between Tasks

	Dependent Variable					
	Time-spent		Mouse-clicks		Self-reported effort	
Trial	Film task	Media task	Film task	Media task	Film task	Media task
1	269.54	211.46	50.08	25.01	3.34	3.40
	(129.23)	(129.23)	(31.12)	(17.16)	(1.13)	(1.06)
2	230.14	250.86	49.50	33.56	3.13	3.44
	(161.26)	(161.26)	(38.82)	(23.29)	(1.25)	(1.19)
3	228.28	252.72	51.15	36.34	3.10	3.43
	(168.18)	(168.18)	(42.10)	(27.13)	(1.27)	(1.21)
4	223.28	257.72	51.23	39.21	3.08	3.49
	(171.36)	(171.36)	(42.37)	(28.37)	(1.35)	(1.26)
5	254.84	226.16	59.90	34.25	3.33	3.31
	(162.17)	(162.17)	(42.96)	(26.47)	(1.25)	(1.24)
6	281.69	199.31	65.22	28.88	3.44	3.07
	(168.58)	(168.58)	(43.27)	(27.24)	(1.24)	(1.27)

Note. Time-spent values are shown in seconds. Self-reported effort values are based on the five-point Likert scale used to assess effort. Standard deviations are indicated in parentheses.

Table 2

Correlations among Prioritization Measures

		Film-scheduling task			Media-request task			
		Time	Clicks	Effort	Time	Clicks	Effort	SR-prior.
Film-scheduling task	Time	-						
	Clicks	.80**	-					
	Effort	.75**	.72**	-				
Media-request task	Time	-1.00**	-.80**	-.75**	-			
	Clicks	-.87**	-.55**	-.61**	.87**	-		
	Effort	-.64**	-.53**	-.45**	.64**	.58**	-	
	SR-prior.	.79**	.67**	.65**	-.79**	-.71**	-.61**	-

Note. These correlations were obtained by averaging across the six performance trials for each individual. Time = time-spent; Clicks = mouse-clicks; Effort = self-reported effort; SR-Prior. = self-reported prioritization. Because of the binary nature of the self-reported prioritization variable, correlations involving this variable are all point-biserial correlations. The sign of the correlations for the self-reported prioritization variable reflect the dummy-coding that was applied, in which the media-request task was the referent group (coded as 0). ** $p < .01$.

Table 3

Trial 1: Means, Standard Deviations, and Correlations among Variables

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
1.	GPD	—	—	—									
2.	Self-efficacy	.28	(.45)	—	—								
3.	Rate of progress	—	—	—	—	—							
4.	Goal commitment	.44	(.50)	—	.31***	—	—						
5.	Mastery goals	4.87	(1.02)	—	.16*	—	-.07	(.81)					
6.	Performance-avoid goals	3.79	(1.07)	—	-.07	—	-.09	.08	(.71)				
7.	Time spent	.69	(.46)	—	.20**	—	.33***	.02	-.08	—			

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
8.	Mouse-clicks	.76	(.43)	—	.24**	—	.32***	.03	-.04	.82***	—		
9.	Self-reported effort	.54	(.50)	—	.18*	—	.37***	-.02	.00	.72***	.64***	—	
10.	Self-reported prioritization	.56	(.50)	—	.29***	—	.41***	.00	-.01	.64***	.60***	.78***	—

Note. $n = 216$. * $p < .05$. ** $p < .01$. *** $p < .001$. Correlations among all variables excluding Mastery goals and Performance-avoid goals are phi correlations, due to the dichotomous nature of these variables. Correlations among Mastery goals and Performance-avoid goals are Pearson correlations, and correlations between these two variables and all other variables are point-biserial correlations.

Table 4

Trial 2: Means, Standard Deviations, and Correlations among Variables

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
1.	GPD	.50	(.50)	—									
2.	Self-efficacy	.35	(.48)	.52***	—								
3.	Rate of progress	.50	(.50)	—	-.52***	—							
4.	Goal commitment	.48	(.50)	.30***	.43***	-.30***	—						
5.	Mastery goals	4.87	(1.02)	.00	.09	.00	-.04	(.81)					
6.	Performance-avoid goals	3.79	(1.07)	-.04	-.03	.04	-.09	.08	(.71)				
7.	Time spent	.54	(.50)	.20**	.34***	-.20**	.49***	.08	.01	—			

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
8.	Mouse-clicks	.62	(.49)	.26***	.36***	-.26***	.50***	.09	.04	.84***	—		
9.	Self-reported effort	.46	(.50)	.31***	.36***	-.31***	.55***	.03	-.03	.71***	.66***	—	
10.	Self-reported prioritization	.45	(.50)	.25**	.39***	-.25**	.48***	.03	.09	.70***	.65***	.82***	—

Note. $n = 216$. * $p < .05$. ** $p < .01$. *** $p < .001$. Correlations among all variables excluding Mastery goals and Performance-avoid goals are phi correlations, due to the dichotomous nature of these variables. Correlations among Mastery goals and Performance-avoid goals are Pearson correlations, and correlations between these two variables and all other variables are point-biserial correlations.

Table 5

Trial 3: Means, Standard Deviations, and Correlations among Variables

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
1.	GPD	.42	(.49)	—									
2.	Self-efficacy	.41	(.49)	.62***	—								
3.	Rate of progress	.42	(.49)	.84***	.55***	—							
4.	Goal commitment	.47	(.50)	.56***	.59***	.51***	—						
5.	Mastery goals	4.87	(1.02)	.02	-.06	.09	.01	(.81)					
6.	Performance-avoid goals	3.79	(1.07)	.00	.08	.04	.11	.08	(.71)				
7.	Time spent	.53	(.50)	.44***	.47***	.45***	.65***	.02	.01	—			

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
8.	Mouse-clicks	.62	(.49)	.45***	.44***	.42***	.65***	.11	.02	.82***	—		
9.	Self-reported effort	.46	(.50)	.50***	.58***	.51***	.68***	.02	.07	.82***	.74***	—	
10.	Self-reported prioritization	.50	(.50)	.46**	.51***	.45***	.63***	.00	.03	.79***	.73***	.82***	—

Note. $n = 216$. * $p < .05$. ** $p < .01$. *** $p < .001$. Correlations among all variables excluding Mastery goals and Performance-avoid goals are phi correlations, due to the dichotomous nature of these variables. Correlations among Mastery goals and Performance-avoid goals are Pearson correlations, and correlations between these two variables and all other variables are point-biserial correlations.

Table 6

Trial 4: Means, Standard Deviations, and Correlations among Variables

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
1.	GPD	.44	(.50)	—									
2.	Self-efficacy	.39	(.49)	.78***	—								
3.	Rate of progress	.47	(.50)	.83***	.62***	—							
4.	Goal commitment	.44	(.50)	.61***	.64***	.52***	—						
5.	Mastery goals	4.87	(1.02)	-.01	.05	-.01	.02	(.81)					
6.	Performance-avoid goals	3.79	(1.07)	.00	.04	.02	.08	.08	(.71)				
7.	Time spent	.50	(.50)	.46***	.51***	.41***	.65***	.08	.09	—			

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
8.	Mouse-clicks	.59	(.49)	.46***	.54***	.39***	.64***	.07	.07	.82***	—		
9.	Self-reported effort	.46	(.50)	.66***	.66***	.61***	.78***	.07	.09	.84***	.82***	—	
10.	Self-reported prioritization	.45	(.50)	.48***	.54***	.45***	.63***	.03	.11	.73***	.71***	.92***	—

Note. $n = 216$. * $p < .05$. ** $p < .01$. *** $p < .001$. Correlations among all variables excluding Mastery goals and Performance-avoid goals are phi correlations, due to the dichotomous nature of these variables. Correlations among Mastery goals and Performance-avoid goals are Pearson correlations, and correlations between these two variables and all other variables are point-biserial correlations.

Table 7

Trial 5: Means, Standard Deviations, and Correlations among Variables

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
1.	GPD	.43	(.50)	—									
2.	Self-efficacy	.40	(.49)	.84***	—								
3.	Rate of progress	.45	(.50)	.85***	.75***	—							
4.	Goal commitment	.51	(.50)	.50***	.50***	.42***	—						
5.	Mastery goals	4.87	(1.02)	.06	.06	.09	-.09	(.81)					
6.	Performance-avoid goals	3.79	(1.07)	.04	.03	.10	.07	.08	(.71)				
7.	Time spent	.59	(.49)	.21**	.24***	.22**	.54***	-.11	.01	—			

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
8.	Mouse-clicks	.67	(.47)	.26***	.25***	.27***	.56***	-.09	-.02	.83***	—		
9.	Self-reported effort	.55	(.50)	.37***	.37***	.38***	.66***	-.14	-.11	.76***	.71***	—	
10.	Self-reported prioritization	.56	(.50)	.38***	.42***	.36***	.73***	-.08	-.05	.66***	.65***	.89***	—

Note. $n = 216$. * $p < .05$. ** $p < .01$. *** $p < .001$. Correlations among all variables excluding Mastery goals and Performance-avoid goals are phi correlations, due to the dichotomous nature of these variables. Correlations among Mastery goals and Performance-avoid goals are Pearson correlations, and correlations between these two variables and all other variables are point-biserial correlations.

Table 8

Trial 6: Means, Standard Deviations, and Correlations among Variables

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
1.	GPD	.44	(.50)	—									
2.	Self-efficacy	.44	(.50)	.79***	—								
3.	Rate of progress	.48	(.50)	.80***	.67***	—							
4.	Goal commitment	.53	(.50)	.04	.11	.19**	—						
5.	Mastery goals	4.87	(1.02)	-.02	-.01	-.02	-.04	(.81)					
6.	Performance-avoid goals	3.79	(1.07)	.04	.08	.09	.06	.08	(.71)				
7.	Time spent	.65	(.48)	-.43***	-.34***	-.28***	.31***	.01	-.07	—			

	Variable	*M*	*(SD)*	1	2	3	4	5	6	7	8	9	10
8.	Mouse-clicks	.72	(.45)	-.42***	-.40***	-.28***	.31***	.01	-.02	.86***	—		
9.	Self-reported effort	.61	(.49)	-.23**	-.17*	-.09	.49***	-.03	-.07	.68***	.67***	—	
10.	Self-reported prioritization	.61	(.50)	-.27***	-.21**	-.12	.46***	-.06	.02	.71***	.69***	.78***	—

Note. $n = 216$. * $p < .05$. ** $p < .01$. *** $p < .001$. Correlations among all variables excluding Mastery goals and Performance-avoid goals are phi correlations, due to the dichotomous nature of these variables. Correlations among Mastery goals and Performance-avoid goals are Pearson correlations, and correlations between these two variables and all other variables are point-biserial correlations.

Table 9

Log-odds Associated with Occurrence of Each Dependent Variable When the Film-scheduling Task Had the Smaller GPD

	First half of performance period	Second half of performance period
Time-spent	10.55	7.90
Mouse-clicks	8.64	5.59
Self-reported prioritization	3.96	2.46

Table 10

Percent of Time within Each Trial Spent on Task with Smaller/Larger GPD

Trial	Task	Percent of Overall Time
Trial 2	Task with smaller GPD	54.0%
	Task with larger GPD	33.0%
Trial 3	Task with smaller GPD	65.9%
	Task with larger GPD	29.6%
Trial 4	Task with smaller GPD	67.1%
	Task with larger GPD	29.0%
Trial 5	Task with smaller GPD	55.7%
	Task with larger GPD	42.6%
Trial 6	Task with smaller GPD	32.1%
	Task with larger GPD	65.8%
All trials combined	Task with smaller GPD	46%
	Task with larger GPD	33%
	Film task when GPD was equal across tasks	12%
	Media task when GPD was equal across tasks	9%

Note. Summing the two percentages for each trial does not equal 100. The balance of time represented situations where GPD was equal across the two tasks.

Table 11

Hypothesis 7: Percent of Variance Between Subjects Within Film-Scheduling Task on Each Dependent Variable

Dependent variable	Percent of variance between subjects
Time-spent	35%
Mouse-clicks	63%
Self-reported effort	48%
Self-reported prioritization	44%

Table 12

Hypothesis 8: Percent of Variance Between Subjects Within Media-Request Task on Each Dependent Variable

Dependent variable	Percent of variance between subjects
Time-spent	34%
Mouse-clicks	73%
Self-reported effort	48%
Self-reported prioritization	43%

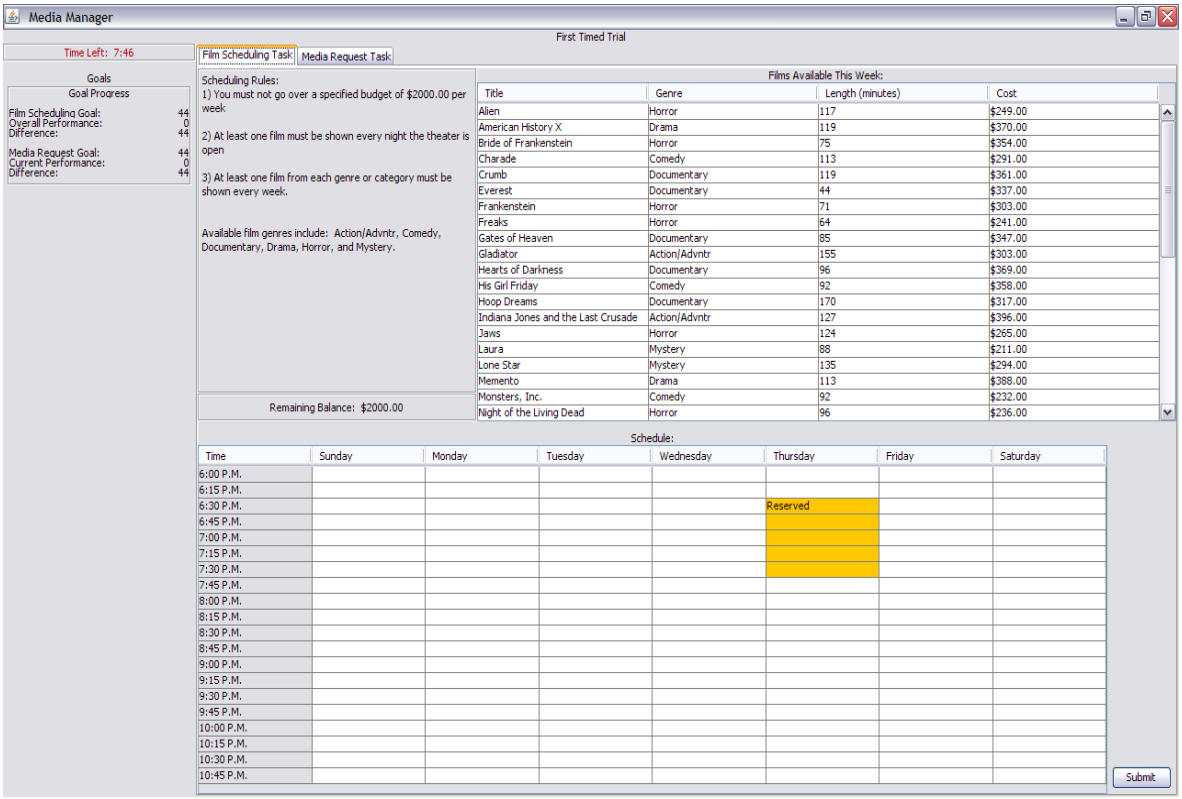

Figure 1. Screenshot of the film-scheduling task.

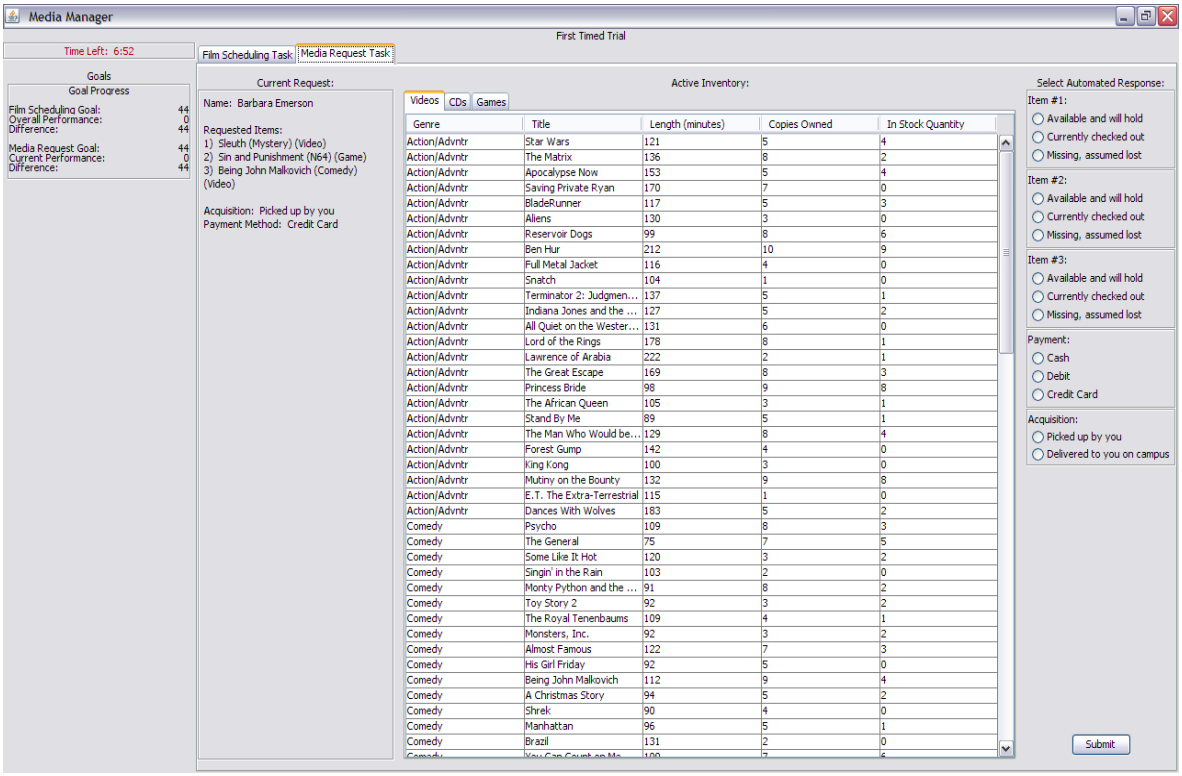

Figure 2. Screenshot of the media-request task.

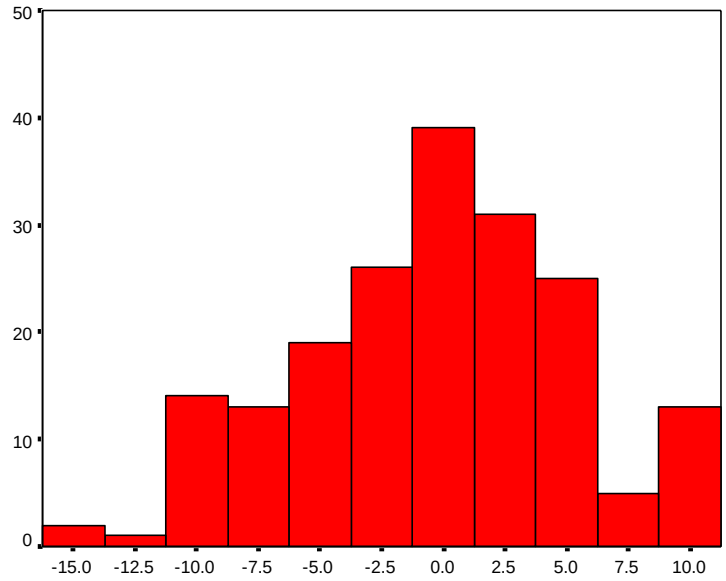

Figure 3. Trial 2 Between-task Differences on GPD Variable.

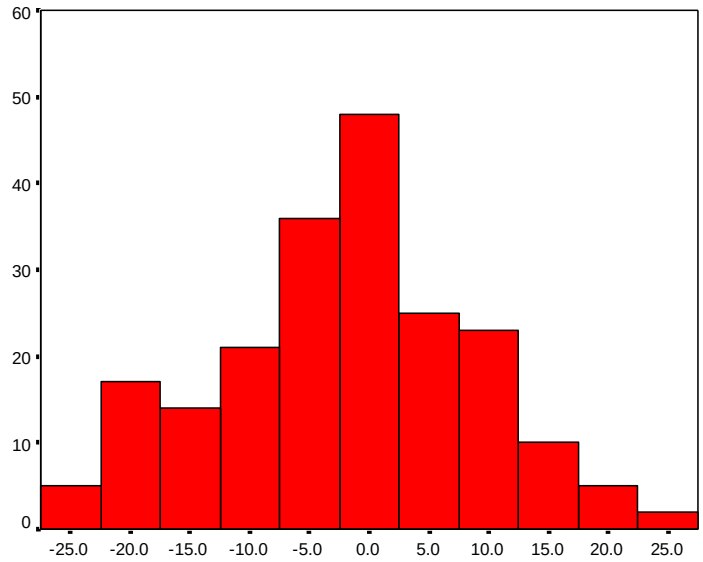

Figure 4. Trial 3 Between-task Differences on GPD Variable.

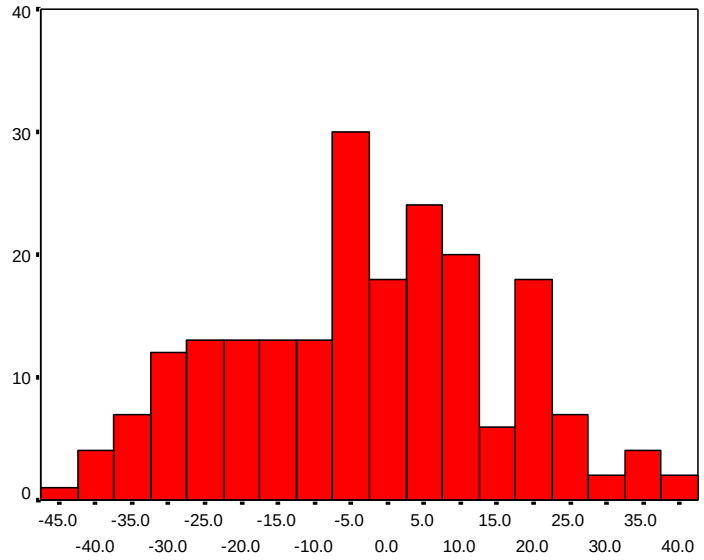

Figure 5. Trial 4 Between-task Differences on GPD Variable.

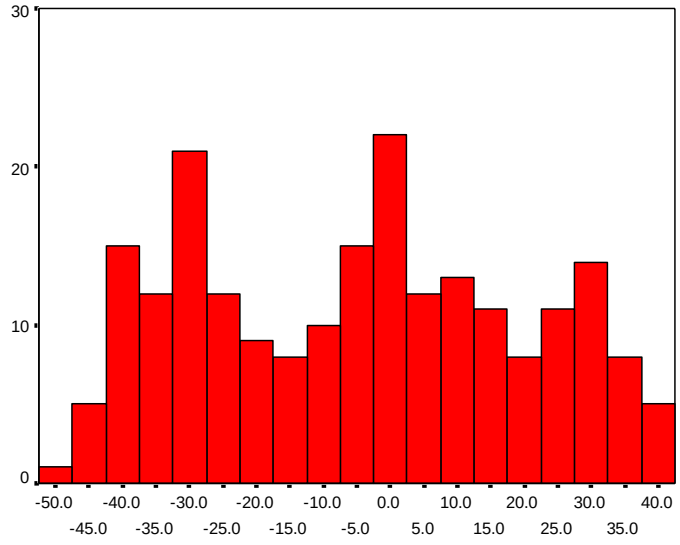

Figure 6. Trial 5 Between-task Differences on GPD Variable.

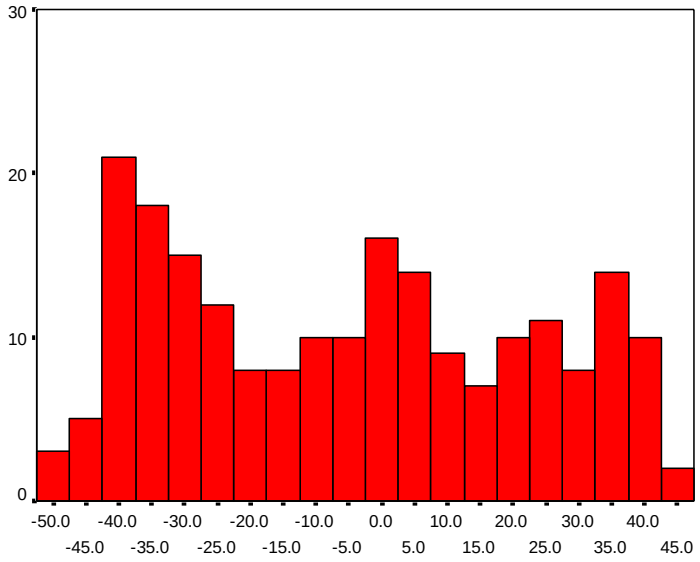

Figure 7. Trial 6 Between-task Differences on GPD Variable.

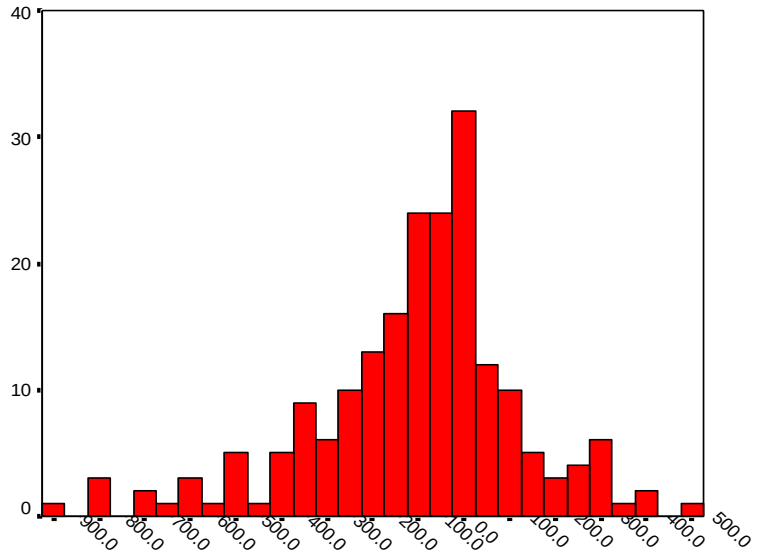

Figure 8. Trial 1 Between-task Differences on Efficacy Variable.

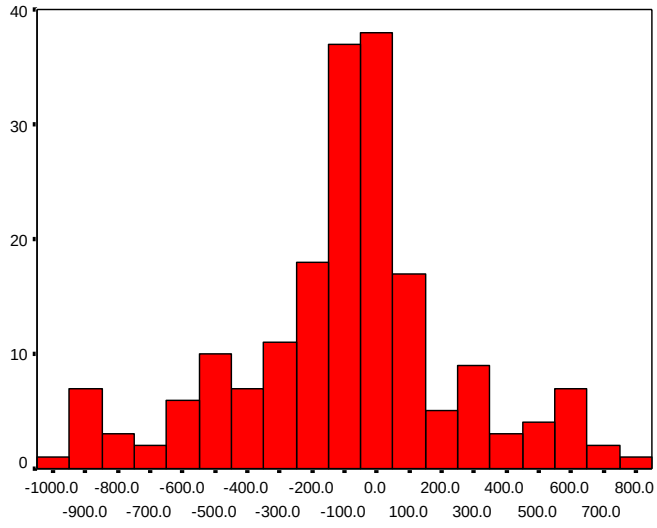

Figure 9. Trial 2 Between-task Differences on Efficacy Variable.

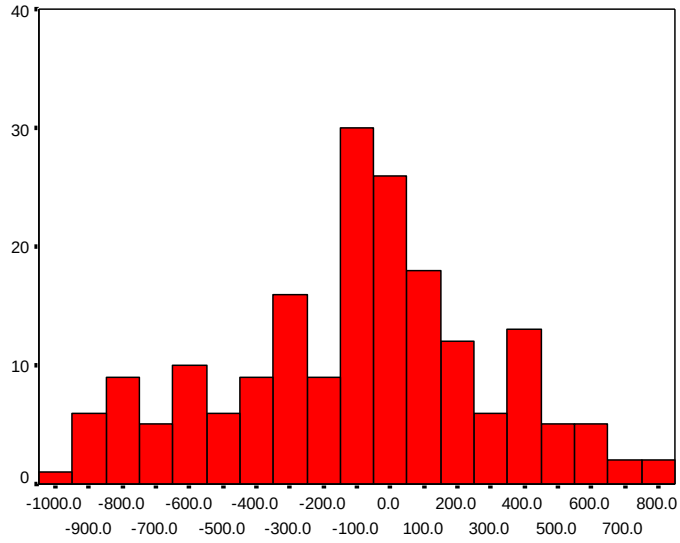

Figure 10. Trial 3 Between-task Differences on Efficacy Variable.

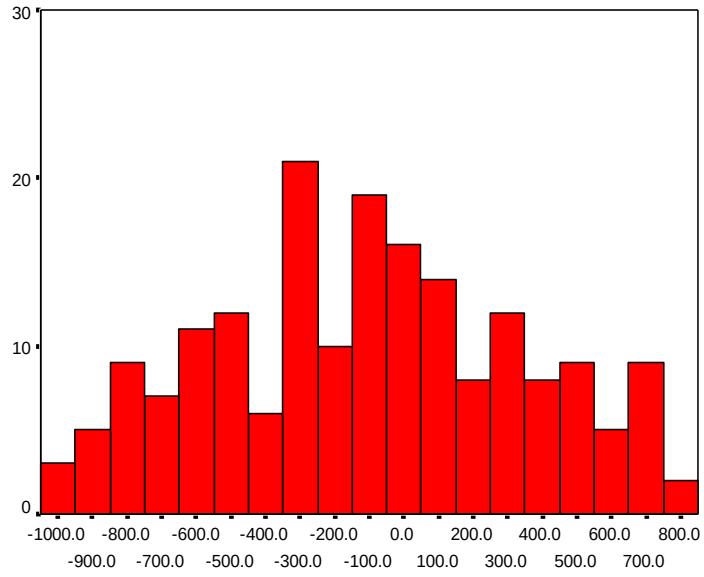

Figure 11. Trial 4 Between-task Differences on Efficacy Variable.

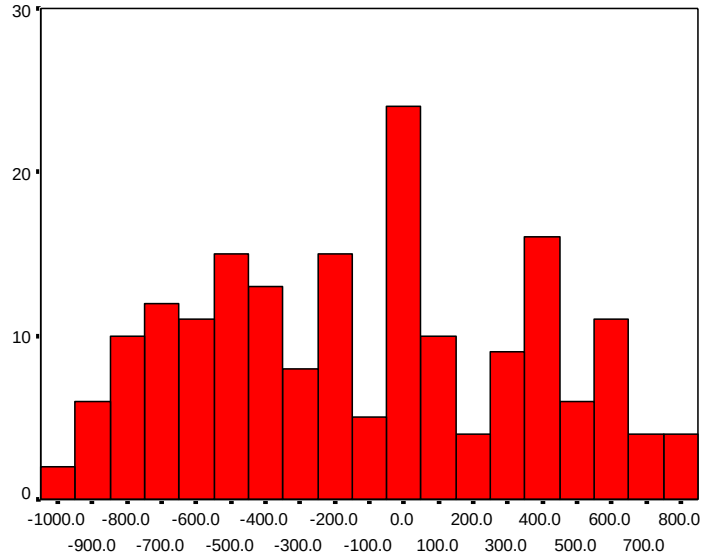

Figure 12. Trial 5 Between-task Differences on Efficacy Variable.

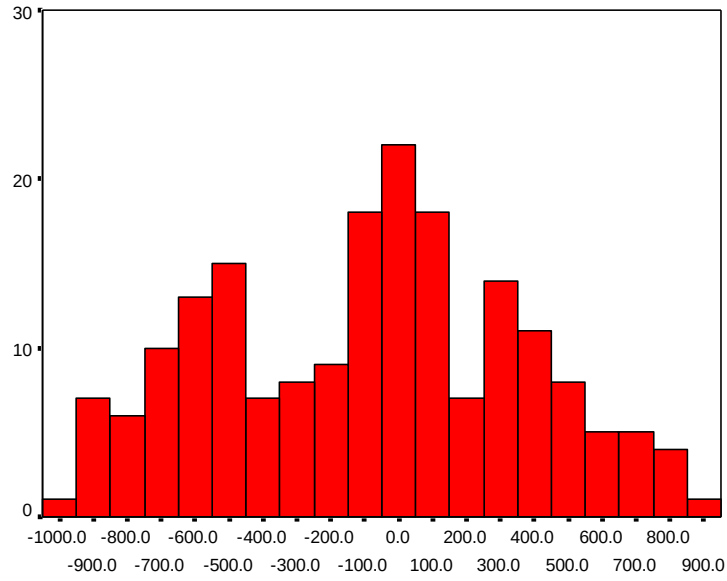

Figure 13. Trial 6 Between-task Differences on Efficacy Variable.

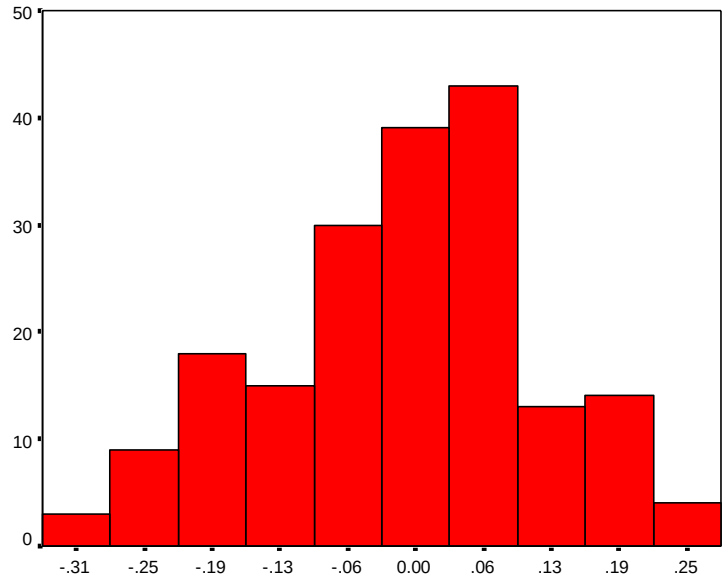

Figure 14. Trial 2 Between-task Differences on Rate-of-Progress Variable.

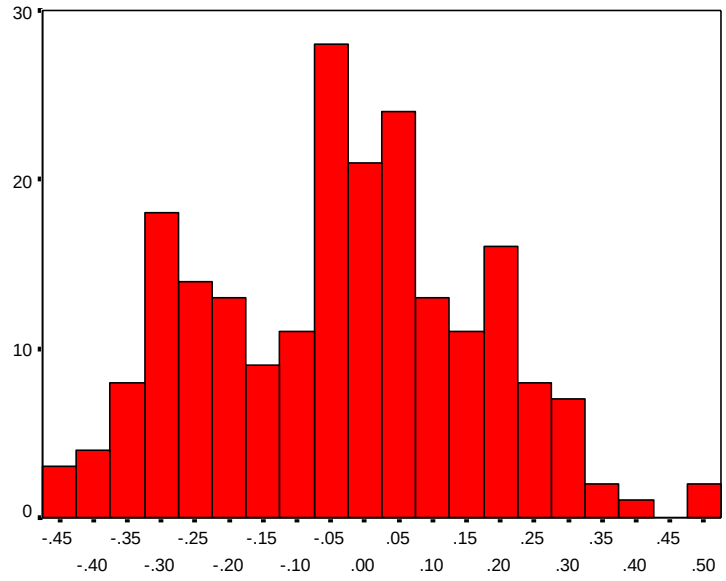

Figure 15. Trial 3 Between-task Differences on Rate-of-Progress Variable.

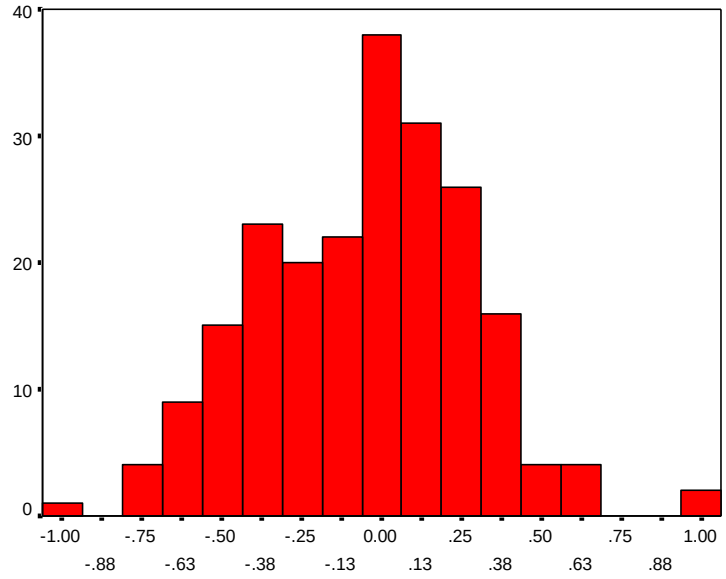

Figure 16. Trial 4 Between-task Differences on Rate-of-Progress Variable.

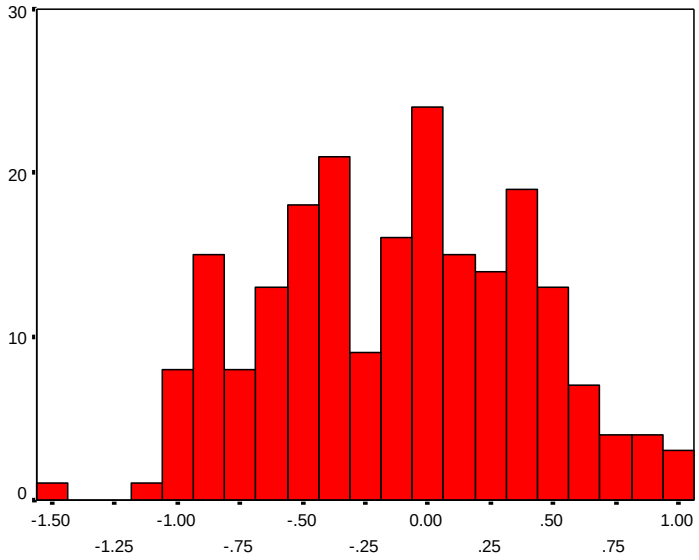

Figure 17. Trial 5 Between-task Differences on Rate-of-Progress Variable.

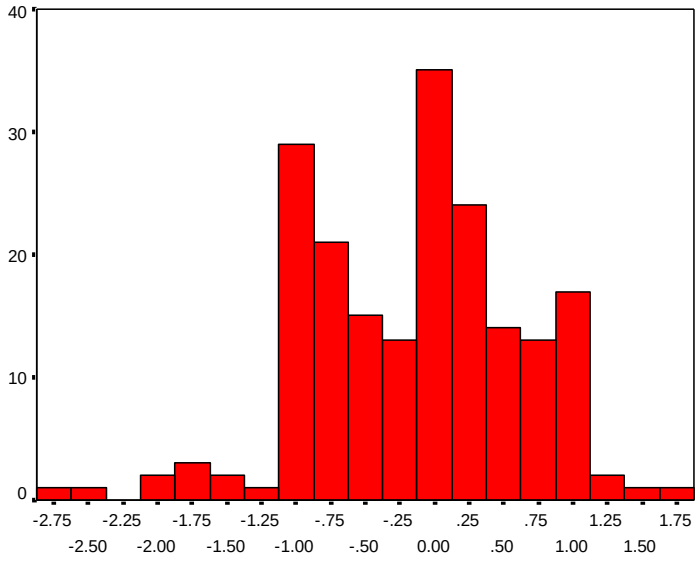

Figure 18. Trial 6 Between-task Differences on Rate-of-Progress Variable.

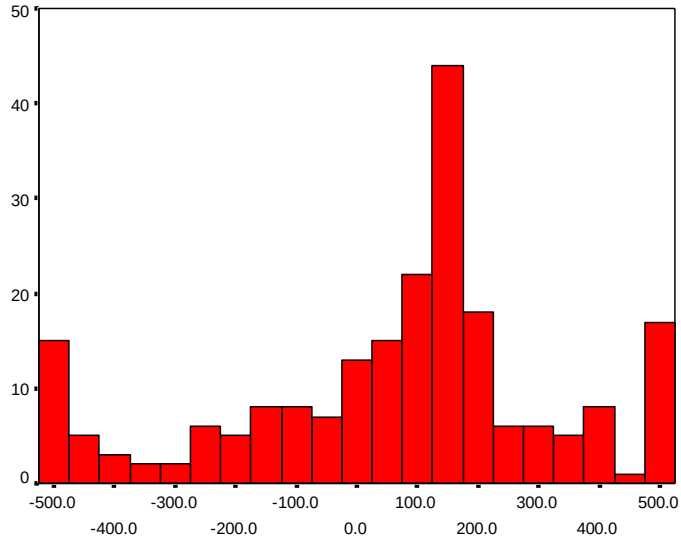

Figure 19. Trial 1 Between-task Differences on Time-Spent Variable.

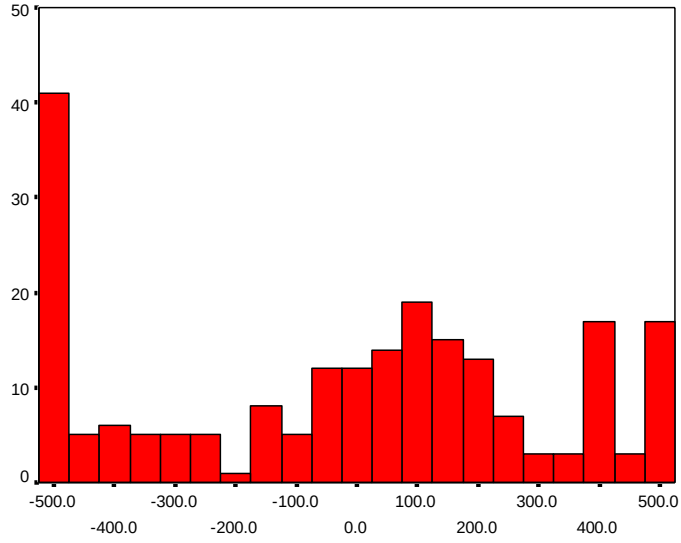

Figure 20. Trial 2 Between-task Differences on Time-Spent Variable.

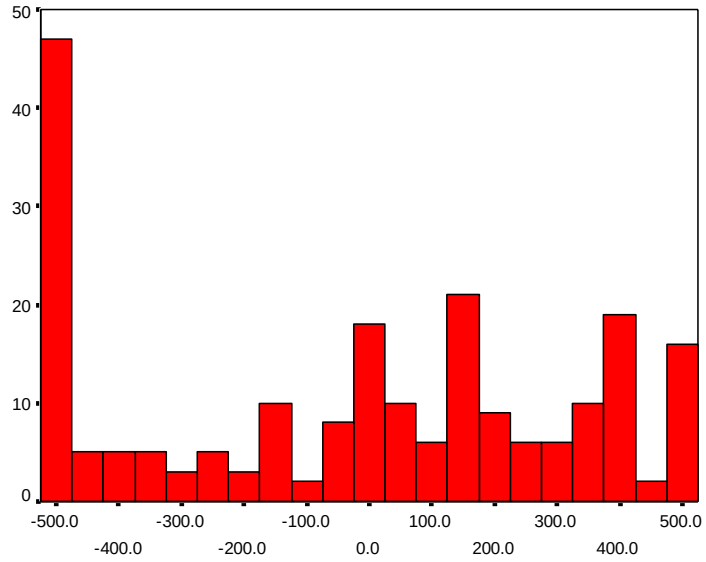

Figure 21. Trial 3 Between-task Differences on Time-Spent Variable.

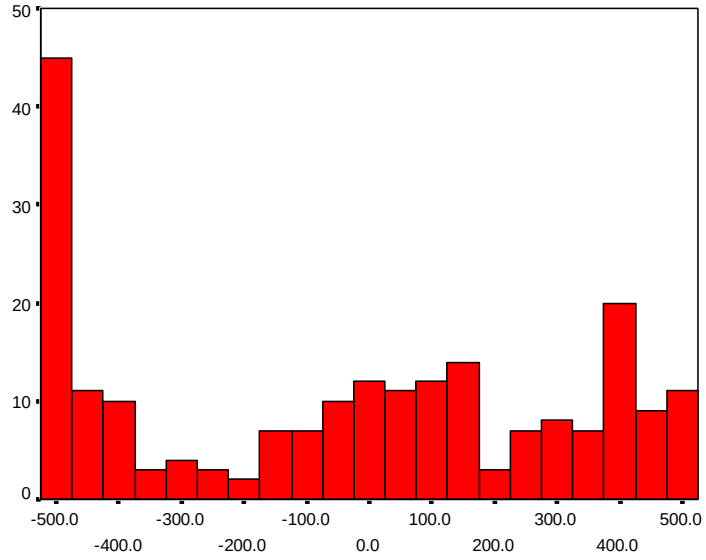

Figure 22. Trial 4 Between-task Differences on Time-Spent Variable.

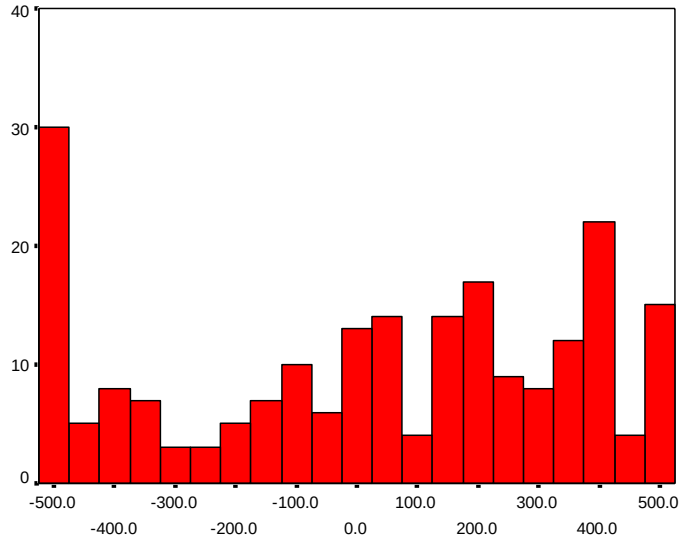

Figure 23. Trial 5 Between-task Differences on Time-Spent Variable.

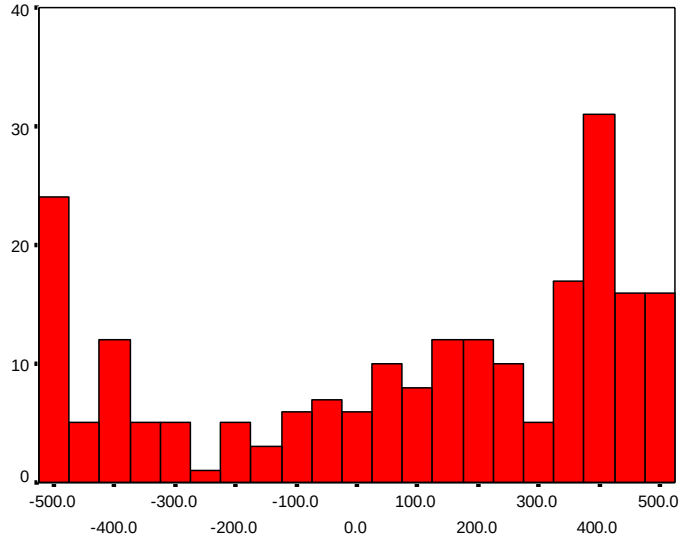

Figure 24. Trial 6 Between-task Differences on Time-Spent Variable.

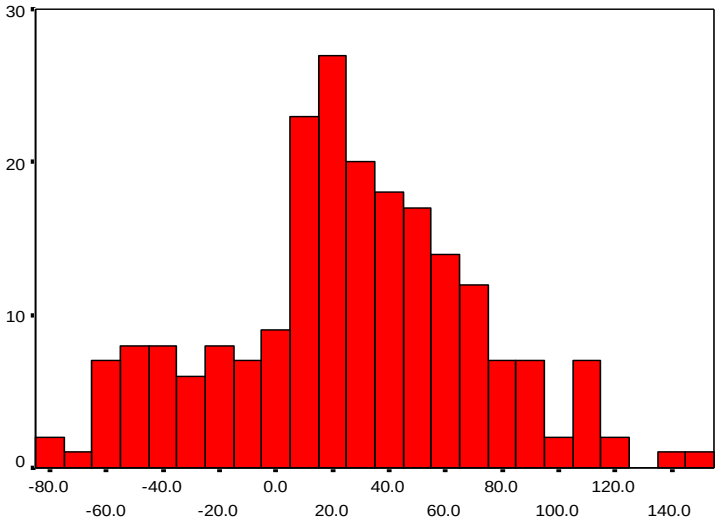

Figure 25. Trial 1 Between-task Differences on Mouse-clicks Variable.

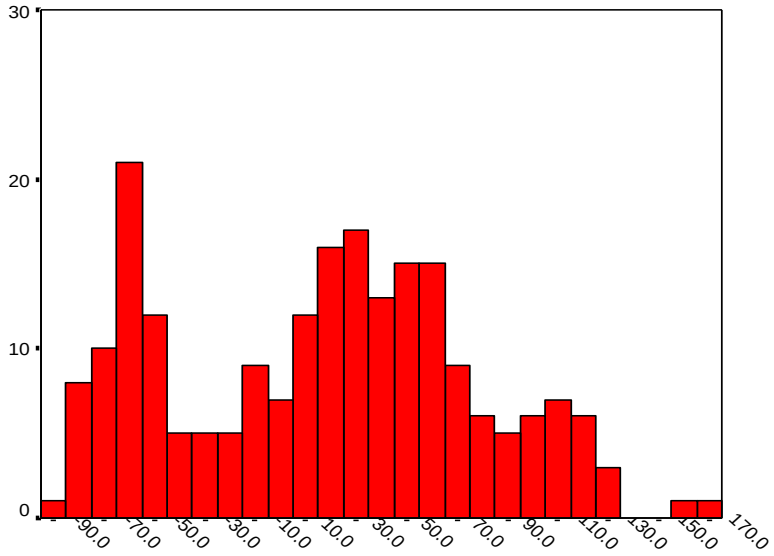

Figure 26. Trial 2 Between-task Differences on Mouse-clicks Variable.

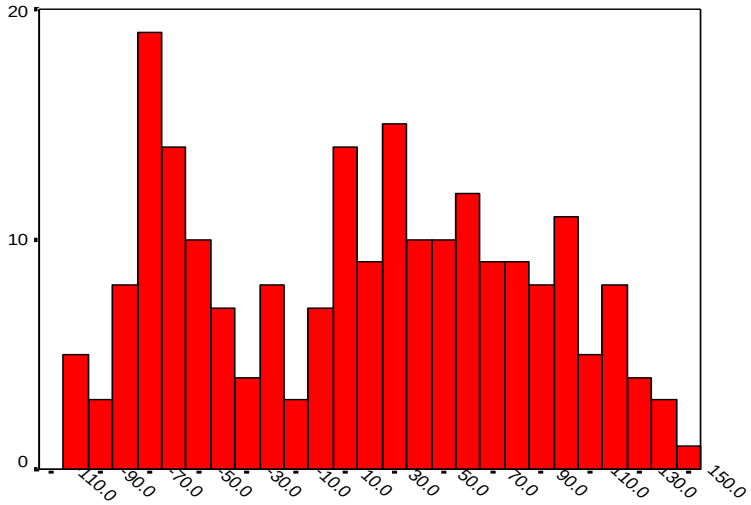

Figure 27. Trial 3 Between-task Differences on Mouse-clicks Variable.

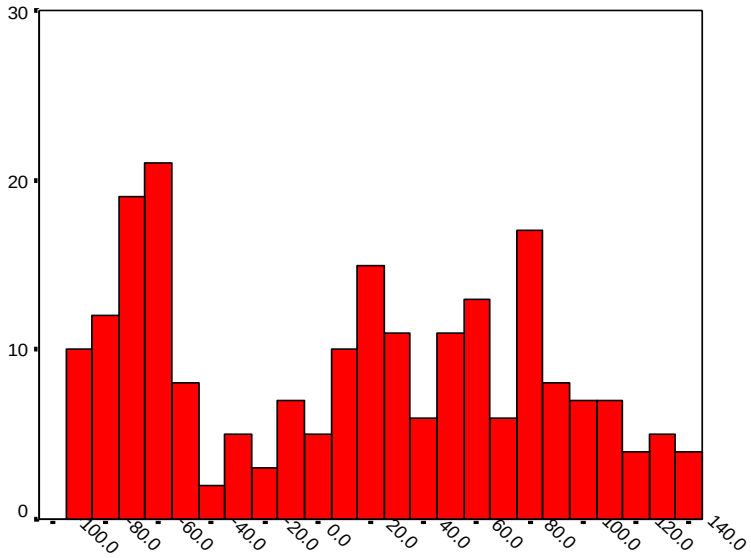

Figure 28. Trial 4 Between-task Differences on Mouse-clicks Variable.

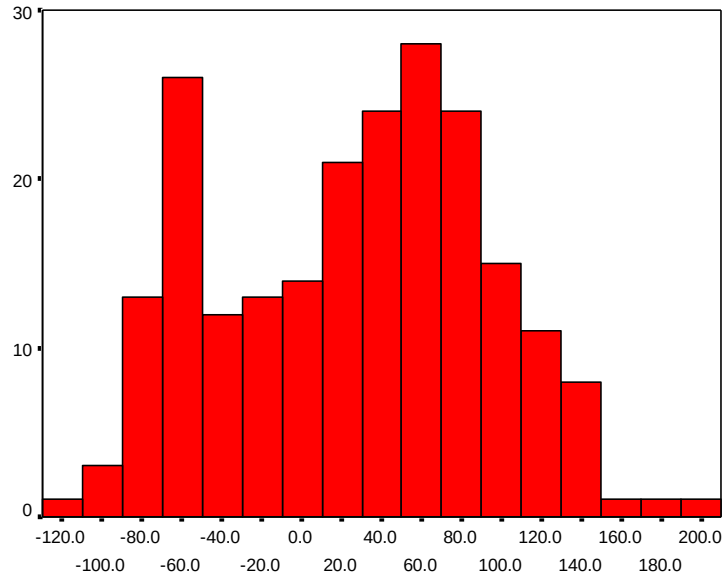

Figure 29. Trial 5 Between-task Differences on Mouse-clicks Variable.

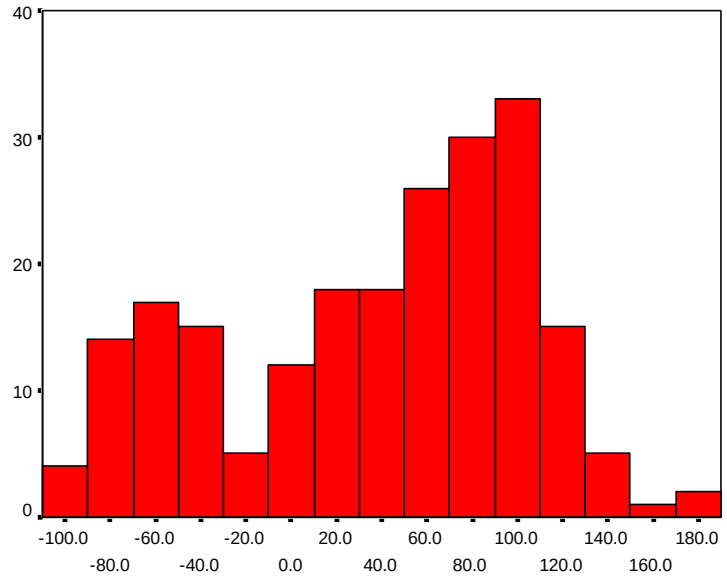

Figure 30. Trial 6 Between-task Differences on Mouse-clicks Variable.

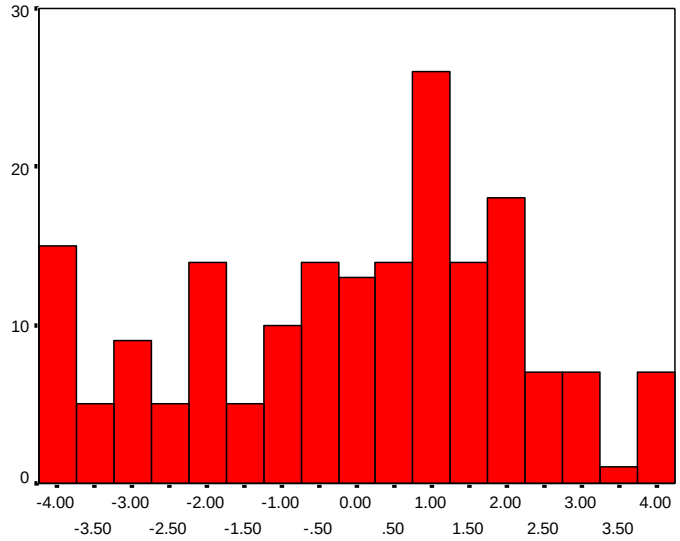

Figure 31. Trial 1 Between-task Differences on Self-reported Effort Variable.

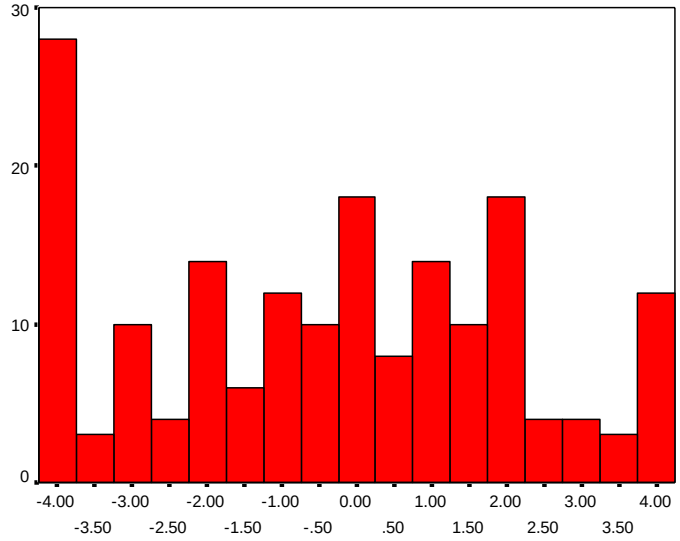

Figure 32. Trial 2 Between-task Differences on Self-reported Effort Variable.

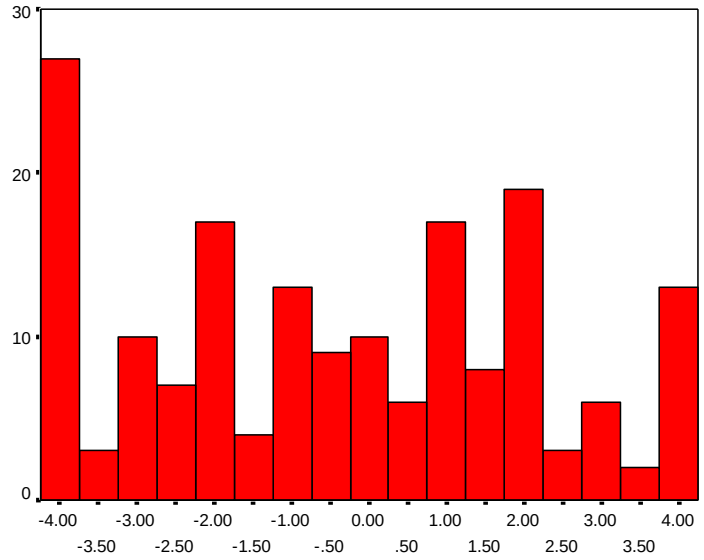

Figure 33. Trial 3 Between-task Differences on Self-reported Effort Variable.

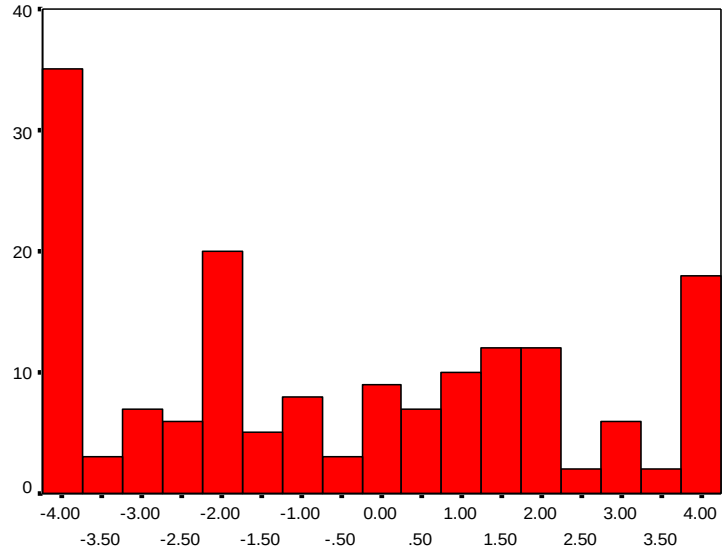

Figure 34. Trial 4 Between-task Differences on Self-reported Effort Variable.

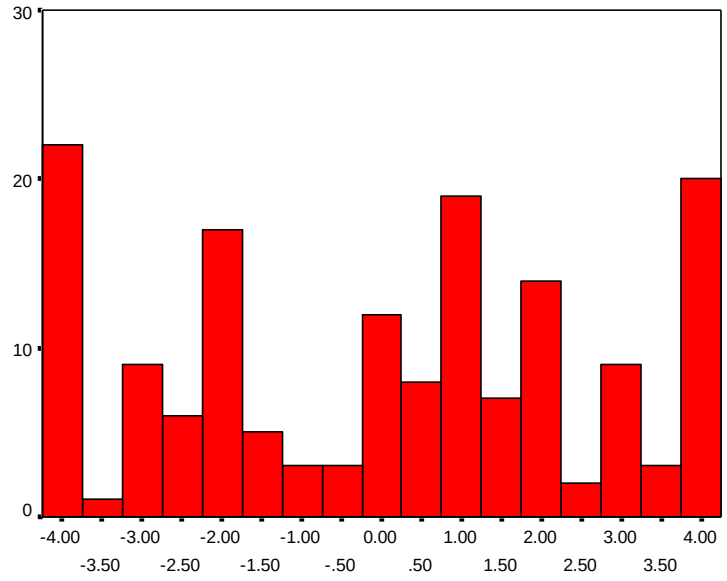

Figure 35. Trial 5 Between-task Differences on Self-reported Effort Variable.

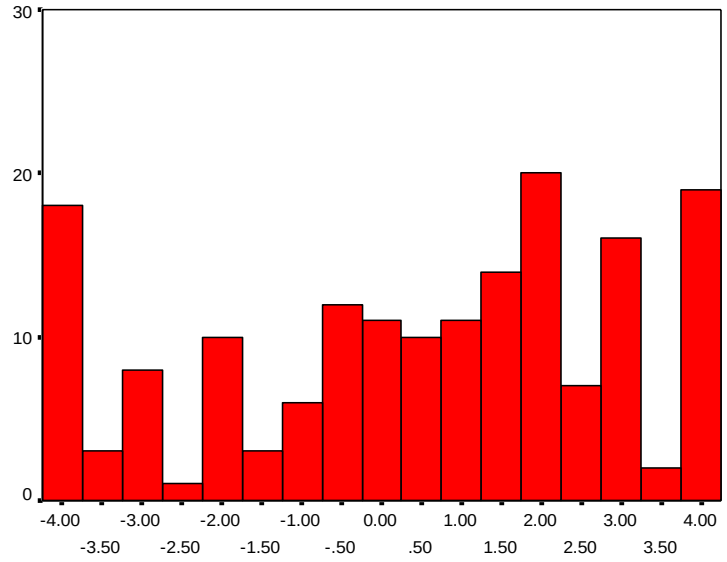

Figure 36. Trial 6 Between-task Differences on Self-reported Effort Variable.

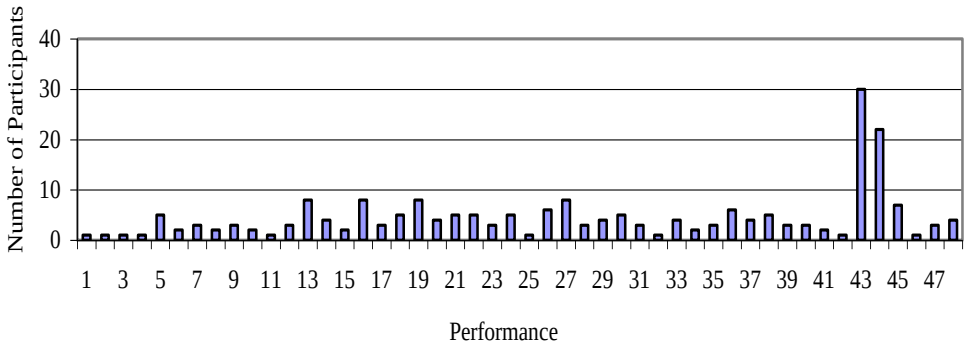

Figure 37. Cumulative Performance on Film-Scheduling Task (goal was 44).

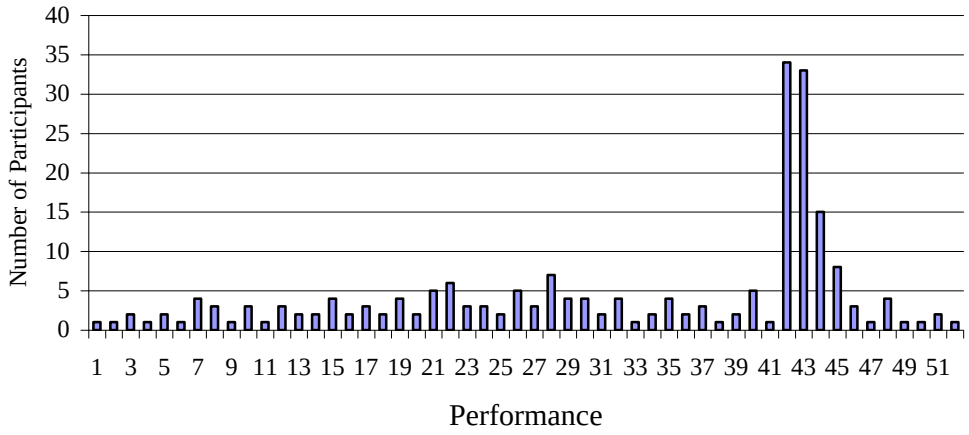

Figure 38. Cumulative Performance on Media-Request Task (goal was 44).

Appendix A

Self-reported Task Effort Measure

Please indicate the extent to which you agree or disagree with the following statements regarding your effort during the performance trial that just ended.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

1. I put a lot of effort into working on the film-scheduling task during this trial.
2. I didn't try very hard to do well at the film-scheduling task during this trial.
3. I tried very hard on the film-scheduling task during this trial.
4. It was important to me to do well at the film-scheduling task during this trial.
5. I didn't put much energy into working on the film-scheduling task during this trial.

Note. The same questions and answer format was used in regard to the media-request task, but references to the film-scheduling task were substituted with references to the media-request task.

Appendix B

Self-reported Prioritization Measure

Which task did you prioritize during the performance trial that just ended?

1. Film-scheduling task goal
2. Media-request task goal

Appendix C

Self-Efficacy Measure

Please answer the following questions concerning your long-term performance on the film-scheduling task.

1. By the end of the sixth and final trial, will you be able to correctly schedule:

At least 5 weeks of movies?	Yes	No	At least 30 weeks of movies	Yes	No
At least 10 weeks of movies?	Yes	No	At least 35 weeks of movies	Yes	No
At least 15 weeks of movies?	Yes	No	At least 40 weeks of movies	Yes	No
At least 20 weeks of movies?	Yes	No	At least 45 weeks of movies	Yes	No
At least 25 weeks of movies?	Yes	No	At least 50 weeks of movies	Yes	No

2. On a scale from 0 – 100 (completely unconfident to completely confident), how confident are you that you will correctly schedule the following number of movies?

At least 5 weeks of movies?	0-100	At least 30 weeks of movies	0-100
At least 10 weeks of movies?	0-100	At least 35 weeks of movies	0-100
At least 15 weeks of movies?	0-100	At least 40 weeks of movies	0-100
At least 20 weeks of movies?	0-100	At least 45 weeks of movies	0-100
At least 25 weeks of movies?	0-100	At least 50 weeks of movies	0-100

Note. Participants indicated their level of self-efficacy on the media-request task using the same set of questions, except ‘electronic requests’ replaced ‘weeks of movies.’

Appendix D

Goal Commitment Measure

Which goal are you more committed to achieving?

1. Film-scheduling task goal
2. Media-request task goal

Appendix E

Achievement Goals Measure

1	2	3	4	5	6	7
Strongly disagree			Neutral			Strongly agree

1. I want to learn as much as possible about the Media Manager task. (m)
2. It is important for me to understand how to perform the Media Manager task as thoroughly as possible. (m)
3. I worry about the possibility of performing poorly on the Media Manager task. (p-a)
4. My fear of performing poorly in this study is what motivates me. (p-a)
5. I would like to completely master the Media Manager task. (m)
6. I just want to avoid doing poorly in this study. (p-a)
7. In a study like this, I prefer tasks that arouse my curiosity, even if they are difficult to learn. (m)
8. I'm afraid that if I ask the experimenter a "dumb" question, they may not think I'm very smart. (p-a)
9. I prefer working on tasks that really challenge me so I can learn new things. (m)
10. I wish performance in this study was not scored. (p-a)

Note. (m) indicates Mastery item; (p-a) indicates Performance-avoid item.

Appendix F

Task Interest Measure

7	6	5	4	3	2	1
Very interesting						Very uninteresting

1. How interesting is the scheduling task to you?

7	6	5	4	3	2	1
Great enjoyment						Zero enjoyment

2. What amount of enjoyment do you associate with the scheduling task?

7	6	5	4	3	2	1
Highly likely						Highly unlikely

3. How likely would you be to perform the scheduling task again in the future?

Note. The same questions and answer format were used in regard to the media-request task, but references to the film-scheduling task were substituted with references to the media-request task.