MOTIVATIONAL AND SELF-REGULATORY RESPONSES TO INTERRUPTIONS

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ABSTRACT

As jobs become increasingly complex and multifaceted, it is an inevitable reality for work to become interrupted. The current study extended existing research by examining the motivational and self-regulatory responses to interruptions. More specifically, the current study explored how both situational characteristics of interruptions (interruption control and interruption importance) and individual differences (polychronicity and action-state orientation) influenced affect, expectancies, goals, and performance. Interruptions resulted in increasingly negative affect and decreases in expectancies, goals, and performance. Contrary to expectations, results indicated that those without control over the interruption showed less negative responses overall than those with control. This finding was considered to be due to greater attentional resources needed for those with control who chose to switch back and forth between the primary and interruptive tasks. Furthermore, both polychronicity and action-state orientation served as key moderators in explaining interruptions’ effect on subsequent responses. Also, an interruption was responded to more quickly when its inherent value was high, and especially for those who were polychronic. This research concludes that subsequent responses to interruptions are determined by both situational components and the individual differences of those responding to the interruption.
DEDICATION

This dissertation is dedicated to my family for all their encouragement, love, and support over the years. Also, I dedicate this achievement to Kaci, for inspiring me everyday and in whom I’ve learned so much.
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CHAPTER I

STATEMENT OF THE PURPOSE

As jobs become increasingly complex and multifaceted, interruptions have become pervasive in the modern workplace. These days, it isn’t unusual for workers to receive constant phone calls, emails, instant messages, as well as additional tasks needing immediate attention, which all serve to take an individual away from his or her present task. Given their prevalence, it is important to understand the impact of interruptions, as well as factors that influence employees’ reactions to and handling of interruptions. Research indicates that a common response to interruptions is to simply discontinue and abandon the original interrupted activity. For example, O’Conaill and Frohlich (1995) found that interruptions resulted in the current activity not being resumed over 40% of the time. This is a troubling finding, as important activities may be neglected at the expense of short-term demands. Unfortunately, much remains to be learned regarding how interruptions influence the flow of work. Although the existing literature on interruptions has provided valuable insights regarding the cognitive components involved in processing interruptions, little work exists on the motivational and self-regulatory responses to interruptions. The current study seeks to apply self-regulatory principles to understand responses to interruptions, as well as the important contextual and dispositional characteristics that influence those responses.
Specifically, the current study examines responses to interruptions by addressing three main foci. First, as described above, this study seeks to understand the affective and motivational processes that may explain varying responses to interruptions. There has been ample evidence suggesting that interruptions affect performance negatively (e.g., Adamczyk & Bailey, 2004; Bailey & Konstan, 2006; Cellier & Eyrolle, 1992; Gillie & Broadbent, 1989; Speier, Vessey, & Valacich, 2003), however little is known about the motivational processes (specifically affect, expectancy, and goal revision) involved. It is important to understand these processes because they serve as valuable mechanisms of motivated behavior, and may be acting as more proximal precursors to later performance decrements due to interruptions. These outcomes are thus important to study as they provide possible explanations for why individuals may or may not complete ongoing tasks upon the arrival of interruptions. Therefore, it is argued here that affective reactions, followed by goal changes and new expectations of performance are the self-regulatory actions affected by the arrival of interruptions. Thus, it is important to explore the more proximal mechanisms such as the motivational and self-regulatory responses inherently tied to performance. Unfortunately, there is currently a lack of understanding of how these responses relate to tasks being interrupted. Thus, the current study seeks to address this important, but neglected, issue.

There has been some theoretical basis for interest in exploring these responses. Both Mandler (1990) and Carver and Scheier (1990, 1998) point to the role of negative affect emanating from the arrival of an interruption. Empirical examinations of possible affective reactions within the interruptions literature, has however, not been very ubiquitous. Thus, the current study explores responses to interruptions such as affect,
along with motivational responses including expectancies, and goal revision. These responses are also suggested to ultimately tie to one’s primary task performance. For instance, it may be that after an interruption occurs negative affect may increase, resulting in decreased expectancies of successfully finishing the primary task, and hence, unsuccessful performance as a result. These responses may be seen as stable over time resulting in the downward revision of goals, or even worse, goal abandonment. That is, one may conclude that the interrupted task can no longer be successfully completed in the time that remains. Since these possible responses to interruptions are ultimately tied to performance on the interrupted task, it is imperative to understand these self-regulatory processes to better explain the powerful consequences of interruptions. Notwithstanding, these current responses to interruptions also depend on the way in which the interruption functions within one’s context. In other words, the situational characteristics of the interruption may likely lead to varying responses, perhaps even mitigating negative reactions that are most likely to occur.

A second focus of the current study is to better understand how situational factors impact the management of interruptions, particularly with regard to the processes described above. The current study explores two such situational contributions: the importance of the interruption and control over the interruption. Interruption importance is practically relevant as there are times when the interruption may take precedence over a current task or may be of low importance and an inevitable nuisance of the environment, which can be more distracting to current demands. Possible affective and motivational responses to interruptions are likely to vary based on how important the new demand is compared to one’s primary task. For example, when a manager needs an
important task to be completed then effective handling of this interruption serves a purpose and is necessary at the expense of current task demands. Negative reactions to the interruption in this sense are likely to be lessened as one’s shift to the new task is a necessary priority. In other instances, new tasks are not important at the present time and one can afford to postpone handling their demands. An example of this situation may be a coworker who stops by to discuss last night’s television shows. Here, the arrival of the coworker, paired with the low importance of the information, will likely increase negative reactions. This may result in subsequent motivational responses that can affect existing tasks that have already been started. Thus, it is a key focus of the current study to understand how varying the importance of the interruption leads to differences in affective and motivational responses. Understanding how the importance of an interruption affects these self-regulatory and motivational responses would represent a significant contribution on both theoretical and conceptual grounds.

Another important contextual reality of interruptions is their level of controllability. Controllability is a factor that can influence the effects of interruptions on motivation and performance. For instance, it was found that when individuals were able to control when they worked on an interruption, their performance was higher than those who were not given this control (McFarlane, 1999). Controllability can be conceptualized in two related but distinct ways. These pertain to the interruption’s timing and its response demands.

Timing relates to when the interruption comes within execution of a primary task. Jett and George (2003) describe within the time management literature the timing of interruptions as important so that they can become more predictable and controllable. The
interruptions literature has explored timing of interruptions and found that interruptions that come between task boundaries have less disruptive effects on performance than those coming within task boundaries (Adamczyk & Bailey, 2004). In other words, an interruption that occurs during important times while executing a particular (sub)task is more harmful than one that occurs after a particular (sub)task has been finished. This is especially relevant when an individual does not have the option to control when the interruption occurs in regard to where he or she is in relation to the primary task.

Other research has explored the level of control over an interruption within different methods of coordination (response demands). McFarlane (1999) identified various ways a user can respond to being interrupted. Of importance to the current study, two possible responses include an immediate and negotiated response. An immediate response results when the user is forced to stop whatever current task is being performed to work on the interruption. Here, no control is afforded over processing the interruption. A typical example of an immediate type of interruption, where the user has very little or no control, would be a coworker stopping by unannounced. Another example would be a task that needs immediate assistance without regard to what was currently being performed. Also, individuals typically have less control over a phone call than an email notification, both of which are very typical work interruptions. Conversely, a negotiated response results when the user maintains control over when the interruption gets processed, giving him or her time to still work on the primary task. An email is a typical example whereby the individual can execute control over when they handle its interruptive qualities. Recent work has explored strategies for dealing with these specific, controllable interruptions. It was found that individuals optimize their efficiency in
dealing with email interruptions in reference to their work task goals. Some individuals chose to respond immediately, in light of their current goals, whereas others chose to remain focused on their current work, postponing or even ignoring the interruption (Russell, Purvis, & Banks, 2007). These results point to the fact that controllable interruptions are still handled differently across individuals and may be explained by personality differences. Moreover, the available research on interruption control is scant. Thus, this provides validation for including control over the interruption as an important variable to continue to explore to better understand how it relates to effective performance.

Having control over when to process an interruption can make a difference of how the primary task gets handled and may likely influence different motivational responses. For instance, by having discretion over when to handle a secondary task, one may be able to maintain positive affect and high expectancies on his or her current task. This is because their initial strategies toward attaining their goals are not thwarted by the demands of the interruption. This may also lead to the maintenance of goals and performance. Moreover, in this situation, having control over the interruption allows the individual to make time for processing current demands or even create mental notes of where they left off on their primary task. Research has suggested that tasks in which individuals were given time to rehearse in order to remember where they left off upon resumption of the interrupted task resulted in greater performance and better reactions to the interruption than those who were not given time to rehearse (Czerwinski, Horvitz, & Wilhite, 2004; Miller, 2001). Conversely, when control over the interruption is compromised by the situation, this may lead to more negative reactions including
increased negative affect, decreased expectancies, and downward goal revision, ultimately resulting in decreases in primary task performance or eventual task abandonment. Thus, this practical reality of interruptions is important to empirically examine as it may help explain affective and motivational factors inherent within this process.

The current study also expects control over the interruption to interact with interruption importance. For example, when the situation presents no control over handling an unimportant interruption, an individual may experience greater negative affective and motivational responses. Over time, this may ultimately lead to goal and performance declines as one may foster a sense of helplessness over the situation (Wortman & Brehm, 1975). It is also interesting to explore potential differences in response times to interruptions varying in importance but that allow control over their processing. Any differences will demonstrate that the importance of the interruption influences the timing and execution of the interruption within one's work. If no differences existed, it may be that individuals simply respond to whatever is new within their environment, no matter how important it may be. This response is potentially harmful as short-term distractions of minimal importance may pull resources away from more important tasks. It is expected that important interruptions would be handled faster than unimportant interruptions as the inherent value of switching to this demand is higher in the former as opposed to the latter. These situational influences are a major focus of the current study but do not operate without the inherent interactions with individual differences. As was mentioned, individual differences in responding to interruptions are
likely to play a role in the affective and motivational responses that follow, and so, the current study seeks to explore these potential effects as well.

The third focus of this dissertation is to examine the role of individual differences. Personality effects are important to explore as they may help to explain why some individuals can maintain high goals and performance despite short-term setbacks due to interruptions. In other words, faced with a similar situation in which an interruption is noticed, individuals may handle it differently based on the way in which they tend to handle concurrent demands in general. Hence, differences in self-regulatory responses are also likely to vary based on these personality factors. Moreover, individual differences may interact with situational components affecting overall responses to interruptions.

Two important variables that may help explain reactions to interruptions are polychronicity and action-state orientation. Polychronicity relates to differences in preferences for handling multiple things at the same time, whereas action-state orientation relates to differences in self-regulatory function pertaining to distractibility of non-goal related information, initiating action on tasks, and persistence on task completion. For those who prefer to handle multiple activities simultaneously and can stay focused despite interruptions, exhibited by those who are polychronic and action-oriented, may exhibit less negative responses, whereas those who prefer to handle one task at a time and who do not regulate actions on tasks well, exhibited by those who are monochronic and state-oriented, may show more negative responses.

These individual differences may also moderate both interruption importance and the control warranted by the interruption on motivation. For instance, it may be that individuals’ preferences for handling multiple demands may help explain differences for
those with control over the interruption. For those preferring to work on one task at a
time, they may respond to the interruption only when they feel they are finished with
their current task. More negative reactions will likely ensue when control is disallowed
for these individuals. Conversely, those who prefer working on multiple activities may
jump back and forth between both demands and may show more positive reactions from
this situation. These personality differences may also explain the influence of the
importance of the interruption on motivational responses. For instance, responding to
interruptions only because they are new to the current situation, no matter how important
they are might be a possible result. It is argued here that a more likely result will show
preferences for handling more important interruptions faster than less important ones,
especially for those who prefer to work simultaneously on multiple demands. Moreover,
those that are unable to temporarily disregard the interruption may suffer more negative
reactions than those that can focus their efforts on their primary responsibilities. Thus, it
is important to explore the impact of these personality factors to understand how their
direct and moderating effects on the contextual factors described above influence self-
regulatory responses to these competing demands on one’s time.

In sum, the current study takes a self-regulatory perspective to interruptions
highlighting possible motivational reactions. Potential motivational responses to
interruptions may come by way of affective reactions, expectancies of success, and goal
revision. These outcomes will ultimately help explain the interruptions-performance link
as well as fill in missing pieces within the interruptions literature. These reactions are
expected to be influenced by both situational and individual influences. Ultimately,
results from the current study will add a better explanation of the inherent responses that
may be linked to the disengagement of a primary task as a result of interruptions. Thus, the current study helps explain and contribute to the practical nature of interruptions’ effects. Taking a self-regulatory and motivational perspective will also add an empirical and theoretical contribution by exploring effects not explained by current research, which has focused more on the cognitive components of interruptions. Figure 1.1 below shows the heuristic model of the variables in the aforementioned discussion and on which the current study proposes their relations.
Figure 1.1. Heuristic model. Self-regulatory responses to interruptions are dependent upon both situational characteristics of the interruption, as well as individual difference factors.
CHAPTER II

LITERATURE REVIEW

In a targeted review outlining the main questions of the current study, I will first explore the literature on interruptions. This will serve to establish the current study within a broader theoretical and empirical foundation. Discussion will focus on interruptions’ impact in the workplace including their effects on performance and the existing cognitive descriptions in past research. This discussion will be followed by a review of the situational components of interruptions, including their importance and controllability. Next, two personality constructs, polychronicity and action-state orientation, will be reviewed as to how they relate to differences in self-regulatory function. Following, a review of self-regulatory theory will be presented to extend the function of interruptions within a motivational paradigm. These discussions will culminate into a review of the main hypotheses, which highlight both motivational and self-regulatory responses to interruptions as a function of both the situational characteristics and individual differences.

Interruptions

In order to understand self-regulatory and motivational responses to interruptions it is necessary to first describe why interruptions are important to study. It is also important to establish what we do know about interruptions by looking at what the
research tells us so far. This description will help to shed light on the nature and prevalence of interruptions within the workplace and will make the aims of the current study a much-needed addition to the current literature, which has predominantly focused on the cognitive components to interruptions while disregarding the self-regulatory and motivational responses inherently tied to interruptions.

*Prevalence and Impact in the Workplace*

Work today has become inundated with multiple tasks that require full attention in order to be completed effectively and efficiently. With various tasks competing for one’s attention it becomes an uphill climb to be able to spread attentional resources to these concurrent demands. These tasks represent interruptions into the flow of work and have become a part of the job requirements. These interruptions also come by way of colleagues stopping by, the boss passing off urgent messages that need to be handled right away, the arrival of new email, and phone calls. This constant diversion of one’s attention, becoming a steadfast reality of the workplace, wastes both time and money. It has been shown that interruptions consume on average 2.1 hours a day or 28% of the workday (Spira, 2005). For knowledge workers, whose time equals more money, this translates into a cost of $588 billion a year lost for the U.S. economy due to these incoming interruptions (Spira, 2005). Thus, interruptions are an important element in a practical sense. Below I examine research evidence to further advise the applicability of their impact.

Interruptions can be defined as, “externally generated, temporary cessation[s] in the current flow of behavior, typically meant for the subject to execute activities that belong to a secondary set of actions” (van den Berg, Roe, Zijlstra, & Krediet, 1996). This
definition implies that a separate secondary set of actions is required in order to process the interruption, separate from any primary activity. The workplace is a prime environment in fostering interruptions for workers to deal with day-to-day. Interruptions are so pervasive that individuals may see them as part of the job. To adequately describe their prevalence, Jett and George (2003) identified four main types of interruptions that are dealt with in organizational settings: intrusions, breaks, distractions, and discrepancies. The current study focuses on intrusions and discrepancies as interruptions. An intrusion is “an unexpected encounter initiated by another person (or task) that interrupts the flow and continuity of an individual’s work and brings that work to a temporary halt” (Jett & George, 2003). Discrepancies occur when an individual perceives a difference between expectations and the reality of the external environment (Jett & George, 2003). For instance, hearing of a related article to one’s own current research in progress will create a discrepancy that the current work is original. Intrusions may also lead to discrepancies. For example, the intrusion of a new task prompts an inconsistency to the individual, creating a discrepancy, in that their expectation of working on one task is immediately changed to now working on two tasks. Important negative consequences emanating from these intrusions and discrepancies include weaker performance due to a shift in one’s resources to the new demand, and time pressures, as well as automatic processing of task-related information leading to errors (Cellier & Eyrolle, 1992). It is argued in the current study that this can be exacerbated when the individual lacks particular traits that help to mitigate the burden of concurrent tasks.

Interruptions have also been shown to be a large part of the work of managers. From emails to solving problems that arise managers’ constant struggle to get their own
work accomplished represents an uphill climb. In a hallmark study on managerial work, Mintzberg (1973) concluded that, “The manager, particularly at senior levels, is overburdened with work...He is driven to brevity, fragmentation, and superficiality in his tasks, yet he cannot easily delegate them because of the nature of his information.” Furthermore, unexpected meetings throughout the day and frequent conversations with coworkers interrupt managers’ work. Grove (1983) even went further to claim that interruptions represented by unexpected visits are, “the plague of managerial work.” Although interruptions seem to be a persistent intrusion among the work of managers they also result in substantial effects for workers at all levels of the organization.

Upon looking at the occurrence of interruptions and how they are dealt with in the workplace, one study found that interruptions resulted in the current activity being resumed only 41% of the time (O’Conaill & Frohlich, 1995). In other words, even after the interruption was processed, slightly less than half of the time was the initial task actually finished. Thus, if goals had been set on the interrupted tasks then over a third of the time individuals choose to completely disengage from their goal. Moreover, both goal and task disengagement may stem from other reactions more proximal to the impact of the interruption. This may have a direct end result on the interruptee’s performance. Other research has shown that during the course of the day, several other activities intervene between an interruption and the current task, such that only part of the time the interrupted task is immediately resumed (Mark, Gonzalez, & Harris, 2005). These two lines of research provide a stepping-stone for the current study, such that certain responses to interruptions may help to explain why the disengagement of an interrupted task occurs. Possible explanations may be an ever-increasing negative affective reaction
to interruptions, decreased expectancies of successfully applying goal-directed behaviors on primary tasks, or revision of personal goals. These responses to interruptions are explored in the current study and serve to broaden the explanations offered so far in the extant literature and may help establish reasons why individuals choose to forego their current demands in light of interruptions.

With an ever-increasing reliance on technology in the workplace, it is important to consider what effect this can have on individual reactions and the costs to individuals of such technological changes. One important technology that has changed the way individuals communicate is the use of email. By its “helpful” nature, pop-ups on screen and auditory reminders of new email tell the individual to check their inbox. For managers, this may be an overwhelming task to keep up with the arrival of new emails. One study addressing the cost of email interruptions followed employees including clerks, programmers, and managers over one month to see how they process and recover from email interruptions. It was found that it took on average just one minute and forty-four seconds to react to a new email notification, where 70% were reacted to within six seconds and 85% were reacted to within two minutes of arriving (Jackson, Dawson, & Wilson, 2001). As most set their software to check for new email every five minutes, with a recovery time of sixty-four seconds after processing the new email, the overall time cost of email, as noted by this study, is monumental. This implication exemplifies the reality of interruptions.

Strategies for dealing with this technology differ across individuals, as the same situation isn’t handled in the same fashion. For instance, when overloaded with a primary task, some users ignored incoming emails while others preferred to process it
immediately. These individual differences in personality involving regulation and motivational style are important considerations upon studying the effects of interruptions (Russell et al., 2007). The current study takes this view by looking at polychronicity and action-state orientation in dealing with the demands of interruptions.

Another study looked at the effects of interruptions with instant messages during different stages of task completion. It was found that irrelevant messages that don’t pertain to the ongoing task are more disruptive than those that are relevant. Further, it took more time to reorient back to the interrupted task for irrelevant messages, which also took longer to process (Cutrell, Czerwinski, & Horvitz, 2000). This study showed that the relevancy of a new message greatly impacts performance on current tasks. By extension, it may be argued that the importance of the instant messages interrupting ongoing work may also play a part in the allocation of needed attentional resources. In other words, besides their inherent relevancy, the importance of the message might also influence potential performance on primary tasks. The current study seeks to explore further the effect of interruption importance and their disruptive qualities by way of performance effects, as well as the inherent self-regulatory and motivational responses that immediately follow these interruptions.

As pointed to above, it is apparent that the average worker will have to in some fashion deal with interruptions throughout their time at work. Through the use of technology and personal communication efforts tasks become interrupted in a variety of ways. The pervasive nature of interruptions can have a profound impact on one’s use of time, and more importantly, the psychological reactions and responses that are inevitably linked to them. In order to better understand the aims of the current study in looking at
self-regulatory and motivational responses to interruptions, it is important to describe cognitive explanations, as this is what the existing research has examined so far.

Cognitive Explanations of Interruptions

Interruptions are a major disruption to goal-directed behaviors in the modern workplace. Given their nature, interruptions can lead to many first-order effects. One primary effect is their impact on performance.

Dating back to early research and what later became known as the “Zeigarnik effect,” in which memory for tasks that are interrupted is greater than memory for tasks that are not interrupted (Zeigarnik, 1927), the research on interruptions’ effects has grown. This early research produced an interest in interruptions and the Zeigarnik effect was later shown to hold up under conditions in which expectancies of success on a primary task leads to resumption of one’s efforts, whereas expectancies of failure do not (Prentice, 1944). Now in the present cognitive era, the disruptive nature of interruptions has been shown to rely heavily on the way it taxes much needed cognitive resources. For instance, Gillie and Broadbent (1989) found that the duration of the interruption wasn’t as taxing to performance as was its similarity to the primary task or complexity of the interruption itself. The similarity results illustrate the importance of cognitive interference, whereas the complexity results point to the role of cognitive overload. Behavioral strategies change as well following interruptions varying in complexity. When primary task complexity was held constant, whereas interruption complexity varied, it was found that individuals executed a simultaneity strategy during simple interruptions but a sequential strategy during complex ones (Kapitsa & Blinnikova, 2003). Moreover, these authors argued that the internal readiness to continue interrupted
activities suffered only when the interruption is complex. This presents itself in more
time being needed to re-orient back to the primary task.

These factors have also been explored relative to the timing of the interruption. In
an experiment manipulating the time at which an interruption occurs it was found that
when presented with an interruption during execution of a primary task, individuals
required 3% to 27% more time to complete the task, committed twice as many errors, and
experienced twice the anxiety compared to when the interruption was presented between
tasks (Bailey & Konstan, 2006). Thus, the complexity of interruptions is more
detrimental to performance when one has devoted cognitive resources to an existing task
as well as when the interruption is not controllable in respect to its timing.

It has also been found that the impact of interruptions also depends not only on
the complexity of the interruption but also on the complexity of the interrupted task. One
study looked at the effects of interruptions on a computerized clerical task, finding that
interruptions increased editing latencies on cognitively complex tasks, but not simple
ones (Burmistrov & Leonova, 1996). A similar study also found performance decrements
during cognitively complex tasks as opposed to simple tasks, where text-editing time was
the main operationalization of performance (Burmistrov & Leonova, 2003). Here, the
time to re-orient back to the primary task was found to be responsible for declines in
performance (also see Speier, Valacich, & Vessey, 1997, 1999). Another study that
required individuals to process interruptions immediately (exhibiting no control over their
processing) found similar results presented above; interruptions inhibited performance on
complex tasks but actually facilitated performance on simple tasks (Speier, Vessey, &
Valacich, 2003). For simple tasks attention is lessened, perhaps due to boredom (Fisher,
1998), and so interruptions during these tasks represent a boost in attention in order to process the new demands. When individuals re-orient themselves back to the original task, their increased attention leads to increased performance.

To further support the cognitive implications of interruptions, two studies looked at performance in terms of processing time of a primary task and error rates after interruptions have occurred. The first study found a significant effect of temporal strains induced by interruptions on performance and an increase in mean error rate (Eyrolle & Cellier, 2000). In this study, both field (customer calls as interruptions) and laboratory results supported the role of interruptions impacting processing time on the primary task. Behavioral strategies were aimed at eliminating the interruption by first postponing the primary task until later and so its completion suffered as a result. Another study found opposite findings, whereby interruptions led to a decrease in processing time of the primary task while maintaining the same level of accuracy, but with increased effort allocation (Zijlstra, Roe, Leonora, & Krediet, 1999). However, in this study individuals were free to invest as much time as needed to process the interruption. Also, individuals showed affective consequences of this increased demand on their resources, exhibiting more negative affect and decreased well-being. Thus, the decrease in processing time of the primary task came at a cost to the individual. It is interesting to note that individuals who had less experience, and arguably less self-efficacy with the primary and interruptive tasks, showed a significant effect in interruption strategy, or more specifically, handled the interruption in an immediate fashion rather than delaying its execution (also see Xia & Sudharshan, 2002 for a description of self-efficacy effects on interruptions). For those with more experience and self-efficacy, there was no difference in behavioral strategies.
used to handle the interruption. The psychological importance of an interruption may be lessened when one has experience dealing with similar disruptions in the past.

Interpreting self-efficacy as one type of individual difference variable, it can be expected that those who are used to handling multiple activities at the same time or can manage disruptive thoughts about other demands to also show no differences in their reactions to interruptions whether control is warranted or not.

Finally, it was also found that when time limits exist in which individuals need to process an interruption within a limited time parameter, interruptions suffer at the expense of more time being devoted to the primary task (Law, Logie, & Pearson, 2006). More specifically, individuals showed a significant preference for the primary task even though they were told to process the interruption. Thus, under cognitive load, individuals had to make a trade-off due to the interference between the tasks (Law et al., 2006). Since this finding in which individuals ignore interruptions hasn’t been typical in the extant literature, it is important to continue to explore how the importance of the interruption affects time devoted to both primary and secondary task demands, which the current study seeks to investigate.

The research presented above provides a theoretical and empirical foundation of what is currently known about interruptions however has focused almost exclusively on the cognitive ramifications of interruptions’ effects. The major implications culminating from this research has found that cognitive and attentional resources can become depleted having primary effects on task performance. Also, the complexity of both the interruption and interrupted task influence the level of disruption that occurs. This overload is also exacerbated when interruptions come at inopportune times during task execution. The
cognitive processes involved with interruptions have explained much on how interruptions influence performance; however, these effects may be explained by self-regulatory and motivational responses being more immediate consequences from the arrival of interruptions. Thus, it is imperative to understand other characteristics of interruptions that may help explain their effects. Below, one aspect may be the differences in their functionality.

**Situational Characteristics of Interruptions**

To advance our understanding of other factors that are potentially important, extending beyond pure cognitive characteristics, it is necessary to examine the way in which interruptions function within the environment. Next, I will examine the situational components of interruptions by looking at their relative importance as well as their controllability. These characteristics provide a major component of the current study and provide an initial influence on which self-regulatory and motivational responses follow. In other words, self-regulatory and motivational responses to interruptions may depend on the level of importance and controllability of the interruption.

*Interruption Importance*

In any work context an individual must actively choose to work on any one activity that is perceived as most important at the time. This is a fairly easy mission if there is enough available time to pursue prioritized tasks in an exhaustive fashion, however becomes harder when time is of the essence. There are multiple ways in which task importance can focus an individual’s attention to those specific tasks (described herein as a primary task and secondary task comprising an interruption). For example, choosing to work on a task that will be needed to be completed for an upcoming board
meeting will likely be perceived as more important than a task that does not need to be completed until the following week. Here, the importance comes from a temporal dimension of when the tasks need to be finished. Another aspect of task importance can also come from the subsequent consequences associated with different tasks. For instance, working on a task that will potentially lead to more money for the individual if done properly (e.g., securing potential clients) than another task that won’t afford more incentives as a result will likely lead to allocating importance to the former task than to the latter. These instances of relative task importance are some ways by which prioritizing activities can change over time. These aspects can also be applied to interruptions, which act as new activities that require shared attention and that create changes in an individual’s time frame for task completion (see Blount & Janicik, 2001).

An often-cited example used within the literature is an executive’s assistant deciding when to interrupt upon receiving new tasks that require attention from the executive. Here the assistant is acting for the executive in making the priority decisions. The importance of the new message needing attention is deciding upon by the assistant knowing what messages are of more importance than others. Subsequently, the assistant may interrupt only when the message is important, saving less important interruptions until a later time. This situation can also be applied to the arrival of new email for a worker in which being able to actively control whether immediate action is taken depends upon the relevancy or importance of the information in the email message (Miyata & Norman, 1986). Prioritizing effective and efficient handling of interruptions, then, may be decided upon by their relative importance. It is expected that more important interruptions, judged by their consequences or incentives associated with them, will be
handled faster than interruptions of lesser importance. These differences are also expected to lead to differences in subsequent affective and motivational responses.

For the executive described in the example above it seems an obvious reality that hiring an assistant that interrupts upon receiving any new message would likely be an irritation. Primary responsibilities currently being performed by the executive would suffer by the constant interruptions of the assistant. From this situation one would expect the executive to react with increased negative affect (stress, annoyance, etc.), which in turn may spark decreased expectancies, or eventual goal revision and performance declines on current tasks especially when his or her time is being interrupted by unimportant information. Conversely, one might expect that being pulled away for important tasks needing assistance from the executive would not foster negative reactions, as their support is relevant for the organization as well as for the executive. Correct handling of this type of interruption may also allow maintenance of current expectancies for the interrupted task allowing current goal pursuits to be maintained. This scenario can also be applied to individuals constantly being interrupted during work by colleagues with unimportant information not relevant to current task demands, or conversely, situations in which new tasks offer potential positive rewards and that serve important means for their fulfillment.

The interruptions literature has been relatively silent in examining the impact of this function of interruptions. The current study is employing the practical reality of concurrent demands by manipulating the importance of the interruption (new task) to look at how this affects subsequent self-regulatory and motivational responses, as well as primary task performance. New insights can thus be gained by exploring how individuals
respond to interruptions that differ in importance. More specifically, several contributions can come out of exploring the importance of the interruption: 1) it has practical value in the workplace since most interruptions vary in relation to their importance. It is useful and interesting then to explore its potential influence on responses; 2) it will help explain why some interruptions are responded to faster than others. This may serve as a valuable tool as important additional demands are inherent in the workplace; 3) it will help explain attentional differences to the primary task. These differences may relate to significant costs to production if important primary tasks are being put off for unimportant secondary tasks; 4) it may relate to an affective response, which may be a more proximal cause of subsequent motivational responses such as goal revision and lowered expectations of success. In sum, the value in studying the importance of an interruption as a situational characteristic is robust. It has been assumed so far that an individual can actively choose when to respond to new demands of differing importance, however this may not always be the case. Besides importance, another component of the situation that the current study seeks to examine is the level of control over the interruption, described next.

* Interruption Controllability

The notion of control over an interruption represents the way in which individuals process its new demands. For instance, interruptions can occur suddenly and switching one’s attention to them requires attentional and cognitive resources. One such situation emphasizing a sudden switch in attention may be when an individual gets a request for abrupt action on another task. This type of interruption has been called “immediate” as the user does not exert control over when the interruption gets processed (McFarlane,
In an important study, McFarlane asked an essential question of whether different methods of coordinating an interruption have different effects on performance. Individuals participated in a two-task multitask composed of a continuous game task where controllers had to save jumpers from a building while also being aware of a concurrent task that was presented intermittently, composed of a matching task. Four possible ways to be interrupted were manipulated: an immediate solution as described above; a negotiated solution whereby individuals exerted control over processing the interruption; a mediated solution in which a best time for interruption was determined; a scheduled solution in which the interruption occurred at predetermined times offering an expectation of when interruptions would occur. Results showed that no specific solution was optimal for overall performance on both the interrupted task and interruption. Tradeoffs were demonstrated across the different methods. One cost of an immediate form of interruption was reduced performance on the interrupted task due to the time needed to reacquaint oneself with the task (McFarlane, 1999). The negotiated solution showed the best performance on the primary task however resulted in interruptions not being handled in a timely manner. The scheduled solution was the worst for accuracy on the primary task, whereas the mediated solution was similar in nature with the immediate method on providing prompt handling of the interruption (McFarlane, 1999).

This study was the first to experimentally manipulate the different ways in which a user has control over an interruption. The current study seeks to expand on this approach by focusing exclusively on two of these methods: immediate and negotiated. To keep with this existing research, I am interested in primary task performance effects but also how these interruption control parameters influence self-regulatory responses. It
should be noted that for most of the research presented above, individuals exercised control of when they chose to switch from the primary task to the interruptive task. For example, in one study composed of searching for a product during online viewing, it was found that when given control over interruptions these distractions were viewed more positively and decreased the negative effects of the interruptions (Xia & Sudharshan, 2002). Thus, this level of control over the interruption functioned as a negotiated method, as described above.

Another study, mentioned above, sought to establish understanding an interruption that does not force the individual away from his or her main task. This was operationalized by looking at differences across individuals in handling email interruptions. While most of the existing research focused on interruptions that immediately captured the user’s attention, this study focused on establishing precedence to more controllable or negotiated types of coordinating interruptions. The key findings showed that individuals used multiple strategies for dealing with email and these strategies changed according to the situational parameters of the email (Russell et al., 2007). More specifically, it was found that during demanding tasks, which are important and time-intensive, emails were ignored. When main tasks were boring emails these were responded to in an immediate fashion (see Fisher, 1998 for possible explanations). When the email was important they used strategies to deal with it as fast as possible. Finally, when individuals were overloaded by a multitude of emails, they used strategies to reduce the perceived load, such as using prioritization systems (Russell et al., 2007). It was suggested that the aspects of the situation alone did not account for all differences across individuals, but that personality factors played a significant role. This was argued by the
occurrence of 43% of individuals who checked their email and hence allocated their attention to the interruption despite being under a deadline (Russell, et al., 2007).

The current study heads these results by exploring interactions between situational parameters of interruptions (controllability) with personality differences. For situations affording control over the interruption those that have a preference for pursuing multiple activities simultaneously may be able to handle the interruption in an efficient manner thus exhibiting less negative responses as a result. Conversely, for those who prefer single activities at a time may respond more positively at first to their level of control over the competing demands of the interruption, however may exhibit negative reactions as the pressing demands of the interruption increase, especially within a time-intensive environment. Thus, there is empirical evidence that shows that the level of exerting control over an interruption can impact both performance as well as strategic decisions. The affective and motivational responses as a direct result of the situational parameter such as interruption controllability has not been researched, and so the current study seeks to further explore these important reactions to interruptions.

The way in which both interruption importance and interruption control affect subsequent responses is an important component within the current study. Since there has been relatively little research examining these situational characteristics of interruptions, much can be gained by exploring them in the present study. Their impact on subsequent affective and motivational responses has not been examined as of yet and so the current study seeks to expand upon previous work by looking at these effects.
Individual Differences

The role of context effects on possible responses to interruptions may also depend on the way in which individuals prefer to deal with concurrent demands in general. Thus, another major component of the current study looks at how individual differences in motivation-related constructs influence self-regulatory responses to interruptions. The role of individual differences points to the fact that research has demonstrated variance in how individuals respond to interruptive events (Kirmeyer, 1988; Oldham, Kulik, & Stepina, 1991) and that the negative consequences of distracting events may be more sensitive to some individuals than to others (Jett & George, 2003). Two key constructs I am proposing as influencing differences in responses to interruptions are polychronicity and action-state orientation.

Polychronicity

The use of time at work and in general can vary between trying to get many tasks accomplished all at once or parceling attentional resources to a specific task until its completion before switching to another task. This preference of time use and the allocation of efforts across multiple demands characterize the construct of polychronicity.

The concept of one’s use of time and hence the term polychronicity came about in describing cultures and their preferences for organizing activities (Hall, 1959; 1983). Here, a culture tends to perform several activities at once and within the same block of time or is involved in events one at a time. As a cultural variable the definition of polychronicity came to be, “the extent to which people in a culture prefer to engage in two or more tasks or events simultaneously and believe their preference is the best way to do things” (Bluedorn et al., 1999). This variable can vary along a continuum with
cultures expressing different levels of polychronic behavior. Thus, extreme polychronicity manifests in the behavior of moving back and forth among several tasks with unscheduled events (interruptions) being interpreted as part of the process of normal activities. Conversely, extreme monochronicity manifests in behavior of focusing on a single task with unscheduled events as distractions and deviations from the plan or schedule (Bluedorn et al., 1999). Across cultures, polychronic behavior is preferred in many Latin American cultures, whereas traditional Western cultures, such as the United States, exemplify monochronic behavior (Cotte & Ratneshwar, 1999).

The link from a cultural conception to an individual conception has been expressed in research investigating time use among individuals (Bluedorn, Kaufman, & Lane, 1992; Kaufman, Lane, & Lindquist, 1991; Lindquist & Kaufman-Scarborough, 2007) and illustrates how individual preferences for time use relate to specific outcomes. The current study takes this approach and adopts the individual-level component of polychronicity as opposed to the cultural conceptualization upon looking at its effects with the study variables.

One component that the current study explores is the association of polychronicity within a context exposed to interruptions. Theoretical support for the connection between polychronicity and interruptions conveys that polychronic individuals do not see interruptions as disruptive but see them as part of the task, have an easier time organizing tasks, work better under time pressure, and are less likely to put off activities until a later time (Kaufman-Scarborough & Lindquist, 1999). In opposition, monochronic individuals see interruptions as hindering their ability to accomplish work and cannot effectively handle multiple demands simultaneously. They have a harder time organizing tasks, work
worse under time pressure, and are more likely to put off activities until a later time (Kaufman-Scarborough & Lindquist. 1999). Also the importance of clock time varies among this dimension. More specifically, to polychrons, time is less structured and they are less worried about deadlines, whereas monochrons seem to be more engaged in the amount of time that is available to them, especially as deadlines draw near. These differences are expected to influence how distracting interruptions are to task performance as well as how they influence different responses to interruptions within the current study.

Empirical investigations examining the relationship among polychronicity and performance has provided a clear picture of how preferences for time use can influence objective outcomes. In an early attempt to relate polychronicity to performance, one study used a sample of university faculty members, examining research productivity as an outcome of self-efficacy, goal setting, and one’s preference for working on multiple projects. Results showed that polychronicity related to both higher objective and subjective productivity measures, and hence, effective job performance (Taylor, Locke, Lee, & Gist, 1984). In this work setting, preferring to engage in multiple activities at the same time related to higher performance. This specific environment was more inclined to foster a polychronic culture, and so, the correlation represented this congruence between preferred polychronicity and work-unit polychronicity (see Slocombe & Bluedorn, 1999). More specifically, it has been shown that when an individual’s preference for handling work matches that of the environment in which the work is carried out, such as an academic setting, polychronicity is associated with higher perceived performance evaluations (Slocombe & Bluedorn, 1999).
Another study examined polychronicity in a field setting composed of train operators. In this setting, a monochronic focus was preferred to carry out the job’s tasks. It was hypothesized that because of this work-unit preference, polychronicity would be negatively related to performance. Results were supported in that more polychronic individuals received lower supervisory ratings of performance (Conte & Jacobs, 2003). This relationship accounted for variance above and beyond dimensions of the Big-five personality (Conscientiousness, Extraversion, and Neuroticism), as well as cognitive ability. In a similar study in the context of a retail sales position, requiring associates to switch back and forth between multiple tasks and customers, polychronic time use was preferred. Results supported the hypotheses in that polychronicity was positively related to supervisor ratings of customer service ($r = .22$), sales performance ($r = .22$), and overall performance ($r = .23$) (Conte & Gintoft, 2005).

These studies demonstrate that preferences for time use as subsumed within the polychronicity construct relate to different aspects of performance. As noted above, whether individual preferences match the context in which one works determines the impact on performance. In addition to performance, these person-situation agreements are also argued in the present study to affect self-regulatory and motivational responses as well. Also, the different approaches to deadlines and clock time, as well as outlooks on interruptions are apparent within the polychronic continuum. The current study makes use of a time deadline to increase the demands placed on one’s limited resources as well as utilizes the arrival of incoming interruptions to further explore differences in reactions due to polychronicity. As responses to interruptions have been largely unexamined, especially due to the direct effects of polychronicity, the current study provides a
valuable framework for establishing answers to this important question. Moreover, effects on self-regulatory responses may help explain current performance effects.

*Action-State Orientation*

This personality construct was developed by Kuhl (1994) to explain individual differences in volitional abilities to plan, initiate, and complete intended activities. In everyday life, and as the current study explains, multiple activities exert control over an individual’s resources whereby coping responses are necessary for successful accomplishment of task objectives. Thus, Kuhl sought to explain differences between individuals on their ability to function in these types of situations. Action-state orientation has become a growing researched variable within the motivation literature and resides within the context of a broader model of self-regulation (Diefendorff, Lord, Hall, & Strean, 2000). More specifically, aspects of volitional processes influencing outcomes such as performance reside within what is known as goal striving in the motivation literature. Goal striving refers to the regulatory behaviors of pursuing an established goal. Here, goal implementation is characterized by the interaction of events with cognitions in which behaviors change over time based on the dynamic and changing qualities inherent within goal pursuit. In other words, to actively meet a goal, one must be able to minimize constraints due to the situation, that which happens during goal striving. In the current study, the dynamic quality of the situation is proposed to be affected by the arrival of a secondary task, or interruption. Thus, the function of action-state orientation should influence how an actively engaged goal within a primary task gets pursued despite short-term demands imposed by an interruption.
As action-state orientation helps to describe differences between individuals in their thoughts, cognitions, and actions during goal pursuit, the current study explores its potentially important role relating to outcomes such as performance. Also, the current study’s use of interruptions as distractions develops the context within which action-state orientation functions, resulting in specific self-regulatory responses such as affect, expectancies, and goal revision. To more fully explain the construct of action-state orientation Kuhl operationalized it with three separate components labeled by their state oriented pole referring to issues such as staying focused, initiating action, and persisting despite distractions. These are referred to as preoccupation, hesitation, and volatility, respectively.

**Preoccupation** refers to the ability to disengage from negative thoughts associated with alternative states or goals. These negative thoughts oftentimes are associated with failure (Diefendorff, 2004). Those who are action-oriented (labeled as disengagement) have an easier time disengaging from goal-related worries and intrusive thoughts, whereas those who are state-oriented (labeled as preoccupation) have ruminations about failures that are persistent and hinder staying focused on the task at hand (Kuhl, 1994). An example of this dimension may be explained by actively pursuing a goal at work such as filing papers. For those that are action-oriented, this task may be accomplished faster without intrusive thoughts about other demands, such as interruptions. For those that are state-oriented, the constant reminder of another task or the non-attainment of other goals may impair their ability to pursue the paper-filing goal.

**Hesitation** refers to initiating action on tasks that have already been chosen. For example, actively pursuing the task of filing papers may be easier for those who are
action-oriented (labeled as initiative) as these individuals are better at beginning work, whereas state-oriented individuals (labeled as hesitation) procrastinate more, resulting in tasks being delayed. In relation to interruptions, those who can initiate work faster on the primary task may be less affected by the time constraints imposed by future interruptions.

Finally, *Volatility* is concerned with the ability to persist with tasks until completion with action-oriented individuals (labeled as persistence) finishing tasks they started, whereas state-oriented individuals (labeled as volatility) hastily disengaging from started tasks. To continue with the example above, action-oriented individuals will more readily finish the filing task, whereas state-oriented individuals may give up before they have finished all of the papers. Interruptions may thus foster a higher propensity to disengage from the primary task altogether or opt for less stringent standards for those who are state-oriented. Also, given the increased time pressure due to the arrival of the interruption, those who are action-oriented are more flexible than those who are state-oriented to allow new decision strategies to be used in response to the new situational demands (Stiensmeier-Pelster & Schurmann, 1993).

In sum, action-oriented individuals are better able to disengage from thoughts or concerns irrelevant to the primary task, initiate required actions more effectively, without wasting time due to procrastination, and persist despite short-term distractions to task accomplishment. Conversely, state-oriented individuals are more preoccupied with non-task related thoughts, take more time to initiate action on tasks, and lose focus more readily due to short-term distractions. The current study seeks to examine differences in this construct across individuals on specific self-regulatory responses as a direct result of interruptions. As with polychronicity, there has been a lack of examination into how
differences in self-regulatory function affect reactions in handling interruptions, and so the current study sees the importance in looking at these effects.

In the abovementioned discussion it was important to establish both the situational characteristics of interruptions that may influence self-regulatory and motivational responses as well as personality factors that show preferences and behaviors in reference to competing demands. Below I present my hypotheses that tie in these proximal factors and their influence on different responses to interruptions. I propose that important self-regulatory and motivational responses inherently culminating from the arrival of interruptions are affect, expectancies, goal revision, and performance. However, in order to better establish how these responses function within the overall picture of the present study a brief review of self-regulation theory will be presented next. This will serve to provide a basis for which a self-regulatory perspective to interruptions is explored within the current study.

Self-Regulation

Self-regulation has been a central component within the paradigm of motivation. Most central within this process the individual is focused on his or her performance in relation to his or her goal or standard and any potential disturbances that may impact his or her attainment efforts. Regulation has been defined as, “…maintaining a variable at some value despite disturbances to the variable” (Vancouver, 2000). Self-regulation points to the role of individuals to maintain their levels of performance in accordance to their goals and implies within the act modulation of thought, affect, behavior, or attention (Karoly, 1993). Self-regulation can refer to, “the processes involved in attaining and maintaining goals, where goals are internally represented desired states” (Vancouver,
Thus in respect to the main focus of the current study, responses to interruptions including affect, expectancies, and goal revision represent self-regulatory and motivational characteristics that can be disturbed by the arrival of interruptions, and represent proximal acts to regulate cognitions, affect, and behavior in a dynamic environment.

Feedback is a necessary component in any self-regulation model as it provides useful information on how an individual is maintaining their current goals. For example, upon receiving feedback or information indicating failure to attain a monthly sales goal, an individual will have been actively engaged in self-regulation throughout the month to determine how close they were in relation to their goal (e.g. day to day feedback culminating into a monthly report or overall feedback). This negative feedback may spark revision to the sales goal because the performance was lower than the original standard imposed by the goal. Also, within the month, the individual is also actively engaged in assessing how close attainment is to the monthly goal. Any deviation, such as the constant interruption of coworkers during the day, represents the environmental disturbances to the goal and directly represents part of the self-regulation process. Thus, as seen by this example, feedback originating from the environment and assessment of the current state of progress are critical requirements for the self-regulation of one’s goals.

Self-regulation has long been an important topic within industrial/organizational psychology, and more directly within the motivation literature. Numerous theories have been proposed to explain this process including cybernetic models such as control theory (Carver & Scheier, 1998; Powers, 1973), as well as decision-making models such as
goal-setting theory (Locke & Latham, 1990) and social cognitive theory (Bandura, 1991; 1997). Within these theories lies agreement that human behavior is a function of goals and that a purpose lies beneath the adoption of one’s goals. Inherent in this purpose is a structure to goals represented by a hierarchy in which the goal is represented by lower- and higher-order means. The current study acknowledges these important theories within the self-regulatory paradigm, however it focuses more exclusively on control theory, and more specifically on the velocity hypothesis afforded by Carver and Scheier (1990, 1998) as the main theory underlying self-regulatory responses to interruptions. However, a more complete understanding of control theory is warranted next so that the velocity theory can be explicated.

Control Theory

As an early theory within a branch of engineering whereby machines were enabled to do things done by humans (Hyland, 1988), control theory can be separated into two camps. The earlier, more mechanistic camp is known as Cybernetic Control Theory whereas newer versions are referred to as Rational Control Theory (Donovan, 2001). As they both describe how individuals interpret and gather environmental feedback to guide behavior, a brief description of both types will be presented below.

Of the earlier, cybernetic versions of control theory (Powers, 1973), one of the main descriptors of behavior is represented by a feedback loop and is argued as the fundamental building block of action (Klein, 1989). Here the feedback loop, as shown in Figure 2.1 below, consists of four pieces: a referent standard (goal), a sensor or input function, a comparator, and an effector, or output function (Carver & Scheier, 1990).
Figure 2.1. Basic feedback loop outlined by control theory. A reference value (goal) is compared to a sensed value (current progress), which gives an output value (discrepancy). Adjustments are made, if necessary, to shift the sensed value closer toward the direction of the reference (Carver & Scheier, 1990). Note. The current study is representing outside influences, as depicted above, by the occurrence of an interruption.

To illustrate how these all tie together to form the process of a feedback loop, an often classical example is to represent a thermostat controlling the temperature of a room. Here, the system or environment in which the feedback loop operates is the air temperature. An input sensor senses the temperature and sends a signal to the comparator, whereby it is tested against a referent standard (e.g., 72 degrees). If a discrepancy exists between the air in the system and the referent, an error signal is detected which prompts the output or effector to take some action to reduce the discrepancy. If for example the air in the room is cooler than 72 degrees, the heater would go on to warm the air to this standard, whereas if the air in the room is warmer than 72 degrees, the air conditioner would go on to cool the air to this standard. This simple feedback loop applied to human behavior, as argued by early theories of control theory, represents the way in which individuals handle discrepancies related to their goals.
In a human control system, the referent or standard is a goal that is motivating action. For example, a worker that sets a goal to produce ten widgets will take in information about his or her performance by the input function of the feedback loop. This will be sent to a comparator that compares the current performance with the goal of ten widgets. If a discrepancy exists then the worker will take some action to reduce the discrepancy. This action can be increased effort, goal abandonment, or goal revision. It is important to note that both early control theories and later, rational theories, argue that individuals will reduce discrepancies that come by way of goal-performance differences (Donovan, 2001). Thus in these views, if performance is lacking, effort will increase to attain the goal, whereas if performance is too high, effort may either remain the same or decrease to maintain the goal.

The rational views of control theory representing later views on goal-directed behavior also highlight the role of the feedback loop. These newer arguments lamented the notion that individuals must be aware of the discrepancies to produce action, but are also tolerant of small goal-performance discrepancies, which may not produce any output change in the system (Campion & Lord, 1982). One of the more noted changes within rational control theory is the idea of a discrepancy production mechanism whereby goals are set above past performance. The newer arguments highlight that goals can be increased for discrepancies revealing performance above the standard. This notion of discrepancy production agrees with the tenants outlined by social cognitive theory, although recent conceptualizations and empirical examinations reveal differences among the level of discrepancy production (Carver & Scheier, 1998; Phillips, Hollenbeck, & Ilgen, 1996).
Research has been fruitful in describing what relates to an individual’s choice in his or her goals within the feedback loop. It has been found that past performance levels and ability are crucial determinants of both behavioral and cognitive responses to discrepancies, as well as the size of the discrepancy, one’s expectancy of success for reducing future discrepancies, and the individual’s past success or failure in reducing the discrepancy (Campion & Lord, 1982; Donovan, 2001; Kernan & Lord, 1990; Lord & Levy, 1994; Vancouver, 2005). These tenants of control theory have been tested and supported for over thirty years and represent one of the main theories describing human motivation.

As noted above, feedback indicating discrepancies between one’s performance and goal(s) is imperative to subsequent motivation and self-regulatory behaviors. However, it has been suggested that discrepancy feedback alone indicating differences between a goal and one’s performance may not relate specifically to the occurrence of one type of response; an emotional response or affective reactivity (Carver & Scheier, 1990). Instead, it has been suggested theoretically, and subsequently empirically supported, that the rate or speed of discrepancy reduction determines an affective response (Carver & Scheier, 1998).

As with the simple feedback loop described above, which Carver and Scheier termed monitoring, another simultaneous function operates in parallel with this process called meta-monitoring. This latter process is also concerned with discrepancy reduction within the control system, however is more focused on the “rate of discrepancy reduction in the behavioral (monitoring) system over time” (Carver & Scheier, 1990). When the discrepancy is being reduced rapidly then progress is deemed to be high, whereas if the
discrepancy is being reduced slowly then progress is deemed to be low. To illustrate this process, a good example is a GPS-navigation procedure in a car, which accurately tracks the goal of arriving to the destination by estimating the time of arrival. The goal here would be to arrive to the destination by the given time of the GPS system and of course, starting out, a simple discrepancy exists between one’s current location and the final destination. Once the car starts its journey the GPS system monitors car speed and changes the time of arrival to reflect the rate at which the current location and final destination discrepancy is being reduced. If current speed is maintained then the arrival time goal, representing the desired rate of discrepancy reduction, does not change. However, when interruptions occur such as traffic jams on the highway the arrival time goal changes to reflect these disturbances to the feedback system. Carver and Scheier equate this meta-monitoring system described above to be psychologically equivalent with velocity. This can be accurately illustrated in the example above. More specifically, one way to maintain the current arrival time goal would be to keep the velocity of the car constant over time. Since the current speed and hence velocity of goal progress was slowed down by interruptions the velocity changed as well, and so the arrival time goal had to be revised as a result. This revision would likely produce a new arrival time, which would be later than the original time.

One way to circumvent the need to revise the arrival time goal would be to drive the car faster to make up for the lost time due to traffic. This latter system is coined acceleration and describes changes in rates of discrepancy reduction over time. More specifically, when the velocity of goal attainment changes over time due to unforeseen setbacks the system is said to be accelerating or decelerating in its rate of progress toward
possible goal attainment. Both the velocity and acceleration conceptualizations fit nicely with the aims of the present study, such that as individuals progress on their primary task goals and come across interruptions, their current velocity or rate of discrepancy reduction is thwarted. A possible response may be to increase effort by increasing the rate of progress toward the goal. This type of response has been demonstrated by which secretaries increased the speed of their performance after an interruption to make up for lost time, however psychological costs such as emotional well-being suffered as a result (Zijlstra et al., 1999). The effects of this process map on nicely to those described by Carver and Scheier. Their velocity hypothesis assigns specific outcomes or responses to manifest in leading to outcome expectancies and affect, as well as changes in referent standards relating to goal revision decisions. Thus, the current study ties together the interruptions framework and self-regulation paradigm by looking at self-regulatory responses, afforded by the velocity theory, in relation to how interruptions impact rates of goal-oriented progress.

Self-Regulatory and Motivational Responses

The influence of situational characteristics of interruptions as well as personality differences in responding to interruptions has been described above. I am proposing that these variables will directly and jointly contribute to subsequent self-regulatory responses. Next, I will examine specific self-regulatory and motivational responses to interruptions such as affect, expectancies, and goal revision, as well as performance effects by taking a self-regulatory perspective, outlined within the velocity theory (Carver & Scheier, 1990, 1998) described above. Each of these responses will be discussed
separately culminating in specific hypotheses relevant to the heuristic model shown in Figure 1.1 above.

**Affect**

Affect arises from the rate at which the goal-performance discrepancy is being reduced and can manifest as positive, negative, or neutral states. Table 2.1 below shows that although discrepancy-reduction is the primary mechanism operating when goals are compared to current progress, affect differences exist primarily from the rate at which the discrepancy is being reduced.

<table>
<thead>
<tr>
<th>Depiction of behavior</th>
<th>Action-Loop construal</th>
<th>Meta-loop construal</th>
<th>Affect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Progress toward goal, at a rate equal to the standard</td>
<td>Discrepancy reduction</td>
<td>No discrepancy</td>
<td>Neutral</td>
</tr>
<tr>
<td>2. Progress toward goal, at a rate lower than the standard</td>
<td>Discrepancy reduction</td>
<td>Discrepancy</td>
<td>Negative</td>
</tr>
<tr>
<td>3. Progress toward goal, at a rate higher than the standard</td>
<td>Discrepancy reduction</td>
<td>Positive discrepancy</td>
<td>Positive</td>
</tr>
</tbody>
</table>

With the above example it is apparent that the arrival of traffic suddenly shifts current affective state to a negative tone. This response seems highly likely, as current progress toward the arrival time goal has slowed. If efforts were made to forego speed limits and increase the speed of the car to make up for lost time, then the arrival time goal would slowly get back to its original level (time). This change from slow progress towards the goal to fast progress is in keeping with Carver and Scheier’s
conceptualization of acceleration. The likely response would be a negative affective tone changing to a less negative tone as the individual arrives on time. If arrival were earlier than expected then a more positive affective tone would be noticed. It is important to consider that the level of the goal used within the feedback loop helps to determine the rate of progress and subsequent affect. For instance, a very demanding arrival time goal will force the rate of progress to be unrealistic and hard to attain and so it is highly likely that more negative than positive affect will be exhibited. Conversely, an easy rate of progress goal (e.g., “Sunday drivers”) will be easy to maintain and so it is highly likely that more positive than negative affect will be exhibited. This equates nicely with time pressure as a determinant of the meta-level reference standard (goal) with more time pressure leading to more stringent goals and lack of time pressure leading to less stringent goals (Carver & Scheier, 1990). In relation to the ideas presented above, there has been empirical justification supporting the tenants of the velocity hypothesis and its relation to an affective response.

In a study examining the relationship between velocity and satisfaction, subjects responded to hypothetical scenarios in which they would indicate which was more satisfying. In manipulation of velocity each scenario equated with more or less progress toward a goal (e.g. class percentile raising from the 30th percentile to the 70th percentile over 6- versus 3-weeks). Results showed that subjects demonstrated higher satisfaction for scenarios emphasizing improving to a high outcome over having a constant outcome, a fast velocity over a slow velocity, and a high velocity within a short distance over a low velocity within a long distance (Hsee & Abelson, 1991, Study 1). In a second study, which actually manipulated an outcome changing in time rather than hypothetical
scenarios, it was found that subjects demonstrated higher satisfaction preferring fast velocity when an outcome was improving and a slow velocity when an outcome was declining (Hsee & Abelson, 1991, Study 2).

Another study manipulated the feedback of progress toward a goal over a six-trial time frame. For those in the low velocity condition, their initial feedback was high and subsequently fell to a final outcome of 50%. For those in the high velocity condition, their initial feedback was low and subsequently rose to a final outcome of 50%. Thus the discrepancy itself was similar for both conditions however the rate and direction of progress differed. Other moderate levels of progress were also manipulated to look at difference in rates of velocity. Results favored the rate of discrepancy reduction over the size of the discrepancy in ratings of mood. More positive mood was exhibited for those conditions with the worst cumulative performance, which were moving upward at a faster rate toward the final outcome, whereas more negative mood was exhibited for those with the best cumulative performance, which were moving downward at a slower rate toward the final outcome (Lawrence, Carver, & Scheier, 2002). This research demonstrates that affect is an important response to the rate at which goals are attained. To bring the velocity hypothesis in line with the aims of the current study, it is important to show affective responses to interruptions that have been explained by existing research.

The impact of interruptions on affect has been only briefly examined within the literature. Interruptions serve as impediments to goal attainment as they disrupt goal-directed activity and regulation as well as associated cognitive processes. In response, individuals typically have to modify current action plans associated with goal attainment to account for the interruptive event. To overcome the burden of the interruption extra
effort is needed, which may pull away needed resources for the primary task and result in negative mood (Rogelberg, Leach, Warr, & Burnfield, 2006). Negative mood can also occur when the rate of progress in completing the primary task slows down as a direct function of the interruptive activity (Rogelberg et al., 2006). In another study that looked at the effects of interruptions on boredom, Fisher (1998) found that internal interruptions or interruptive thoughts not related to current tasks resulted in greater boredom and less satisfaction when these interruptions were more frequent. Even though these interruptions came by way of internal mechanisms, they were still associated with more negative affective responses.

Zijlstra and colleagues (1999) pointed to the role of looking at positive versus negative shifts in emotion due to interruptions. Their work showed that in response to interruptions increased effort was needed to maintain performance standards on the primary task, but that this effort came at a cost to emotional well-being. They suggested future research explore these effects to further elaborate on the mechanisms behind this type of response. This suggestion was headed by later research by Bailey and colleagues (Adamczyk & Bailey, 2004; Bailey & Konstan, 2006; Bailey, Adamczyk, Chang, & Chilson, 2006). In a variety of research examining the effects of interruptions at different moments within task execution, it was found that interruptions coming during the execution of primary tasks resulted in greater annoyance and frustration than those that came between the boundary of primary tasks (Adamczyk & Bailey; Bailey & Konstan, 2006). These few studies support the notion of an affective response resulting from interruptions, however, they have not directly tied their results to the velocity hypothesis.
afforded by Carver and Scheier. Thus, the current study uses these results to more formally tie this response to interruptions within a self-regulatory framework.

Research by Bailey and colleagues show that when interruptions come at more opportune times within task execution, individuals suffer less negative emotions. This can equate with the availability of control over the interruption’s timing. By having control over when to respond to the interruption possible negative reactions can be mitigated. The current study explores the role of interruption control as a main situational parameter expected to influence affective reactions. It is expected then, that when individuals are allowed to exert control over when they turn their attention to the interruption, they will experience less negative affective reactions as a result compared to those not afforded this control. In line with Carver and Scheier’s claims, those with control over the interruption may be better able to maintain their current progress toward their primary task goals. For those who do not have control over the interruption, progress on the primary task will be immediately halted due to the arrival of the interruption. Thus the following hypothesis is warranted:

*Hypothesis 1:* The amount of control over the interruption will relate to an affective response, such that less negative affective responses will occur for those with control and more negative affective responses will occur for those without control.

The role of interruption importance is also expected to relate to differing affective responses. It has been shown that the relevancy of incoming messages relates to annoyance, such that irrelevant messages for primary task execution are perceived to be more annoying than relevant messages (Cutrell et al., 2000). For the current study the importance of the interruption is examined and expected to influence how one responds
to the new task demands. For interruptions regarded as highly important, current progress on the primary task is stopped for a reason as new demands are important to allocate one’s attention. The value placed in stopping progress on the current task is maintained by the value inherently assigned within the interruption’s importance. Thus it is expected that possible negative affective reactions will be lessened in this situation. Conversely, when the interruption is not inherently important, then the progress that is stopped for this secondary task will likely lead to more negative affective reactions, since the cost in this switch of attention cannot be assigned to the value of this secondary task. Moreover the influence of interruption importance is also expected to interact with its level of control.

It is expected that more negative affective reactions will occur for those who do not exert control over an interruption of low importance as opposed to an interruption of high importance. This leads to two more hypotheses described below:

**Hypothesis 2:** The importance of the interruption will relate to an affective response, such that less negative affective responses will occur for those responding to an interruption of high importance and more negative affective responses will occur for those responding to an interruption of low importance.

**Hypothesis 3:** Control over the interruption and interruption importance will interact in their influence on affect, such that more negative affective responses will occur for those without control responding to an interruption of low importance, whereas less negative affective responses will occur for those with control responding to an interruption of high importance (see Figure 2.2 below).
Affect is also a function of dispositional traits inherent within the person. To account for these substantive effects, the current study is also exploring the moderating effects of the way in which interruptions are viewed within one’s preference for handling multiple activities as well as the way in which individuals regulate actions toward secondary tasks. These are highlighted within polychronicity and action-state orientation, respectively. To restate here, those who are polychronic prefer to engage in multiple activities and see interruptions as part of task requirements, whereas those who are monochronic prefer to engage in one activity at a time and see interruptions as disruptive to task progress. Since interruptions are regarded as less of a hindrance to performance for those who are polychronic and more of a hindrance to performance for those who are monochronic, I expect that more negative affective responses will occur for the latter compared to the former. This personality trait should interact with the main effects of interruption control and interruption importance as described above. More specifically, the availability of control over handling the interruption will better suit those who are polychronic, such that they tend to prefer to engage in multiple streams of activity at
once. This should lead to less negative affective responses. Conversely, when no control is given over handling the interruption, those who are monochronic will likely see this as a major disruption to their primary task efforts and should subsequently respond with increased negative affect. Similarly, when the interruption is perceived to be of low importance compared to of high importance, affective responses should be more negative for those who are monochronic compared to those who are polychronic.

An extensive research base describing differences between action- and state-orientation in the regulation of affect provides preliminary evidence for action-state orientation as a moderator of interruptions on affect (Baumann & Kuhl, 2002, 2003; Baumann, Kaschel, & Kuhl, 2007; Brunstein & Olbrich, 1985; Heckhausen & Strang, 1988; Koole & Jostmann, 2004; Kuhl & Koole, 2004; Rholes, Michas, & Shroff, 1989). More specifically, this research argues that under stressful conditions initial aversive affect is better regulated by those who are action-oriented compared to those who are state-oriented. The consequences of these differences in affective regulation result in the ability to decrease initial negative affect leading to mood improvements for those who are action-oriented, whereas the avoidance and inefficient regulation of negative affect for those who are state-oriented leads to sustained negative mood. To bring in line with the present study, the interruption serves as proxy for a stressful event. In response I expect those who are action-oriented to better manage their initial negative reactions to this added demand resulting in less negative reactions, whereas those who are state-oriented to maintain their negative affect. More specifically, I expect the dimensions of Preoccupation and Volatility to predict differences in affect in response to interruptions. As with polychronicity, these differences will likely interact with both interruption
control and interruption importance. Moreover, when control is not afforded and when the interruption is perceived to be of low importance, the differences between action- and state-orientation in affective regulation should be greater, such that more negative affective responses will ensue for those who are state-oriented. In sum, for those who are action-oriented, they are better able to maintain focus on current demands (Disengagement) and persist longer despite disruptions (Persistence), while those who are state-oriented suffer more on their ability to stay focused on current demands (Preoccupation) and have a harder time persisting in the face of new challenges (Volatility).

Thus it is expected that these dispositional characteristics will also lead to differences in affective responses to interruptions. More specifically, it is expected that the influence of both interruption control and interruption importance will be moderated by these personality factors.

*Hypothesis 4:* Polychronicity will moderate the impact of interruption control on affect, such that more negative affective responses will occur for those who are monochronic with no control, whereas less negative affective responses will occur for those who are polychronic with control (see Figure 2.3 below).
Hypothesis 5a: Action-state orientation will moderate the impact of interruption control on affect, such that more negative affective responses will occur for those who are tied down by task-irrelevant thoughts (Preoccupation) with no control, whereas less negative affective responses will occur for those who are focused on thoughts more relevant to the primary task (Disengagement) with control.

Hypothesis 5b: Action-state orientation will moderate the impact of interruption control on affect, such that more negative affective responses will occur for those who have a harder time persisting in the face of new demands (Volatility) with no control, whereas less negative affective responses will occur for those who are better able to stick to their task despite setbacks (Persistence) with control (see Figure 2.4 below).
**Hypothesis 6:** Polychronicity will moderate the impact of interruption importance on affect, such that more negative affective responses will occur for those who are monochronic for an interruption of low importance, whereas less negative affective responses will occur for those who are polychronic for an interruption of high importance (see Figure 2.5 below).

![Figure 2.5. Proposed Polychronicity X Interruption Importance on Affect.](image)

**Hypothesis 7a:** Action-state orientation will moderate the impact of interruption importance on affect, such that more negative affective responses will occur for those who get caught up in irrelevant thoughts not pertinent to the task (Preoccupation) for an interruption of low importance, whereas less negative affective responses will occur for those who can stay focused (Disengagement) for an interruption of high importance.

**Hypothesis 7b:** Action-state orientation will moderate the impact of interruption importance on affect, such that more negative affective responses will occur for those who give up more easily (Volatility) for an interruption of low importance, whereas less negative affective responses will occur for those who are steadfast (Persistence) for an interruption of high importance (see Figure 2.6 below).
Figure 2.6. Proposed Action-State Orientation X Interruption Importance on Affect.

Although no specific hypotheses regarding the activation or arousal dimension of affect have been given above, the specific affective terms chosen for the current study allow a complete examination of this dimension as well. More specifically, the activation dimension, contrary to the valence dimension noted above, pertains to the degree of arousal within a specific emotion. For instance, the emotion, “happy” is higher on arousal than the emotion, “relaxed,” whereas the emotion, “agitated” is higher on arousal than the emotion, “low.” Thus the complete dimensions of the emotions circumplex are explored within the current study. It is expected that the valence dimension is likely to drive the effects proposed above, however the current study notes the possibility for differences in activation across different affective responses to relate to varying responses as well, and so will also be analyzed.

**Expectancies**

Expectancies or outcome expectancies have also been a highly examined motivational construct within the motivation and self-regulation literatures (Bandura,
Here, expectancy refers to the belief that effort will lead to performance needed to attain rewards (Locke & Latham, 2002). Bandura later used the term as, “a person’s estimate that a given behavior will lead to certain outcomes” (Bandura, 1977). He clarified that although a person may have positive expectations that a particular course of action will lead to specific outcomes (such as success) but have doubts in their capabilities to perform those activities then expectancies do not influence their behavior (Bandura, 1977). Carver and Scheier further illustrate within their velocity hypothesis that feelings of confidence and doubt play a large role in choosing to evaluate the probability of eventual success. These assessments come after a disruption to the current flow of activity has been detected via fast reactions such as negative affect in the form of frustration or anxiety. Thus according to the velocity hypothesis, when the rate of progress toward a goal suddenly slows down due to outside influences a faster more immediate response comes in the form of negative affect, followed by a slower acting expectancy assessment (Carver & Scheier, 1990, 1998). Thus the relation between affect and expectancy is positive such that when negative feelings arise the probability of eventual success is low (pessimistic view), whereas when positive feelings arise the probability of eventual success is high (optimistic view) (Carver & Scheier, 1998). I am arguing in the current study that this expectancy assessment is another self-regulatory response to interruptions representing disruptions to goal attainment.

It has been argued that outcome expectations (success and failure) may indeed be due to effects of specific environmental contingencies (Kirsch, 1985). To illustrate with an example, if a recreational golfer A is playing against another recreational golfer B of better skill, then golfer A will likely have lower expectations of succeeding than golfer B.
However, if golfer B accidentally injured his wrist and won’t be able to perform to his normal level of play, then golfer A’s level of confidence of success should likely increase. Thus, this situation has influenced a change in expectancies of success for golfer A from low to high. Likewise, one can see that if this injury occurred during play then golfer B’s expectancies would likely decrease due to golfer B’s unfortunate accident. Inherent within this example is the notion of rate of progress toward winning the round. Before the injury, the current rate of progress would have secured a win, whereas after the injury suddenly the rate of progress decreased leading to a less favorable expectation of winning for golfer B, and subsequently, higher expectancies for golfer A.

The current study seeks to establish the influence on expectancies by incorporating an environmental contingency in the form of an interruption. I expect that individuals will show lower expectancies after receiving an interruption during primary task execution. As described above, this proposition is supported by the presumption that one’s perceived capabilities aren’t influencing confidence levels, but rather, expectations of success are determined against how well an individual can handle the interruption in relation to their primary task goal. If properly handled, subsequent expectancies should remain high, whereas if the interruption is more disruptive to current goal progress, then subsequent expectancies should be low. Since I am also exploring variations in the form of the environmental conditions surrounding the interruption, such as its level of control, I expect this difference to subsequently influence expectancies. More specifically, for those who exert control over when they process the interruption I expect that confidence can be maintained because current rate of progress on the primary task can maintain its
current pace. Conversely, for those who have to immediately switch to the interruption, a sense of doubt will accumulate that current rate of progress cannot be maintained. For the former it is expected that confidence will lead to high expectancies of success, whereas for the latter, doubt will lead to low expectancies of success. Thus, I propose the following:

*Hypothesis 8:* Control over interruptions will differentially affect expectancies, such that those with control will exhibit high expectancies, whereas those without control will exhibit low expectancies.

I also expect that this effect will be greater for those in which the interruption is seen as more distracting. Those who are monochronic tend to see interruptions as detrimental to their schedule and way of performing activities one at a time. Those who are state-oriented take longer to start a task (Hesitation) and ruminate about thoughts not relevant to their primary goal (Preoccupation) as well as more likely to drift into constant assessment of current probabilities of eventual success (Kuhl, 1994). When an interruption occurs immediately without awareness of its demands, it is expected to be more harmful to those not able to function according to their preferred way of working. Thus a subsequent response will likely be lowered expectancies due to both aspects of the situation and characteristics of the individual. In sum, these dispositional characteristics should show lower expectancies to interruptions in which no control is afforded. Conversely, those who are polychronic and action-oriented prefer to engage in multiple activities and can better persist on current demands despite distractions (Persistence). When control is afforded, they can perform the way in which they prefer. Thus these dispositional characteristics should show higher expectancies to interruptions in which control is warranted.
Hypothesis 9: Polychronicity will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who are monochronic without control, whereas higher expectancies will occur for those who are polychronic with control (see Figure 2.7 below).

Figure 2.7. Proposed Polychronicity X Interruption Control on Expectancies.

Hypothesis 10a: Action-state orientation will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who take longer to start a task (Hesitation) without control, whereas higher expectancies will occur for those who are able to initiate tasks faster (Initiative) with control.

Hypothesis 10b: Action-state orientation will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who are preoccupied with irrelevant thoughts not related to the task (Preoccupation) without control, whereas higher expectancies will occur for those who can focus on the task at hand (Disengagement) with control.

Hypothesis 10c: Action-state orientation will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who have a hard time persisting despite additional demands (Volatility) without control, whereas higher expectancies will occur for those who persist despite distractions (Persistence) with control (see Figure 2.8 below).
Goal Revision

Goal revision is proposed as another self-regulatory response to interruptions, however is argued to function at a point later than affect or expectancies. Figure 2.9 is taken from Carver and Scheier (1990) and depicts the flow of decisions that result after progress toward a goal is hampered by the arrival of an interruption. Here, interruptions represent the disturbance in the feedback loop exemplified by self-regulatory models, and so, such a disturbance may foster goal revision if the rate of discrepancy reduction is suddenly slowed down.

Figure 2.8. Proposed Action-State Orientation X Interruption Control on Expectancies.

Goal Revision

Goal revision is proposed as another self-regulatory response to interruptions, however is argued to function at a point later than affect or expectancies. Figure 2.9 is taken from Carver and Scheier (1990) and depicts the flow of decisions that result after progress toward a goal is hampered by the arrival of an interruption. Here, interruptions represent the disturbance in the feedback loop exemplified by self-regulatory models, and so, such a disturbance may foster goal revision if the rate of discrepancy reduction is suddenly slowed down.
Figure 2.9. Flowchart depicting expectancy and goal revision possibilities. Note: “Interruption” and “Revise goal downward” were inserted for aims of the current study and were referred to as “Problems?” and “Disengage from attempt” in the original diagram (Carver & Scheier, 1981).

Carver and Scheier (1990, 1998) illustrate the potential for goals to be revised within their velocity theory and speak to the role of limited disengagement, or the scaling back of goals so that they are less demanding. As shown in Figure 2.9 above, revision decisions occur when rate of progress on current goal pursuits have been interrupted and outcome expectancies of success have been assessed. This limited disengagement, as argued by Carver and Scheier, isn’t the first response resulting from disruptions. Initially, efforts will be maintained or ramped up to account for disruptions in current rate of progress toward the goal. Only after assessments of expected success are repeatedly low will the decision to revise the goal downward be chosen as an effective means to lessen the impact of the disruption. Similarly, if progress is well above one’s goal, efforts will be aimed at coasting with current pursuits rather than increasing the level of the standard (Carver & Scheier, 1998). Thus goal revision decisions, as a proxy of limited disengagement, function more slowly than responses such as affect and expectancies described in the preceding sections above. It is important to also point out that revision
strategies or limited disengagement of efforts isn’t entirely an act of giving up on personal pursuits. Sometimes it is even better to make these decisions. Moreover, by revising the rate of progress or goal attached to current behavior downward an individual increases the availability for positive affect to increase in the future and decreases the possibility for negative affect. An aftereffect of a less stringent standard is the perception that current rates of progress are now higher than that needed for the newly established goal increasing the likelihood for positive affect to occur. Research supports the contention of revising goals downward, or even goal abandonment as fruitful avenues when self-regulatory persistence at current levels lead to negative outcomes (Carver & Scheier, 2000; Wrosch & Heckhausen, 1999; Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). On the other hand, by increasing the goal an individual decreases the availability for positive affect in the future and increases the possibility for negative affect (Carver & Scheier, 1998). Hence, a maintenance strategy is expected to be utilized rather than an upward strategy for those who have maintained positive expectancies. Given the theory just presented, as interruptions present disturbances to goal attainment and current rates of progress, I expect that goal revision strategies (downward revision) will be used for those that see these new demands as more disruptive in general. Hence, characteristics of the interruption and dispositional factors will also likely relate to subsequent differences in goal revision strategies.

Although no research as of yet has looked at goal revision as a possible response to interruptions there has been a few studies examining how interruptions impact the retrieval of suspended goals. It was found that the time to retrieve goals in a Tower of
London task were longer when interruptions were unexpected, more complex, and which suspended the goal for a longer duration (Hodgetts & Jones, 2006a). In further support of the cue availability effect (Altmann & Trafton, 2004), when given the opportunity to prepare for a break using visual cues, individuals were faster to retrieve a suspended goal (Hodgetts & Jones, 2006b). Thus, these studies highlight that in a task in which there are multiple components for overall execution, interruptions disrupt the retrieval of suspended goals. Although goal revision was not specifically examined, it can be argued that when interruptions are fairly complex, are presented within task sequences, and occur unexpectedly, memory components such as goals are greatly affected. Managing competing goals once an interruption occurs can lead to poor decision-making, as priorities now need to be made and attentional narrowing increases (Endsley & Jones, 2001). This prioritizing may increase the forgetting of competing goals, and decrease the time needed and progress of reducing current discrepancies, as resources need to be shared between the primary task and the interruption.

It has been shown that a slower response to interruptions that impede current rate of progress toward goals is a decision to adopt a less stringent standard. Also, there is initial evidence that interruptions that come at inopportune times during task execution impact the retrieval of suspended goals. Additionally, in one study looking at online product searches manipulating the specificity of the goal, it was found that those with concrete goals (more specific), when given control, were less likely to process the interruption compared to those with abstract goals (less specific) (Xia & Sudharshan, 2002). Here then, more resources were devoted to the primary search and less attention to the interruption when goals were specific. In the current study individuals will set
personal goals of which are both very specific in nature and important. This leads nicely into how control over the interruption may also impact goal revision as well. When given control, this should help to increase one’s resistance to interruptions especially since they have better control over its timing. Also, as the studies above have shown, when given time to prepare for interruptions, individuals use this time wisely so as to minimize the effects upon returning to suspended goals. Those with control then are better equipped to manage their resources in a way that optimizes their chances of maintaining performance standards in spite of distractions due to interruptions. Also, given control, I expect that interruptions of high importance will be responded to faster than interruptions of low importance. Thus, I propose the following:

_Hypothesis 11:_ Control over the interruption will result in different goal revision decisions for those that have control over the interruption as opposed to those without control. More specifically, a maintenance strategy or less downward revision is expected for those with control whereas more downward revision is expected for those without control over the interruption.

_Hypothesis 12:_ For those with control, interruptions of high importance will be responded to faster than interruptions of low importance.

I also expect that both polychronicity and action-state orientation will moderate the influence of the importance of the interruption on the response latency to the interruption. Empirical work suggests the need to study potential personality effects. In a study looking at how individuals respond to email interruptions, it was found that individuals show differences in their handling of the email. Some individuals chose to respond immediately, in light of their current goals, whereas others chose to remain focused on their current work, postponing or even ignoring the interruption (Russell, Purvis, & Banks, 2007). Russell and others suggested that more work explore the
potential personality differences across individuals that may help explain their results. The current study extends these insights by looking at both polychronicity and action-state orientation as potential individual difference factors that may help explain why some individuals respond to interruptions faster than others. It is expected that those who prefer to work on multiple tasks simultaneously (polychronic), as well as those who aren’t distracted easily by additional demands (action-oriented) will show the fastest response latency when an interruption occurs, especially if the interruption is of high importance. Conversely, those who prefer to engage in one task at a time (monochronic), as well as those who are distracted easily by additional demands (state-oriented) will show the slowest response latency when an interruption occurs, especially if the interruption is of low importance. The following hypotheses summarize these arguments:

**Hypothesis 12a:** Polychronicity will moderate the influence of interruption importance on response latencies to the interruption, such that interruptions will be responded to faster for those that are of high importance, especially for those who are polychronic. Conversely, interruptions of low importance will be responded to slower, especially for those who are monochronic (see Figure 2.10 below).

![Figure 2.10. Proposed Interruption Importance X Polychronicity on Response Latency.](image)
Hypothesis 12b: Action-state orientation will moderate the influence of interruption importance on response latencies to the interruption, such that interruptions will be responded to faster for those that are of high importance, especially for those who are action-oriented. Conversely, interruptions of low importance will be responded to slower, especially for those who are state-oriented (see Figure 2.11 below).

![Figure 2.11. Proposed Interruption Importance X Action-State Orientation on Response Latency.](image)

Although the explicit examination of the relationship between polychronicity and goal revision has not been researched, it is a fair extension to expect that as a consequence of the situation and performance outcomes, individual performance standards in the form of goals may be revised. The presence of a change in the velocity of goal-performance discrepancies, as well as expectancy changes that arise from the arrival of an interruption present a decision on the part of the individual for subsequent performance episodes and goal-setting. For those who are polychronic, the arrival of an interruption will not be seen as disruptive to their performance goals and so should exhibit a maintenance strategy upon subsequent goal-setting situations. Conversely, for monochronic individuals the interruption will bring forth a cost to their available time on the primary task as well as create more realistic expectations on their personal strivings.
To circumvent the negative affect that may arise from this situation as well as lower expectancies, I expect monochronic individuals to exhibit a downward revision strategy upon subsequent goal-setting.

*Hypothesis 13:* Polychronicity will moderate the relationship between interruption control and goal revision, such that those who are polychronic will exhibit a maintenance strategy, whereas those who are monochronic will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater (see Figure 2.12 below).

![Figure 2.12. Proposed Polychronicity X Interruption Control on Goal Revision.](image)

Action-state orientation is also likely to moderate interruption’s effect on goal revision through the self-regulatory nature during goal striving processes. One study assessed the influence of internal versus external sources of regulation via nutritional goals. It was found that action-oriented individuals showed greater compliance to goals that were self-selected, whereas state-oriented individuals exhibited greater obedience to goals recommended by someone else (Fuhrmann & Kuhl, 1998). This shows that personal goals are more important to those who are action-oriented and that those who are state-oriented prefer externally generated motivations. Since differences exist on
volitional processes described above relating to goal striving, outcomes such as goal attainment will likely be affected as well. Because interruptions will be more distracting to those who are state-oriented as well as these individuals having a harder time initiating action on chosen tasks (Hesitation), get caught up in irrelevant thoughts (Preoccupation), and don’t persist despite setbacks (Volatility), I expect their decisions to revise their goal downward upon subsequent goal-setting decisions to be a more likely occurrence. As their hardships accumulate during goal pursuit upon regulating the arrival of an interruption, those who are state-oriented will less likely attain their primary task goals, and thus seek for a less stringent goal upon subsequent trials. Conversely, for those who are action-oriented, who are better able to handle interruptions within primary task execution (Initiative), focus on task-relevant thoughts (Disengagement), and can persist despite goal setbacks (Persistence), will be better able to attain primary task goals and will less likely seek revision on ensuing goal pursuits.

*Hypothesis 14a:* Action-state orientation will moderate the relationship between interruption control and goal revision, such that those exposed to interruptions and who can initiate its completion (Initiative) will exhibit a maintenance strategy, whereas those who don’t respond quickly to the new demand (Hesitation) will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater.

*Hypothesis 14b:* Action-state orientation will moderate the relationship between interruption control and goal revision, such that those exposed to interruptions and who can stay on goal-focused thoughts (Disengagement) will exhibit a maintenance strategy, whereas those who are easily strayed away to goal-irrelevant thoughts (Preoccupation) will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater.
Hypothesis 14c: Action-state orientation will moderate the relationship between interruption control and goal revision, such that those exposed to interruptions and who can persist despite distractions (Persistence) will exhibit a maintenance strategy, whereas those who aren’t able to exert constant effort toward their goals (Volatility) will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater (see Figure 2.13 below).

![Figure 2.13. Proposed Action-State Orientation X Interruption Control on Goal Revision.](image)

**Performance**

The last response to interruptions examined within the current study is their effect on primary task performance. There has been ample support suggesting a decrease in performance due to the competing demands imposed by interruptions (Bailey & Konstan, 2006; Burmistrov & Leonova, 1996, 2003; Eyrolle & Cellier, 2000; Gillie & Broadbent, 1989; Speier et al., 1997, 2003). Given this evidence, the current study seeks to replicate these findings, however proposes that these effects may stem in part to more proximal motivational and self-regulatory responses to interruptions. Furthermore, given theory presented above describing that the rate of progress toward goals determines how one responds to disruptions, a likely outcome resulting from a change in affect, expectancies,
and subsequent goals is a decrease in performance. This however may depend on both the situational characteristics of interruptions and dispositional factors of the individual.

The direct effect of interruption control is proposed to relate to differences in performance. More specifically, performance can be actively maintained for those who are able to control when and how they process the interruption since they have better management over both their current strategy and use of time. Conversely, those without control are forced to conform to additional demands and will likely suffer on current pursuits as new strategies may need to be formed to account for shared resources (Gillie & Broadbent, 1989).

Hypothesis 15: Control over the interruption will affect primary task performance, such that performance will be higher for those with control, whereas performance will be lower for those without control.

I also expect that the inherent value placed on the interruption, due to its importance, will affect performance. This may be a function of the costs associated upon returning to the suspended task. It has been shown that time to respond to interrupted tasks greatly impact performance on those tasks (Altmann & Trafton, 2004; Monk, Boehm-Davis, & Trafton, 2004). Resumption of suspended efforts on the interrupted task will likely take longer for those tasks that are of lesser importance. The longer recovery time associated with this type of interruption will culminate in a decrease in performance. Conversely, interruptions that are highly important should make resumption on the suspended task shorter. This in turn should relate to more efficient time use being devoted to handling the demands of the primary task, thus resulting in higher performance. Also, these effects should be greater when one has the option of devoting
proper time to both primary and secondary tasks. Thus, an interaction between importance and control over the interruption should be seen.

*Hypothesis 16:* The importance of the interruption will affect primary task performance, such that performance will be higher for those responding to an interruption of high importance, whereas performance will be lower for those responding to an interruption of low importance.

*Hypothesis 17:* Interruption control and importance will interact on primary task performance, such that performance will be highest for those with control responding to an interruption of high importance, whereas performance will be lowest for those without control responding to an interruption of low importance (see Figure 2.14 below).

![Figure 2.14. Proposed Interruption Control X Interruption Importance on Performance.](image)

Dispositional factors are also proposed to have direct effects on performance. For those that are polychronic their preference for multiple activities won’t lead to disruptions on primary task performance since the new demands aren’t seen as debilitating current pursuits. Performance will likely suffer for those who are monochronic as these individuals prefer to work on one task at a time and see interruptions as disruptive. Much work has shown that when working on tasks that do not match preferential strategies, performance suffers as a result (Conte & Gintoft, 2005; Conte & Jacobs, 2003; Slocombe
& Bluedorn, 1999). Given support for these effects the following hypothesis explains the
direct effect of polychronicity on performance:

_Hypothesis 18:_ Polychronicity will positively relate to performance, such that
those who are polychronic will exhibit greater primary task performance
compared to those who are monochronic.

For action-state orientation it is expected that those who are action-oriented will
be able to actively include the interruption into their primary task pursuit as they will be
able to focus on the task at hand, not paying attention to intrusive thoughts
(Disengagement) regarding the interruption, as well as initiating action faster on the
primary task (Initiative). Those who are state-oriented will see the interruptions as more
distractive to their ability to attain their primary task goals by way of ruminating thoughts
of getting the interruption handled (Preoccupation), as well as exhibiting longer times to
start the primary task (Hesitation). Research gives initial support for the claims presented
above.

Kuhl (1994) argues that, “excessive self-reflectiveness and rumination can be
associated with rigidity in the sense of an increased difficulty to switch from one activity
to another one when necessary or when one intends to do so.” This subsumes those who
are state-oriented and thus switching between the primary task and the interruption may
be harder for these individuals. In another study looking at self-regulatory efficiency, it
was found that alternation times on a computer-aided test, which assessed the difficulty to
alternate between tasks, was positively correlated with preoccupation scores (Kuhl &
Fuhrmann, 1993). Also, in an experiment on learned helplessness state-oriented
individuals had a hard time switching from an unsolvable training task to a new solvable
test task (Kuhl, 1981). Thus, this provides initial evidence that performance on a primary
task may suffer due to the inability for state-oriented individuals to switch to and from the interruption.

Further evidence of the link from action-state orientation to performance has been found in looking at work-related outcomes. Diefendorff and others (2000) found that action-oriented individuals on the hesitation dimension received higher supervisor ratings of job performance than their state-oriented counterparts. This relates to the ability to initiate tasks faster relating to more effective performance overall (Diefendorff, 2004). In an academic setting utilizing course performance as the outcome, a positive correlation was found between hesitation and performance with action-oriented individuals performing better than state-oriented individuals. Here, the ability to not put off course related material within studying and learning led to better course performance. Given the existing research showing an association between action-state orientation and performance, the following is proposed:

**Hypothesis 19a:** Action-state orientation will positively relate to performance, such that those who aren’t preoccupied by irrelevant thoughts (Disengagement) will exhibit greater primary task performance compared to those who are taken over by thoughts related to the interruption (Preoccupation).

**Hypothesis 19a:** Action-state orientation will positively relate to performance, such that those who start working on the additional demands faster (Initiative) will exhibit greater primary task performance compared to those who hesitate to work on the additional demands (Hesitation).

Also, I expect that these direct effects of both polychronicity and action-state orientation will interact with control over the interruption. It has been found that when external control is instructed over task decisions, compared to maintaining autonomy over task execution, performance decrements on a simple visual discrimination task were eliminated for state-oriented individuals trying to resist temptation. More specifically, it
has been shown that when control is determined by an external source this can help state-oriented individuals suppress tempting impulses. This equates to a strong situation in which the expression of individual differences due to action-state orientation are lessened (see Diefendorff, Richard, & Gosserand, 2006). Thus state-oriented individuals are more greatly influenced by whether the situation gives them control. Moreover, action-oriented individuals were less likely to be influenced by experimental instructions manipulating control over the situation, showing less performance differences across conditions (Baumann & Kuhl, 2005). Furthermore, differences in control will be substantial for those who are monochronic, such that when control is given, individuals will be able to suspend the interruption, however its added resources will soon result in having to attend to multiple tasks within the same time frame, which is not preferred by these individuals. When no control is given, performance effects should be even more substantial. Although control shouldn’t affect those who are polychronic as much, it is still expected that having control will allow their preferences to be enacted better than when no control is afforded.

*Hypothesis 20:* Polychronicity will interact with control over the interruption on primary task performance, such that higher performance is expected for those who are polychronic with control, whereas lower performance is expected for those who are monochronic without control (see Figure 2.15 below).
Hypothesis 21: Action-state orientation will interact with control over the interruption on primary task performance, such that higher performance is expected for those who are action-oriented with control, whereas lower performance is expected for those who are state-oriented without control (see Figure 2.16 below).

Figure 2.15. Proposed Polychronicity X Interruption Control on Performance.

Figure 2.16. Proposed Action-State Orientation X Interruption Control on Performance.
Mediation Effects

I am also interested in a few mediational effects that may help explain better the hypotheses described above. These do not affect the discussion above however represent possible extensions to the model in order to more fully establish causal links between the outcomes. More specifically, I am proposing that affect may be a potential mediator in explaining resulting expectancies, as well as expectancies possibly mediating effects on goal revision. These potential mediating effects will be described next.

Within their velocity hypothesis, Carver and Scheier (1990, 1998) support the contention that affect, expectancies, and goal revision are potential consequences when the rate of discrepancy reduction is slowed by outside disturbances. The current study establishes this theory within an interruptions framework in which these self-regulatory responses are said to result from the arrival of an interruption during goal pursuit. It has also been established that a causal chain exists between these outcomes. As noted above, Carver and Scheier argue that expectancies are much slower than affective reactions but that both relate to each other, such that conscious evaluation of expected success occurs after a more automatic feeling arises when the rate of discrepancy reduction suddenly shifts. Furthermore, negative feelings that arise when the rate slows down produce negative expectancies, whereas positive feelings that arise when the rate speeds up produce positive expectancies. Thus the occurrence of expectancies depends in part on the emotions that exist prior to assessing outcomes success. Expectancies are also tied directly to the memories that are utilized when certain emotions are elicited. Moreover, individuals bring forward past occurrences of outcomes and the feelings that were associated with them at the time. When similar situations involving discrepancy reduction
progress are prevalent in the present time these memories are easily accessible. In these instances, Carver and Scheier argue that affective tone subsequently elicits expectancies of eventual success.

In relation to the current study, I am proposing that when interruptions impede the rate of progress toward goal pursuit individuals will experience an affective as well as expectancy reaction to this disruption. To account for the argument presented above, I am also proposing that the expectancies that arise when interruptions occur are directly related to the affect experienced when goal progress is judged. More specifically, I am arguing that affect will mediate the influence of interruptions on expectancies.

*Hypothesis 22:* Affect will mediate the influence of interruptions on expectancies.

I am also extending this mediation effect to the slower reactions that are subsequently experienced as a result of interruptions to goal attainment. Thus the expectancies that arise as a result of affect that is experienced may also influence goal revision decisions that follow. As shown in Figure 2.9 above, as interruptions occur during goal pursuit, outcome expectancies are assessed. If an individual feels confident that they can maintain their goal then no revision occurs and current goal pursuits are continued. If however individuals are doubtful that current pursuits can be attained after an interruption has occurred, then one way to reclaim lost progress is to adjust the goal downward. This new standard will serve as the referent in the new action- and meta-level loops, which will serve to make current rates of progress seem faster as one will now be closer to the goal. As Carver and Scheier (1990) claim, “…as people accumulate more experience in a given domain, adjustments can occur in the pacing that they expect and demand of their efforts.” Since expectancies seem to occur before slower reactions, such
as decisions to change goals, I am proposing that expectancies may also mediate any effects on goal revision.

_Hypothesis 23:_ Expectancies will mediate the effect of interruptions on goal revision.

Figure 2.17 below updates the heuristic model to account for these exploratory hypotheses, summarizing the full model explored within the current study.

**Summary**

In sum, the following study explores the relative contributions of situational components to interruptions as well as dispositional variables that are argued to relate to subsequent self-regulatory responses. Hypotheses were described above in relation to the model that ties together both interruption and self-regulatory paradigms. More specifically, current research relating to cognitive characteristics of interruptions’ effects were expanded to account for more proximal motivational and self-regulatory responses inherently tied to the demands associated with the arrival of an interruption. These responses were couched within the velocity hypothesis afforded by Carver and Scheier (1990, 1998) to better explain the mechanisms behind this process.
Figure 2.17. Full model including all experimental hypotheses. *Note:* H = Hypothesis; Hyps = Hypotheses.
CHAPTER III
METHOD

Overview

166 undergraduate students from a large Midwestern university participated in an 80 minute study in exchange for extra credit. This study employed a 2 (interruption control: control vs. no control) X 2 (interruption importance: high vs. low) between-subjects design. Each participant sat in front of a personal computer, which administered all pieces of the experiment described below.

Participants completed three 10-minute trials of a proofreading task, in which they were interrupted for three-minutes during the second and third trials with a scheduling task. Although all participants were informed that they may be interrupted during their performance of the proofreading task, they did not know when or for how long they would be interrupted (actual interruption takes up 3 minutes of 10-minute clock). No interruption was presented during the first trial, so that participants could form initial expectations regarding the level of performance they might achieve on the proofreading task in the absence of interruptions. That is, participants were expected to use performance on this first round to estimate the level of performance that they may be able to achieve for all three rounds as a whole. This was intended to make the presence of the interruption (during Trials 2 and 3) more salient and jarring, as the loss of three-minutes
meant that initial goals would be very difficult—if not impossible—to attain. This set the stage for the examination of the affective and behavioral responses to such interruptions (e.g., negative emotions, consideration of revising goals downward, increasing effort to make up for lost ground, etc.).

The proofreading task consisted of nine memos (three in each of the three trials), in which various words were misspelled throughout. This task required participants to click on words they felt were misspelled (e.g., errors) until they felt they had correctly identified all errors throughout the letters (see Appendix D). Words were highlighted when clicked on by participants in order to provide participants with a visual indication of which word(s) they had already marked as an error. To increase task difficulty, a time limit was imposed on the task (10 minutes per trial), so participants may or may not get through the entire selection. This time limit was implemented to make this task more demanding and complex, and to increase the extent to which the interruption task impaired proofreading task performance. A clock representing time available for the proofreading task appeared in the upper-right hand corner of the screen and continuously counted down from ten minutes at the start of each trial.

A scheduling task served as the interruption. This task asked participants to check for available times across three of six employees in order to pick the correct day and time interval within which these selected employees are available to attend either a 1- or 2-hour meeting (randomized across schedules). This interruptive task was quite intrusive (comprised 3 minutes of the 10 minutes in Trial 2 and Trial 3), in that it “drained” time that could have otherwise been allocated to the proofreading task. A separate clock appearing below the “memo clock” counted down from three minutes when participants
switched to this task. For those with control over the interruption only, if they switched back to the proofreading task the clock representing the scheduling task stopped (those without control over the interruption did not have the option to switch back to the proofreading task before the three minutes had elapsed). The clock started again when they switched back over to the scheduling task. While working on the proofreading task and the seven minutes had expired, participants were automatically switched to the scheduling task for any remaining time that existed on the scheduling task clock. The task was also cognitively demanding by requiring that participants assess up to three employees across all five days of the workweek (Monday-Friday). Additionally, participants were to schedule an overlap for both a 1- and 2-hour time slot that was selected at random across schedules. The high complexity of this task was imposed to present a greater effect on the outcome variables. As noted above, all participants were required to spend precisely three minutes on the scheduling task during the second and third trials. This was done so that the time-demand placed by the interruption was held constant for all participants—otherwise, the interruption may siphon only a small amount of time for some participants (e.g., high ability participants) but could require substantial time for others (e.g., low ability participants). Thus, during Trials 2 and 3, participants had three minutes to correctly complete as many schedules as possible—upon submitting a correct schedule a new schedule appeared with different parameters (e.g., new employees with different meeting availabilities) asking the participant for a new day and time interval. If an incorrect schedule was submitted participants were informed they were wrong and were asked to please try again. The amount of schedules correctly submitted also helped identify effort exerted on the interruption (i.e., submitting more
schedules indicated higher effort and less schedules indicated lower effort), which was utilized to help explain results.

**Manipulations**

Control over the interruption was manipulated based on whether or not participants had the ability to determine when to work on the interruptive scheduling task. More specifically, control was operationalized as having a choice of when to switch to the interruption as well as being able to finish the interruptive task all at once, or in small chunks by switching back and forth between the proofreading task and scheduling task. In order to increase the distractibility of the interruption, I decided to present it within an early portion of the proofreading task (after the first 2½ minutes had expired in Trials 2 and 3)\(^1\) such that participants did not have time to get reacquainted with the primary task before being presented with more responsibilities. This has been shown to be more disruptive than when presented later or during task boundaries (Iqbal & Bailey, 2005; Monk et al., 2004). A message flashed briefly on the right side of the screen, signaling the start of the interruption. This message functioned much like a pop-up message in which action was required of the recipient. It told participants that another task is required for them to complete. Inherent in this message was the availability of control over the interruption. Participants in the condition with control over the interruption were able to read the interruption message but were able to switch to this task at their discretion by clicking on a button under the message. The three minutes afforded for the interruption did not start until participants clicked on a button that took them to the task.

\(^1\) The 2½ minutes represented roughly the first third of the seven minutes they had for the proofreading task.
(only for those with control over the interruption). Once they clicked on the button they were taken to the interruptive task where they read some brief instructions on what was required of them. Also, participants in this condition were able to switch back and forth among both the proofreading task and scheduling task as many times as they wanted. Thus, their control over how they handled the interruption was maintained throughout whereby they could execute a simultaneous or sequential dual-task strategy.

Conversely, those without control over the interruption did not have the option of being able to choose when they handled the interruption. In this condition, participants were automatically taken to the interruptive scheduling task. Similarly with participants in the “control over interruption” condition, participants in the “no control over interruption” condition first saw the interruptive task 2 ½ minutes after the start of the trials (only Trials 2 and 3). However, for participants without control over the interruption, the three minutes afforded for the interruption started automatically when the interruption task was presented (taking them abruptly away from their current proofreading task). The instructions were the same as for the “control over interruption” condition however participants were not able to switch back and forth between both tasks. Thus, they were only allowed to go back to the primary task when they had completed the interruptive task (as many of the ten schedules they could complete), and the three minutes had expired.

Interruption importance was manipulated by differing incentives for completion of the interruptive task schedules, as well as varying the consequences associated with the task. When beginning the study, participants were told that they might receive an additional task but that this is normal for their role as a recruiting assistant. For those in
the high interruption importance condition, instructions went on to say that, “Remember: in your recruiting assistant job, you will also have other tasks which may call for your attention at any time. Because these other tasks are of HIGH IMPORTANCE, large incentives are provided for their completion.” Participants in the high importance condition were informed that they would receive 10 cents for each schedule they answered correctly for a chance to earn up to $2 across the entire study. Also, they were told that their boss has chosen them over others as they can be trusted with this task, which is associated with scheduling meetings for budgetary issues related to positions similar to their recruiting assistant position, that their $.10 per schedule is ten times the amount that most companies pay their employees, that the money they earn is real and will be received at the conclusion of the study, and that the scheduling task was being used for another study so their performance will help determine its validity.

Conversely, participants in the low interruption importance condition were also told that their role as recruiting assistant might foster the arrival of additional demands. Instructions went on to say that, “Remember: in your recruiting assistant job, you will also have other tasks which may call for your attention at any time. Because these other tasks are of LOW IMPORTANCE, small incentives are provided for their completion. However, they still must be done.” Participants in the low importance condition were informed that they would receive 1 cent for each schedule they answered correctly for a chance to earn up to 20 cents across the entire study. They were also told that the schedules were for meetings associated with the company-sponsored picnic, which no one seemed to enjoy from past years, that many people in their department could have done the task but their coworker decided to push this off to them to work on, and that
most companies pay their employees ten times more than they are earning to do the same task. No mention of whether the money they earn is real was given in this condition (although they still received money at the conclusion of the study). Thus, with the combination of an incentive structure and instructions highlighting a high versus low importance mentality, it was expected participants would see this additional task as different in its importance level.

Procedure

After informed consent participants completed questions on demographics, polychronicity, action-state orientation, tenacity, and a self-regulation measure. They then read a short paragraph in which they were timed for their reading speed and asked to answer three questions measuring their comprehension. Participants were then presented with instructions on their role as a recruiting assistant who are new to the job but would be working for the next three days (represented as trials). The instructions highlighted the following: their job is a recruiting assistant within a recruitment-based company. Much of their work involves proofreading memos from individuals in the organization, as well as from clients seeking job opportunities, before the memos are sent out. Most of the memos are replies to specific job postings. Following this description, a summary page was also given to explain performance scores and the incentives associated with them (further explanation is located below under Measures within “Performance”). After these instructions, participants were taken to practice on the proofreading task. Three minutes were given to finish looking over a memo with misspelled words, in which participants clicked on the words they felt were incorrect. Performance feedback was then given at the end of the trial as the percentage of correctly identified misspelled words (includes
the selection of false positives) they found. Participants were also provided with a 
continuously updated (i.e., every 30-seconds) projection of their expected performance 
during the task. This projected feedback was provided to serve as a way for participants 
to gauge how their current rate of progress related to an expected end of trial and overall 
performance score—that is, it indicated the performance that would be expected if the 
current pace of finding misspelled words was maintained throughout the remainder of the 
trial and in subsequent trials. Projected performance was utilized to make the 
performance implications of the interruption more salient to participants so that they 
would be more strongly affected by its occurrence. Thus, the projected performance was 
dynamic as it might change due to unforeseen interruptions, which may change the pace 
of progress on the proofreading. Following performance feedback on the practice trial, 
participants’ affect was measured.

Participants were asked to set both proximal and distal goals on the proofreading 
task across all three trials. Before they were asked for their personal goals for Trial 1, 
individuals were informed of how their goals and performance related to external 
incentives (see Appendix B). Incentives were utilized as to make personal goals more 
meaningful, as well as make effort towards performance more beneficial to the 
individual, and to make the interruption more salient (as interruption-induced decreases 
in one’s expected proofreading task performance meant decreases in the number of 
awards one might receive). The external incentives for the proofreading task were lottery 
entries for a chance to win $50. The number of lottery entries earned was a function of 
proofreading task performance in relation to one’s proofreading task goal. By setting 
higher goals, participants became eligible for more lottery entries, in comparison to
setting lower goals. For example, a participant setting a performance goal of 30% would be eligible to receive up to 9 lottery entries, whereas a participant setting a performance goal of 70% could receive 21 lottery entries for meeting that goal. Thus, there was greater potential reward to setting one’s sights high.

However, the number of lottery entries actually received also depended on one’s actual level of performance—specifically, participants lost 5 lottery entries (relative to the nominal level associated with their chosen goal) for every 10 points they fell short of their goal. For example, although a participant who set a goal of 70% would earn 21 entries for precisely meeting that goal, they would only receive 6 entries if their actual performance were 40%. In comparison, that same level of performance (i.e., 40%) would have earned the participant 12 lottery entries if they had set a goal of 40%. Additionally, participants received 1 additional lottery entry for each 10% by which they have exceeded their goal. For example, a participant setting a goal of 40% would receive 13 lottery entries for an actual performance of 50% (goal exceeded by 10%) in comparison to the 12 lottery entries they would have received for an actual performance of 40% (goal precisely met). However, this same participant could have earned 15 lottery entries if they had set their goal at 50%. Thus, the best strategy for attaining the most entries was to set a goal that is very close to one’s actual maximum performance. Moreover, this reward structure was intended to motivate participants to set their goals at the highest level they believe they could actually attain.

The total number of entries accumulated was a function of the cumulative performance score on the proofreading task (across all three trials), relative to the overall goal participants set on Trial 3. The reward matrix (see Appendix B) awarded lottery
entries based on a combination of the final (Trial 3) overall goal and cumulative performance ranging from 10% - 100%. Participants had the option to change their overall goal for the proofreading task from Trial 1 to Trial 2 and from Trial 2 to Trial 3. At each opportunity to revise this goal, participants were reminded that revising upwards leads to the possibility of earning more lottery entries, but increases the risk of not meeting that more stringent goal, resulting in accumulating less lottery entries. They were also told that revising their goal downward provides a better chance of meeting that performance level, but may sell oneself short of earning more lottery entries if they in fact perform higher than that specific goal. Thus, after experiencing the interruption in Trial 2—which was likely to cause most participants to fall behind the pace required to meet the overall goal as set prior to Trial 2—most participants were left with the difficult choice of reducing their overall goal to a level that was more readily attainable, or maintaining their goal and attempting to improve performance on Trial 3 to compensate for the interruption.

Participants were then asked to make a personal goal for the amount of errors on the proofreading task they were trying to attain based on a percentage (e.g., 80% of the total errors) for the upcoming trial (Trial 1), as well as for their overall goal across all three trials. Participants also chose the personal goal that represented the lowest acceptable percentage with which they would be satisfied for their performance on both the upcoming and overall trials. Locke and colleagues (e.g., Locke & Bryan, 1968; Locke & Latham, 1990) have argued that such “minimal goals” provide a better representation of the performance level participants are truly seeking to attain, whereas other goals may represent “hoped for” or “wished for” goals that do not guide behavior to the same
degree. Goal commitment was assessed after each personal goal was chosen. An expectancy measure asking participants about their probability of success at various levels on the proofreading task for the upcoming trial, as well as across all three trials was also presented. After these measures, the experimental trial began with the proofreading task. During the experimental trials, control over the interruption (only Trials 2 and 3) as well as interruption importance (all three trials) was manipulated as described above. Feedback was given in the form of their rate of progress on identifying errors within the letter (during trial), which was updated every 30 seconds to account for changes in performance rate, as well as their true performance at the end of each trial (e.g., “You correctly identified 80% of the misspelled words”).

After Trial 1 performance feedback was given, participants were then measured on their post-trial affective responses, as well as on the attributions for their performance and the effort they allocated to the primary task. Attributions were assessed here for exploratory purposes only. They were then asked to set another personal overall goal and goal for the upcoming trial (including “lowest acceptable amount” goals), along with another set of goal commitment, effort, and expectancy measures for the second trial. They were able to freely choose a goal that was higher, lower, or similar to their original goal, representing goal revision. Attributions for performance were again assessed after feedback was given on Trial 2, along with a similar effort allocation measure and post-trial affect as that assessed at the end of Trial 1. Trial 3 proceeded in similar fashion after Trial 2 had ended with all similar measures given as described above. Following the last measures participants received feedback acceptance and cognitive interference measures, as well as responded to items representing the manipulation check. Finally, a debriefing
of the study was given and participants received money they earned from the scheduling task.

*Measures*

The following describes the measures that were assessed throughout the study. These included control variables, individual difference variables, and those related to the outcomes of interest (e.g., affect, performance, etc.).

*Cognitive ability.* Cognitive ability was assessed for use as a control variable. Specifically, participants were asked to report their ACT or SAT test scores. These scores have been previously shown to be valid and reliable indicators of cognitive capabilities (American College Testing Program, 1989; Gully, Payne, Kiechel, & Whiteman, 1999; Schmidt, 1988). I also obtained participants’ consent to collect their grade-point average and ACT/SAT scores from University records. All scores were standardized using national norms before being included in the analyses.

*Reading Speed/Comprehension.* Both reading speed and reading comprehension were used as control variables as they differ across individuals. Although proofreading does not necessarily require an individual to read and comprehend words in the usual way (may just scan for words, or even start from the end of a memo and proceed backwards), it was expected that one’s reading abilities could impact their proofreading performance. Participants were given a short paragraph to read, which contained the same amount of words used in actual memos on the proofreading task (both the paragraph and questions were taken from an online version of a standardized reading speed test - http://www.testprepreview.com/modules/reading1.htm). Before they started, they clicked on a button designated as, “start,” and after they finished the paragraph they clicked on a button
designated as, “stop.” The amount of time it took them to read the paragraph was
recorded in seconds. On a subsequent screen, they received three questions pertaining to
the paragraph, relating to their comprehension.

_Tenacity._ This measure was used as a control variable. Participants responded to
three items measuring how often they tend to stop before completing a goal because they
had the opportunity to pursue another, how often they shift attention among various
pursuits, and whether they find it difficult to pursue another goal until they had
completed the goal they were presently engaged in (see Shah, Friedman, & Kruglanski,
2002). Each rating was provided on a 7-point scale ranging from 1 (never) to 7 (all the
time).

_Polychronicity._ This variable was measured by the scale (10-items) developed by
Bluedorn and others (1999), as well as another scale (5-items) developed by Lindquist
and Kaufmann-Scarborough (2007). Both scales assessed an individual’s preference for
engaging in two or more tasks at the same time. Individuals marked their response to
fifteen questions (combined scales) on a 7-point likert scale (1 = strongly disagree; 7 =
strongly agree). This construct was measured on a continuum with higher levels
indicating polychronic preference, whereas lower levels indicate a monochronic
preference, or behavior that focuses on one task at a time. Questions highlighted how an
individual usually handles task accomplishment. An example question is, “I like to juggle
several activities at the same time.”

_Action-state orientation._ In an attempt to assess the construct validity of a revised
measure of action-state orientation, it was found using exploratory and confirmatory
factor analyses that 22 items reflected a three-factor solution corresponding to
Preoccupation, Hesitation, and Volatility (Diefendorff et al., 2000). This revised measure replaced the existing 36-item Action Control Scale-90 measure (see Kuhl & Beckmann, 1994). The current study measured responses on the full 36-item scale (scale scores were also made for the revised 22-item measure for purposes of hypothesis testing) in which participants respond to depictions of scenarios that occur in everyday life, whereby they were forced to choose between two behavioral options representing state and action poles. An example item from the scale representing hesitation is, “When I know I must finish something soon: I have to push myself to get started (state); I find it easy to get it done and over with (action).” The responses that were chosen that represented action- or state-oriented poles were summed to form an overall action-state orientation.

**Self-regulation.** This measure was included to see how participants actively self-regulate their actions toward behavior prevalent in their life. This afforded an externally valid means of justifying the results present in the current study. Participants responded to twenty-four items related to school- and work-related behaviors asking them how well they feel they have managed each task over the past three months (see Diefendorff, Lord, Hepburn, Quickle, Hall, & Sanders, 1998). Each rating was provided on a 5-point scale ranging from 1 (*not at all well*) to 5 (*very well*). An example of an item is, “Attending classes as often as required.”

**Effort allocation.** To assess the effort exerted on the primary task (proofreading), participants were asked 5 questions on a 7-point likert scale (1 = *little or no effort*; 7 = *very high effort*) indicating how much effort they allocated in relation to the primary task. An example item is, “What was the level of effort you invested when you engaged in this activity?” Participants’ number of schedules solved (interruptive time availability task)
and performance on the proofreading task was also be used as a proxy for the amount of
effort allocated to each task.

*Affect.* Participants’ affective responses were measured using emotional terms
used in self-regulatory research from an emotional intensity measure (e.g., Shah &
Higgins, 2001). Participants rated how intensely they currently felt various negative (8)
and positive emotions (8) on a 5-point likert scale (1 = “very slightly or not at all;” 5 =
“extremely.”) Some positive emotions used were “excited,” “proud,” and “happy,”
whereas some negative emotions used were “sad,” “agitated,” and “discouraged.” These
emotions were intended to capture more of the emotional circumplex than those
associated with the PANAS (e.g., Watson, Clark, & Tellegen, 1988). The selected
emotions also related to differences in activation or arousal, and so a complete
examination of both valence and arousal was facilitated by the use of this measure.

*Expectancy.* Outcome expectancies were measured by having participants
estimate their chances of reaching a goal on a scale from 0 to 100, with 10-point
increments. The current study utilized this method by marking off each 10% solutions
found of the proofreading task and asking participants to mark their confidence in solving
each level on an eleven-point scale with 0 reflecting “not at all confident” and 10
reflecting “extremely confident.” Participants rated their expectancies for both the
upcoming trial and across all three trials for each of the three trials. This measure was
taken after goals had been chosen and before commencement of the upcoming trial.

*Goal commitment.* Goal commitment can be defined as “one’s determination to
reach a goal.” It can also be viewed as the intention to extend effort toward goal
attainment, persistence in pursuing that goal over time, and an unwillingness to lower or
abandon that goal (Hollenbeck & Klein, 1987). Goal commitment was assessed using the
unidimensional 5-item scale adopted from Klein, Wesson, Hollenbeck, Wright, and
DeShon (2001). This updated version from the original HWK scale has been
demonstrated to be construct valid and have appropriate psychometric properties. This
construct was measured on a 5-point scale with 1 = strongly disagree and 5 = strongly
agree. An example item is, “I am strongly committed to pursuing this goal.”

Performance. The current study provided true performance feedback representing
the percentage of misspelled words correctly identified within the proofreading task.
Thus, performance was operationalized as the percentage of misspelled words identified
within the trial, ranging from 0-100% and given at the end of each trial. Actual
performance was based on the points gained from correctly identifying misspelled words
(1 point for each correctly identified misspelled word), minus a penalty for false
positives, or words that were falsely identified as being misspelled (e.g., 40 correctly
identified misspelled words – 5 incorrectly identified misspelled words = 35 points out of
60 possible = 58.33%). Performance feedback was given both during, as well as at the
end of each trial. The feedback occurring during trials provided information on the
current rate of progress in finding the possible misspelled words. This was computed in
which the amount of misspelled words correctly identified was compared to both the time
that remained and the number of errors left to be identified (e.g., if an individual had only
found 10 of the 60 possible misspelled words within a trial [20 misspelled words in each
of 3 memos] and half the time remained then a projected performance for the end of the
trial would be 20 out of 60 or 33.33%). As noted above, this information was provided so
that participants were able to judge whether their current rate of progress was sufficient to
maintain the goals they set for themselves. Also, the dynamic quality of this feedback functioned in relation to the arrival of interruptions, which was expected to potentially slow down an individual’s current rate of progress. Furthermore, it functioned to make the performance implications of the interruption increasingly relevant for participants so they saw the interruption as more interruptive on their primary performance goals.

*Personal goals.* Participants set personal goals on the performance score they were seeking to achieve on the proofreading task. Individuals chose their goals from a list indicating levels between 10% and 100% in 10-point increments. *Proximal goals* were chosen for the upcoming trial, as well as *distal goals* regarding their overall performance across all three trials. This distal goal (the one chosen for “Across All 3 Days,” and not their “lowest acceptable”) served as the goal that related to the possibility for accumulating lottery entries, as noted above. Participants indicated their goals before each trial of the proofreading task. Participants also chose the personal goal that represented the lowest acceptable percentage they would be satisfied with for their performance for upcoming trials and across all trials. This has been shown to be motivating as much as their tried for personal goal (Locke & Bryan, 1968).

*Goal revision.* This outcome measure was operationalized as the change in personal goal level (both per-trial performance goal and overall performance goal) from Trial 1 to Trial 2 and from Trial 2 to Trial 3 (includes interruption). Inherent in this operationalization is the necessity of a difference score (Trial 2(3) goal - Trial 1(2) goal). This difference represents an indication of revision. If the number is positive then upward revision occurred whereas if the number is negative then downward revision occurred. Also, if the number is zero, then a maintenance strategy occurred. With the typical
ambiguities inherent in difference scores (e.g., Edwards, 1995; 2001), besides this operationalization, the current study also employed a multivariate, repeated-measures data analysis strategy described more fully below. To summarize here, changes in personal goals represented a within-person variable and was used as a predictor (Trial) in which interactions between Trial and other predictors indicated that the predictors influenced the nature of the changes in the DV from Trial 1(2) to Trial 2(3).

**Attributions.** Causal attributions were assessed via use of the McAuley, Duncan, and Russell (1992) revised causal dimension scale. The CDSII scale is a 12-item measure comprised of four factors (locus of causality, stability, personal control, and external control). Participants responded on a 9-point Likert scale with 9 reflecting causes of the self and 1 reflecting causes of the situation. An example of a stability item is, “Is the cause of your performance something unchangeable/changeable.”

**Feedback Acceptance.** Ilgen, Fisher, and Taylor (1979) defined feedback acceptance as “the recipient’s belief that the feedback is an accurate portrayal of his or her performance” (p. 356). Feedback acceptance was measured to assess how well participants believed the feedback that was given. This was measured at the end of trial 3 in order to provide an extra variable that may help explain the results. Feedback acceptance was measured by having the participants respond to four questions (see Nease, Mudgett, & Quiñones, 1999). Responses were made on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). A sample question is “The feedback I received was an accurate evaluation of my performance.”

**Cognitive Interference.** This measure was used for exploratory purposes in order to determine whether participants exhibited cognitive interference during the study tasks.
There were twenty-two items (see Sarason, Sarason, Keefe, Hayes, & Shearin, 1986) asking participants how often each thought occurred to them while doing the task on which they have just worked (proofreading task). Each rating was made on a 5-point scale ranging from 1 (never) to 5 (very often). An example item is, “I thought about how poorly I was doing.” Item 22 was rated on a 7-point scale from 1 (not at all) to 7 (very much).

*Manipulation Check.* Participants responded to a 26-item measure, which was designed specifically for the details of the current study. For the interruption importance manipulation, participants responded to seven items that asked: which condition they were in (e.g., “I was told the additional task was of high importance;” “I was told that I could earn up to $2.00 on the additional task”), as well as items reflecting the perceived relative importance of the primary and secondary tasks (e.g., “The additional task was important to me to work on”). For the control over the interruption, six items asked participants whether they were able to switch back and forth between the primary and additional tasks, and if they had the option to choose when to switch to the additional task (e.g., “I was not able to choose when I switched over to the additional task”). Twenty-three of the 26 items were on a 1 (strongly disagree) to 5 (strongly agree) scale. The other three items were responded on a 1 (not at all difficult) to 5 (extremely difficult) scale. The other 13 items not specifically pertaining to the manipulations asked how difficult the tasks seemed, preferences for the time given on the tasks, and understanding of the task characteristics.
Analysis Plan

For a majority of the hypotheses described above multiple regression was utilized to determine the significance of the effect of the independent variables (IV) on the dependent variables (DV). Both difference scores and Trial 2(3) measures, controlling for Trial 1(2) were used as DVs for all regression analyses. Hierarchical regression was used when moderators were used as predictors and to allow a more straightforward procedure as two-way interactions could be interpreted rather than the three-way interactions required with the repeated measures analysis, as mentioned below.

When analyzing changes in the responses to interruptions as the DV there have been concerns in using difference scores (Edwards, 1995, 2001). To address these concerns in using difference scores in general, I employed a multivariate, repeated measures data analysis strategy using the Repeated Measures GLM procedure in SPSS when looking at the influence of interruption control and interruption importance. When moderators were considered, hierarchical regression was utilized as the three-way interactions from a repeated measures approach were thought to be more difficult to interpret. In the repeated analyses procedure, multiple observations (affect, expectancies, goals, and performance) over time are nested within individuals. The IVs (interruption importance and interruption controllability) represented between-persons variables, whereas the DV (affect, expectancies, goals, and performance) represented a within-person variable. Changes in the dependent variables were represented by including “trial” as a predictor, which indicated the extent to which affect, expectancies, goals, and performance changed within-person from Trial 1 to Trial 2, and Trial 2 to Trial 3. Thus, interactions between trial and the IVs mentioned above indicated that the predictors
influenced the representation of the DV across time, which provided an unconfounded value for the DV at both time points (see Tolli & Schmidt, 2008).

Finally, a Power Analysis was used to determine the sample size needed to detect a medium effect size while using multiple regression as my analysis strategy. A statistical software program called “G-Power” (Erdfelder, Faul, & Buchner, 1996) was employed, which determined the sample size using an estimated effect size (0.15), an alpha level (.05), power level (.95), and number of predictors (2). The result showed an estimated sample size of 107 participants ($\lambda = 16.05$, critical $F(2, 104) = 3.0837$). When the number of predictors was increased to four (to take into consideration the individual difference moderators), the required sample size needed increased to 129 participants ($\lambda = 19.35$, critical $F(4, 124) = 2.4448$).
CHAPTER IV

RESULTS

This chapter will begin by discussing the preliminary steps that were taken to describe the measures that were assessed, including: factor analytic findings of the moderators, correlations and reliabilities of the variables within the heuristic model, manipulation check findings, details of how the analyses were run for all hypotheses listed above, as well as how missing data was handled and the reasons for excluding participants in the analyses. Secondly, the results of the hypotheses will be organized according to their relation to the responses that were predicted to be affected by the arrival of interruptions: affect, expectancies, goal revision, and performance. Finally, exploratory results relating to cognitive interference, effort, lifestyle self-regulation, and task switching will be discussed.

Preliminary Analyses

Before any testing of the hypotheses were executed it was important to establish the psychometric properties of the moderators. Also, a confirmation that the manipulation check worked in accordance with expectations was also an important first step. Additionally, correlations among the outcomes will also be discussed below.
Factor Analysis

Both action-state orientation and polychronicity measures were subjected to a factor analysis with a varimax rotation. Each measure was analyzed using an exploratory factor analysis to confirm prior uses of the scales. Both the full (reported here) and revised scale for action-state orientation showed consistent results representing a three-factor solution. Both the scree plot and eigenvalues greater than 1 were used as criteria for this conclusion. Table 4.1 shows the factor loadings across the three factors. This is in agreement with past research showing that a three-factor solution is the best description for the action-state orientation scale (Diefendorff et al., 2000).

Table 4.1. Factor Loadings for Action-State Orientation Measure.

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Table 4.1. Factor Loadings for Action-State Orientation Measure (continued).

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</tr>
<tr>
<td>2</td>
<td>-.07</td>
<td>.01</td>
</tr>
</tbody>
</table>

An exploratory factor analysis was also run for the polychronicity measure. Both the scree plot and factors with eigenvalues greater than 1 resulted in an initial two-factor solution. To recap, polychronicity was measured by combining two scales – a ten-item measure (IVP: Bluedorn et al., 1999) and a five-item measure (PMTS: Lindquist & Kaufmann-Scarborough, 2007). These scales were highly correlated ($r = .75, p < .01$), and as Table 4.2 below indicates the factor loadings for the 15-item measure, the items on the 5-item measure (Items 11-15) loaded with items from the 10-item measure on a similar factor. As shown, the reverse-coded items from the Bluedorn (1999) scale (items 2, 4, 5, 7, & 9) and item 10 loaded together on the second factor, whereas the rest of the items, including the five items from the Lindquist & Kaufmann-Scarborough (2007) scale, loaded on the first factor. The reverse-coded items however showed fairly moderate cross-loadings on the first factor. Bluedorn and others (1999) examined the basis for a two-construct interpretation of the IVP using the reverse-coded items as the second factor from the non-reverse coded items. From three different samples, both factors were highly correlated and so they interpreted the scale as one-construct. The current factors (reverse and non-reverse items) within the present study were also highly correlated ($r = .53, p < .001$) and so the scale was interpreted as one factor.
Table 4.2. Factor Loadings for Polychronicity Measure.

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - I like to juggle two or more activities at the same time.</td>
<td>.76</td>
<td>.41</td>
</tr>
<tr>
<td>11 - I prefer to do two or more activities at the same time.</td>
<td>.75</td>
<td>.43</td>
</tr>
<tr>
<td>12 - I typically do two or more activities at the same time.</td>
<td>.74</td>
<td>.26</td>
</tr>
<tr>
<td>3 - I believe people should try to do many things at once.</td>
<td>.71</td>
<td>-.05</td>
</tr>
<tr>
<td>14 - I am comfortable doing more than one activity at the same time.</td>
<td>.71</td>
<td>.28</td>
</tr>
<tr>
<td>13 - Doing two or more activities at the same time is the most</td>
<td>.70</td>
<td>.30</td>
</tr>
<tr>
<td>efficient way to use my time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 - I believe it is best for people to be given several tasks</td>
<td>.69</td>
<td>.14</td>
</tr>
<tr>
<td>and assignments to perform.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 - I believe people do their best work when they have many tasks</td>
<td>.69</td>
<td>-.02</td>
</tr>
<tr>
<td>to complete.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - I like to juggle several activities at the same time.</td>
<td>.65</td>
<td>.30</td>
</tr>
<tr>
<td>2 - I would rather complete an entire project every day than</td>
<td>-.17</td>
<td>.76</td>
</tr>
<tr>
<td>complete parts of several projects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - I would rather complete parts of several projects every day</td>
<td>.21</td>
<td>.73</td>
</tr>
<tr>
<td>than complete an entire project.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 - I believe it is best to complete one task before beginning</td>
<td>.37</td>
<td>.62</td>
</tr>
<tr>
<td>another.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 - When I work by myself, I usually work on one project at a</td>
<td>.25</td>
<td>.60</td>
</tr>
<tr>
<td>time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 - I prefer to do one thing at a time.</td>
<td>.47</td>
<td>.58</td>
</tr>
<tr>
<td>9 - I seldom like to work on more than a single task or assignment</td>
<td>.10</td>
<td>.44</td>
</tr>
<tr>
<td>at the same time.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Variable Correlations

Table E.1 in Appendix E displays the correlations among the study variables. Both polychronicity and action-state orientation showed high reliabilities ($\alpha = .90$ & $\alpha = .80$, respectively). However, tenacity, a three item measure, showed a somewhat low level of reliability ($\alpha = .66$). Nonetheless these measures taken together demonstrated sufficient psychometric properties for their use in the subsequent analyses. Correlations with interruption importance did not reveal many significant relationships with outcomes of affect, expectancies, goals, or performance. Interruption control did however significantly relate to Trial 3 high activation affect ($r = -.19, p < .05$) as well as Trial 3
positive/high activation affect \( (r = -.16, \ p < .05) \). Interruption control also showed
significant negative relationships with distal expectancy at Trial 1 \( (r = -.17, \ p < .05) \),
proximal expectancy at Trial 2 \( (r = -.19, \ p < .05) \) and distal \( (r = -.18, \ p < .05) \) and
proximal \( (r = -.17, \ p < .05) \) expectancies at Trial 3. This goes against expected patterns,
such that as control was warranted, expectancies were lower. Explanations regarding this
result will be discussed in Chapter Five.

Polychronicity significantly and positively related to tenacity \( (r = .51, \ p < .01) \),
which confirms the descriptions of the constructs in how they both relate to working on
multiple tasks/goals at once. Polychronicity negatively related to Trial 2 high activation
affect \( (r = -.16, \ p < .05) \) and low activation affect \( (r = -.21, \ p < .01) \), indicating that after
an interruption those preferring multiple tasks rated their emotions as not inherently high.
Action-state orientation showed many positive and significant relationships, most notably
with positive affective responses, such that those who were action-oriented showed
higher responses to positive emotions especially after an interruption occurred \( (r = .22, \ p
< .01) \). Conversely, those were action-oriented also showed lower degrees of negative
emotions after an interruption \( (r = -.30, \ p < .01) \). Affective responses also showed
significant relationships with expectancies, goals, and performance (see Table E.1).

Expectancies showed positive significant relationships with goals \( (r = .43-.69, \ p < .01) \)
and with performance \( (r = .39-.61, \ p < .01) \). Goals also showed positive significant
relationships with performance \( (r = .31-.74, \ p < .01) \). These patterns highlight the
interplay between these various responses to interruptions, which confirms existing
theory (Carver & Scheier, 1990, 1998) that they all represent key players within
motivational and self-regulatory processes.
Manipulation Check

A manipulation check was given at the end of the study to assess whether participants responded in conjunction with their randomly assigned condition representing the manipulations of both the control over the interruption, as well as the importance of the interruption.

Items 12-17 (see Appendix A) pertained to the interruption control manipulation and reflected multiple indicators of this construct. Exploratory factor analysis revealed one factor as the best description for these items representing interruption control as only one factor had an eigenvalue greater than 1. Also, reliability for this section of the manipulation check was high ($\alpha = .90$). An ANOVA was run for the overall scale, which indicated that mean differences were significant across conditions of interruption control, $F(1,153) = 129.86, p < .01$. As can be seen in Table 4.3 below, means were in the predicted direction for each item. The means for participants with control over the interruption were significantly higher than the means for those without control over the interruption for items pertaining to participants’ feelings of control, whether they were freely able to switch to the additional task, and whether they had a choice of when to switch to the additional task, respectively (Items 12, 13, & 14). For reverse-coded items (15, 16, & 17), means were significantly higher for those without control compared to those with control, which is in agreement with the manipulation. This shows that the manipulation of control was a success among the study participants and that they reported this sense of control over the interruptions during the study.
Table 4.3. Means and Significance of Manipulation Check (interruption control).

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>I felt like I had control over when I handled the additional task.</td>
<td>Control = 3.18, No Control = 2.62</td>
<td>12.50</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>I was given control over when to switch to the additional task.</td>
<td>Control = 3.61, No Control = 2.01</td>
<td>113.26</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>I was able to choose when I switched over to the additional task.</td>
<td>Control = 3.55, No Control = 1.92</td>
<td>107.42</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>I felt like I had no control over when I handled the additional task.</td>
<td>Control = 2.27, No Control = 3.62</td>
<td>66.98</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>I was not given control over when to switch to the additional task.</td>
<td>Control = 2.31, No Control = 3.86</td>
<td>93.14</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>I was not able to choose when I switched over to the additional task.</td>
<td>Control = 2.27, No Control = 3.81</td>
<td>76.88</td>
<td>&lt; .01</td>
</tr>
</tbody>
</table>

Items 18-23 (see Appendix A) pertained to the interruption importance manipulation. Exploratory factor analysis revealed two factors as the best description of these items as two factors had an eigenvalue greater than 1. The first factor represented agreement to the manipulation characteristics of the incentives tied to the task and the high versus low wording (items 18, 19, 20, & 21). The second factor represented the perceived importance of the interruption (items 22 & 23). Reliability estimates for each of these factors were satisfactory (α = .83, & .90, respectively). Scale scores were computed after selected items were reverse scored (items 19, 21, & 23) to represent agreement toward an interruption of high importance. As was done for the items above, several one-way ANOVAs were run in order to assess mean differences across those responding to a high versus low importance interruption. As can be seen in Table 4.4 below, all F-tests were significant and means were in the predicted direction for each of
the two factors. The means for those responding to an interruption of high importance were significantly higher than the means for those responding to an interruption of low importance for the factor representing the incentives and wording. Also, for the factor pertaining to participants’ perceived importance the means were also significantly different among those receiving an interruption that was high versus low in its importance. Moreover, when asked whether the additional task was/ was not important for them to work on, those responding to an interruption of high importance indicated that the interruption was more important to them than those responding to an interruption of low importance. These results indicate that participants viewed the importance of the interruptions they received in congruence with the manipulation.

Table 4.4. Means and Significance of Manipulation Check (interruption importance).

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentives &amp; Wording</td>
<td>High = 3.95</td>
<td>227.61</td>
<td>&lt; .01</td>
</tr>
<tr>
<td></td>
<td>Low = 2.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Importance</td>
<td>High = 3.33</td>
<td>18.39</td>
<td>&lt; .01</td>
</tr>
<tr>
<td></td>
<td>Low = 2.68</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Items 1-11 and 25-26 pertained to the difficulty of both the proofreading and scheduling task, preference for more time on the tasks, how bored and excited participants felt executing both tasks, how distracted they felt regarding the arrival of the interruptive task, and whether they understood how to perform both tasks. There were no significant mean differences when comparing conditions representing control over the interruption or when comparing conditions representing interruption importance, nor were any such differences expected. It is interesting to note that participants indicated that they: found both the proofreading and scheduling tasks difficult to perform (\(M = \)
3.61); would have preferred to have more time on the tasks as a whole ($M = 3.66$); for the most part finding the interruptive task moderately distracting ($M = 2.59$); enjoyed the proofreading task ($M = 3.26$); found both the proofreading task ($M = 4.25$) and scheduling task ($M = 3.55$) easy to understand with regard to how they are performed in general.

**Analysis Approach**

For hypotheses indicating a change in an outcome due to the arrival of an interruption, a Repeated Measures approach using the GLM procedure in SPSS was utilized. Using *Trial* as a within-subjects variable in the repeated measures analysis, significant interactions between trial and the between-subjects variables (interruption control and interruption importance) indicate a significant change in the outcome over time due to effects of the interruption. In other words, a comparison across trials was analyzed, which represented the change in trial without an interruption to a trial with an interruption. Both affect and performance were compared across Trials 1 and 2, whereas expectancies and goals were compared across Trials 2 and 3. Thus, the change over time of the outcomes represented the effect of the interruption.

For analyses looking at interactions with moderators (polychronicity and action-state orientation) hierarchical regression analysis was utilized. This procedure was used for ease of interpretation by testing hypotheses with two-way interactions rather than the three-way interactions needed to test them with the repeated measures approach. Thus, hierarchical regression was deemed more straightforward to use, while it still allowed for the explanation of changes in the outcomes due to an interruption. All results for action-state orientation refer to the full scale, although the revised scale was also analyzed and
produced redundant results except where explicitly noted. Covariates (ACT score, reading speed, reading comprehension, and tenacity) were entered at Step 1, as they were thought to relate to proofreading performance, as well as to the manner upon which individuals would organize their work across the primary and interruptive tasks. The between-subjects factors (interruption control and interruption importance) and moderators were entered at Step 2, and the interactions were entered at Step 3. All covariates were standardized before being entered into the regression model and main effects of the variables were interpreted without the inclusion of the interactive effect (Step 2 beta weights and p-values).

The dependent variables (DV) for the regression analyses were primarily difference scores. Difference scores were computed by subtracting the Trial 1(2) measurement from the Trial 2(3) measurement. Negative scores indicated that the outcomes decreased, whereas positive scores indicated that the outcomes increased from the first to the second trial period. To further assess relationships between the predictors and outcomes, the DV for Trial 2(3) outcomes was predicted while controlling for Trial 1(2) measures. These regressions were run in order to be able to explore the changes in outcomes without the use of difference scores and served as another robust test of the influence of interruptions’ effects.

**Missing Data and Final Sample**

Missing data were found for ACT scores reported from the University of Akron Registrar. There were 35 participants who either did not have an ACT score to report or did not give consent to obtain the information. For these individuals mean imputation was utilized based on the overall sample mean ($M = 21.0$). For the specific measures pertinent
to the hypotheses relatively few participants reported missing data. For the analyses described below, pairwise deletion was used as to obtain the most participants in each analysis.

Ten participants were excluded from the analyses described below. Based on experimenter observation, five participants were deemed to have not attended to the descriptions throughout the 80-minute study, blindly moving on to the next page without reading instructions. One individual failed to understand the task and suffered as a result by performing three standard deviations below the sample mean on the proofreading task. Four other individuals responded with a central tendency across the board on most of the measures taken during the study. These participants finished the study within roughly 45 minutes, while most other participants took between 70-80 minutes. This corroborated their central tendency form of responses to the questionnaires. Thus, these 10 participants were excluded from the analyses based on these reasons.

Analysis of Hypotheses

Next, each of the results pertaining to the hypotheses listed in Chapter Two will be discussed with respect to the outcomes they were associated with. Thus, each of the following analyses will be discussed according to interruptions’ effects on affect, expectancies, goal revision, and performance. It is important to note that the analysis reported for each hypothesis was either a repeated measures approach or hierarchical regression as deemed most appropriate for the proper question of interest. However, other analyses were run in order to look at the data in a different way, and produced substantively redundant results unless otherwise noted.
Affect

Hypotheses 1-7b pertained to the effect of interruptions on individuals’ affective responses. Affect was measured using 16 emotional items that pertained to each of the four dimensions of the emotional circumplex (valence and activation: positive/high activation [proud, happy, enthusiastic, excited]; positive/low activation [relaxed, interested, satisfied, calm]; negative/high activation [tense, agitated, discouraged, on edge]; and negative/low activation [sad, low, disappointed, uneasy]). These scale scores were separately analyzed for each of the hypotheses. Also, separate scale scores were computed for positive valence, negative valence, high activation, and low activation. For brevity, only significant results associated with each of the eight scale scores are reported below. A complete listing of the non-significant results is shown in Table F.1 in Appendix F. Since affect was measured after each of three task performance trials, all analyses below analyzed the change in affect from Trial 1 (no interruption) to Trial 2 (inclusion of interruption).

**Hypothesis 1.** This hypothesis predicted that control over the interruption would relate to affect, such that those with control would show less negative affective responses than those without control. A repeated measures procedure was used to assess the change in affect due to the arrival of an interruption represented by a model including the main effect for interruption control, interruption importance, and their interaction. Each of the scale scores mentioned above were used as the DV in the repeated measures analyses. The negative valence scale score was of most interest. Using this as the DV there was a significant overall effect of trial on affect, \( F(1,144) = 59.18, p < .01 \), such that negative affect increased from Trial 1 to Trial 2. When looking at the interaction of control with
trial, there was however no significant interaction effect, $F(1,144) < 1$, $p = ns$. Thus, those with control and those without control over the interruption showed similar increases in negative affect over time.

When the positive valence scale score was used as the DV, there was also a significant effect of trial on affect, $F(1,144) = 59.73$, $p < .01$, such that from Trial 1 to Trial 2, positive affect decreased. Again, there was no significant interaction of control with trial, $F(1,144) < 1$, $p = ns$. When looking at the between subjects effects of control on all affect scale scores, there was a marginally significant main effect on high activation, $F(1,144) = 3.03$, $p = .08$, such that those without control showed higher affective responses than those with control. Unfortunately, all other scale scores showed no significant main effects regarding the influence of interruption control and so it is hard to interpret whether participants’ differences on high activation emotions due to interruption control were more from positive or negative valence words. Thus, Hypothesis 1 was not supported.

**Hypothesis 2.** This hypothesis predicted that the importance of the interruption would relate to affect, such that those responding to an interruption of high importance would show less negative affective responses than those responding to an interruption of low importance. Interruption importance was examined in the same model with interruption control as noted in Hypothesis 1 above. There was a marginally significant main effect of interruption importance on negative/high activation affect, $F(1,144) = 3.35$, $p = .06$, such that those responding to an interruption of high importance showed higher affective responses compared to those responding to an interruption of low importance. This was the opposite finding of what was predicted. It may be that highly
important interruptions created the pressing demand to get accomplished, whereas unimportant interruptions didn’t create this urgency. Thus, it may be that the more important interruptions increased participants’ negative affect as a result of the higher demand for their fulfillment. There was also a significant effect of trial, $F(1,144) = 56.16$, $p < .01$, such that negative/high activation affect increased from Trial 1 to Trial 2. There was, however no interaction effect between trial and importance, $F(1,144) < 1$, $p = ns$. As the marginal between-subjects effect of interruption importance on affect was the opposite of what was expected, and there was no differential main effect of importance on affect over time, Hypothesis 2 was not supported.

**Hypothesis 3.** Interruption control and interruption importance was predicted to interact on their effects on affect, such that those with control responding to an interruption of high importance would show less negative affective responses than those without control responding to an interruption of low importance. The interaction was interpreted from the overall analysis used to examine the main effects of interruption control (Hypothesis 1) and interruption importance (Hypothesis 2). There was no significant interaction of control and importance on any affect scale score, $Fs(1,144) < 1$, $p = ns$. Thus, Hypothesis 3 was not supported.

**Hypothesis 4.** Polychronicity was expected to moderate the impact of interruption control on affect, such that post-interruption increases in negative affect should be lower those who are polychronic, especially when control was warranted. Conversely, more negative affect was expected for those who are monochronic, especially when no control was warranted. Hierarchical regression was utilized to look at the moderating impact of polychronicity. First, difference scores were computed for all affect dimensions as
mentioned above and served as the DV. The control variables, entered at Step 1, were all non-significant with any of the affect scale scores (all $t < 1, p = ns$). Secondly, both interruption control and polychronicity were entered at Step 2. No significant main effects were observed for these variables (all $t < 1, p = ns$). Finally, the interaction between polychronicity and control was entered at Step 3, showing a marginally significant effect on positive/high activation change, $\beta = 0.23, t = 1.70(1,144), p = .09$.

Table 4.5 below shows the beta-weights for each of the variables at each step in the analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Num $\beta$</th>
<th>Den $t$</th>
<th>$p$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>-0.11</td>
<td>1</td>
<td>147</td>
<td>-0.20</td>
</tr>
<tr>
<td>Reading Speed</td>
<td>-0.09</td>
<td>1</td>
<td>147</td>
<td>-1.43</td>
</tr>
<tr>
<td>Reading Comp</td>
<td>-0.02</td>
<td>1</td>
<td>147</td>
<td>-0.29</td>
</tr>
<tr>
<td>Tenacity</td>
<td>-0.02</td>
<td>1</td>
<td>147</td>
<td>-0.33</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>0.12</td>
<td>1</td>
<td>145</td>
<td>0.91</td>
</tr>
<tr>
<td>Polychronicity</td>
<td>-0.11</td>
<td>1</td>
<td>145</td>
<td>-0.14</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control X</td>
<td>0.23</td>
<td>1</td>
<td>144</td>
<td>1.70</td>
</tr>
<tr>
<td>Polychronicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note:* ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.1 below shows the plotted means describing this marginally significant interaction effect. As can be seen, when no control was given over the interruption, those that were polychronic showed more downward changes in their positive affect compared to those that were monochronic. Affective changes were similar across polychronic and monochronic individuals when control over the interruption was warranted. It was expected that monochronic individuals would show more negative reactions to the
interruption when no control was given and polychronic individuals would show less negative reactions to the interruption when control was given. Potential explanations for this unexpected finding will be provided in the discussion section. However, since this marginal interaction was not in the expected direction, Hypothesis 4 was not supported.

![Figure 4.1. Interruption Control X Polychronicity on Positive/High Activation Affect Change.](image)

When a regression was run using Trial 2 as the DV and Trial 1 as a control variable, there was a main effect of polychronicity, $\beta = -0.11, t = -2.95, p < .05$. Here, higher affective responses occurred for those that were monochronic compared to those who were polychronic. However, since no main effects existed for the dimensions that included both valence and activation, it isn’t known whether the above main effect pertains to either positive or negative valence emotions representing the low activation scale.

*Hypothesis 5a.* The Preoccupation dimension of the action-state orientation scale was expected to moderate the effect of control over the interruption on affect, such that those with control over the interruption who are more focused on thoughts relevant to the
primary task (Disengagement) would show less negative affective responses than those without control over the interruption who are tied down by task-irrelevant thoughts (Preoccupation). Hierarchical regression was used to analyze this prediction. Upon using difference scores for all affective dimensions (positive reported here) no significant main effects were found for any of the covariates (all ts < 1, p = ns), or for interruption control (all ts < 1, p = ns) and preoccupation (all ts < 1, p = ns). There was, however, a significant main effect for preoccupation on negative affect change, $\beta = -.42$, $t = -1.95$, $p = .05$ and on negative/high activation change, $\beta = -.50$, $t = -2.08$, $p < .05$ (see Table F.1 in Appendix F), indicating that more changes occurred for those who were state-oriented. Also, no significant interactions were found between preoccupation and interruption control when using either the full- or revised-scale of action-state orientation (all ts < 1, p = ns). To further assess this interaction, I also ran another regression using Trial 1 affect as a control within the model and Trial 2 affect as the DV. Nonetheless, no significant results were found. There was, however, a significant main effect of preoccupation (full scale) on negative/high activation affect at Trial 2, after controlling for Trial 1 affect, $\beta = -0.61$, $t = -2.53$, $p < .05$. Here, individuals that were better able to keep their thoughts on the primary task showed less negative affective responses compared to those that were unable to ignore their thoughts about the interruption. Since no interaction was found, Hypothesis 5a was not supported.

**Hypothesis 5b.** The Volatility dimension of the action-state orientation scale was expected to moderate the effect of control over the interruption on affect, such that those with control over the interruption who are better able to stick to their primary task despite setbacks (Persistence) would show less negative affective responses than those without
control over the interruption who have a harder time persisting in the face of new
demands (Volutility). Hierarchical regression was used to assess this hypothesis. Using
the volatility scale (positive affect reported here), no significant main effects for the
covariates (all ts < 1, p = ns) or for interruption control and volatility were found (all ts <
1, p = ns). Also no interaction effects with interruption control were found on any of the
affective dimensions using difference scores as the DV or when controlling for Trial 1
and predicting Trial 2 affect (all ts < 1, p = ns). Specific beta-weights for the changes in
each of the affective dimensions from this regression can be found in Table F.2 in
Appendix F. Thus, Hypothesis 5b was not supported. Although not predicted, analyses
were also run using the hesitation scale. No significant effects were found, however.

Hypothesis 6. This hypothesis predicted that polychronicity would moderate the
impact of the importance of the interruption on affect, such that those responding to an
interruption of high importance who are polychronic would show less negative affective
responses than those responding to an interruption of low importance who are
monochronic. Hierarchical regression was used to explore the moderating effect of
polychronicity on interruption importance when predicting affective responses. Both
difference scores and controlling for Trial 1 affect when predicting Trial 2 affect
produced no significant interaction effects (all ts < 1, p = ns). Table F.3 in Appendix F
shows the beta weights for the covariates, interruption control, polychronicity, and
interactions for all affective dimensions. There was, however, a main effect of
polychronicity on time 2 low activation affect, β = -0.11, t = -3.10, p < .05. Here, higher
affective responses occurred for those that were monochronic compared to those who
were polychronic. However, since there were no main effects that were significant for the
dimensions that included both valence and activation, it isn’t known whether the above main effect pertains to either positive or negative valence emotions representing the low activation scale. Given no significant interactive effect, Hypothesis 6 was not supported.

*Hypothesis 7a.* The Preoccupation dimension of the action-state orientation scale was expected to moderate the effect of the importance of the interruption on affect, such that those responding to an interruption of high importance who can stay focused (Disengagement) would show less negative affective responses than those responding to an interruption of low importance who get caught up in irrelevant thoughts not pertinent to the task (Preoccupation). Upon looking at the results for the hierarchical regression models and when using difference scores as my DV, there was a marginally significant moderating effect of preoccupation on importance (full scale) when assessing positive affect change, $\beta = -0.75$, $t = -1.66$, $p = .09$. This interaction did not qualify any significant main effects for interruption importance or preoccupation. Also no main effects for the covariates were witnessed. Table 4.6 below summarizes the parameter estimates of the regression models. Figure 4.2 below shows the means for the interaction.
Table 4.6. Importance X Preoccupation on Positive Affect Change.

<table>
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<th>Variable</th>
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<th>t</th>
<th>p</th>
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Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.2. Interruption Importance X Preoccupation on Positive Affect Change.

As shown in the figure above, those who were action-oriented (disengagement) showed more decreases in positive affect than those who were state-oriented (preoccupation) when the interruption was of high importance. Conversely, this relationship was the opposite when responding to an interruption of low importance, such that those who were state-oriented showed more decreases in positive affect compared to those who were action-oriented. This interaction partially supports the prediction as those
responding to an unimportant interruption and who get caught up in irrelevant thoughts not pertinent to the primary task showed more negative reactions than those who could better stay focused. A similar marginal interactive effect was also found when using the positive/high activation dimension as the DV, $\beta = -0.87$, $t = -1.69$, $p = .09$. It is also noteworthy to mention that there was a main effect for preoccupation on negative/high activation change, $\beta = -0.50$, $t = -2.08$, $p < .05$, such that those who were state-oriented showed more changes in negative affect as a result of the interruption than those who were action-oriented. Since I did not expect a crossover effect, but more of a fan orientation of this interaction, Hypothesis 7a was partially supported.

**Hypothesis 7b.** The Volatility dimension of the action-state orientation scale was expected to moderate the effect of the importance of the interruption on affect, such that those responding to an interruption of high importance who are steadfast (Persistence) would show less negative affective responses than those responding to an interruption of low importance who give up more easily (Volatility). A similar regression model was run as in Hypothesis 7a above. No significant main effects were found for any of the covariates, or for importance or volatility. There was, however, a marginally significant interaction effect of importance and volatility on negative/low activation affect change, $\beta = 1.16$, $t = 1.70$, $p = .09$. Table 4.7 shows the parameter estimates of the regression models, while Figure 4.3 shows the interaction.
Table 4.7. Importance X Volatility on Negative/Low Activation Affect Change.

<table>
<thead>
<tr>
<th>Variable</th>
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<th>df</th>
<th>t</th>
<th>p</th>
<th>R²</th>
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</table>

Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.3. Interruption Importance X Volatility on Negative/Low Activation Affect Change.

As can be see from the figure above, those that responded to an interruption of high importance and were action-oriented (Persistence) showed greater changes in negative affect than those who were state-oriented (Volatility). This was unexpected, as it was predicted that those who were action-oriented would be less affected in their negative emotional responses by an important interruption than those who were state-
oriented. However, when responding to an interruption of low importance, those that were state-oriented showed greater changes in negative affect than those that were action-oriented. Thus, this interaction partially supports the prediction as those responding to an unimportant interruption and who give up more easily showed more negative reactions than those who persisted despite the interruption. A more robust interactive effect was also found when using the negative/low activation affect at Trial 2 as the DV, controlling for Trial 1 affect in the regression model, $\beta = 1.28$, $t = 1.91$, $p = .05$. Since I did not expect a crossover effect, but more of a fan orientation of this interaction, Hypothesis 7b was partially supported.

*Expectancies*

Hypotheses 8-10c pertained to the effect of the interruption on individuals’ expectancies of success. Expectancies were measured prior to each of three time periods and so changes in expectancies were analyzed from Trial 2 (prior to interruption) to Trial 3 (interruption). Both proximal and distal expectancy scale scores were computed. Only significant results pertaining to either or both scale scores are listed below. It is assumed that if either scale score is not mentioned then it was not significantly predicted from the independent variables (IV).

*Hypothesis 8.* This hypothesis predicted that control over the interruption would differentially affect expectancies, such that those with control would show higher expectancies compared to those without control. A repeated measures analysis was utilized to explore the changes in expectancies over time due to the arrival of an interruption. When using distal expectancy as the DV, there was a significant main effect of interruption control, $F(1,146) = 5.27$, $p < .05$, such that those without control showed
higher expectancies at Trial 2, $\beta = 0.57, p = .05$ and at Trial 3, $\beta = 0.72, p < .05$ than those with control over the interruption. This was the opposite of what was expected. There was no significant interaction with trial, $F(1,146) < 1, p = ns$, such that expectancy change over time was similar for those with control (Trial 2 [$M = 6.15$]; Trial 3 [$M = 6.01$]) and those without control (Trial 2 [$M = 6.72$]; Trial 3 [$M = 6.72$]) over the interruption. There was also no significant main effect of trial, such that distal expectancies did not decrease over time, as expected.

When proximal expectancy was used as the DV, there was also a significant main effect of interruption control, $F(1,146) = 6.32, p < .05$, such that those without control showed higher expectancies at Trial 2, $\beta = 0.712, p < .05$ and at Trial 3, $\beta = 0.68, p < .05$ than those with control over the interruption. Again, this was opposite of the prediction. There was no significant interaction with trial $F(1,146) < 1, p = ns$, such that expectancy decreases over time were not different for those with control (Trial 2 [$M = 6.23$]; Trial 3 [$M = 5.94$]) and those without control (Trial 2 [$M = 6.95$]; Trial 3 [$M = 6.63$]) over the interruption. There was however a significant main effect for trial, $F(1,146) = 27.11, p < .05$, such that from Trial 2 to Trial 3, expectancies decreased. As there were no differential changes in expectancies across the interruption control condition, Hypothesis 8 was not supported.

**Hypothesis 9.** Polychronicity was expected to moderate the effect of control over the interruption on expectancies, such that higher expectancies would occur for those with control who are polychronic compared to those without control who are monochronic. Hierarchical regression was utilized to explore the moderating impact of polychronicity on the effect of interruption control on expectancies. All covariates were
entered at Step 1, followed by the inclusion of control and polychronicity at Step 2, with the interaction being entered at Step 3. No significant main effects of the covariates or of control and polychronicity were found when using difference scores as the DV. There was however a significant main effect of ACT when predicting both distal ($\beta = 0.20, p < .05$) and proximal expectancy ($\beta = 0.19, p < .05$) at Trial 3 when controlling for Trial 2. For either difference scores or for predicting Time 3 expectancy, there was no significant interaction between polychronicity and interruption control for either distal or proximal expectancy, $F$s(1,144) < 1, $p = ns$. Thus, Hypothesis 9 was not supported.

**Hypothesis 10a.** The Hesitation dimension of the action-state orientation scale was expected to moderate the effect of interruption control on expectancies, such that those with control who are able to initiate tasks faster (Initiative) would show higher expectancies compared to those without control who take longer to start a task (Hesitation). Hierarchical regression analyses showed that when either the full- or revised-scale of the hesitation dimension was used as the predictor, there were no significant interactions with interruption control when predicting expectancy change or when predicting Trial 3 expectancy after Trial 2 was controlled for, $t$s(1,144) < 1, $p = ns$. This was the case for both distal and proximal expectancies. No main effects were found for any of the covariates or for control or hesitation. Table F.4 in Appendix F lists the beta-weights for this regression analysis for distal and proximal expectancies. Hypothesis 10a was therefore not supported.

**Hypothesis 10b.** The Preoccupation dimension of the action-state orientation scale was expected to moderate the effect of interruption control on expectancies, such that those with control who can focus on the task at hand (Disengagement) would show
higher expectancies compared to those without control who are preoccupied with irrelevant thoughts not related to the primary task (Preoccupation). A hierarchical regression analysis revealed no significant main effects for any of the covariates, and no significant main effects for interruption control or preoccupation (full or revised scale). The main effect for preoccupation approached significance, $\beta = 0.41, t = 1.58, p = .11$. There was however, a marginally significant interaction effect of interruption control and preoccupation on distal expectancy change (using difference score), $\beta = -0.98, t = -1.88, p = .06$. Table 4.8 below shows the beta-weights for all the variables within the analysis.

Figure 4.4 examines the plotted means for the marginal interaction.

<table>
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<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>Num $df$</th>
<th>Den $df$</th>
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</table>

Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.
Figure 4.4. Interruption Control X Preoccupation on Distal Expectancy Change.

As can be seen from the figure above, those that had control over the interruption and were action-oriented (Disengagement) showed slightly more decreases in their overall expectancies compared to those who were state-oriented (Preoccupation) as a result of the interruption. Conversely, the crossover effect revealed that when participants had no control over the interruption higher overall expectancies occurred for those who were action-oriented compared to those who were state-oriented. The effect in the no control condition shows that those that are able to keep focused on thoughts relevant to the primary task despite the intrusion of an interruption increased their overall expectancies of success, whereas those that are troubled by thoughts from outside disturbances showed the expected decreases in their expectancies. The interaction effect corroborated predictions within the no control condition, but failed to show expected relationships within the interruption control condition; thus, Hypothesis 10b was partially supported.

Hypothesis 10c. The Volatility dimension of the action-state orientation scale was expected to moderate the effect of interruption control on expectancies, such that those
with control who persist despite distractions (Persistence) would show higher
expectancies compared to those without control who have a hard time persisting despite
additional demands (Volatility). Another hierarchical regression model was run in order
to explore the moderating impact of volatility on the influence of interruption control on
both distal and proximal expectancies. A marginally significant main effect was found for
ACT, $\beta = 0.16, p = .06$. A significant main effect for Volatility was also found when
predicting distal expectancy change when the revised scale was used, $\beta = -0.82, t = -2.17,
p < .05$, such that those who persist despite distractions (Persistence) showed less
downward expectancy change compared to those who give up more easily (Volatility). At
Step 3 within the regression model a significant interaction was found between
interruption control and volatility on proximal expectancy change for both the full
(reported) and revised version of the action-state orientation scale, $\beta = 3.48, t = 4.76, p <
.05$. Table 4.9 displays the beta-weights for the model and Figure 4.5 shows the
interaction effect. A similar significant effect was found when predicting Trial 3 proximal
expectancy after controlling for Trial 2 expectancy, $\beta = 3.37, t = 4.64, R^2$-change = .022,
p < .05.
Table 4.9. Control X Volatility on Proximal Expectancy Change.

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<th>df</th>
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<th>p</th>
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Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.5. Interruption Control X Volatility on Proximal Expectancy Change.

As can be seen in the figure above and congruent with predictions, when given control over the interruption, those that persist despite distractions showed an unchanging expectancy for an upcoming trial with an interruption, compared to those who give up more easily, which showed decreases in their proximal expectations of success. Conversely, and not expected, those who are state-oriented (Volatility) showed minimal changes in their expectancies compared to those who are action-oriented (Persistence)
when no control was warranted over the interruption. Potential explanations for this finding will be provided in the discussion. Nonetheless, the interaction results partially support Hypothesis 10c.

Goal Revision

Hypotheses 11-14c related to the impact of interruptions on changes in goals. Goals were measured prior to each of three time periods and so changes in goals (i.e., goal revision) were analyzed from Trial 2 (prior to interruption) to Trial 3 (interruption). Four goals were assessed for each time period, representing participants’ distal goal, proximal goal, lowest acceptable distal goal, and lowest acceptable proximal goal. Only significant results pertaining to each of these goals will be described below. It is assumed that if any of the goals are not mentioned then it was not significantly predicted from the independent variables (IV).

Hypothesis 11. This hypothesis predicted that control over the interruption would result in differential goal revision decisions. A maintenance strategy or less downward revision was expected for those with control, whereas a downward revision strategy was expected for those without control. A repeated measures analysis with trial serving as a within-subjects variable was utilized to explore the effect of interruption control on goal revision. The main goal of interest was participants’ distal goal, which was expected to decrease as the occurrence of an interruption disturbed prior progress on the proofreading task. Using difference scores for all goals described above, which subtracted the Trial 3 goal from the Trial 2 goal, a significant main effect for trial was achieved, $F(1,146) = 10.77, p < .05$, such that those with control (Trial 2 [$M = 6.25$]; Trial 3 [$M = 5.98$]) and those without control (Trial 2 [$M = 6.55$]; Trial 3 [$M = 6.26$]) both showed decreases in
their goals over time. There was, however, no interaction between trial and control, $F(1,146) < 1, p = \text{ns}$. Thus, across those with or without control over the interruption, no differences existed on goal revision decisions over time. Analyses did reveal a significant main effect of control on participants’ distal lowest acceptable goal at Time 3, $F(1,146) = 3.95, p < .05$, such that those without control ($M = 5.14$) reported higher goals than those with control ($M = 4.51$). Given no interaction with time, and those without control over the interruption reporting higher goals than those with control both before and after an interruption (opposite of prediction), Hypothesis 11 was not supported.

**Hypothesis 12, 12a, & 12b.** A main effect of interruption importance was expected to relate to participants’ response latencies to the interruption. Those responding to an interruption of high importance were expected to respond faster than those responding to an interruption of low importance. The time for the overall clock when they clicked on the message regarding the interruption was recorded in the computer program. For each individual that had control over the interruption the response time was changed into their latency in seconds by subtracting the time they clicked on the message from 7:30 (the time when the message arrived on-screen).\(^2\) A one-way ANOVA was used to explore the main effect of importance on participants’ response latency to the interruption. Both their response in seconds and a transformed logarithmic value both at

\(^2\) For those that did not click on the interruption message before the full 7 minutes expired on the proofreading task, a response time of 270 seconds was used as their latency score, representing the 4 minutes and 30 seconds that expired from the start of the interruption message (clock = 7:30) to being automatically switched over to the interruption (clock = 3:00). During Trials 2 and 3, respectively, those who had important interruptions showed fewer non-clicks ($N = 1; 5$) than those who had unimportant interruptions ($N = 8; 9$).
Trial 2 (first trial with interruption) and at Trial 3 (second trial with interruption) were used as the DV in the analysis.

Using the non-transformed response latency at Trial 2 as the DV, there was a significant effect of interruption importance, $F(1,75) = 6.69, p < .05$, such that those who responded to an interruption of high importance responded faster ($M = 12.47$ seconds) than those who responded to an interruption of low importance ($M = 58.19$ seconds). This effect was marginal when the Trial 3 response latency served as the DV, $F(1,74) = 3.61, p = .06$, such that those who responded to an interruption of high importance responded faster ($M = 77.02$ seconds) than those who responded to an interruption of low importance ($M = 120.94$ seconds). When the natural log of the response latencies was used as the DV, a significant main effect of interruption importance was found both at Trial 2, $F(1,75) = 6.90, p < .05$ and at Trial 3, $F(1,74) = 7.72, p < .05$, such that important interruptions were responded to more quickly than unimportant interruptions. Using the log-transformed response latency better uniformed the distribution compared to using the raw latencies. It is interesting to point out that after the first interruption, participants reacted much more slowly to the interruption in Trial 3, although those with an important interruption still responded faster than those with an unimportant interruption. This effect may relate to the fact that individuals chose to do more of the primary task as opposed to switching to the interruption when the interruption message arrived in Trial 3. Thus, they selected to prioritize their resources more toward the primary task after they had experience with the interruption in the prior trial. Given that both results were significant, Hypothesis 12 was fully supported.
The main effect of interruption importance on response latency was also expected to be moderated by polychronicity, such that those responding to an interruption of high importance who are polychronic would respond faster than those who responded to an interruption of low importance who are monochronic (Hypothesis 12a). Hierarchical regression was utilized to look at this moderating effect. As with Hypothesis 12 above, both the raw response latency and the transformed log latencies were used as the DVs. When the raw latency was predicted for Trial 2 (first interruption), there was a significant main effect of ACT, $\beta = 5.09$, $t = 0.35$, $p < .05$. There was also a significant main effect of interruption importance, $\beta = -47.57$, $t = -2.48$, $p < .05$, such that those responding to an interruption of high importance were faster to click on the interruption than those responding to an interruption of low importance. A significant main effect of polychronicity was also found, $\beta = -25.52$, $t = -2.30$, $p < .05$, such that those who were polychronic responded more quickly to the interruption than those who were monochronic. More importantly, these main effects were qualified by an interaction between importance and polychronicity, $\beta = 41.27$, $t = 2.17$, $p < .05$, such that those with control over the interruption who were polychronic responded faster to the interruption than those without control who were monochronic. Table 4.10 shows the beta-weights for the regression models. Figure 4.6 illustrates the relationship of this interaction. There was no significant interaction for Trial 3 response latencies.
Table 4.10. Importance X Polychronicity on Response Latency at Trial 2.

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>β</th>
<th>Num df</th>
<th>Den df</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
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<td>.057</td>
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<td>-1.43</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Reading Comp</td>
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<td>1</td>
<td>69</td>
<td>0.89</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tenacity</td>
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<td>69</td>
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<td>ns</td>
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</tr>
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</tr>
</tbody>
</table>

Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.6. Interruption Importance X Polychronicity on Response Latency at Trial 2.

As can be seen from the figure above, when the interruption was highly important, those that were polychronic were faster to respond than those that were monochronic. This tendency was greater when the interruption was unimportant. This was expected as those that prefer to work on multiple tasks at once would welcome the arrival of an additional task, whereas those who prefer to do one task at a time would be
slower to respond to the additional demand. As this result corresponds precisely with the prediction, Hypothesis 12a was fully supported.

When the log-transformed latency was used as the DV, representing a more uniform distribution of response latencies, a marginal interaction effect was found, $\beta = 0.30, t = 1.91, p = .06$. Both interruption importance ($\beta = -0.42, p < .05$) and polychronicity ($\beta = -0.22, p < .05$) showed significant main effects on latencies. This corroborates the results found with the raw scores. In sum, these results provide a robust check that this interaction wasn’t due to a skewed distribution, which further supports Hypothesis 12a.

_Hypothesis 12b_ predicted that action-state orientation would also moderate the main effect of interruption importance on participants’ response latency to the interruption, such that those responding to an interruption of high importance who are action-oriented would respond faster than those who responded to an interruption of low importance who are state-oriented. All three dimensions of the action-state orientation scale (full and revised) were used as predictors in the regression equations. When the non-logarithmic latencies were used as the DV, only the hesitation scale (revised scale) resulted in a significant interaction with importance, $\beta = 123.08, t = 1.97, p = .05$, such that those who don’t hesitate to start working on their demands responded more quickly overall than those who choose to procrastinate in their actions. A significant ACT main effect was found as was also found above ($\beta = 5.09, p < .05$). Also, only interruption importance showed a significant main effect on latency, $\beta = -45.11, t = -2.28, p < .05$, whereas no main effect was found for hesitation, $p = \text{ns}$. Table 4.11 below summarizes the estimates for the regression analysis and Figure 4.7 shows the interaction. A marginal
interaction effect between importance and hesitation on response latency was found when using the full action-state orientation scale, \( p = .07 \).

Table 4.11. Importance X Hesitation on Response Latency at Trial 2.

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<th>Den df</th>
<th>t</th>
<th>p</th>
<th>( R^2 )</th>
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<td>&lt; .05</td>
</tr>
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<tr>
<td>Tenacity</td>
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<td>69</td>
<td>0.32</td>
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<td>Step 2</td>
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</tr>
<tr>
<td>Importance</td>
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<tr>
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</table>

Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.7. Interruption Importance X Hesitation on Response Latency at Trial 2.

As can be seen in the figure above, overall, the results were consistent with predictions, such that those responding to interruptions who are quick to work on tasks without putting them off showed faster responses to incoming interruptions than those who choose to put off their efforts. However, a crossover effect was unexpected with
regards to the high importance condition. Contrary to expectations, those who are state-oriented (Hesitation) were quicker to respond to the interruption than those who are action-oriented (Initiative). When the interruption was of low importance, results were in the expected direction with those who are action-oriented responding faster than those who are state-oriented. Given the look of these effects within the significant interaction, Hypothesis 12b was only partially supported.

Furthermore, when the log-transformed latencies were used as the DV within the regression equation, the significant interaction between importance and hesitation (full and revised) approached significance, $\beta = 0.91, p = .12$ (full) and $\beta = 0.84, p = .11$ (revised). Given that this DV more accurately represents a uniform distribution of response latencies, Hypothesis 12b is only partially supported.

_Hypothesis 13._ This hypothesis predicted that polychronicity would moderate the influence of interruption control on goal revision, such that those with control who are polychronic would show a maintenance revision strategy, whereas those without control who are monochronic would show greater downward revision. A hierarchical regression analysis revealed a marginally significant interaction effect of interruption control and polychronicity on distal lowest acceptable goal revision (Trial 3 – Trial 2), $\beta = 0.36, t = 1.7, p = .09$, such that those that were polychronic showed less downward revision overall than those that were monochronic. This interaction did not qualify any significant main effects for interruption control or for polychronicity. Table 4.12 below displays the coefficients of the regression model. Figure 4.8 examines the means for the interaction.
Table 4.12. Control X Polychronicity on Distal Goal Revision.

<table>
<thead>
<tr>
<th>Variable</th>
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<th>df</th>
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<th>R²</th>
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</tr>
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<td>Polychronicity</td>
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</tbody>
</table>

Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.8. Interruption Control X Polychronicity on Distal Goal Revision.

As can be seen from the figure above, those with control over the interruption who were polychronic, for the most part, maintained their overall goal on the proofreading task despite interruptions, whereas those who were monochronic chose to revise their goals downward. This was similar to predictions. However, when no control was warranted over interruption, those who were monochronic revised their goals
downward slightly less than those who were polychronic. It was predicted that monochronic individuals would show greater downward revision in the no control condition compared to the condition where control was given. These results may also be explained by reasons similar to the affective responses described above. These results definitely lead to more research being needed that can elucidate these findings. In sum, Hypothesis 13 was partially supported.

Hypothesis 14a. The Hesitation dimension of the action-state orientation scale was predicted to moderate the impact of interruption control on goal revision, such that those with control who can initiate completion of the interruptive task (Initiative) would show a maintenance or less downward revision strategy, whereas those without control who don’t respond quickly to the new demand (Hesitation) would show a downward revision preference. To look at the moderating effect of hesitation on interruption control in predicting goal revision, hierarchical regression was used. When using difference scores or when predicting Trial 3 goals after controlling for Trial 2 goals as the DV, there were no significant interactions using the full scale of action-state orientation. Upon using the revised hesitation subscale, there was a marginally significant interaction between hesitation and interruption control on distal lowest acceptable goal revision, $\beta = 1.19, t = 1.71, p = .09$, such that those with control over the interruption and who were action-oriented (initiative) showed less downward revision than those who were state-oriented (hesitation). Furthermore, when no control was given over the interruption, both poles of action-state orientation showed similar levels of revision in their goals. This interaction did not qualify any significant main effects of control or hesitation. Table 4.13 lists the beta-weights for each step in the regression model. As shown in Figure 4.9,
overall, those who prefer to act quickly on additional demands revised their goal downward less than those who put off action toward starting tasks.

Table 4.13. Control X Hesitation on Distal Goal Revision.

<table>
<thead>
<tr>
<th>Variable</th>
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<th>Den</th>
<th>df</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
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</tr>
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<td>Tenacity</td>
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</table>

Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Figure 4.9. Interruption Control X Hesitation on Distal Goal Revision.

There was also a marginally significant interaction when predicting participants’ proximal goal at Trial 3 after controlling for their Trial 2 goal, \( \beta = 0.97, t = 1.81, p = .07 \). Since the interaction results were in the expected direction within the interruption control
condition, but failed to play out as predicted within the no interruption control condition, Hypothesis 14a was partially supported.

**Hypothesis 14b.** The Preoccupation dimension of the action-state orientation scale was predicted to moderate the impact of interruption control on goal revision, such that those with control who can stay on goal-related thoughts (Disengagement) would show a maintenance or less downward revision strategy, whereas those without control who are easily strayed away from goal-irrelevant thoughts (Preoccupation) would show a downward revision preference. A similar hierarchical regression procedure was used for the preoccupation dimension of the action-state orientation measure. Both the full and revised scales failed to produce a significant interaction effect when the DV was either difference scores or when predicting Trial 3 goals after controlling for Trial 2 goals. Table F.5 in Appendix F displays the beta-weights for the regression analysis for both distal and proximal goal change as the DV. Thus, Hypothesis 14b was not supported.

**Hypothesis 14c.** The Volatility dimension of the action-state orientation scale was predicted to moderate the impact of interruption control on goal revision, such that those with control who can persist despite distractions (Persistence) would show a maintenance or less downward revision strategy, whereas those without control who aren’t able to exert constant effort toward their goals (Volatility) would show a downward revision preference. A hierarchical regression model produced a significant interaction between volatility (full) and interruption control on participants’ distal lowest acceptable goal revision, $\beta = 2.55$, $t = 2.11$, $p < .05$, such that individuals who were given control over the interruption and who were action-oriented (Persistence) revised their goal downward less than those who were state-oriented (Volatility). The reverse was true when control was
not afforded on the interruption, such that those who were state-oriented revised their
goal downward less than those who were action-oriented. Table 4.14 displays the values
of the regression model and Figure 4.10 shows the interaction.

Table 4.14. Control X Volatility on Distal Goal Revision.

<table>
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<tr>
<th>Variable</th>
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<th>Den df</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
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<td>147</td>
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<tr>
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Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

![Figure 4.10. Interruption Control X Volatility on Distal Goal Revision.](image)

As can be seen by the figure above, the availability of control over the
interruption was more harmful to maintaining goal standards for individuals who aren’t
able to exert constant effort toward their goals, especially when they have the option of
being able to work on multiple tasks at the same time. This was not the case for those that can persist despite distractions. On the flip side, when no control was given and participants had to work on the interruption without warning, individuals who were action-oriented seemed to suffer more by the interruption than those who were state-oriented. This crossover effect was less apparent when participants proximal lowest acceptable goal was predicted, also resulting in a significant interaction effect between control and volatility, $\beta = 1.83$, $t = 2.14$, $p < .05$, $R^2 = 0.06$. As shown in Figure 4.11 below, a similar relationship between hesitation and control on revision was exhibited, however the differences across action-state orientation were less pronounced within the no control condition compared to the differences when distal goal was predicted.

Individuals who were state-oriented (Volatility) may have felt less inclined to revise their overall goal (as shown in Figure 4.10 above), and rather chose to revise their proximal goal for the next trial. As a whole, Hypothesis 14c was partially supported as a crossover interaction effect was found rather than the predicted fan effect.

![Figure 4.11. Interruption Control X Volatility on Proximal Goal Revision.](image-url)
Performance

Hypotheses 15-21 pertained to the effect of interruptions on an individuals’ primary task performance (proofreading performance). Since performance was measured after the conclusion of the task for each of three time points, all analyses below analyzed the change in performance from Trial 1 (no interruption) to Trial 2 (inclusion of interruption). Both overall performance on the proofreading task across all three trials and performance on Trial 2 were used as DVs for these analyses.

Hypothesis 15. This hypothesis predicted that control over the interruption affected primary task performance, such that performance would be higher for those with control compared to those without control. A repeated measures analysis was used with Trial 1 and Trial 2 performance as the within-subjects variable. There was a significant main effect of Trial, $F(1,144) = 52.52, p < .05$, such that performance decreased from Trial 1 to Trial 2. Unfortunately there was no significant Trial X Control interaction, as performance declines were similar across those who had control over the interruption and those who did not. When a hierarchical regression was run looking at the performance difference score as the DV, when predicting overall performance, or when predicting Trial 2 performance after controlling for Trial 1 performance, no significant effects were found. Thus, Hypothesis 15 was not supported.

Hypothesis 16. It was expected that the importance of the interruption would also affect primary task performance, such that performance would be higher for those

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3 As a whole, participants reported a high level of agreement that the feedback they received was real ($M = 3.53$; 1 to 5 scale), indicating they believed their performance to be their true score on the primary task. There were also no significant differences across conditions of interruption control or importance.
responding to an important interruption compared to those responding to an interruption of low importance. A similar repeated measures analysis was run in order to look at the effect of the importance of the interruption on performance. As with interruption control above, there was a significant main effect of Trial, $F(1,144) = 52.52, p < .05$, such that performance decreased from Trial 1 to Trial 2. There was, however, no significant Trial X Importance interaction as those responding to an interruption of high importance showed similar decreases in performance as those responding to an interruption of low importance. A hierarchical regression predicting performance change, overall performance, and performance at Trial 2 after controlling Trial 1 performance revealed no significant effect. Thus, Hypothesis 16 was not supported.

**Hypothesis 17.** Interruption control and interruption importance were proposed to interact in explaining primary task performance, such that those with control responding to an interruption of high importance would perform higher than those without control responding to an interruption of low importance. Although no main effects were found for interruption control and interruption importance, there was a significant interaction between these IVs on performance change, $\beta = -7.91, t = -2.52, p < .05$. The beta-weights of the hierarchical regression model are reported in Table 4.15 below.
Table 4.15. Control X Importance on Primary Task Performance Change.

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>Num df</th>
<th>Den df</th>
<th>t</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.039</td>
</tr>
<tr>
<td>ACT</td>
<td>2.06</td>
<td>1</td>
<td>147</td>
<td>2.00</td>
<td>&lt; .05</td>
<td></td>
</tr>
<tr>
<td>Reading Speed</td>
<td>0.21</td>
<td>1</td>
<td>147</td>
<td>0.26</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Reading Comp</td>
<td>0.15</td>
<td>1</td>
<td>147</td>
<td>0.19</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Tenacity</td>
<td>0.97</td>
<td>1</td>
<td>147</td>
<td>1.18</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.056</td>
</tr>
<tr>
<td>Control Importance</td>
<td>-1.73</td>
<td>1</td>
<td>145</td>
<td>-1.12</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.096</td>
</tr>
<tr>
<td>Control X Importance</td>
<td>-7.91</td>
<td>1</td>
<td>144</td>
<td>-2.52</td>
<td>&lt; .05</td>
<td></td>
</tr>
</tbody>
</table>

Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

As shown in Figure 4.12 below, those who had no control over an interruption of high importance showed the least performance change ($M = -2.00$), whereas those who had control over an interruption of high importance showed the most performance change ($M = -7.68$). Those without control responding to an interruption of low importance showed the second most decrease in performance ($M = -7.32$), whereas those responding to an interruption of low importance with control showed the third most decrease in performance ($M = -4.73$). This result is the opposite of what was expected regarding this interaction.
Figure 4.12. Interruption Control X Interruption Importance on Primary Task Performance Change.

Potential explanations regarding this unexpected finding will be provided in the discussion. Nonetheless, although there was a significant interaction, the results were in the opposite direction, and so Hypothesis 17 was not supported.

**Hypothesis 18.** Polychronicity was expected to positively relate to primary task performance, such that performance would be higher for those who are polychronic compared to those who are monochronic. Correlational analyses revealed no significant relationship between polychronicity and overall primary task performance, $r = .10, p = \text{ns}$. Correlations with performance at the end of each trial were also non-significant, $p_{s} = \text{ns}$. This correlation was expected to be larger. However, the relationship between polychronicity and performance was positive, suggesting the notion that as one is more polychronic, the better they perform on tasks involving interruptions. Nevertheless, Hypothesis 18 was not supported.

**Hypothesis 19a.** The Preoccupation dimension of the action-state orientation scale was expected to positively relate to primary task performance, such that performance
would be higher for those who are not preoccupied by irrelevant thoughts (Disengagement) compared to those who are taken over by thoughts related to the interruption (Preoccupation). No significant relationship was found between either the full- or revised-scale of the action-state measure with overall performance ($r = -0.07$, $p = ns$) or with performance at the end of each trial $ps = ns$. Thus, Hypothesis 19a was not supported.

**Hypothesis 19b.** The Hesitation dimension of the action-state orientation scale was expected to positively relate to primary task performance, such that performance would be higher for those who start working on the additional demands faster (Initiative) compared to those who hesitate to work on the additional demands (Hesitation). No significant relationship was found when predicting overall performance using the full ($r = -0.07$, $p = ns$) or revised scale ($r = -0.04$, $p = ns$) or when predicting any of the other performances at the end of each trial. Thus, Hypothesis 19b was not supported. Although no hypothesis was made regarding the relationship between volatility and performance, correlations were run anyways. However, these revealed no significant relationship with overall performance, $r = 0.07$, $p = ns$ or for any of the other performance scores, $ps = ns$.

**Hypothesis 20.** Polychronicity was expected to moderate the effect of control over the interruption on primary task performance, such that those with control who are polychronic would perform higher than those without control who are monochronic. A hierarchical regression was used to explore the moderating effect of polychronicity on interruption control when predicting changes in performance due to the interruption. No significant main effects were found for interruption control or polychronicity. When using performance change as the DV, $\beta = -0.16$, $t = -0.10(1,144)$, $p = ns$ or when
predicting overall performance, and Trial 2 performance after controlling for Trial 1 performance, no significant interaction was found. Thus, Hypothesis 20 was not supported. Table F.6 in Appendix F displays the regression analysis beta-weights from this analysis.

*Hypothesis 21.* Action-state orientation was expected to moderate the effect of control over the interruption on primary task performance, such that those with control who are action-oriented would perform higher than those without control who are state-oriented. Hierarchical regression analyses revealed no significant main effects of any of the action-state orientation dimensions (full or revised scales) or interruption control on performance (overall, Trial 1, Trial 2, Trial 3). Moreover, no significant interaction was found when predicting performance change, overall performance, or Trial 2 performance after controlling for Trial 1 performance. Consequently, Hypothesis 21 was not supported. Table F.7 in Appendix F displays the beta-weights for this regression analysis when predicting overall performance change for the preoccupation dimension.

**Mediation Analysis**

Hypotheses 22 and 23 pertained to the mediation of both affect and expectancies. For these analyses separate hierarchical regression models were run including affect and expectancies as control variables, when predicting expectancies and goal revision, respectively.

*Hypothesis 22.* Affect was expected to mediate the effect of interruptions on expectancies. It was first important to determine a relationship between interruptions and expectancies, as well as a relationship between interruptions and affect. Hypothesis 8 was significant, however Hypothesis 1 and 2 were not. Since there was no significant effect of
interruptions on affect, there was no mediation effect to analyze regarding the influence of interruptions on expectancies through affect. Thus Hypothesis 22 was not supported.

*Hypothesis 23.* Expectancy was expected to mediate the effect of interruptions on goal revision. However, the preconditions necessary for mediation were not met. More specifically, there was no significant effect of interruptions on goal revision. Thus, there was no mediation effect to analyze regarding the influence of interruptions on goal revision through expectancies. Consequently, Hypothesis 23 was not supported. Table 4.16 below shows a list of each hypothesis and whether or not it was supported for quick reference.

Table 4.16. Quick guide for significance of each hypothesis.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hypothesis 1:</em> The amount of control over the interruption will relate to an affective response, such that less negative affective responses will occur for those with control and more negative affective responses will occur for those without control.</td>
<td>NS</td>
</tr>
<tr>
<td><em>Hypothesis 2:</em> The importance of the interruption will relate to an affective response, such that less negative affective responses will occur for those responding to an interruption of high importance and more negative affective responses will occur for those responding to an interruption of low importance.</td>
<td>NS</td>
</tr>
<tr>
<td><em>Hypothesis 3:</em> Control over the interruption and interruption importance will interact in their influence on affect, such that more negative affective responses will occur for those without control responding to an interruption of low importance, whereas less negative affective responses will occur for those with control responding to an interruption of high importance.</td>
<td>NS</td>
</tr>
<tr>
<td><em>Hypothesis 4:</em> Polychronicity will moderate the impact of interruption control on affect, such that more negative affective responses will occur for those who are monochronic with no control, whereas less negative affective responses will occur for those who are polychronic with control.</td>
<td>NS</td>
</tr>
<tr>
<td><em>Hypothesis 5a:</em> Action-state orientation will moderate the impact of interruption control on affect, such that more negative affective responses will occur for those who are tied down by task-irrelevant thoughts (Preoccupation) with no control, whereas less negative affective responses will occur for those who are focused on thoughts more relevant to the primary task (Disengagement) with control.</td>
<td>NS</td>
</tr>
</tbody>
</table>
Table 4.16. Quick guide for significance of each hypothesis (continued).

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis 5b:</strong> Action-state orientation will moderate the impact of interruption control on affect, such that more negative affective responses will occur for those who have a harder time persisting in the face of new demands (Volatility) with no control, whereas less negative affective responses will occur for those who are better able to stick to their task despite setbacks (Persistence) with control.</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 6:</strong> Polychronicity will moderate the impact of interruption importance on affect, such that more negative affective responses will occur for those who are monochronic for an interruption of low importance, whereas less negative affective responses will occur for those who are polychronic for an interruption of high importance.</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 7a:</strong> Action-state orientation will moderate the impact of interruption importance on affect, such that more negative affective responses will occur for those who get caught up in irrelevant thoughts not pertinent to the task (Preoccupation) for an interruption of low importance, whereas less negative affective responses will occur for those who can stay focused (Disengagement) for an interruption of high importance.</td>
<td>PS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 7b:</strong> Action-state orientation will moderate the impact of interruption importance on affect, such that more negative affective responses will occur for those who give up more easily (Volatility) for an interruption of low importance, whereas less negative affective responses will occur for those who are steadfast (Persistence) for an interruption of high importance.</td>
<td>PS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 8:</strong> Control over interruptions will differentially affect expectancies, such that those with control will exhibit high expectancies, whereas those without control will exhibit low expectancies.</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 9:</strong> Polychronicity will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who are monochronic without control, whereas higher expectancies will occur for those who are polychronic with control.</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 10a:</strong> Action-state orientation will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who are take longer to start a task (Hesitation) without control, whereas higher expectancies will occur for those who are able to initiate tasks faster (Initiative) with control.</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 10b:</strong> Action-state orientation will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who are preoccupied with irrelevant thoughts not related to the task (Preoccupation) without control, whereas higher expectancies will occur for those who can focus on the task at hand (Disengagement) with control.</td>
<td>PS</td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 10c:</strong> Action-state orientation will moderate the impact of interruption control on expectancies, such that lower expectancies will occur for those who have a hard time persisting despite additional demands (Volatility) without control, whereas higher expectancies will occur for those who persist despite distractions (Persistence) with control.</td>
<td>PS</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.16. Quick guide for significance of each hypothesis (continued).

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis 11:</strong> Control over the interruption will result in different goal revision decisions for those that have control over the interruption as opposed to those without control. More specifically, a maintenance strategy or less downward revision is expected for those with control whereas more downward revision is expected for those without control over the interruption.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 12:</strong> For those with control, interruptions of high importance will be responded to faster than interruptions of low importance.</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Hypothesis 12a:</strong> Polychronicity will moderate the influence of interruption importance on response latencies to the interruption, such that interruptions will be responded to faster for those that are of high importance, especially for those who are polychronic. Conversely, interruptions of low importance will be responded to slower, especially for those who are monochronic.</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Hypothesis 12b:</strong> Action-state orientation will moderate the influence of interruption importance on response latencies to the interruption, such that interruptions will be responded to faster for those that are of high importance, especially for those who are action-oriented. Conversely, interruptions of low importance will be responded to slower, especially for those who are state-oriented.</td>
<td>PS</td>
</tr>
<tr>
<td><strong>Hypothesis 13:</strong> Polychronicity will moderate the relationship between interruption control and goal revision, such that those who are polychronic will exhibit a maintenance strategy, whereas those who are monochronic will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater.</td>
<td>PS</td>
</tr>
<tr>
<td><strong>Hypothesis 14a:</strong> Action-state orientation will moderate the relationship between interruption control and goal revision, such that those exposed to interruptions and who can initiate its completion (Initiative) will exhibit a maintenance strategy, whereas those who don’t respond quickly to the new demand (Hesitation) will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater.</td>
<td>PS</td>
</tr>
<tr>
<td><strong>Hypothesis 14b:</strong> Action-state orientation will moderate the relationship between interruption control and goal revision, such that those exposed to interruptions and who can stay on goal-focused thoughts (Disengagement) will exhibit a maintenance strategy, whereas those are easily strayed away to goal-irrelevant thoughts (Preoccupation) will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 14c:</strong> Action-state orientation will moderate the relationship between interruption control and goal revision, such that those exposed to interruptions and who can persist despite distractions (Persistence) will exhibit a maintenance strategy, whereas those who aren’t able to exert constant effort toward their goals (Volatility) will exhibit downward revision when control is warranted. When no control is warranted, these differences in revision strategies will be greater.</td>
<td>PS</td>
</tr>
<tr>
<td><strong>Hypothesis 15:</strong> Control over the interruption will affect primary task performance, such that performance will be higher for those with control, whereas performance will be lower for those without control.</td>
<td>NS</td>
</tr>
</tbody>
</table>
Table 4.16. Quick guide for significance of each hypothesis (continued).

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis 16:</strong></td>
<td>The importance of the interruption will affect primary task performance, such that performance will be higher for those responding to an interruption of high importance, whereas performance will be lower for those responding to an interruption of low importance.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 17:</strong></td>
<td>Interruption control and importance will interact on primary task performance, such that performance will be highest for those with control responding to an interruption of high importance, whereas performance will be lowest for those without control responding to an interruption of low importance.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 18:</strong></td>
<td>Polychronicity will positively relate to performance, such that those who are polychronic will exhibit greater primary task performance compared to those who are monochronic.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 19a:</strong></td>
<td>Action-state orientation will positively relate to performance, such that those who aren’t preoccupied by irrelevant thoughts (Disengagement) will exhibit greater primary task performance compared to those who are taken over by thoughts related to the interruption (Preoccupation).</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 19b:</strong></td>
<td>Action-state orientation will positively relate to performance, such that those who start working on the additional demands faster (Initiative) will exhibit greater primary task performance compared to those who hesitate to work on the additional demands (Hesitation).</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 20:</strong></td>
<td>Polychronicity will interact with control over the interruption on primary task performance, such that higher performance is expected for those who are polychronic with control, whereas lower performance is expected for those who are monochronic without control.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 21:</strong></td>
<td>Action-state orientation will interact with control over the interruption on primary task performance, such that higher performance is expected for those who are action-oriented with control, whereas lower performance is expected for those who are state-oriented without control.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 22:</strong></td>
<td>Affect will mediate the influence of interruptions on expectancies.</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Hypothesis 23:</strong></td>
<td>Expectancies will mediate the effect of interruptions on goal revision.</td>
<td>NS</td>
</tr>
</tbody>
</table>

Note: NS = not supported; PS = partially supported.

Exploratory Analysis

Several exploratory analyses were examined in order to help explain some of the findings above. These pertain to several of the other measures that were assessed within the study. More specifically, participants’ reported cognitive interference, effort, and lifestyle self-regulation were analyzed for their relation with the outcomes across levels of the IVs. Also, participants who had control over the interruption were examined for the
amount of times they switched back and forth between the proofreading and interruptive scheduling task.

Cognitive Interference

It was important to be able to understand whether participants thought about other things while executing the primary task. This may be a possible reason for the negative responses that followed from the interruption. Upon looking at both dimensions of the cognitive interference measure (task and non-task related thoughts; see Appendix A), results showed that participants thought about more task-relevant thoughts ($M = 2.68$) while performing the proofreading task than non-task related thoughts ($M = 1.65$). Moreover, the highest task-related thought pertained to how much time remained on the task ($M = 3.71$). When asked the degree that participants felt their mind wandered during the proofreading task, results showed minimal interference from outside thoughts ($M = 2.57$). These results show that participants were concerned with task-related thoughts while working on the primary task. The issue of how much time remained seemed to be the main driver of their attention.

When mean differences were computed for those with and without control over the interruption, a significant difference was found for the item referring to the thought of working more carefully, $F(1,151) = 4.52, p < .05$. It appears that individuals without control ($M = 3.28$) were more concerned about the manner in which they handled the tasks than those with control ($M = 2.92$). When the importance of the interruption was considered, results showed a significant mean difference for the item referring to how often participants thought about being confused. Those in the low importance condition ($M = 1.89$) showed significantly fewer thoughts about their confusion than those in the
high importance condition ($M = 2.32$). Those in the high importance condition also reported thinking about something that made them feel tense ($M = 1.91$) significantly more than those in the low importance condition ($M = 1.57$). As a whole, participants did show some signs of cognitive interference while performing the proofreading task, with specific thoughts described above as occurring more than others.

Cognitive interference also showed many significant relationships with reported affect at all three time periods. More specifically, participants who reported more task-related cognitive interference also reported higher negative affect (Trial 1: $r = .44, p < .01$; Trial 2: $r = .52, p < .01$; Trial 3: $r = .44, p < .01$) as well as significant positive relationships with negative/high and negative/low activation at all three time points, indicating that those with more cognitive interference also reported higher negative affect. The correlation with the preoccupation dimension of the action-state orientation measure was significant, $r = -.29, p < .01$ (full); $r = -.32, p < .01$ (revised), indicating that participants who were more state-oriented and who have a harder time focusing on task-relevant thoughts also reported higher cognitive interference during the primary task. A significant negative relationship was also found between non-task related cognitive interference and the 10-item polychronicity measure, $r = -.18, p < .05$, such that monochronic individuals reported more cognitive interference. These results as a whole indicate that negative affective responses may have been in part due to the interfering thoughts that occurred during task execution and more for those who are both monochronic and state-oriented.
Effort

Self-reported effort (1 to 7 scale) was measured after each of the three trials (see Appendix A). Participants reported that their effort on the primary task was high for all three time periods (Trial 1: \( M = 5.61 \); Trial 2: \( M = 5.53 \); Trial 3: \( M = 5.64 \)). Across conditions of interruption control and importance no significant differences were found relating to effort. There was, however, a marginal difference during the second trial with those without control reporting higher effort (\( M = 5.68 \)) than those with control over the interruption (\( M = 5.36 \)), \( F(1,154) = 2.78, p = .09 \).

Effort was also correlated with the outcomes to see if any significant relationships existed. For trials including an interruption (Trial 2 and 3), significant positive correlations were found with performance for that trial (Trial 2: \( r = .20, p < .05 \); Trial 3: \( r = .17, p < .05 \)), such that those indicating they put forth greater effort showed higher performances on the proofreading task. Participants reporting higher effort on Trial 1 also chose higher distal goals for the primary task at Trial 1, \( r = .22, p < .01 \) and at Trial 2, \( r = .26, p < .01 \). Likewise self-reported effort at Trial 2 also was significantly positively related to distal goals at Trial 2, \( r = .28, p < .01 \) and at Trial 3, \( r = .23, p < .01 \). Effort at Trial 3 was also significantly positively related to distal goals at Trial 3, \( r = .22, p < .01 \). Significant positive relationships were also found between effort and expectancies, such that participants who expected to succeed more on Trial 1 also reported higher effort on the task, \( r = .27, p < .01 \) and \( r = .28, p < .01 \) for distal and proximal expectancies, respectively. This relation was also exhibited between effort and distal, \( r = .34, p < .01 \) and proximal \( r = .37, p < .01 \) expectancies at Trial 2. Similarly Trial 3 distal, \( r = .31, p < .01 \) and proximal, \( r = .34, p < .01 \) expectancies related to Trial 3 effort. In sum, reported
effort related to goals set forth on the primary task as well as expectancies and subsequent performance. It is interesting to note that effort did not seem to increase due to the arrival of an interruption. Nonetheless, self-reported effort did seem to play a role in the subsequent responses that followed.

*Lifestyle Self-Regulation*

A self-regulatory measure was given at the beginning of the study assessing participants’ self-reported success at managing both school- and work-related tasks over the last three months. This measure was used to relate self-regulatory functioning during the task with real-life situations. Both school tasks ($M = 3.42$) and work tasks ($M = 4.36$) were reported as managed well for participants. These dimensions were also subjected to correlations with the outcomes of the study, such that indications of success at regulating tasks relevant to other lifestyle activities (school and work) may function with similar task environments in which regulation of one’s actions is needed (tasks involving interruptions). However, no significant relationships were found with any of the performance scores across all three trials or with overall performance. Relationships with goals were, for the most part, negative, such that those who reported higher abilities in managing school-related tasks set lower distal goals, $r = -.19, p < .05$ and proximal goals, $r = -.17, p < .05$ for Trial 1. These significant relationships did not hold up for Trials 2 or 3. Also, relationships with expectancies were also small and negative for the most part across all three trials. These results demonstrate that self-regulatory ability in real life did not play a part with task-related abilities within the current study. However, it was important to examine whether regulatory functioning within this situation was also related to relevant real-life scenarios.
Task Switching

It was important to examine whether participants with control over the interruptions utilized their option of switching between the primary and interruptive tasks. Results showing task switching would indicate that participants preferred to spend their time and attention on multiple tasks at once. The computer program recorded the amount of times individuals moved back and forth between tasks. Total switches for Trials 2 and 3 were computed by counting the number of times participants moved between tasks after their initial switch to the interruption. As they could have stayed on the interruption for the total length of 3 minutes, this initial switch was not included. Thus any remaining switches signified individuals’ preference for executing a simultaneous task strategy compared to those without control over the interruption who were forced to execute a sequential task strategy (finishing interruptive task before moving back to primary task). For example, a total switch of 4 for an individual would indicate that after they switched to the interruption the first time, they moved back to the primary task (1), then back to the interruption (2), then back to the primary task (3), and then back to the interruption (4). Their last switch signified that any time remaining on the task they ended up on was exhausted.

Overall, individuals showed a preference for switching between tasks when they were given control over the interruption (Trial 2: $M = 1.92$, range = 0-6; Trial 3: $M = 1.66$, range = 0-8) with more switches occurring during the first appearance of the interruptive task. Thus, on average participants switched nearly two additional times after their initial switch to the interruption. Although no formal hypothesis was made for task switching, it was expected that more important interruptions would result in less
switching as the consequences associated with the interruption were of value, compared to those responding to an unimportant interruption. This however was not the case in Trials 2 (high: $M = 2.20$; low: $M = 1.61$) and 3 (high: $M = 1.82$; low: $M = 1.47$), such that those responding to an important interruption switched more than those responding to an unimportant interruption. Mean differences were not significantly different, $ps = ns$, although differences across importance approached significance in Trial 2, $F(1,74) = 2.49, p = .11$.

Task switches were also correlated with polychronicity as those who are polychronic prefer working on multiple tasks at once, while those who are monochronic prefer to work on one task at a time. This relationship at Trial 2 was in the expected positive direction, although it was not statistically significant, $r = .11, p = .35$. Both Trial 3 and overall switches were not in the expected direction, $r = -.08, p = .52$ and $r = .01, p = .94$, respectively. Correlations with performance were small and negative for Trials 2 ($r = -.14, p = .24$ and 3 ($r = -.15, p = .19$), indicating that as participants switched more often, their performance suffered more. As indicated, these relationships were not statistically significant however. Relationships with affect did not reveal any significant findings. For the most part, correlations were small and negative hovering around +/- 0.0 and 0.1.

Correlations between Trial 2 switches and Trial 3 expectancies/goals also revealed small, negative values that were not statistically significant for distal ($r = -.06, p = .59$) and proximal ($r = -.04, p = .73$) expectancies, or for distal ($r = -.13, p = .25$) and proximal ($r = .01, p = .90$) goals.
Given the existence of switching for those with control over the interruption it was determined to control for this in all analyses (Hypotheses 1-21). Likewise, as there were significant differences related to how quickly interruptions were responded to between important versus unimportant interruptions within the interruption control condition, response latencies were also controlled for in all analyses (Hypotheses 1-21). These added covariates to the models were post-hoc and served as exploratory purposes only and was primarily utilized to account for their effects. However, after these variables were added to the list of covariates no significant results were exhibited for many of the hypotheses. The only significant change that occurred was for Hypothesis 4, upon which the interaction between interruption control and polychronicity on positive/high activation change was closer to being statistically significant, $\beta = .25, t(1,142) = 1.92, p = .06, R^2 = .023$. The inclusion of both switching and response latencies increased the variance explained by the covariates from 1.6% to 9.4% with an overall variance of the full model from 5.1% to 12.8%. Given the small overall differences across all hypotheses, but noticeable differences regarding Hypothesis 4, it will be useful for future research to examine these variables as controls in analyses.

As participants did choose to utilize their given option to switch between primary and secondary tasks, this may help to explain the opposite findings than expected relating to those without control over the interruption showing less negative affect, greater performance, expectancies, and goals, than those with control over the interruption. Chapter Five below will explore why this may have been the case within this study, bringing in conceptual arguments describing both resource demands and the time needed
to re-orient back to the interrupted task as potential reasons for differences in the degree of responses across conditions of interruption control.
CHAPTER V
DISCUSSION

The current study sought to understand the effect of interruptions on motivational and self-regulatory responses. Situational components of the interruption (control and importance) were proposed to influence subsequent changes in affect, expectancies, goals, and performance. Additionally dispositional factors relevant to functioning within a multiple-task environment (polychronicity and action-state orientation) were expected to moderate the effect of the interruptions on these responses.

This chapter will begin by discussing overall reactions to interruptions including the changes that occurred in responses over time. Next, results related to the situational components of the interruption (control and importance) will be explicated. This will include potential reasons, rooted in theory, of the unexpected findings related to interruption control. Additional results pertaining to the individual difference variables (polychronicity and action-state orientation) will then be explored. Subsequent sections will include the limitations of the current study and important future research that should be conducted to continue to understand responses to interruptions. Finally, a conclusion will be given to highlight the main points to take away from this chapter.
Summary of Key Results

Overall, interruptions did lead to measurable reactions, showing negative effects from their arrival. In particular, affect was increasingly negative and expectancies, goals, and performance decreased as a result of the interruption during primary task execution. These changes were measured across the trials before and after an interruption occurred. Consistently, decreases in motivational and self-regulatory responses indicated that the interruption was the underlying variable responsible for such changes. The main effects of Trial within most analyses presented in Chapter Four indicate the negative influence of interruptions on subsequent reactions. This result supports existing research showing the negative effects of interruptions (Gille & Broadbent, 1989; Zijlstra et al., 1999).

However, results from the current study also add to existing research by exploring the impact of interruptions on expectancies and goals. As of yet, these outcomes were not included as being affected by interruptions. The results of the current study lend support for practice that interruptions negatively impact both individuals’ expectations of succeeding in the future and the goals they strive to attain. These effects also depended on the situational components inherent within the interruption, which are described more fully next.

Interruption Control and Importance

The negative impact of interruptions also depended on the situational constraints inherent within its arrival. More specifically, the current study examined the importance of the interruption and the level of control over its execution. Results showed that interruption importance interacted with action-state orientation on affect, such that those who were state-oriented responded more negatively to an unimportant interruption than
those who were action-oriented. This result was expected. However, when the
interruption was important the opposite was found, such that those who were action-
oriented responded more negatively than those who were state-oriented. The importance
of the interruption also influenced how quick participants reacted to its arrival, such that
important interruptions were responded to significantly faster than unimportant
interruptions. This result also depended on individuals’ degree of polychronicity with
those who were polychronic responding faster than those who were monochronic. These
results indicate that the values assigned to an interruption do impact subsequent self-
regulatory responses, especially the affective responses that occur. It will be fruitful for
future research to continue to explore the role of importance to further elucidate its effect
on reactions to interruptions.

Interruption control was also a powerful predictor of subsequent self-regulatory
responses. However, the influence of interruption control was opposite of predictions.
Those without control over the interruption showed less negative responses, exemplified
by less negative affect, and higher expectancies, goals, and performance in general than
those with control over the interruption. Since this result was unexpected it is important
to explain why this was the case. Next, conceptual arguments, rooted in theory, will
explain why this unexpected finding occurred.

Interruption Control Results Explained

One of the main findings of the current study is that those without control over the
interruption showed less negative responses than those with control over the interruption.
This is counter to the hypothesized effects of control, whereby those without control were
expected to respond more negatively to the interruption. Such unexpected results can
provide a rich opportunity to advance our understanding. Thus, I seek to provide potential explanations for this effect to help guide future work in this domain.

The operationalization of interruption control was multifaceted, whereby those with control had a choice of when to switch over to the interruption (see McFarlane, 1999), as well as the option to switch back and forth between both the proofreading task and the scheduling task as many times as they wanted until time ran out on the trial. Those without control were automatically taken to the interuptive scheduling task. Additionally, the second situation of switching back to the proofreading task before the interruption was completed was not available for those without control and so this aspect of the manipulation of “control” may have produced confounding results. One major theme that may support such findings is the resource demands needed to work on both the primary and interruptive tasks. Kanfer and Ackerman’s (1989) resource allocation model supports such demands on one’s resources.

Resource Demands. Kanfer and Ackerman’s resource allocation model proposes that task performance is determined by individual differences in attentional resource capacity, the attentional resources needed by the task parameters, and the self-regulatory processes needed for individuals allocating cognitive and attentional effort across multiple activities. Their main argument is that although self-regulatory processes engage individuals to maintain their goals, effort, and performance, this act also requires attentional resources. For more demanding tasks (e.g., higher, specific goals, increased task difficulty) more cognitive and attentional resources are needed for task performance, as well as self-regulation, resulting in declines in performance. This was supported when more difficult and specific goal assignments were given during an air traffic controller
task, which resulted in lower performance, especially for lower-ability trainees (Kanfer & Ackerman, 1989).

The current study involved working on two tasks within a single limited pool of time. It is assumed that more mental resources were needed to maintain effort toward the proofreading task for those that chose to switch back and forth between this primary task and the interruption. As both tasks were novel and difficult to execute under a time constraint more effortful attentional resources would be needed for those performing across two tasks at the same time (simultaneous strategy used by those with control over the interruption) compared to those who finished the interruption before being switched back to the primary task (sequential strategy used by those without control over the interruption). In other words, more effortful resources regarding mental decisions on which task to regulate one’s actions were needed for those with control over the interruption. Thus, it is speculated that those with control, who switched between tasks used more attentional resources, which resulted in more negative responses to the interruption than those without control that were able to keep their available resources high, as they did not have the option for switching.

Self-regulatory failure (Baumeister & Heatherton, 1996) is another related explanation for the interruption control findings pertaining to the theme of resource demands. Self-regulatory failure represents the loss of control over the self or that the control is misguided in a counterproductive fashion. An example may be a dieter who chooses to eat food that they know would not be productive toward their weight goal. More specifically, these authors point to the role of self-regulatory strength in describing this failure. A strength model of self-regulation regards self-regulation as a limited
resource, similar to arguments made above by Kanfer and Ackerman. According to
Baumeister and Heatherton, “one cannot regulate everything at once.” This argument
seems to be in alignment with the present study as those with control over the
interruption may have been more prone to decreases in their self-regulatory strength
given their attention to multiple tasks at the same time. These authors also support
existing research showing ineffective management of attention as a powerful indicator of
ensuing self-regulatory failure (Baumeister, Heatherton, & Tice, 1994; Wegner, 1994).
Taken as a whole, this self-regulatory failure hypothesis seems to agree with the findings
of the current study, such that management of attention across multiple tasks became an
overly demanding task for those that switched often resulting in subsequent self-
regulatory failure characterized in more negative responses to interruptions.

A third explanation for opposite findings regarding the interruption control
conditions can be found in the Zeigarnik effect, which proposes that interrupting an
activity becomes more strenuous as it nears its completion and that in general, people do
not like to leave their task uncompleted. Inherent within this effect is that actions and the
resources needed for those actions are arranged in a sequential fashion, such that
completion of one action releases the working memory resources needed for that action,
which can then be utilized for the next action in the sequence (see interruptive
explanations in Zijlstra et al., 1999). This is also similar to the explanations regarding
resource demands discussed above. Within the current study, those without control may
have suffered less from this Ziegarnik effect than those with control, as they had the
chance to produce a closure to the interruptive scheduling task (could not switch back
until all three minutes were depleted on the interruption, and hence, it was completed).
This allowed these individuals to more fully engage their self-regulatory resources and efforts on the primary proofreading task, which resulted in less negative responses in general. For those with control over the interruption, they did not finish the interruption all at once, but in blocks of repeated attention and effort, resulting in a task that remained open for longer during the execution of the primary task. This lack of closure, as a result of their choosing to switch between both tasks, may have resulted in the greater negative responses that were found.

Additional support for the opposite findings of interruption control can be found within the interruptions literature. One of the earlier studies looking at the effect of mental load within an interruptive environment found that coping with simultaneous demands produced greater workload estimates than coping with these same demands sequentially (Kirmeyer, 1988). Kirmeyer and results from Zijlstra and others (1999) explain the effect of interruptions using Cohen’s cognitive shifts model of cognitive fatigue (Cohen, 1978), whereby frequent changes in one’s focus of attention causes cognitive (mental) fatigue or a decrease in total available attention capacity. Thus, as stated above, the simultaneous strategy adopted by those with control over the interruption within the present study may have suffered greater cognitive fatigue and overload in their attentional capacity than those without control over the interruption, who by the programming of the task, used a sequential strategy to deal with the interruption.

Task switching research may also help explain present findings. This research points to the role of struggling with transitions from one task to another and the difficulty of remembering when to switch while engaged in current activity (Cellier & Eyrolle,
1992; Rogers & Monsell, 1995; Spector & Bierderman, 1976). This may also be stronger when these resources need to be kept in working memory each time an individual switches between primary and secondary tasks. Hopp-Levine, Smith, Clegg, and Heggestad (2006) showed how cues help to mitigate the negative effects of remembering when to switch to an interruption. Those who had cues available showed better performance than those who did not have cues of when to switch to the interruption. It was argued that cues made cognitive resources more available for the primary task without these resources being lost due to a harder working memory for both tasks. This effect has also been supported in other research (Altmann & Trafton, 2002, 2004; Hodgetts & Jones, 2006b).

Within the current study, those with control over the interruption did not have cues available indicating when to switch to the interruption but had to choose by their own means when was the best time. This added demand may have overwhelmed their ability to focus exclusively on the primary task all at once and drained more resources that were needed for its execution. As a result, this may have produced greater negative responses. Another theme that may help to elucidate the opposite findings of interruption control is the extra time and effort needed to reorient back to the interrupted task.

*Reorienting Efforts Toward Primary Task.* Another explanation found within the interruptions literature is the time needed to re-orient back to interrupted task (see Burmistrov & Leonova, 2003). The argument is that after coming back to the primary task from an interruption, an individual has to re-retrieve where they left off, including information related to their goal on the task, and the behaviors needed to reach this goal, along with judging one’s performance in relation to any remaining time that is available.
In other words, the self-regulatory resources executed for the interrupted task need to be re-established and re-engaged after the interruption has been dealt with. For the current study, this process was different for those with and without control over the interruption. For those without control, this process only had to be done once, as they only had two automatic switches imposed by the parameters of the manipulation. Conversely, for those with control over the interruption who enacted multiple switches on their own volition, had to re-orient each time and as a result, more frequently. This cost of both time and resources upon reorientation may help to explain the current findings.

The reorientation of efforts after an interruption can also coincide with the frequency of interruptions. Speier and others (1999) found that more frequent interruptions led to lower decision-making performance and described this effect as due to information overload. Frequent interruptions make the demand for remembering where one left off higher, such that the more times one is interrupted, the more times they have to remember their current state on the interrupted task. Within the current study those with control, by actively switching between both the interrupted and interruptive tasks, made the interruption seem to last longer and be more frequent (on own volition) compared to those without control. In other words, by actively switching, these individuals interrupted themselves more often, which may have caused the primary task to feel like progress was harder to make. Thus, the opposite findings seem to be partly explained by this supposition.

Unexpected results for Hypothesis 17 seem to be in agreement with explanations given above. Both the influence of interruption control and its importance were predicted to interact on primary task performance, such that those with control responding to an
important interruption should not show decreases in performance as much compared to those without control responding to an unimportant interruption. Results showed that those without control and responding to an important interruption showed the least decreases in their performance, while those with control responding to an important interruption showed the greatest performance declines.

Explanations regarding this result are in congruence with the reasons given above regarding interruption control. Restated here, it may be that those who were given the interruption all at once (no control) suffered less demands on their self-regulatory resources than those who had the opportunity to switch between the interruption and the proofreading task. The cognitive resources needed for constantly choosing which task to work on for those with control over the interruption may have affected performance more than those who did not have this mental drain. Additionally, although no significant main effect of interruption importance was found it is interesting that those responding to an unimportant interruption performed slightly worse than those responding to an important interruption. This was in the predicted direction, however, failing to be significant (Hypothesis 16). Moreover, those fulfilling an important interruption may have seen value in their devoted time, compared to those who fulfilled an unimportant additional demand. This may help to explain the distribution of the interaction with interruption control seen in Figure 4.12.

In sum, many explanations have been forwarded to help illuminate why those without control showed less negative responses to interruptions than those with control; that which was opposite of predictions. The main tenant of these explanations described above rests on the resource demands associated with task switching. Furthermore, the
inherent time and effort that was needed to re-orient back to the primary task was speculated to be influential on subsequent responses for those with control. Next, the results pertaining to the situational determinants of interruptions did not act alone but in conjunction with individual differences in self-regulatory functioning.

*Polychronicity and Action-State Orientation*

Polychronicity and action-state orientation also proved to be key pieces in explaining interruptions’ effect on self-regulatory responses. These results point to the argument that situational factors alone do not influence how individuals react to interruptions, but that individual preference in self-regulatory functioning also explain how interruptions impact subsequent responses. For the most part, the influence of interruption control depended upon one’s preference for working on multiple tasks at the same time.

For Hypothesis 4, it was expected that those who are monochronic would show more negative affective reactions to interruptions than those who are polychronic, especially when no control was given. Results showed that hardly any differences in positive affect change existed on polychronicity when control was given, but that those who were polychronic showed greater decreases in positive affect than those who were monochronic when no control was given over the interruption. This opposite finding may be due to the congruence between the environmental aspects of the task and one’s preferences for handling multiple tasks at the same time. This amounts to the equivalence between situational constraints and individual differences (Slocombe & Bluedorn, 1999).

Moreover, it may be that those who are polychronic prefer to have the option of choosing when they handle additional tasks and being able to switch back and forth
between tasks. As a result these individuals may have been more upset when they weren’t
given this option within the no control condition, thus showing greater negative reactions
as explained in their affective response. Conversely, those that were monochronic, still
showing negative responses to the interruption in general, may have liked that they had to
respond to the interruption all at once and not being able to switch back and forth among
both tasks, thereby agreeing with their preference for handling one task at a time. This
may be why they showed more negative reactions in the interruption control condition
and less negative reactions in the no interruption control condition.

Hypothesis 13 predicted that polychronicity would moderate the influence of
interruption control on goal revision, such that polychronic individuals overall would
show less downward changes in goals than those who are monochronic, and especially
when no control was given over the interruption. Results did support this as polychronic
individuals showed less downward changes overall. Interactions with control over the
interruption produced a crossover interaction, which was unexpected. More specifically,
when control over the interruption was given, and hence, the availability of choosing
when to switch to the interruption as well as being able to switch back and forth among
both the proofreading and interruptive task, might have been more preferred for
polychrons who favor this way of working. On subsequent trials they didn’t feel the need
to set less stringent goals as a result of the additional demands imposed by the
interruption as it didn’t serve as a cost on their available resources.

Conversely, those who preferred working on one task at a time (monochrons)
might have been put off by the need to regulate which task they attended to with the
control they had. This may have resulted in an increased cognitive load or use of their
much needed attentional resources and sparked them to reduce the level of their performance goals on subsequent trials. We see the reverse when no control was given, upon which monochrons were not given free will over which task they allocated their resources. Thus, they had to devote all three minutes to the interruption, which they could get out of the way, and then proceed to finishing the primary task. This more closely resembled their preference for working on one task at a time. For polychrons, this lack of control may not have agreed with their preferred way of operating. Thus, the slightly larger decrease in goals for polychrons was witnessed, whereas less downward revision occurred for monochrons.

Additionally, as described above, the influence of interruption importance on response latencies also depended on polychronicity. Moreover, those responding to an important interruption and who were polychronic responded significantly faster than those who were monochronic who responded to an unimportant interruption. This result indicates that those preferring to work on multiple tasks at once welcome the arrival of interruptions whereas those who prefer to work on one task at a time see interruptions as more of a hindrance (see Kaufman-Scarborough & Lindquist, 1999).

Besides polychronicity, results from the current study also showed that action-state orientation produced different subsequent responses to interruptions related to affect, expectancies, and goal revision.

Results for Hypothesis 7a and 7b indicated that affective reactions to interruptions depended on self-regulatory functioning across primary and secondary tasks. More specifically it was found that when responding to an important interruption, those who were action-oriented (Disengagement & Persistence) showed more negative affect than
those who were state-oriented. Conversely, when responding to an unimportant
interruption, those who were state-oriented (Preoccupation & Volatility) showed more
negative affect than those who were action-oriented. The latter finding was in congruence
with expectations, however the former was not. It may be that those who were action-
oriented saw the important interruption as another goal and tried to maintain their efforts
across both tasks. Given their capabilities to succeed in this type of situation it still may
have been too much to handle. Subsequently, this extra effort may have resulted in more
negative affect. Those who were state-oriented may not have processed the incentives
associated with the important interruption as another goal, and so, did not show negative
reactions to its arrival. On the flip side, when the interruption was not important, those
who were state-oriented may have had a harder time ignoring its presence (even though
small values were associated with it) and gave up more quickly on their current primary
task pursuits, resulting in more negative affect than those who were action-oriented.

Hypothesis 10c also showed findings that were somewhat opposite of predictions.
Results showed that when control was given over the interruption, those who were
action-oriented did not decrease their expectancies as a result of the interruption, whereas
those who were state-oriented did. This played out as expected. However, when no
control was given over the interruption, the opposite effect occurred, such that those who
were state-oriented showed less expectancy decreases than those who were action-
oriented. An explanation for this effect may rest on the self-regulatory nature of the
volatility dimension of action-state orientation. Moreover, those that give up more easily
responded by showing more downward changes in their expectancies when control was
given over the interruption. The availability of control afforded individuals the cognitive-
load and resource-intensive job of choosing which task to work on (primary or interruptive). This high load on their self-regulatory resources may have been too much for these individuals, but just fine for individuals who persist no matter what.

On the flip side, when no control was given, upon which individuals were forced to switch to the interruptive task, knew they had to exhaust all their time there before being switched back to the primary task. Thus, their changes in their expectancies did not decrease as much. This may be a result of less cognitive load experienced by these individuals. Those who persist more easily that showed greater downward changes in expectancies when no control was given over the interruption was unexpected. It may be that these individuals weren’t comfortable in this type of situation and prefer greater control in how they handle multiple tasks.

Finally, Hypothesis 14a and 14c showed expected results for those with control over the interruption. More specifically, less goal revision occurred for those who had control over the interruption and who were action-oriented (Initiative & Persistence) compared to those who were state-oriented (Hesitation & Volatility). This result was predicted. However, when no control was given, differences in action-state orientation were less apparent for hesitation, such that similar levels of goal revision occurred across the hesitation dimension of action-state orientation. Similarly, but more pronounced, a cross-over interaction effect was found for volatility, such that those who were state-oriented showed less decreases in their goals compared to those who were action-oriented. This unexpected finding may have been due to those who were state-oriented persisting with stringent performance goals despite their lack of control. They may have pursued such standards in their distal goals knowing that they would not be able to reach
them. There was however more downward goal revision for proximal goals for those that were state-oriented within the no interruption control condition (see Figure 4.11). Those who were action-oriented may have acted more in line with reasonable self-regulatory processes by decreasing the standards they chose to attain, which resulted in the opportunity to succeed in subsequent pursuits. Overall, these results maintain that self-regulatory functioning is an important personality construct to study when examining responses to interruptions.

Limitations and Future Research

As the current study was the first to explore the self-regulatory and motivational responses to interruptions, there are also some limitations that need to be considered, which can be corrected for with future research exploring these effects. First, as noted above, the manipulation of interruption control was multifaceted. Those without control were immediately taken to the interruptive task whereas those with control had the option to choose when they wanted to switch over, as has been done in existing research looking at control over interruptions (McFarlane, 1999). However, the current study also allowed those with control over the interruption to switch back and forth between both tasks however they saw fit. The availability of switching may have produced a confound as those without control over the interruption did not have this option. Future research should replicate this study without using the availability for those with control to switch back to the primary task after they have switched to the interruptive task. Responses may play out more in line with predictions of the current study than the opposite findings that occurred.
Second, the manipulation of control may have produced differences in the perceived characteristic of the interruption itself. More specifically, those without control received a break or intrusion during their execution of the primary proofreading task by being automatically forced over to the interruption. This is in agreement with former characteristics of what defines an interruption, such that it is imposed on the individual without one’s knowing. Conversely, those with control were given a warning that another task existed but were allowed to switch to it whenever they wanted. Thus the interruption in this condition acted more like a secondary goal apart from their primary task goal on the proofreading task. Participants in this condition knew ahead of time the additional demands required of them and by actively switching exhibited qualities of pursuing multiple goals. This limitation may also be another explanation for the opposite findings regarding interruption control. Moreover, those without control may have perceived the interruption as an interruption, whereas those with control felt more discouraged by perceiving the interruption as another goal to work toward within their environment. Again, future research may want to explore this as a condition in and of itself, whereby responses are measured for those who respond to interruptions that occur by surprise, compared to responses exhibited by allocating resources across multiple goals. This could be studied in a within or between-subjects approach, which could yield fascinating insights into the interplay between interruptions and multiple goals.

As the research on situational parameters of interruptions is fairly young, it would be interesting for future research to continue to explore the boundary conditions and their effects on individuals’ responses that follow. Some of what has been researched on the situational constraints of interruptions are its complexity and frequency in relation to the
interrupted task, its timing within or between task boundaries, how much time is needed between the primary task and the interruption to maintain effective performance, as well as the time needed for recovery after an interruption. The availability of cues seems to be a significant parameter for performance to be maintained, relating to the cost of working memory resources. Future research needs to continue to explore the importance of interruptions within a natural work setting, utilizing incentives similar to the ones used within the current study, as well as additional values more pleasing to the job. Future research also needs to use physiological aspects of measuring individuals’ responses such as skin conductance and attentional eye blink or heart rate to measure annoyance, frustration, and stress. This avenue will also provide more accurate affective reactions than can be studied by self-report measures alone. More timely affective responses could measure changes as they occur and would help to explain the conditions in which interruptions are more intrusive to current pursuits.

Third, the current study only explored two potential dispositional factors that were argued to influence differential self-regulatory and motivational responses to interruptions. Both polychronicity and action-state orientation were smart areas to start with, as the existing literature is silent in exploring these individual difference moderators, and because they represent preferences and self-regulatory functioning for working on multiple tasks. Future research should continue to look at other potentially interesting personality constructs, such as regulatory focus, goal orientation, and intrinsic motivation. For example, a promotion focus may foster individuals to ignore interruptions less as they tend to be oriented toward maximal goals (Shah, Higgins, & Friedman, 1998). They may view interruptions as avenues for greater success.
Conversely, those with a prevention focus may ignore interruptions more as they tend to view goals as obligations that one should attain. Also, with regards to goal orientation, those that are more learner-focused may seek out benefits from interruptions and incorporating them into their existing task demands. For these individuals responses may be less negative as a result of their interest in learning how to deal with interruptions. Conversely, for those that are focused more on demonstrating their ability, they may not prefer interruptions that may decrease their potential for success and may show more negative responses as a result.

Research on intrinsic motivation may also shed some light on the results of the current study. Self-determination theory (Deci & Ryan, 2000) describes that human motivation is determined by psychological needs for competence, autonomy, and relatedness and is highly effected by their interplay within social contexts. In regards to the current study, it may be that the situation involving interruptions that were important led to a decrease in participants’ intrinsic motivation to perform on the task, as these interruptions demanded attention. Likewise, although the manipulation of control was supposed to increase the perceived autonomy inherent within attending to the interruption, the high need to switch back and forth between both the primary and interruptive tasks may have caused a decrease in this perception. Moreover, the overall situation, inundated with external incentives related to goals and performance, may have imposed an external motivation for task completion. Future research should explore the impact of interruptions, including their level of control and importance on subsequent levels of intrinsic motivation. Furthermore, it will be important for future research to
explore these interesting personality factors and how they may explain self-regulatory and motivational responses to interruptions.

Fourth, participants may have performed within task parameters that were overly controlled. Within the proofreading and scheduling tasks a clock counted down showing how much time remained for the participant on each task. This was utilized to impose greater difficulty on the task and make one’s efforts a pressing need to be directed toward goal-related behaviors. Its use, however, may have produced an unrealistic presence that made goals seem impossible to achieve. The clock may have also focused attention too much on monitoring the pace of work, rather than on more specific behaviors needed to perform higher (e.g., scanning words for errors quicker, etc.). Thus although the time parameters were used to make the choice for task-related actions to be used wisely, it may have also been a distraction. Also, the compensation and incentive structure tied to the importance manipulation might have been too unrealistic, although results from the manipulation check show that participants viewed the interruption to be more or less important based on the importance condition. Nonetheless, the use of money for the interruptive task might have been a controlling task characteristic.

As a whole, the above-stated characteristics of the task parameters raise questions concerning the external validity of the current study. The use of a laboratory study made possible a highly organized environment to explore the nature of specific responses to interruptions. Its use may be unrealistic to that in real-world contexts like the general office environment, such that many more distractions exist than can be achieved in a lab setting. However, many study characteristics are also very similar to that of the real world. More specifically, responding to interruptions from a boss is very congruent to
receiving an extra task to work on. Getting a task on one’s desk that requires immediate action and that varies in its importance is very similar to the reality of the environment created within the current study. Also, individuals may manage their time by using clocks on computers or watches, especially when their work has deadlines. Thus, although the environment created within the current study was very controlling, there are some congruencies to work being performed in the workplace.

A last concern may be that participants were not fully engaged in the tasks or did not see them as meaningful. Additional data did reveal, however, some indirect indications that participants were fully engaged in the task, as participants reported strong commitment to their goals and reported low levels of boredom on both tasks and high levels of enjoyment on the proofreading task. Nonetheless, different effects may have been noticed on tasks that are more personally significant. Future research may want to explore other tasks that are more intrinsically pleasing to individuals.

Implications

Despite the limitations of the current study, it provides several much needed contributions to both the interruptions and motivation literatures. Findings from past research were replicated showing disruptive effects in affect and performance as a result of interruptions during primary task execution. The current research also extends the literature by its exploration of motivational responses, such as expectancies of success and goals. The current study was the first to tie in aspects of self-regulation with the

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4 Participants reported they were committed to the goals they set ($M = 3.87$). Participants also reported low levels of boredom on the proofreading ($M = 2.71$) and scheduling ($M = 2.60$) tasks and high levels of enjoyment on the proofreading task ($M = 3.26$). This indicates that participants were engaged in the tasks within the current study.
cognitive explanations of interruptions’ effects on performance. The results provide support for the downward changes within individuals’ expectations of succeeding at their current task, as well as their subsequent decreases in goals. Explaining the motivational effects of interruptions has practical implications for individuals at work. Training initiatives may benefit from knowing how to keep employee standards high despite the occurrence of interruptions within one’s job. These responses provide a possible avenue for why some individuals can persist despite constant setbacks from interruptions, while others have more trouble keeping up with their personal standards.

Additionally, the current study extended explanations of interruptions’ effects and provides the workplace with some conditional boundaries to interruptions and how they are handled. Moreover, these boundaries are the availability of control over interruptions and the values inherently tied to them. Results did show differences in subsequent responses across these situational factors, which may help to explain how the environmental aspects of interruptions impact responses that follow. Both their level of control and the values attached to them seem to influence differential responses among individuals. Those with control seem to utilize a task-switching approach between their primary duties and interruptions. This may have a direct impact on responses that follow, as individuals cannot handle the attentional resources needed for such an undertaking. Companies that allow such autonomy may want to focus training on areas related to making better use of available resources and the important allocation choices that come along with multiple goals. Likewise, when values are assigned to interruptions, it will be important for organizations to consider how this impacts primary task assignments. Current results suggest that work may be set aside for more important interruptions while
these same interruptions may be ignored if no inherent values are attached to them.

Applying the context of interruptions to performance management systems is also an important implication from the current study. It may be that negative responses culminating from interruptions are hurting other important work areas relevant to one’s job. Knowing how to reward the handling of some interruptions (e.g., organizational citizenship behaviors) over others will be important for practice.

Lastly, the current study also showed the impact of polychronicity and action-state orientation on subsequent responses to interruptions, highlighting the interplay of individual factors with existing situational constraints. For organizations concerned with their employees’ morale and well-being, it is important for training initiatives to focus on developing individuals who can mitigate the disruptive effects of interruptions within their work. Likewise, selection procedures for jobs that are interruption-intensive should look for individuals with personality styles that welcome these disruptions and prefer to work with multiple tasks. Here, a person-job fit would be important to consider as its been shown before (Slocombe & Bluedorn, 1999), as well as with the results from the current study, that matches of individual preferences and situational constraints lead to better work outcomes such as higher performance, and more recently, less negative responses related to affect, goals, and expectancies of success. Since most jobs in today’s workforce require the individual to deal with interruptions from coworkers or through technological mediums, it is important to know the proximal responses that occur from interruptions. The current study provides both research and practice with a first-hand look at what these responses are.
Conclusion

The current study explored the influence of both situational constraints and personal work styles on responses to interruptions. The exploration of self-regulatory and motivational reactions such as affect, expectancies, and goals provided a more complete understanding of why some individuals maintain high performance standards while others do not. This research marks the first to tie in self-regulatory constructs within the cognitive base of the interruptions literature. Results did show negative reactions to interruptions with affect being increasingly negative as well as decreases in expectancies, goals, and performance. These results were a function of both the availability of control over the interruption and its inherent importance, with the added influence of individual differences related to polychronicity and action-state orientation. The results were also examined in the light of some limitations of the current study. Most notably, the manipulation of interruption control was mentioned to be a distinguishing confound. Moving forward, it will be important for research exploring interruption control to use a single method within the manipulation parameters to explore its influence. It will also be important for future research to continue to explore other situational parameters that may also affect motivational responses. Additionally, the interplay between situational aspects of interruptions and individual differences in self-regulatory functioning should be a continued research endeavor. Implications from this research pertained to the selection and training initiatives within organizations to carefully select those individuals for jobs that are inundated with interruptions. Results suggest that both polychronicity and action-state orientation are initial constructs to use. Moreover, training individuals to actively monitor their motivational and self-regulatory responses when interruptions occur during
their job will be important for companies to get the most out of their employees and may result in higher performance for future work involving similar interruptions.
REFERENCES


APPENDIX A

MEASURES

Polychronicity

*Instructions: Please indicate on the scale provided the extent to which you agree with the following statements. In response to each statement please answer the extent that you agree in reference to how you behave on a regular basis.*

1. I like to juggle several activities at the same time.
2. I would rather complete an entire project every day than complete parts of several projects.
3. I believe people should try to do many things at once.
4. When I work by myself, I usually work on one project at a time.
5. I prefer to do one thing at a time.
6. I believe people do their best work when they have many tasks to complete.
7. I believe it is best to complete one task before beginning another.
8. I believe it is best for people to be given several tasks and assignments to perform.
9. I seldom like to work on more than a single task or assignment at the same time.
10. I would rather complete parts of several projects every day than complete an entire project.
11. I prefer to do two or more activities at the same time.
12. I typically do two or more activities at the same time.
13. Doing two or more activities at the same time is the most efficient way to use my time.
14. I am comfortable doing more than one activity at the same time.
15. I like to juggle two or more activities at the same time.
Action-State Orientation

Instructions: Please read each statement below and choose one of the two responses that best indicates how you typically behave in each situation.

1. (H) When I know I must finish something soon:
   a. I have to push myself to get started
   b. I find it easy to get it done and over with

2. (V) When I have learned a new and interesting game:
   a. I quickly get tired of it and do something else
   b. I can really get into it for a long time

3. (P) If I’ve worked for weeks on one project and then everything goes completely wrong with the project:
   a. It takes me a long time to adjust myself to it
   b. It bothers me for a while, but then I don’t think about it anymore

4. (H) When I don’t have anything in particular to do and I am getting bored:
   a. I have trouble getting up enough energy to do anything at all
   b. I quickly find something to do

5. (H) When I am getting ready to tackle a difficult problem:
   a. It feels like I am facing a big mountain that I don’t think I can climb
   b. I look for a way that the problem can be approached in a suitable manner

6. (P) If I had just bought a new piece of equipment (for example a tape deck) and it accidentally fell on the floor and was damaged beyond repair:
   a. I would manage to get over it quickly
   b. It would take me a long time to get over it

7. (H) When I have to solve a difficult problem:
   a. I usually don’t have a problem getting started on it
   b. I have trouble sorting things out in my head so that I can get down to working on the problem

8. (P) If I have to talk to someone about something important and, repeatedly, can’t find him or her at home:
   a. I can’t stop thinking about it, even when I’m doing something else
   b. I easily forget about it until I see the person

9. (V) When I read an article in the newspaper that interests me:
    a. I usually remain so interested in the article that I read the entire article
    b. I still often skip to another article before I’ve finished the first one

10. (P) When I am told that my work has been completed unsatisfactorily:
    a. I don’t let it bother me for too long
    b. I feel paralyzed

11. (H) When I have a lot of important things to do and they must all be done soon:
    a. I often don’t know where to begin
    b. I find it easy to make a plan and stick with it

12. (V) When one of my co-workers brings up an interesting topic for discussion:
    a. It can easily develop into a long conversation
    b. I soon lose interest and want to go do something else
13. (P) If I’m stuck in traffic and miss an important appointment:
   a. At first, it’s difficult for me to start to do anything else at all
   b. I quickly forget about it and do something else
14. (V) When I am busy working on an interesting project:
   a. I need to take frequent breaks and work on other projects
   b. I can keep working on the same project for a long time
15. (H) When I have to take care of something important which is also unpleasant:
   a. I do it and get it over with
   b. It can take a while before I can bring myself to it
16. (P) When something really gets me down:
   a. I have trouble doing anything at all
   b. I find it easy to distract myself by doing other things
17. (H) When I am facing a big project that has to be done:
   a. I often spend too long thinking about where I should begin
   b. I don’t have any problems getting started
18. (P) When several things go wrong on the same day:
   a. I usually don’t know how to deal with it
   b. I just keep on going as though nothing had happened
19. (V) When I read something I find interesting:
   a. I sometimes still want to put the article down and do something else
   b. I will sit and read the article for a long time
20. (P) When I have put all my effort into doing a really good job on something and the whole thing doesn’t work out:
   a. I don’t have too much difficulty starting something else
   b. I have trouble doing anything else at all
21. (H) When I have an obligation to do something that is boring and uninteresting:
   a. I do it and get it over with
   b. It can take a while before I can bring myself to do it
22. (V) When I am trying to learn something new that I want to learn:
   a. I’ll keep at it for a long time
   b. I often feel like I need to take a break and go do something else for a while
23. (P) When I have lost something that is very valuable to me and I can't find it anywhere:
   a. I have a hard time concentrating on something else
   b. I put it out of my mind after a little while
24. (V) When I'm working on something that's important to me:
   a. I still like to do other things in between working on it
   b. I get into it so much that I can work on it for a long time
25. (P) When I'm in a competition and have lost every time:
   a. I can soon put losing out of my mind
   b. The thought that I lost keeps running through my mind
26. (V) When I'm watching a really good movie:
   a. I get so involved in the film that I don't even think of doing anything else
   b. I often want to get something else to do while I'm watching the movie
27. (V) When I have been busy for a long time doing something interesting (for example, reading a book or working on a project):
   a. I sometimes think about whether what I'm doing is really worthwhile
   b. I usually get so involved in what I'm doing that I never think to ask whether it's worthwhile
28. (H) When I have to make up my mind about what I am going to do when I get some unexpected free time:
   a. It takes me a long time to decide what I should do during this free time
   b. I can usually decide on something to do without having to think it over very much
29. (P) When I've bought a lot of stuff at the store and realize when I get home that I've paid too much - but I can't get my money back:
   a. I can't usually concentrate on anything else
   b. I easily forget about it
30. (H) When I have work to do at home:
   a. It is often hard for me to get the work done
   b. I usually get it done right away
31. (V) When I'm on vacation and having a good time:
   a. After a while, I really like doing something completely different
   b. I don't even think about doing anything else until the end of vacation
32. (H) When there are two things that I really want to do, but I can't do both of them:
   a. I quickly begin one thing and forget about the other thing I couldn't do
   b. It's not easy for me to put the other thing I couldn't do out of my mind
33. (P) When something is very important to me, but I can't seem to get it right:
   a. I gradually lose heart
   b. I just forget about it and do something else
34. (V) When I am having an interesting conversation with someone at a party:
   a. I can talk to him or her the entire evening
   b. I prefer to go do something else after a while
35. (V) When it turns out that I am much better at a game than the other players:
   a. I usually feel like doing something else
   b. I really like to keep playing
36. (H) When I have a boring assignment:
   a. I usually don't have any problem getting through it
   b. I sometimes can't get moving on it

*Note*: Items with letters in front of the description pertain to the dimension. P = Preoccupation; H = Hesitation; V = Volatility.
Tenacity

*Instructions:* Please indicate from the scale provided how often you behave in relation to the description of each item below.

1. never 2. rarely 3. occasionally 4. sometimes 5. often 6. very often 7. all the time

1. I often tend to stop before completing a goal because I have the opportunity to pursue another goal.
2. I often shift my attention among various pursuits.
3. I find it difficult to pursue another goal until I have completed the goal I am presently engaged in.

Self-Regulation

*Instructions:* Please indicate for each item below how well you feel you have managed each task over the last 3 months.

1. not at all well 2. somewhat well 3. very well

1. Attending classes as often as required.
2. Being on time for classes.
3. Completing assignments (papers, worksheets, etc.) on time.
4. Avoiding "all-nighters" before tests by planning ahead for the needed study time.
5. Studying for an adequate amount of time each night.
6. Remaining patient in potentially frustrating situations.
7. Refraining from losing your temper or getting overly upset due to minor issues.
8. Asking questions during class to clarify your understanding of the topic.
9. Taking part in class discussions more often.
10. Meeting with professors to discuss troublesome concepts before the test.
11. Raising GPA to a higher level.
12. Keeping GPA at desired level.
13. Working on long-term projects consistently over time rather than procrastinating.
14. Improving sleep habits to a healthier pattern.
15. Reading assigned materials prior to class.
16. Altering the amount of time spent socializing each week to target amount.
17. Maintaining performance level equal to that of coworkers.
18. Staying at work until your shift is over or your duties are completed.
19. Raising level of performance above that of coworkers or to your target level.
20. Arriving at work on time.
21. Improving level of work skills above the level at which you started the job (i.e., increasing typing speed, making better tips, making more sales).
22. Following company rules and policies (i.e., smoking restrictions, length of coffee breaks).
23. Finding and/or maintaining employment, while in school.
24. Focusing on work-related thoughts and activities when "on the clock."
Reading Speed and Comprehension

King Louis XVI and Queen Marie Antoinette ruled France from 1774 to 1789, a time when the country was fighting bankruptcy. The royal couple did not let France’s insecure financial situation limit their excessive spending, however. Even though the minister of finance repeatedly warned the king and queen against wasting money, they continued to spend great fortunes on their personal pleasure. This lavish spending greatly enraged the people of France. They felt that the royal couple bought its luxurious lifestyle at the poor people's expense.

Marie Antoinette, the beautiful but exceedingly impractical queen, seemed uncaring about her subjects. While French citizens begged for lower taxes, the queen embellished her palace with extravagant works of art. She also surrounded herself with artists, writers, and musicians, who encouraged the queen to spend money even more abundantly.

While the queen's favorites gluttoned themselves on huge feasts at the royal table, many people in France were starving. The French government taxed the citizens outrageously. These high taxes paid for the entertainments the queen and her court so enjoyed. When the minister of finance tried to stop these royal spendthrifts, the queen replaced him. The intense hatred that the people felt for Louis XVI and Marie Antoinette kept building until it led to the French Revolution. During this time of struggle and violence (1789-1799), thousands of aristocrats, as well as the king and queen themselves, lost their lives at the guillotine. Perhaps if Louis XVI and Marie Antoinette had reined in their extravagant spending, the events that rocked France would not have occurred.

Questions & Answers:

1. The people surrounding the queen encouraged her to spend money ____.
   A. wisely
   B. abundantly
   C. carefully
   D. foolishly
   E. joyfully

2. The minister of finance tried to curb these royal ____.
   A. aristocrats
   B. money wasters
   C. enemies
   D. individuals
   E. spenders

3. Both King Louis XVI and Marie Antoinette lost their lives by ____.
   A. hanging
   B. torture
   C. guillotine
   D. gunfire
   E. whipping
Affect

Instructions: Please indicate from the scale provided below how intensely you currently feel the following emotions:

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td></td>
<td>very slightly or not at all</td>
<td>a little</td>
<td>moderately</td>
<td>quite a bit</td>
<td>extremely</td>
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</table>

Emotional Terms:

- Interested
- Excited
- Sad
- Tense
- Satisfied
- Calm
- Agitated
- Discouraged

- Enthusiastic
- Proud
- Happy
- Relaxed
- Low
- Disappointed
- Uneasy
- On edge

Goals (only trial 1 is listed below; trials 2 and 3 are similar to trial 1)

Overall Goal
Instructions: Please pick which goal you are trying to attain on the proofreading task across ALL 3 DAYS. Simply click on the level of performance you are trying to attain, from 10% to 100%.

10%; 20%; 30%; 40%; 50%; 60%; 70%; 80%; 90%; 100% (chosen for each of the 4 goals in each of the three trials)

Trial Goal
Instructions: Please pick which goal you are trying to attain on the proofreading task for Day 1 ONLY. Simply click on the level of performance you are trying to attain, from 10% to 100%.

Lowest acceptable Overall Goal
Instructions: Please pick which goal you feel is the lowest acceptable amount that you would be satisfied with attaining on the proofreading task across ALL 3 DAYS. Simply click on the value that represents the lowest level of performance you would consider acceptable, from 10% to 100%.
Lowest acceptable Trial Goal

Instructions: Please pick which goal you feel is the lowest acceptable amount that you would be satisfied with attaining on the proofreading task for Day 1 ONLY. Simply click on the value that represents the lowest level of performance you would consider acceptable, from 10% to 100%.

Goal Commitment

Instructions: Using the following scale, please report how committed you are to attaining the goal that you indicated above.

1 2 3 4 5
strongly disagree neutral agree strongly agree
disagree

1. I don’t care if I achieve the goal or not.
2. I am strongly committed to pursuing this goal.
3. It wouldn’t take much to make me abandon this goal.
4. I think it is a good goal to shoot for.
5. I am willing to put a great deal of effort to achieve this goal.
6. It is hard for me to take this goal seriously.
Expectancy (only trial 1 is listed below; trials 2 and 3 are similar to trial 1)

Instructions: The following scale will list a specific level of performance on each line. For each level of performance, indicate how confident you are about your ability to perform at each of these levels on a scale of 0 - 10, 0 being "not at all confident" and 10 being "extremely confident."

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<th>8</th>
<th>9</th>
<th>10</th>
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<tr>
<td></td>
<td>not at all confident</td>
<td>moderately confident</td>
<td>extremely confident</td>
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1. I believe that I can find at least 10% of the misspelled words Across ALL 3 Days.
2. I believe that I can find at least 20% of the misspelled words Across ALL 3 Days.
3. I believe that I can find at least 30% of the misspelled words Across ALL 3 Days.
4. I believe that I can find at least 40% of the misspelled words Across ALL 3 Days.
5. I believe that I can find at least 50% of the misspelled words Across ALL 3 Days.
6. I believe that I can find at least 60% of the misspelled words Across ALL 3 Days.
7. I believe that I can find at least 70% of the misspelled words Across ALL 3 Days.
8. I believe that I can find at least 80% of the misspelled words Across ALL 3 Days.
9. I believe that I can find at least 90% of the misspelled words Across ALL 3 Days.
10. I believe that I can find at least 100% of the misspelled words Across ALL 3 Days.

1. I believe that I can find at least 10% of the misspelled words On Day 1 Only.
2. I believe that I can find at least 20% of the misspelled words On Day 1 Only.
3. I believe that I can find at least 30% of the misspelled words On Day 1 Only.
4. I believe that I can find at least 40% of the misspelled words On Day 1 Only.
5. I believe that I can find at least 50% of the misspelled words On Day 1 Only.
6. I believe that I can find at least 60% of the misspelled words On Day 1 Only.
7. I believe that I can find at least 70% of the misspelled words On Day 1 Only.
8. I believe that I can find at least 80% of the misspelled words On Day 1 Only.
9. I believe that I can find at least 90% of the misspelled words On Day 1 Only.
10. I believe that I can find at least 100% of the misspelled words On Day 1 Only.
Causal Attributions (only trial 1 is listed below; trials 2 and 3 are similar to trial 1)

*Instructions:* The items below concern your impressions or opinions of the cause or causes of your performance on the proofreading for Day 1. Indicate your response by clicking on the button that signifies how much you lean to one side or the other.

<table>
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<tr>
<th>9</th>
<th>8</th>
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<tr>
<td>Is the cause(s) something:</td>
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<tr>
<td>1. That reflects an aspect of yourself</td>
<td>reflects an aspect of the situation</td>
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<td>2. Manageable by you</td>
<td>not manageable by you</td>
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<td>3. Permanent</td>
<td>temporary</td>
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<td>4. You can regulate</td>
<td>you cannot regulate</td>
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<td>5. Over which others have no control</td>
<td>over which others have control</td>
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<td>6. Inside of you</td>
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<td>7. Stable over time</td>
<td>variable over time</td>
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<td>8. Not under the power of other people</td>
<td>under the power of other people</td>
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<td>9. Something about you</td>
<td>something about others</td>
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<td>10. Over which you have power</td>
<td>over which you have no power</td>
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<td>11. Unchangeable</td>
<td>changeable</td>
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<td>12. Other people cannot regulate</td>
<td>other people can regulate</td>
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Effort

*Instructions:* Please indicate for each item below from the scale provided the effort you invested during the proofreading task.

```
1 2 3 4 5 6 7
little or no effort medium effort very high effort
```

1. What was the level of effort you invested when you engaged in this activity?
2. How much effort did you use to make sure you performed at or near your goal?
3. How much effort did you use to do well on this activity?
4. How much effort was required to do well on this activity?
5. What level of effort did you use to make sure you performed to your own standards?

Feedback Acceptance

*Instructions:* Please indicate your response to each question using the scale provided below.

```
1 2 3 4 5
strongly disagree neutral agree strongly agree
```

1. The feedback I received was an accurate evaluation of my performance.
2. It is hard to take the feedback seriously.
3. I did not agree with the feedback provided.
4. The feedback I received influenced my effort in upcoming days (trials).
Cognitive Interference

Instructions: This questionnaire concerns the kinds of thoughts that go through people's heads at particular times, for example, while they are working on a task. The following is a list of thoughts, some of which you might have had WHILE DOING THE PROOFREADING TASK ON WHICH YOU JUST WORKED. Please indicate from the scale provided approximately how often each thought occurred to you while working on the proofreading task.

1. I thought about how poorly I was doing.
2. I thought about what the experimenter would think of me.
3. I thought about how I should work more carefully.
4. I thought about how much time I had left.
5. I thought about how others have done on this task.
6. I thought about the difficulty of the task.
7. I thought about my level of ability.
8. I thought about the purpose of the experiment.
9. I thought about how I would feel if I were told how I performed.
10. I thought about how often I get confused.
11. I thought about other activities (for example, assignments, work).
12. I thought about members of my family.
13. I thought about friends.
14. I thought about something that made me feel guilty.
15. I thought about personal worries.
16. I thought about something that made me feel tense.
17. I thought about something that made me feel angry.
18. I thought about something that happened earlier today.
19. I thought about something that happened in the recent past (last few days, but not today).
20. I thought about something that happened in the distant past.
21. I thought about something that might happen in the future.
22. Please indicate the number on the following scale below which best represents the degree to which you felt your mind wandered DURING THE PROOFREADING TASK YOU HAVE JUST COMPLETED.

Not at all 1 2 3 4 5 6 7 Very Much
Manipulation Check

Instructions. Please respond to the following items by choosing the best option that pertains to your experience with the tasks you recently completed.

Items 1-3:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>very easy</td>
<td>easy</td>
<td>neither easy nor difficult</td>
<td>difficult</td>
<td>very difficult</td>
</tr>
</tbody>
</table>

Items 4-26:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly disagree</td>
<td>disagree</td>
<td>neither agree nor disagree</td>
<td>agree</td>
<td>strongly agree</td>
</tr>
</tbody>
</table>

1) To what extent was the proofreading task difficult to perform within the time limit?
2) To what extent was the time availability task difficult to perform within the time limit?
3) To what extent was the both the proofreading task and time availability task difficult to perform within the time limit?
4) I would have preferred to have more time on the tasks in order to perform well.
5) I could have afforded to have less time on the tasks in order to perform well.
6) I was bored performing the proofreading task.
7) I was bored performing the time availability task.
8) I enjoyed performing the proofreading task.
9) I enjoyed performing the time availability task.
10) The time availability task (additional task) was too distracting to perform well on the proofreading task.
11) I didn’t feel distracted from the arrival of the additional task.
12) I felt like I had control over when I handled the additional task.
13) I was given control over when to switch to the additional task.
14) I was able to choose when I switched over to the additional task.
15) I felt like I had no control over when I handled the additional task.
16) I was not given control over when to switch to the additional task.
17) I was not able to choose when I switched over to the additional task.
18) I was told the additional task was of HIGH IMPORTANCE.
19) I was told the additional task was of LOW IMPORTANCE.
20) I was told that I could earn up to $2.00 on the additional task.
21) I was told that I could earn up to $0.20 on the additional task.
22) The additional task was important to me to work on.
23) The additional task was not important to me to work on.
24) The additional task was no more important to me to work on than the proofreading task.
25) I understood how to perform the proofreading task.
26) I understood how to perform the time availability task.
APPENDIX B

INSTRUCTIONS

Introduction to Study

NOTE: Please carefully read the message below. It will inform you of your tasks that you will complete today.

Hello, and welcome to your first day on the job! Your job position is a Recruiting Assistant within the recruitment and selection department. Your job as recruiting assistant will be to proofread letters sent from customers using our services, as well as those within our company who are looking for open positions. These letters are sent to you so that you may identify any errors that still exist.

As a recruiting assistant, it is important that you identify any misspelled words within each letter so that our clients maintain a professional image. Please note that these errors are only typographical errors, or words that have been misspelled by either misplaced, missing, or incorrect characters (letters) within the words. More specifically, you do not have to find any grammatical errors but only words in the letters that are misspelled. To keep our standards high, your job will be to try to find as many errors as possible within each of the letters you proofread.

Also, since this is a fast-paced environment, you will only have a limited amount of time to complete your proofreading. The characteristics of the job entail that you will also have other tasks, which may call for your attention at any time. In other words, you may have to perform an additional task, so please be forewarned of this demand of the job.

Good luck on your first day!

Practice Trial Instructions

Instructions:
You will be given a chance to practice and get familiar with the task on the next screen. The following task involves you to identify as many errors as possible in the allotted time (3 minutes) by clicking on the word(s) you feel are misspelled. You only need to click once, upon which the clicked-on word will turn red. If you feel you made a mistake and don’t want to identify a word as an error simply click on it again and it will turn back to black. Once you hit “Continue”, you will be taken to one practice letter and the clock will
begin to count down. You will also receive feedback, updated every 30 seconds on your current progress, which will let you know how many misspelled words you have identified and will relate to a projected performance on the trial. When the clock runs out any errors you have identified will be saved and will relate to your overall trial performance.

Please click “Continue” once you are ready to proceed.

Incentives for Proofreading Task

You will be given a CHANCE TO WIN $50 based on your goals and performance on the proofreading task. Your name will go into a lottery with more entries being put in based on a combination of your overall goal AND how well you actually perform across the entire study. The way in which the lottery entries works is as follows (Please refer to the chart below for specific examples given):

Chance of more rewards (more lottery entries)
- You get rewarded with the accumulation of more lottery entries for setting a higher goal on the proofreading task (pertains to the goals for “ACROSS ALL 3 DAYS”)
  - For example: setting a goal of 30% has the potential to earn up to 9 entries, whereas setting a goal of 70% has the potential to earn up to 21 entries if the goal is attained.
- You get rewarded with the accumulation of more lottery entries for performing better on the proofreading task (pertains to your overall performance on the proofreading).
  - You earn 1 more lottery entry for every 10% increase in performance. For example, at a goal of 50% you would earn 15 entries if your performance is 50% but would earn 16 entries if your performance is 60%.
- Summary: So as your goal and performance are higher (and hence more difficult to attain) you get rewarded by the accumulation of more lottery entries.

Chance of fewer rewards (less lottery entries)
- You get fewer lottery entries by performing lower than the goal(s) you set.
  - For every 10% lower your performance is than your goal, you lose 5 lottery entries. For example: if your goal is 70% and you perform at that level then you would earn 21 entries, whereas if your performance is 60% you would earn 16 entries.
- You get fewer lottery entries by setting a goal lower than your actual performance.
  - For example: if your goal is 40% and your performance is 50% you would earn 13 entries, whereas if you had set a goal at 50% you would have earned 15 entries instead.

5 The description of the incentives was pilot-tested to fine-tune its readability. Participants (N = 56) indicated that they understood how the lottery and incentives worked in relation to their goals and performance.
Summary: So as you set higher goals, be careful to set one that you know you can attain as you will get fewer lottery entries if you do not meet your goal. Also be sure to set goals close to how well you think you will perform as you will get fewer entries if you set a goal lower than your actual performance.

Best Strategy
- The best way to maximize your potential for the most lottery entries is to set a difficult, but attainable goal that you know you can achieve so that your maximum performance on the proofreading task is very close to the goal you set.

Incentives for Proofreading Task (cont.)

The following matrix shows the way in which the lottery entries work in relation to your overall goal and performance.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 20 30 40 50 60 70 80 90 100</td>
</tr>
<tr>
<td>10</td>
<td>3  4  5  6  7  8  9 10 11 12</td>
</tr>
<tr>
<td>20</td>
<td>1  6  7  8  9 10 11 12 13 14</td>
</tr>
<tr>
<td>30</td>
<td>0  4  9 10 11 12 13 14 15 16</td>
</tr>
<tr>
<td>40</td>
<td>0  2  7 12 13 14 15 16 17 18</td>
</tr>
<tr>
<td>50</td>
<td>0  0  5 10 15 16 17 18 19 20</td>
</tr>
<tr>
<td>60</td>
<td>0  0  3  8 13 18 19 20 21 22</td>
</tr>
<tr>
<td>70</td>
<td>0  0  1  6 11 16 21 22 23 24</td>
</tr>
<tr>
<td>80</td>
<td>0  0  0  4  9 14 19 24 25 26</td>
</tr>
<tr>
<td>90</td>
<td>0  0  0  2  7 12 17 22 27 28</td>
</tr>
<tr>
<td>100</td>
<td>0  0  0  0  5 10 15 20 25 30</td>
</tr>
</tbody>
</table>
Brief Reminder of Incentives

Proofreading Incentives Reminder

- Remember that your overall goal and performance on the proofreading task determine how many lottery entries you will receive for a $50 drawing.
- The higher your goal and performance, the more entries you will receive, however if you perform lower than your goal OR set a goal lower than your actual performance you won’t receive as many entries than if you set a goal close to your actual performance.

Additional Task Incentives Reminder

*High Importance:*

Remember, based on the additional demands you receive besides those imposed by the proofreading task, for every schedule you answer correctly you will get **10 cents for a chance to earn up to $2** across the entire study. This is **10 times the amount** that others doing this task receive.

Your **boss has trusted you** to schedule these meetings for highly important budgetary issues related to pay raises for jobs similar to and including your recruiting assistant position.

Also, **this task is being utilized in another study** so your performance will help determine its use.

*Low Importance:*

Remember, based on the additional demands you receive besides those imposed by the proofreading task, for every schedule you answer correctly you will get **1 cent for a chance to earn up to 20 cents** across the entire study. This is **1/10th the amount** that others doing this task receive.

Your **coworker has passed off this task to you** to schedule these meetings for the unimportant company-sponsored picnic.
Accumulated Lottery Entries

Based on the goal you set for your “Overall Goal Across All 3 Days” on Trial 3 and your cumulative performance on the proofreading task you accumulated _____ lottery entries.

<table>
<thead>
<tr>
<th>Goal</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
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<td>12</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
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<td>14</td>
</tr>
<tr>
<td>30</td>
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<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
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<td>15</td>
<td>16</td>
</tr>
<tr>
<td>40</td>
<td>0</td>
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<td>5</td>
<td>10</td>
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<td>16</td>
<td>17</td>
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</tr>
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<td>70</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6</td>
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<td>16</td>
<td>21</td>
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<tr>
<td>80</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>14</td>
<td>19</td>
<td>24</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>90</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>12</td>
<td>17</td>
<td>22</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
</tr>
</tbody>
</table>
APPENDIX C
MANIPULATIONS

High Interruption Importance Condition

*Instructions:*

The following task will involve proofreading three (3) separate letters identified by numbers at the bottom of the screen. To switch to a different letter, simply click on the numbers, upon which the letter number will highlight in black to indicate which letter you are currently on. Just like the practice letter you just performed, your job is to identify as many errors within these letters as possible within the allotted time. Once again, in order to identify the errors, simply *click on words you feel are misspelled. You only need to click once*, upon which the clicked-on word will turn red. If you feel you made a mistake and don’t want to identify a word as an error simply click on it again and it will turn back to black. Once you hit “Continue”, you will be taken to these letters and the clock will begin to count down.

**You will have 10 minutes to identify any misspelled words across all 3 letters.** You will also receive feedback, updated every 30 seconds on your current progress, which provides an estimate of the performance level you are expected to achieve by the end of the trial if you maintain your current pace. Both the clock and projected feedback can be viewed at the top of the screen at all times. When the clock runs out any errors you have identified will be saved, and your performance will be computed.

**Remember: in your recruiting assistant job, you will also have other tasks, which may call for your attention at any time. Because these other tasks are of HIGH IMPORTANCE, large incentives are provided for their completion.**

Please hit “Continue” once you are ready to proceed.

**Incentives for Additional Task Performance**

When this highly important scheduling task comes along that requires your attention to work on you will be given **10 CENTS ($0.10) FOR EVERY SCHEDULE YOU ANSWER CORRECTLY** for a chance to **earn up to $2** across the entire study. Since this additional demand on your time is highly important, it is up to you how many schedules you choose to finish to receive additional money.
Your boss has chosen you over others as you can be trusted to schedule highly important meetings concerning budgetary issues that relate to an important pay raise for jobs like your recruiting assistant position.

Most companies pay their employees $0.01 per completed schedule for the very same task you will be doing. Since you are receiving 10 times this amount, it shows how important the task is.

The money you earn is real! You will receive it after the study is finished. The experimenter has a money box located on the table, upon which he will award you what you have earned before you leave.

The scheduling task is also being utilized for another study, so your performance will help determine the validity of its use.
Low Interruption Importance Condition

Instructions:

The following task will involve proofread three (3) separate letters identified by numbers at the bottom of the screen. To switch to a different letter, simply click on the numbers, upon which the letter number will highlight in black to indicate which letter you are currently on. Just like the practice letter you just performed, your job is to identify as many errors within these letters as possible within the allotted time. Once again, in order to identify the errors, simply click on words you feel are misspelled. You only need to click once, upon which the clicked-on word will turn red. If you feel you made a mistake and don’t want to identify a word as an error simply click on it again and it will turn back to black. Once you hit “Continue”, you will be taken to these letters and the clock will begin to count down.

You will have 10 minutes to identify any misspelled words across all 3 letters. You will also receive feedback, updated every 30 seconds on your current progress, which provides an estimate of the performance level you are expected to achieve by the end of the trial if you maintain your current pace. Both the clock and projected feedback can be viewed at the top of the screen at all times. When the clock runs out any errors you have identified will be saved, and your performance will be computed.

Remember: in your recruiting assistant job, you will also have other tasks, which may call for your attention at any time. Because these other tasks are of LOW IMPORTANCE, small incentives are provided for their completion. However, still must be done.

Please hit “Continue” once you are ready to proceed.

Additional Incentives

When this unimportant scheduling task comes along that requires your attention to work on you will be given 1 CENT ($0.01) FOR EVERY SCHEDULE YOU ANSWER CORRECTLY for a chance to earn up to 20 cents across the entire study. Since this additional demand on your time is not important, but still necessary, it is up to you how many schedules you choose to finish to receive additional money.

The schedules are for meetings concerning the company-sponsored picnic, which no one seems to enjoy from past years.

Many people in your department could have scheduled these meetings, but your coworker decided to push this task off to you as he was too busy. Unfortunately, it still has to be done.
Most companies pay their employees $0.10 per completed schedule for the very same task you will be doing. Since you are receiving 1/10th this amount, it shows how unimportant the task is.
Example of a schedule:

Please look through the table and indicate which day AND time interval will work for *Alan, Bob, and Dave* to get together for a **continuous 1-hour** meeting.

<table>
<thead>
<tr>
<th>Open times</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alan</strong></td>
<td>9-10, 2-3</td>
<td>Nothing open</td>
<td>10-11, 3-4</td>
<td>9-11, 12-2</td>
<td>8-10</td>
</tr>
<tr>
<td><strong>Bob</strong></td>
<td>9-11, 3-4</td>
<td>12-4</td>
<td>10-11, 3-5</td>
<td>Nothing open</td>
<td>9-11, 12-3</td>
</tr>
<tr>
<td><strong>Dave</strong></td>
<td>10-12, 1-2</td>
<td>Nothing open</td>
<td>10-11, 4-5</td>
<td>3-5</td>
<td>10-11, 12-3</td>
</tr>
<tr>
<td><strong>Fran</strong></td>
<td>2-3</td>
<td>2-3</td>
<td>10-12, 1-2</td>
<td>Nothing open</td>
<td>9-10, 11-1</td>
</tr>
<tr>
<td><strong>Susan</strong></td>
<td>4-5</td>
<td>2-5</td>
<td>12-2, 3-4</td>
<td>9-11, 4-5</td>
<td>11-1</td>
</tr>
<tr>
<td><strong>Tim</strong></td>
<td>11-1, 4-5</td>
<td>9-12</td>
<td>9-11, 1-3</td>
<td>2-4</td>
<td>8-1, 4-5</td>
</tr>
</tbody>
</table>
Dear Ms. Prince:

As I indicated in our telephone conversation yesterday, I would like to apply for the marketing research position you advertised in the September 12th edition of the Roanoke Times and World News. With my undergraduate research background, my training in psychology and sociology, and my work experience, I believe I could make a valuable contribution to Large National Bank Corporation in this position.

In May I will complete my Bachelor of Science in Psychology with a minor in Sociology from Virginia Polytechnic Institute and State University. As part of the requirements for this degree, I am involved in a senior marketing research project that has given me experience interviewing and surveying research subjects and assisting with the analyses of the data collected. I also have completed a course in statistics and research methods.

In addition to academic work, my experience also includes working part-time as a bookkeeper in a small independent bookstore with an annual budget of approximately $150,000. Because of the small size of this business, I have been exposed to and participated in most aspects of managing a small business, including advertising, bookkeeping, and marketing. As the bookkeeper, I produced monthly sales reports that allow the owner/buyer to project seasonal inventory needs. I also assisted with the development of ideas for special promotional events and calculated book sales proceeds after each event in order to evaluate its success.

I believe that the combinations of my business experience and social science researcher training is well suited to the marketing research position you described. I have enclosed a copy of my resume with additional information about my qualifications. Thank you for your considerations. I look forward to receiving your reply.

Sincerely,
Jack Lawrence
APPENDIX E

CORRELATION TABLE

Begins on next page.
Table E.1. Correlations and Reliabilities of Study Variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Control</td>
<td>1.50</td>
<td>0.50</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Importance</td>
<td>1.50</td>
<td>0.50</td>
<td>.00</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Polychronicity</td>
<td>3.87</td>
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<td>-.12</td>
<td>(.90)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Action-State</td>
<td>1.62</td>
<td>0.16</td>
<td>.09</td>
<td>-.01</td>
<td>-.03</td>
<td>(.80)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ACT</td>
<td>21.22</td>
<td>3.83</td>
<td>.00</td>
<td>.03</td>
<td>.17</td>
<td>.05</td>
<td>--</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6. Read Speed</td>
<td>79.60</td>
<td>26.13</td>
<td>.00</td>
<td>-.01</td>
<td>-.17</td>
<td>-.01</td>
<td>-.15</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Read Comp</td>
<td>1.58</td>
<td>0.67</td>
<td>.10</td>
<td>.02</td>
<td>.06</td>
<td>-.07</td>
<td>.10</td>
<td>.11</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8. Tenacity</td>
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<td>-.17</td>
<td>.51</td>
<td>-.27</td>
<td>.07</td>
<td>-.11</td>
<td>.08</td>
<td>(.66)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. T1PosAff</td>
<td>2.70</td>
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<td>-.09</td>
<td>-.03</td>
<td>-.03</td>
<td>.19</td>
<td>.13</td>
<td>.04</td>
<td>.00</td>
<td>-.10</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. T1NegAff</td>
<td>1.70</td>
<td>0.76</td>
<td>-.06</td>
<td>.11</td>
<td>-.12</td>
<td>-.25</td>
<td>-.06</td>
<td>.08</td>
<td>-.09</td>
<td>.01</td>
<td>.25</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. T1HighAct</td>
<td>2.13</td>
<td>0.60</td>
<td>-.16</td>
<td>.08</td>
<td>-.09</td>
<td>.05</td>
<td>.10</td>
<td>-.05</td>
<td>-.02</td>
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Note: N = 156, except Read Comp (N = 152) and Tenacity (N = 154). SD = Standard Deviation; Comp = Comprehension; T1 = Trial 1; T2 = Trial 2; T3 = Trial 3; PosAff = Positive Affect; NegAff = Negative Affect; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High; PL = Positive/Low; NH = Negative/High; NL = Negative/Low; ExpD = Distal Expectancy; ExpP = Proximal Expectancy; Goal 1 = Distal goal; Goal 2 = Proximal Goal; Goal 3 = Lowest acceptable distal goal; Goal 4 = Lowest acceptable proximal goal; Perf = Performance. All correlations of \( r \geq \pm .16 \) are significant at \( p = .05 \); \( r \geq \pm .21 \) are significant at \( p = .01 \). Numbers on diagonal are reliabilities.
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Note: N = 156, except Read Comp (N = 152) and Tenacity (N = 154). SD = Standard Deviation; Comp = Comprehension; T1 = Trial 1; T2 = Trial 2; T3 = Trial 3; PosAff = Positive Affect; NegAff = Negative Affect; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High; PL = Positive/Low; NH = Negative/High; NL = Negative/Low; ExpD = Distal Expectancy; ExpP = Proximal Expectancy; Goal 1 = Distal goal; Goal 2 = Proximal Goal; Goal 3 = Lowest acceptable distal goal; Goal 4 = Lowest acceptable proximal goal; Perf = Performance. All correlations of $r \geq +/-.16$ are significant at $p = .05$; $r \geq +/- .21$ are significant at $p = .01$. Numbers on diagonal are reliabilities.
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**Note**: N = 156, except Read Comp (N = 152) and Tenacity (N = 154). SD = Standard Deviation; Comp = Comprehension; T1 = Trial 1; T2 = Trial 2; T3 = Trial 3; PosAff = Positive Affect; NegAff = Negative Affect; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High; PL = Positive/Low; NH = Negative/High; NL = Negative/Low; ExpD = Distal Expectancy; ExpP = Proximal Expectancy; Goal 1 = Distal goal; Goal 2 = Proximal Goal; Goal 3 = Lowest acceptable distal goal; Goal 4 = Lowest acceptable proximal goal; Perf = Performance. All correlations of $r \geq +/- .16$ are significant at $p = .05$; $r \geq +/- .21$ are significant at $p = .01$. Numbers on diagonal are reliabilities.
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*Note: N = 156, except Read Comp (N = 152) and Tenacity (N = 154). SD = Standard Deviation; Comp = Comprehension; T1 = Trial 1; T2 = Trial 2; T3 = Trial 3; PosAff = Positive Affect; NegAff = Negative Affect; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High; PL = Positive/Low; NH = Negative/High; NL = Negative/Low; ExpD = Distal Expectancy; ExpP = Proximal Expectancy; Goal 1 = Distal goal; Goal 2 = Proximal goal; Goal 3 = Lowest acceptable distal goal; Goal 4 = Lowest acceptable proximal goal; Perf = Performance. All correlations of \( r > \pm .16 \) are significant at \( p = .05 \); \( r > \pm .21 \) are significant at \( p = .01 \). Numbers on diagonal are reliabilities.*
### Table E.1. Correlations and Reliabilities of Study Variables (continued).

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Note: N = 156, except Read Comp (N = 152) and Tenacity (N = 154). SD = Standard Deviation; Comp = Comprehension; T1 = Trial 1; T2 = Trial 2; T3 = Trial 3; PosAff = Positive Affect; NegAff = Negative Affect; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High; PL = Positive/Low; NH = Negative/High; NL = Negative/Low; ExpD = Distal Expectancy; ExpP = Proximal Expectancy; Goal 1 = Distal goal; Goal 2 = Proximal Goal; Goal 3 = Lowest acceptable distal goal; Goal 4 = Lowest acceptable proximal goal; Perf = Performance. All correlations of $r \geq +/- .16$ are significant at $p = .05$; $r \geq +/- .21$ are significant at $p = .01$. Numbers on diagonal are reliabilities.
Table E.1. Correlations and Reliabilities of Study Variables (continued).

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Note: N = 156, except Read Comp (N = 152) and Tenacity (N = 154). SD = Standard Deviation; Comp = Comprehension; T1 = Trial 1; T2 = Trial 2; T3 = Trial 3; PosAff = Positive Affect; NegAff = Negative Affect; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High; PL = Positive/Low; NH = Negative/High; NL = Negative/Low; ExpD = Distal Expectancy; ExpP = Proximal Expectancy; Goal 1 = Distal goal; Goal 2 = Proximal goal; Goal 3 = Lowest acceptable distal goal; Goal 4 = Lowest acceptable proximal goal; Perf = Performance. All correlations of $r > .16$ are significant at $p = .05$; $r > .21$ are significant at $p = .01$. Numbers on diagonal are reliabilities.
APPENDIX F

EXTRA TABLES FROM RESULTS

Hypothesis 5a
Table F.1. Hypothesis 5a beta weights for changes in affective dimensions from Trial 1 to Trial 2.

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Note: Comp = Comprehension; Pre = Preoccupation; Pos = Positive; Neg = Negative; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High Activation; PL = Positive/Low Activation; NH = Negative/High Activation; NL = Negative/Low Activation. * $p < .05$.

Hypothesis 5b
Table F.2. Hypothesis 5b beta weights for changes in affective dimensions from Trial 1 to Trial 2.

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Note: Comp = Comprehension; Vol = Volatility; Pos = Positive; Neg = Negative; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High Activation; PL = Positive/Low Activation; NH = Negative/High Activation; NL = Negative/Low Activation.
Hypothesis 6
Table F.3. Hypothesis 6 beta weights for changes in affective dimensions from Trial 1 to Trial 2.

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Note: Comp = Comprehension; Poly = Polychronicity; Pos = Positive; Neg = Negative; HighAct = High Activation; LowAct = Low Activation; PH = Positive/High Activation; PL = Positive/Low Activation; NH = Negative/High Activation; NL = Negative/Low Activation. * p < .05; † p < .10.

Hypothesis 10a
Table F.4. Interruption Control X Hesitation on Distal and Proximal Expectancy Change from Trial 2 to Trial 3.

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Note: Numbers in parentheses refer to proximal expectancy. ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.
**Hypothesis 14b**

Table F.5. Interruption Control X Preoccupation on Distal and Proximal Goal Change from Trial 2 to Trial 3.

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*Note: Numbers in parentheses refer to proximal goal. ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.*
Hypothesis 20
Table F.6. Interruption Control X Polychronicity on Performance Change from Trial 1 to Trial 2.

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Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.

Hypothesis 21
Table F.7. Interruption Control X Preoccupation on Performance Change from Trial 1 to Trial 2.

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Note: ns = non-significant; Num = numerator; Den = denominator; Comp = comprehension.
APPENDIX G

INSTITUTIONAL REVIEW BOARD APPROVAL

NOTICE OF APPROVAL

Date: August 8, 2008
To: Adam P. Toll
137 Hunt Club Dr., Apt 1B
Copley, Ohio 44321

From: Sharon M. Whited, IRB Administrator

Re: IRB Number 00680605
"Proofreading Skills"

Thank you for submitting your IRB Application for Review of Research Involving Human Subjects for the referenced project. Your application was approved on August 8, 2008. Your protocol represents minimal risk to subjects and matches the following federal category for exemption:

☐ Exemption 1 - Research conducted in established or commonly accepted educational settings, involving normal educational practices.

☐ Exemption 2 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior.

☐ Exemption 3 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior not exempt under category 2, but subjects are not expected to be subjected to any procedures which are not normally performed in the conduct of these procedures.

☐ Exemption 4 - Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens.

☐ Exemption 5 - Research and demonstration projects conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine public programs or benefits.

☐ Exemption 6 - Taste and food quality evaluation and consumer acceptance studies.

Annual continuing applications are not required for exempt projects. If you make changes to your study's design or procedures that increase the risk to subjects or include activities that do not fall within the approved exemption category, please contact me to discuss whether or not a new application must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to implementation.

Please retain this letter for your files. If the research is being conducted for a master's thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

Cc: Aaron Schmidt - Advisor
Cc: Rosalie Hall - IRB Chair

Approved consent form/s enclosed

Office of Research Services and Sponsored Programs
Akron, OH 44325-2112
330-972-7666 • 330-972-6281 Fax

The University of Akron is an Equal Education and Employment Institution

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