Using the Job Demands - Resources Model to Understand Student Engagement: The Impact of Resource Use on Academic Outcomes, and the Impact of Need for Cognition on Engagement

by

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A dissertation submitted to the Graduate Faculty in Industrial-Organizational Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2013

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Abstract

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The Job Demands-Resources Model shows that job characteristics, namely resources and demands, lead to job engagement and job burnout (e.g., Salanova & Bakker, 2004). Engagement and burnout, described as psychological states, mediate the relationships between resources, demands, and job outcomes. Specifically, engagement results from job resources, and leads to outcomes such as satisfaction, commitment, and enhanced performance, and burnout results from demands, and leads to outcomes such as turnover, absence, impaired performance, and stress-related health consequences.

A limitation in the Job Demands-Resources Model literature is that studies of this model have focused on perceptions of the same set of job characteristics to measure resources. Therefore, we do not know if resources outside of perceptions of autonomy, feedback, social support, relationship with supervisor, training, and developmental opportunities might fulfill the predictions of the model. In addition, studies do not measure the degree to which participants actually use these resources, so we do not know whether active resource use has more of an impact on work outcomes than passive perception of resources.

Another limitation of the Job Demands-Resources Model is that it does not propose a relationship between demands and engagement, although some studies suggest that such a relationship may exist. Specifically, individual differences may interact with demands to impact engagement.

The current study attempted to address these gaps in the literature, using a student sample. A model was proposed that replicated some of the well-supported findings of the Job Demands-Resources Model. In addition, two new variables were added into the model. First, resource use, theoretically framed as behavioral engagement, was added as a consequence of state engagement, an idea that was proposed by Macey and Schneider, (2008). In addition, a moderator variable was introduced, the need for cognition, which was proposed to uncover a relationship between demands and state engagement. Need for cognition was chosen because of its relationship to academic motivation and performance, and thus its relevance to the student sample. Structural equation modeling and moderated structural equation modeling techniques were used to test the study hypotheses. The study hypotheses were partially supported. Implications of this study are discussed.

Acknowledgements

I would like to thank my advisor, Dr. Harold Goldstein, for your guidance, and for your commitment to helping me complete this project. I would not have finished the program had it not been for your willingness to take this project on.

I would also like to thank my committee, Dr. Lise Saari, Dr. Loren Naidoo, Dr. Glenn Albright, and Dr. Walter Reichman. You provided thoughtful and challenging feedback, and held my work to a high standard.

I would also like to thank dissertation-buddy-extraordinaire, Dr. Larisa Belau-Niedle. I am extremely grateful to have had a partner to figure out SEM with. Thank you for the feedback, moral support, and delicious snacks and meals that fueled our brains during disser-dates.

Finally, thank you to Christine Corbet for proof-reading my survey before it was sent out. You are a super proofer and a thoughtful reviewer.

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CHAPTER 1: Introduction

At work or at school, some individuals thrive when their workload becomes very demanding. They seem motivated to meet the challenges facing them, they remain focused on their tasks, and they successfully meet or exceed performance expectations. Others, however, seem to struggle under the pressure of increasing work demands. They emotionally distance themselves from their work, they experience physical stress, and they fail to perform up to expectations. These two different reactions are sometimes respectively referred to as work engagement and work burnout (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002; Maslach, Jackson, & Leiter, 1997). What accounts for these different reactions to demands?

The Job Demands-Resources Model proposes a solution to the question above, and suggests that situational factors explain why some workers remain engaged in their jobs and others burn out (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Salanova & Bakker, 2004). Specifically, this model explains how employees' working conditions, in terms of job demands and job resources, influence work engagement and work burnout. Studies of the Job Demands-Resources Model generally show that job demands such as high workload or competing deadlines are antecedents to burnout, and that job characteristics referred to as resources, such as perceived supervisory support and training opportunities, are antecedents to engagement (e.g., Salanova & Bakker, 2004; Llorens, Bakker, Schaufeli, & Salanova, 2006). The relationship between demands and exhaustion, a central element that defines burnout, is described as an energy driven process by which individuals suffer because their energy has been depleted by demands. This in turn leads to feelings of cynicism and reduced professional efficacy, because individuals no longer have the energy they need to get things done. The relationship between resources and engagement is described as a motivational continuum, because resources support

and facilitate work. It is important to note that 'resources,' as measured in studies of the Job Demands-Resources Model, are captured as self-reported perceptions of the degree to which certain job characteristics are present in the work environment. Such studies do not focus on the degree to which individuals actually use resources, and what impact resource use versus resource perception/awareness has on job outcomes.

A central proposition of the Job Demands-Resources Model is that engagement and burnout mediate the relationships between antecedent job characteristics, namely job resources and job demands, and job outcomes. Specifically, both engagement and burnout mediate the relationship between job characteristics and job attitudes such as commitment and satisfaction (e.g., Salanova & Bakker 2004; Demerouti, Bakker, Janssen, & Schaufeli, 2001; Bakker, Demerouti, & Euwmema, 20003; Schaufeli & Bakker, 2003) and job performance (Salanova, Agut, & Peiro, 2005; Bakker, Demerouti, & Verbeke, 2004).

Another proposition of the Job Demands-Resources Model is that in addition to fostering engagement, job resources can 'buffer' the relationship between job demands and burnout. In other words, when job demands are high, the presence of job resources may help the individual to cope with job demands thereby reducing burnout. For example, Bakker, Demerouti, and Euwema (2005) and Rothmann and Joubert (2007) found that the more job resources such as autonomy, performance feedback, quality of relationship with supervisor, and social support that employees reported, the weaker the relationship between job demands and burnout. In addition, Bakker, Demerouti, and Euwema (2005) provide evidence that specific resource-demand combinations (such as autonomy and heavy workload) work as buffers, as opposed to the idea that any resources can equally buffer any demand. Not all studies that have looked for this buffer effect have found it (e.g., Bakker, Demerouti, & Verbeke, 2004), and it is probable that

individual difference variables also play a role in the buffer effect. As with all coping mechanisms, not everyone will use a particular coping strategy, and some people may be more motivated to use resources to overcome demands than others.

To dive a little deeper into the operational definitions of burnout and engagement used in the Job Demands-Resources Model, burnout is a psychological state comprised of three different factors: exhaustion, cynicism, and lack of professional efficacy (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Work engagement, as defined by this model, is also conceptualized as a psychological state characterized by three psychological components: vigor, dedication to work, and absorption in work. State engagement is a multifaceted construct made up of aspects of existing constructs such as job satisfaction, organizational commitment, psychological empowerment, and job involvement. The state definition of engagement places emphasis on absorption, passion, and affect, over satisfaction, commitment, and involvement (Macey & Schneider, 2008).

Although the Job Demands-Resources Model focuses on the state definition of engagement, there are other ways of conceptualizing the construct of engagement. In fact, Macey and Schneider (2008) discuss that within the engagement literature, engagement has been defined as personal trait, for example trait positive affect, a psychological state (the definition used by the Job Demands-Resources Model), and also as behavior such as organizational citizenship behaviors or involvement in resource programs. Rather than defending one particular view of engagement, they argue that trait, state, and behavioral definitions of engagement are equally important, and they propose a theoretical model that shows that personal traits are antecedent to state engagement, which in turn is antecedent to behavioral engagement. The Job Demands-Resources Model does not consider how state engagement leads to behavioral

engagement, and instead moves directly from state engagement to job outcomes. The current study added behavioral engagement to this model, by looking at how participants differentially used resources that were available to them. It was predicted that state engagement would lead to resource use, which is a form of behavioral engagement. It was further predicted that state engagement would impact outcomes through resource use in a mediated relationship. These are key contributions of the current study, because it is the first time that resource use has been studied in the Job Demands-Resources Model.

The three facets of burnout and the three facets of state engagement, along with their relationships to other variables and to each other, will be expanded on in Chapter 2. However, it is worth noting here that the two central constructs of the Job Demands-Resources Model, state engagement and burnout, were conceptualized in the current study as related but different variables. There is some ambiguity in the literature around the relationship of burnout to state engagement, and an alternative view is that they are different ends on the same continuum (Halbesleberg & Demerouti, 2005). A case will be made for the related but different conceptualization in Chapter 2, which will include empirical evidence that shows that although some aspects of engagement and burnout overlap, there are also significant unique aspects of the constructs (Schaufeli & Bakker, 2003). Also included will be a discussion of the theoretical differences between the constructs (i.e., the emergence of the burnout literature from stress research and health psychology, and the subsequent emergence of state engagement as a fusion of earlier constructs such as flow, commitment, and involvement, all from organizational psychology research). Ultimately, the current study tested the factor structure of these two constructs, as well as their relative impacts to the hypothesized structural model, in order to evaluate their unique contributions.

In addition to investigating the role of resource use in the Job Demands-Resources Model, another unique contribution of the current study involved testing an individual difference moderator variable to uncover a relationship between demands and state engagement. Such a relationship is not part of the original Job Demands-Resources Model.

The idea to explore the impact of demands on state engagement in the context of the Job Demands-Resources Model is not new. In their attempt to expand the Job Demands-Resources Model, Crawford, Lepine, and Rich (2010) argued that the Job Demands-Resources Model is over-parsimonious and that it dismisses a relationship between engagement and demands, when in fact such a relationship may exist. They investigated a potential relationship between engagement and demands by categorizing the demands that were measured in previous studies as either hindrances or challenges. The categorization of hindrance versus challenge is based on the transactional theory of stress, which says that people's reaction to stress is based on their appraisals of stressors. They found that the 'challenge' demands were antecedents to engagement, whereas the 'hindrance' demands were antecedents to burnout. This study is important because it shows that demands can foster engagement, and that a determining factor in the relationship between demands and engagement involves the different ways in which individuals react to the same demands. However, this study is limited in that it did not examine actual employees' appraisals of demands. Instead, the researchers made this categorization post-hoc. In addition, this study does not reveal anything about which individual differences could lead to different appraisals of the same demands. In other words, which individual differences lead some individuals to react to demands as welcomed challenges, while others see those same demands as hindrances and withdraw their efforts?

The current study proposed that psychological need strength, an individual difference, is a moderator variable that impacts the relationship between demands and state engagement in the Job Demands-Resources Model. Psychological needs also have been studied in the context of the Job Demands-Resources Model before. In a study that attempted to integrate needs into the Job Demands-Resources Model, Van den Broeck, Vanteenkiste, De Witte, and Lens (2008) used a Self-Determination Theory framework to propose that need satisfaction would act as a mediator between job characteristics and engagement and burnout. In other words, demands would thwart need satisfaction and lead to burnout, and resources would satisfy needs and lead to engagement. The need satisfaction areas that they looked at were autonomy satisfaction, belongingness satisfaction, and competency satisfaction. They found that needs satisfaction fully mediated a relationship between job resources and exhaustion and partially mediated the relationships between job demands and exhaustion, and between job resources and vigor. This suggests that employees who are surrounded by resourceful job characteristics are more likely to experience need satisfaction in the form of psychological freedom (autonomy), interpersonal connectedness (belongingness), and effectiveness (competence) which in turn explains why they feel less exhausted, and more vigorous in their jobs. Employees who encounter demands, in contrast, seem more likely to have their psychological needs thwarted and therefore experience more exhaustion (Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008).

The Van den Broeck, Vansteenkiste, De Witte, and Lens (2008) study suggests that psychological needs impact work engagement. The current dissertation study also focused on a psychological need, but the focus was on need strength rather than need satisfaction. Need satisfaction is not an individual difference. A need satisfaction approach assumes that all individuals have more or less the same ordering of psychological needs. Therefore, given the

same set of environmental stimuli, individuals should react in similar ways. In order to study why individuals may react differently to the same environmental stimuli, such as high or low demands, it is more useful to consider the strength of their need for those stimuli. By measuring individuals' need strength instead of need satisfaction, questions about how individuals may react differently to the same stimuli, for example, how some individuals may experience engagement in the face of demands while others may experience burnout, can be proposed and tested. The concept of psychological needs, including a discussion of the background behind the needs satisfaction and needs strength approaches will be presented in Chapter 4.

The psychological need that was measured in the current dissertation study was need for cognition. The need for cognition was chosen over other needs because the work around this need focuses on need strength, and because this need specifically relates to the nature of academic work, and is therefore relevant in understanding how students may react to academic demands. Need for cognition is an individual difference in the tendency to engage in and enjoy effortful cognitive activity (Cacioppo & Petty, 1982). Individuals who are high in need for cognition are highly and intrinsically motivated towards thinking, and exhibit a strong tendency to enjoy complex cognitive tasks (Coutinno & Woolery, 2004). These individuals are also likely to consider themselves 'intellectuals.' In contrast, individuals who are low in need for cognition are likely to be 'cognitive misers.' They do not enjoy thoroughly thinking through complex problems, and are more likely to rely on heuristics and easily available information to form opinions (Coutinno & Woolery, 2004). It is proposed in Chapter 4 that the need for cognition will moderate a relationship between demands and state engagement. Specifically, students with a high need for cognition will experience engagement in the face of demands, because theoretically, their high degree of need for cognition leads them to enjoy and engage in

challenging cognitive activities. Low need for cognition students, on the other hand, will not react to demands with engagement, and instead will suffer burnout, as is typically found in tests of the Job Demands-Resources Model.

In summary, this study attempted to replicate some of the main relationships proposed by the Job Demands-Resources Model in a student sample. This in itself is interesting, in that the study tested whether or not a well-studied framework for understanding engagement and burnout in organizational settings was useful in understanding engagement and burnout in students. The leading measure of student engagement, the National Survey of Student Engagement (Kuh, 2001) is mainly a descriptive tool, designed to assess the extent to which students engage in educational practices associated with high levels of learning and development (National Survey of Student Engagement, 2011). It is interesting to apply more sophisticated models to the student population in order to understand the relationships between aspects of the academic environment, students' psychological states, and students' behavior.

In replication of previous studies, perception of resources was hypothesized as an antecedent to state engagement, and perception of demands was hypothesized as an antecedent to burnout. Furthermore, burnout was hypothesized to mediate the relationship between demands and performance and attitudinal outcomes.

In addition, the Job Demands-Resources Model also shows that state engagement mediates the relationship between resources and outcomes. The hypothesized relationship between state engagement and outcomes in the current study was a little different than the relationships between state engagement and outcomes originally proposed by the Job Demands-Resources Model. Namely, it was hypothesized that state engagement would act as an antecedent to resource use, and resource use would mediate the relationship between state

engagement and outcomes. This hypothesis was not a replication of past findings, and attempted to demonstrate that state engagement leads to engaged behavior before leading to work outcomes, as shown in Macey and Schneider's (2008) theoretical model. The integration of this concept from Macey and Schneider's (2008) theoretical model into the Job Demands-Resources Model is a key contribution of the current study.

In addition, this study examined whether resources buffered, or moderated, the relationships between demands and burnout. However, the hypotheses concerning resources as buffers to the relationships between demands and burnout were not true replications of previous research, because rather than testing perception of resources as a buffer (Bakker, Demerouti, & Euwema, 2005; Rothmann & Joubert, 2007), resource use was tested as a buffer. Again, this is because the current study proposed that state engagement would lead to engaged behavior (i.e., resource use, which would in turn lead to important outcomes).

Finally, the current study investigated the potential relationship between state engagement and demands, by adding a moderator variable, the need for cognition, to uncover that relationship. A relationship between demands and state engagement is not predicted by the original Job Demands-Resources Model, although, as mentioned above, there is some research evidence to suggest that such a relationship exists. The formal investigation of this relationship is another key contribution of the current study. Refer to Figure 1 for the proposed theoretical model of the current study.

CHAPTER 2: Burnout and Engagement

The purpose of the following chapter is to describe the constructs of burnout and engagement, and to identify the operational definitions of burnout and engagement that were used in the current study. Burnout precedes engagement in the literature; therefore this chapter will begin with an overview of burnout. Next, the focus will shift to engagement. The relationships between burnout, engagement, and related constructs will be addressed, as well as the nature of the relationship between burnout and engagement to each other. Empirical evidence of the antecedents and consequences of these constructs will be discussed in Chapter 3, in which burnout and engagement will be discussed in the context of the Job Demands-Resources Model.

Burnout

Job burnout is a psychological state caused by chronic job stressors. It is characterized by feelings of being emotionally over-extended and exhausted by work (called exhaustion), an indifference, lack of enthusiasm, or distant attitude towards work (called cynicism or depersonalization), and feelings of incompetence and lack of successful achievement at work (called professional efficacy or personal accomplishment) (Maslach, Jackson, & Leiter 1997). Initial studies of burnout were qualitative field observations. Then, a measure of burnout was developed based on these observations, called the Maslach Burnout Inventory (MBI). Eventually, researchers began collecting empirical data around the antecedents and consequences of burnout. Burnout has been studied in terms of how it impacts stress, health, and withdrawal in the workplace (e.g., Hallman, Thomsson, Burell, Lisspers, & Setterlind, 2003; Shirom & Ezrachi, 2003; Danhof-Pont, van Veen, & Zitman, 2011). In addition, it has also been incorporated into the Job Demands-Resources Model (e.g., Salanova & Bakker, 2004; Llorens,

Bakker, Schaufeli, Salanova, 2006), which looks at how burnout and engagement are differentially impacted by job demands and job resources.

Burnout was first described as a three-factor construct consisting of exhaustion, cynicism, and lack of professional efficacy by Maslach (1976). A stress researcher focusing on human services occupations such as nursing and other professional care-giving roles, Maslach observed that the provision of care is a demanding occupation and that emotional exhaustion is a common response to this kind of work (Maslach, Schaufeli, & Leiter, 2001). Maslach hypothesized that the demanding nature of work in human services occupations can lead to feelings of emotional exhaustion, and this exhaustion can lead to feelings of cynicism or depersonalization from work. Maslach described cynicism and depersonalization as coping strategies by which an individual begins to emotionally distance oneself from work to prevent further exhaustion. This emotional and/or actual withdrawal from work is theorized to lead to a lack of sense of accomplishment or efficacy on the job, and eventually to turnover (Maslach, Schaufeli, & Leiter, 2001).

Maslach and Schaufeli (1993) describe burnout using the following criteria. First, there is a "predominance of dysphoric symptoms" such as mental or emotional exhaustion, fatigue, and depression. Next, the emphasis of burnout is on mental and behavioral symptoms more than physical ones, and the symptoms are work-related. Further, the symptoms manifest themselves in "normal" persons who did not suffer from psychopathology before. Finally, decreased effectiveness on the job occurs because of negative attitudes and behaviors. It is important to note that burnout is conceptualized as a multifaceted syndrome. In other words, exhaustion, cynicism, and reduced efficacy on the job can independently occur for a variety of reasons. According to theory, high exhaustion and cynicism combined with low professional efficacy, as compared to norms, signals burnout in participants. Many studies of the Job Demands-

Resources Model simply look at the three facets of burnout separately; however, the current study constructed burnout as one latent construct with factor-level indicators. The instrument used to measure Maslach's conceptualization of burnout is called the Maslach Burnout Inventory (MBI), and it will be described in Chapter 6. The MBI is the operational definition of burnout used in the current study.

Burnout, as measured by the MBI, is conceptually different than related constructs such as depression and lack of job satisfaction (Bakker, Schaufeli, Demerouti, Janssen, Van Der Hulst, & Brouwer, 2000; Glass & McKnight, 1996). For example, whereas burnout is a context – specific syndrome associated with one's job, depression can result from a wide range of life events and traumas (Bakker et al., 2000). However, depression and burnout are indeed related. Both burnout and depression share a characteristic lack of or depletion of energy. Schaufeli and Enzmann (1998) found that the exhaustion component of burnout shares on average 26% of its variance with depression. However, cynicism and professional efficacy are less related to depression (sharing 13% and 9% of their variances), and therefore are aspects more distinctive to burnout. Burnout and depression have also been empirically differentiated. For example, Bakker et al. (2000) used Equity Theory in a study that looked at how lack of reciprocity in one's personal life and at work impacted depression and burnout. They found that lack of teachers' perceptions of the reciprocity between their efforts and their students' efforts at school led to burnout and indirectly to depression, in that lack of reciprocity on the job led to depression through burnout (a mediated relationship). Lack of reciprocity in teachers' personal lives, however, led to depression, but not to burnout back on the job.

Burnout is also a different construct than job satisfaction, despite the commonly found negative correlation between these two constructs, typically ranging from .40 to .52 (Maslach,

Schaufeli, & Leiter, 2001). This range of correlations suggests that these constructs are not identical, but they are clearly linked. However, the specific nature of that link is still a matter of speculation (Maslach, Schaufeli, & Leiter, 2001). One difference between measures of burnout and measures of job satisfaction is that burnout is measured as a psychological state, i.e. a highly affective psychological experience caused by one's work, whereas job satisfaction is typically measured as less affective attitudes about one's job. Also, burnout is an indicator of psychological well-being at work, whereas job satisfaction is not thought of as an indicator of psychological wellness. In fact, low job satisfaction may be an appropriate and healthy reaction to the work environment in some situations.

Finally, burnout is a distinct concept from occupational stress. The defining feature of occupational stress is a perceived imbalance of occupational demands with available coping mechanisms. Burnout differs from occupational stress in that it integrates feelings of exhaustion, which is related to the experience of occupational stress, with sense of efficacy and cynicism, i.e. feelings about the meaningfulness and importance of the work. In other words, burnout is a more specific and complex phenomenon that incorporates some aspects of occupational stress with affect and attitudes about the job (Maslach, Jackson, & Leiter, 1997).

Job demands are antecedents to burnout. Particularly, role conflict, role ambiguity, and workload have been strongly linked to burnout (Maslach, Jackson, & Leiter, 2001). In addition, lack of resources, such as social support and feedback, has been linked to burnout. Studies generally show that although some resources may be slightly related to burnout, they are more strongly related to engagement in studies that measure both engagement and burnout (e.g., Salanova & Bakker, 2004). In addition, other studies show resources as moderators to the direct effect of job demands on burnout (e.g., Bakker, Demerouti, & Euwema, 2005). In other words,

although resources do not have much of a direct effect on burnout, they may indirectly impact burnout by lessening the negative impact of demands on burnout. These ideas will be discussed more in Chapter 3.

Burnout is related to various forms of job withdrawal, such as absenteeism, intention to quit, and turnover (Maslach, Schaufeli, & Leiter, 2001). For people who stay on the job, it is related to hampered performance. Attitudes are also impacted: burnout is related to decreased job satisfaction and reduced commitment (Maslach, Schaufeli, & Leiter, 2001).

In addition to the previously mentioned outcomes, burnout is also related to a variety of health-related outcomes. For example, burnout (particularly exhaustion) has been linked to substance abuse (Cunradi, Greiner, Ragland, & Fisher, 2003), cardiovascular disease (Hallman, Thomsson, Burell, Lisspers & Setterlind, 2003), and biomarkers that indicate negative consequences to adrenal response, autonomic nervous system, immune system, metabolic processes, antioxidant defense, hormones, and sleep (Danhof-Pont, van Veen, & Zitman, 2003). With regard to mental health, it has been linked to outcomes such as anxiety (Shirom & Ezrachi, 2003), depression (Shriom & Ezrachi, 2003), and drop in self-esteem (Gilbert & Daloz, 2008).

There is some discussion about the professional efficacy component of burnout in the literature, because it seems to behave differently than the other two facets of burnout in empirical studies using the MBI. Lee and Ashforth (1996) compiled research evidence about the relationships between the three factors of burnout, and they summarized that professional efficacy develops largely independently of emotional exhaustion and cynicism. It is only weakly correlated with these factors, and it has different antecedents and consequences than do exhaustion and cynicism. For example, job demands included across studies of antecedents to burnout (role ambiguity, role conflict, role clarity, workload, and work pressure) strongly

associate with emotional exhaustion and cynicism, and job resources have a much weaker relationship with these burnout factors. Professional efficacy, on the other hand, only weakly relates to both demands and resources, with the exception of such resources as work friends and participative work environment. Furthermore, studies of the consequences of burnout show that exhaustion and cynicism are predictive of job dissatisfaction and lack of organizational commitment, whereas professional efficacy is more related to coping strategies such as the use of active, problem-focused coping techniques as an approach to dealing with job demands (Lee & Ashforth, 1996). One possibility with regard to why professional efficacy acts differently than the other aspects of burnout is that the measures of professional efficacy could be picking up on both state and trait professional efficacy. In other words, for some individuals, lack of professional efficacy may be a psychological state caused by the work environment, but for other individuals it may be a more stable trait that would exist regardless of the work environment.

As discussed earlier, the measure of burnout used in this dissertation, the MBI, measures burnout as a three-factor construct. Also, the MBI does not measure disengagement. An alternative measure of burnout to the MBI is called the Oldenburg Burnout Inventory (OBI) (Halbesleben & Demerouti, 2005). This alternative measure differs from the MBI in a few ways. First, it proposes a two-factor model of burnout, which only includes exhaustion and cynicism. This two-factor structure was proposed because professional efficacy often predicts different outcomes and has different correlates than exhaustion and cynicism, as discussed above, and so it is not considered to be a primary factor (Lee & Ashforth, 1996). Secondly, the OBI contains both positively and negatively worded items, based on a concern about the psychometric properties of the MBI, which has only negatively worded items for exhaustion and cynicism, and only positively worded items for professional efficacy. In addition, the OBI can be used to

measure ‘disengagement,’ which is indicated by high cynicism and low exhaustion scores. In other words, although this scale does not directly measure engagement, it measures a kind of lack of engagement with the same subscales as are used to measure burnout (burnout is evidenced by high scores on both cynicism and exhaustion). Studies that use this scale tend to take the point of view that burnout and engagement are in fact opposite ends of the same construct, rather than different but related constructs. This idea will be discussed in more detail shortly, in the ‘Engagement’ section of this chapter. The Oldenberg Burnout Inventory is highly correlated with the cynicism and exhaustion factors from the MBI, and the Oldenberg has the same correlates as do cynicism and exhaustion as measured by the MBI (Halbesleben & Demerouti, 2005; Demerouti, Bakker, Vardakou, & Kantas, 2003). Ultimately, the MBI was used for the current study rather than the OBI because it is the most commonly used burnout inventory in tests of the Job Demands-Resources Model, and the current study aimed to replicate previous tests’ findings.

To summarize this section of Chapter 2, exhaustion and cynicism appear to be the key facets of burnout. Professional efficacy is also part of the burnout construct, but it appears to emerge independently of the other two burnout factors, and most strongly predicts coping style. The only measure that taps into all three facets of burnout is the Maslach Burnout Inventory, and because of this and because it conceptualizes burnout as a separate but related construct to engagement, the MBI was used in the current study. The emergence of this multi-factor conceptualization of burnout, which includes exhaustion, cynicism, and sometimes, professional efficacy, has ushered in a host of empirical studies which focus on burnout, and these studies will be expanded upon in the context of the Job Demands-Resources Model in Chapter 3 of this

proposal. First, however, this chapter will continue with a definition and discussion of engagement.

Engagement

Whereas burned out employees withdraw their emotions and effort from work, and begin to feel that it is impossible for them to do a good job, engaged employees are motivated, willingly expend energy, and solicit positive reinforcement from their jobs. Macey and Schneider (2008) describe the different ways that engagement is conceptualized, commenting on trait, state, and behavioral definitions of the construct. The current dissertation measured two different types of engagement: state engagement, as is typically captured in studies of the Job Demands-Resources Model, and behavioral engagement, operationalized in the current study as use of available academic resources.

Macey and Schneider (2008) summarize that state engagement is a multifaceted construct made up of aspects of existing constructs such as job satisfaction, organizational commitment, psychological empowerment, and job involvement. The state definition of engagement places emphasis on absorption, passion, and affect, over satisfaction, commitment, and involvement. To put it another way, the affective nature of the state engagement construct differentiates it from related constructs that preceded it. Macey and Schneider (2008) mention the Utrecht Work Engagement Scale, which will be discussed in this section and which was used as the measure of state engagement in the current study, as a promising, well-researched measure of state engagement.

Macey and Schneider (2008) also describe behavioral engagement, and they note the difficulty of pinning down a satisfying definition of behavioral engagement. They suggest that such a definition should reflect more than effort. In addition to effort, behavioral

conceptualizations of engagement should have more to do with actions that, given a specific frame of reference, go beyond what is typical. By this definition, examples of behavioral engagement may include organizational citizenship behaviors, working to surpass performance expectations, and participation in programs, trainings, and other resources that are not required elements of one's job. In other words, behavioral engagement is evidenced by discretionary work behaviors. Macey and Schneider propose a conceptual model that shows trait engagement as an antecedent to state engagement and state engagement as an antecedent to behavioral engagement. This model is important to the current study, and the link between state engagement and behavioral engagement was tested in the current study.

In the earliest conceptualization of engagement, Kahn (1990) defined engagement as a multifaceted motivational concept reflecting the simultaneous investment of an individual's physical (i.e., behavioral), cognitive, and emotional energy in active, full job performance – in other words, the involvement of the entire self in one's work. Kahn's conceptualization of engagement defines engagement both as a state with cognitive and emotional aspects, and as behavior, (i.e., the physical aspect of Kahn's engagement construct). This is similar to how Macey and Schneider (2008) conceptualize different forms of engagement (i.e., trait, state, and behavior). Kahn assumed that an individual's perceptions of his or her work context and his or her own individual characteristics foster psychological conditions that directly influence the willingness to engage in the work role. The three important psychological conditions or antecedents of engagement that Kahn proposed are perceptions of the meaningfulness of work, perceptions of social systems related to support and relationships, and self-perceptions such as self confidence. In the Job Demands-Resources Model, which will be discussed in the next

chapter, the same antecedents of engagement are identified, and are labeled job and psychological resources.

In the conceptualization of state engagement that was used in the current study, Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002) define work engagement as a multifaceted construct, "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (p. 74). Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge through one's work. Finally, absorption is characterized by being fully concentrated and happily engrossed in one's work, whereby the time passes quickly and one has difficulty detaching from work (Schaufeli & Salanova, 2005). Unlike Kahn's conceptualization of engagement, Schaufeli et al's (2002) construct focuses on a state definition of engagement – it does not pull in behavioral or trait factors.

Macey and Schneider (2008) believe that state work engagement such as Schaufeli, Salanova, Gonzalez-Roma, and Bakker's (2002) state engagement construct is "a new blend of old wines with a distinct characteristic and feel" (p. 1). This metaphor suggests that state engagement definitions and measures contain concepts and items that are similar to items found in traditional measures of concepts such as job satisfaction, job involvement, and organizational commitment. However, each of these concepts on their own is not a proxy for state engagement, and all items from these traditional measures are not necessarily items that measure engagement. Part of that 'distinct character and feel' of state engagement is affective in that the items that are relevant from the measures of job satisfaction, job involvement, and organizational commitment

are those that emphasize feelings of energy, enthusiasm, and other positive affect. In addition to its focus on affect, the Schaufeli et al. (2002) definition of state engagement is conceptually different from related variables, such as flow, job-involvement, and organizational commitment, in other ways.

For example, the absorption facet of engagement is described as a psychological state related to a feeling of being carried away by work, similar to the concept of flow. The difference between flow and engagement is that flow is described as a short-term peak experience, whereas engagement is a state that lasts longer (Hallberg & Schaufeli, 2006).

Job involvement is the degree to which a person is behaviorally involved with their work and organization (Brown, 1996), which sounds similar to behavioral engagement. Therefore, job involvement may be a consequence of state engagement, a prediction that would align with Macey and Schneider's (2008) theoretical model, which shows that state engagement is antecedent to behavioral engagement. The theory around job involvement is that a job-involved person finds their job motivating and challenging and is committed (i.e., dedicated) to their work and the organization (Brown, 1996). Therefore, job involvement may share some variance with the dedication facet of engagement.

Measures of organizational commitment tap into attitudes towards the organization rather than the work itself (Brown, 1996) – this is a key difference between commitment and state engagement. Research around organizational commitment has focused on attitudinal, affective aspects of the construct, mainly around an individual's emotional attachment to the organization, based on shared values and interests (Meyer & Allen, 1991). State engagement measures, on the other hand, focus on the psychological reaction to the work itself.

In a study that empirically discriminated state engagement from job involvement and organizational commitment, Hallberg and Schaufeli (2006) hypothesized that since work engagement, job involvement, and organizational commitment all refer to positive attachment to work and contain reciprocal, theoretical references to each other, they will share some variance with each other. However, they are not expected to be redundant. They also predicted that the constructs would be empirically separable, and have different relationships with antecedent and outcome variables. They contrasted a uni-factor model in which work engagement, job involvement, and organizational commitment were modeled as one construct (work attachment) with a three-factor model that modeled them as separate constructs. They found that the three factor model was superior to the composite model. They found that a distinguishing characteristic of engagement is its relationship with health measures, including lack of depressive symptoms, lack of somatic symptoms, and lack of burnout as measured by the MBI. Work engagement appears to be most similar to organizational commitment – both seem to be more related to variables about the work environment such as autonomy, feedback, and role conflict. Job involvement, on the other hand, had weaker relationships with those variables and instead had stronger relationships with intrinsic motivation – a personal characteristic - and role overload.

Perhaps the biggest difference between state engagement as conceptualized by Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002), and the constructs mentioned above is the multi-faceted nature of state engagement. The definition does contain aspects that are very similar to flow, job involvement, and organizational commitment, but the key is that high levels of each of the engagement facets must be present to say that person is experiencing the state of engagement. For example, if someone only exhibits dedication, but does not experience vigor and absorption

while working, then the person is not necessarily engaged. In a way that mirrors the way that Maslach's burnout construct is structured, the Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002) definition of state engagement combines aspects of other constructs into one multi-faceted construct. However, as with burnout, many studies of engagement do not look at engagement as a combined vigor, dedication, and absorption factor. Instead, many researchers look at the different aspects of engagement separately. Schaufeli, Salanova, Gonzalez-Roma, Bakker (2002) suggest that both using the UWES as a combined variable or three different variables are equally acceptable, depending on whether or not the research tests hypotheses about the separate factors of engagement or not.

Before moving on to a discussion of the consequences of engagement, a discussion on the relationship between state engagement and burnout is presented next. Maslach, Schaufeli, and Leiter (2001) describe state engagement as the positive antithesis of burnout. Essentially, this point of view conceptualizes burnout as an erosion of engagement. Energy turns into exhaustion, involvement turns into cynicism, efficacy turns into ineffectiveness. Accordingly, engagement is characterized by energy, involvement, and efficacy – the direct opposites of the three burnout dimensions (Maslach & Leiter, 1997). This suggests that engagement would be measured by opposite patterns of scores from burnout on a measure of burnout.

Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002) take a different approach. Engagement is defined and operationalized as a separate construct from burnout. "Burnout and engagement are considered two kinds of employee well-being that are part of a more comprehensive taxonomy constituted by the two independent dimensions of pleasure and activation (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002, p. 5)." According to this framework, burnout is characterized by low levels of activation and pleasure, and engagement is

characterized by high levels. The construct of burnout has more to do with energy, and it is sensitive to aspects of the job that deplete energy, such as demands. Engagement has more to do with motivation, and is sensitive to aspects of the job that bolster a motivated state, such as resources. The measures of these constructs used in the current study, the MBI and UWES, support the point of view that burnout and engagement are separate constructs. Although there are some similarities between factors of the two scales (e.g., vigor and exhaustion items are similar, and cynicism and dedication items are similar), each scale contains factors that are unique to that scale (i.e., personal efficacy from burnout and absorption from engagement).

State engagement and burnout have related impacts on job attitudes and job performance, namely, engagement has positive relationships with these outcomes and burnout has negative relationships with these outcomes. This appears to support the idea that engagement and burnout are simply opposite ends of the same continuum. However, this similarity with regard to the consequences of burnout and engagement may result from the simplicity of the Job Demands-Resources Model. The model, for example, does not include hypotheses about health consequences, which are linked to burnout, but are relatively unstudied with regard to engagement in tests of the Job Demands Resources Model (however, Hallberg and Schaufeli (2006) did find that engagement was negatively related to depression and somatic symptoms in a test of the discriminant validity of engagement, job involvement, and organizational commitment). By including different kinds of outcome variables, the differential impacts of burnout versus engagement may be easier to understand.

In addition, the similar relationships between engagement, burnout, and job outcomes may be driven by different underlying mechanisms. According to Conservation of Resources Theory, a burned-out worker may begin to underperform as a coping strategy to deal with

overwhelming demands. Exhaustion due to overwhelming demands leads to feelings of cynicism and withdrawal. This is followed by reduced professional efficacy, which further hampers performance. On the other hand, for the disengaged worker, underperformance may be produced by a lack of motivation, not exhaustion. Lack of stimulation decreases feelings of vigor towards, absorption in, and dedication to work, which has a negative impact on performance. The experience of disengagement may be more related to boredom than to the experience of being overwhelmed and exhausted. Because of the parsimony of the Job Demands-Resources Model, it may be difficult to gather evidence for the discriminant validity of burnout versus engagement. However, this does not mean that engagement and burnout are the same construct – instead it leaves the issue as an open question.

With regard to the relationship between the UWES and the MBI, these constructs are related but different. According to the manual for the UWES, vigor is most strongly related to reduced efficacy (r = -.56), then to cynicism (r = -.35), and then to exhaustion (r = -.16). Dedication is most strongly related to cynicism (r = -.60), then to reduced efficacy (r = -.53), and then to exhaustion (r = -.07). Finally absorption is most strongly related to reduced efficacy (r = -.46), then to cynicism (r = -.26) and it is not related at all to exhaustion (Schaufeli & Bakker, 2003). These correlation coefficients suggest that the facets of engagement are related to the facets of burnout, but the correlations are not so strong that one would suspect them of being the same thing. The exhaustion factor is least related to the facets of engagement – this suggests that engaged employees remain less cynical and maintain professional self-efficacy, but they may still feel exhausted.

As for antecedents and consequences, state engagement is thought to be a consequence of trait engagement, i.e., personality traits that predispose an individual to becoming engaged

(Macey & Schneider, 2008). In addition, state engagement is the consequence of perception of job resources, which are aspects of the job that support and facilitate work. For example, Kahn (1990) theorized that social support was a critical antecedent to state engagement. In addition, Schaufeli and Bakker (2003) point to social support, performance feedback, coaching, job autonomy, task variety, and training as antecedents to state engagement.

The consequences of state engagement include attitudes such as satisfaction, commitment, low intent to quit (e.g., Salanova & Bakker 2004; Demerouti, Bakker, Janssen, & Schaufeli, 2001; Bakker, Demerouti, & Euwmema, 2003; Schaufeli & Bakker, 2003), personal initiative and learning motivation (Sonnetag, 2003), and job performance (Salanova, Agut, & Peiro, 2005; Bakker, Demerouti, & Verbeke, 2004). This evidence will be discussed in greater detail in Chapter 3, in the context of the Job Demands-Resources Model.

To summarize this chapter, the multi-factor definitions of burnout and state engagement discussed in this chapter are not the only conceptualizations of these constructs. However, burnout as measured by the MBI and state engagement as measured by the UWES are the conceptualizations that were used for the current study. These operational definitions were chosen because they are adequately distinct from related constructs. Additionally, engagement as measured by the UWES is a concise definition of state engagement. It only contains items that tap into state engagement, and it does not tap into traits or behaviors. This lack of overlap with other definitions of engagement allows the UWES to be used to test predictions about how state engagement relates to behavioral engagement. Furthermore, the MBI and UWES tap into related but different constructs according to theory and empirical data. In addition to state engagement, behavioral engagement, conceptualized as use of academic resources, was measured in the current study. The support for this comes from Macey and Schneider (2008),

who discussed different types of engagement and proposed that state engagement leads to behavioral engagement. In the next chapter on the Job Demands-Resources Model, burnout and engagement will be integrated into a model, which describes how these states are impacted by the work environment, and how they lead to important job outcomes.

CHAPTER 3: The Job Demands-Resources Model

The central proposition of the Job Demands-Resources Model is that job demands lead to burnout, and job resources lead to engagement (Salanova & Bakker, 2004). The relationship between demands and exhaustion, a central element that defines burnout, is described as an energy driven process by which individuals suffer because their energy has been depleted by demands. The relationship between resources and engagement is described as a motivational continuum, because resources support and facilitate work. According to the model, burnout and engagement mediate the relationships between these job characteristics and various organizational outcomes (e.g., job satisfaction, commitment, and absence due to illness). Another proposition that was added to the model over time is the idea that job resources can buffer, i.e., lessen or prevent, against burnout resulting from job demands (e.g., Bakker, Demerouti, & Euwema 2005).

The Job Demands-Resources Model is based on earlier work that focused on how individuals react to situational demands. One such foundational theory is the Conservation of Resources Theory (Hobfoll, 1989). This theory postulates that individuals strive to obtain, conserve, and prevent the loss of resources. Resources are depleted by situational stressors, called demands. Individuals cope with this depletion by actively working to replenish resources and/or by protecting whatever resources they have left through withdrawal from the stressful environment.

The Conservation of Resources Theory broadly defines demands as stressors that deplete resources. Demands do not always have negative consequences - as long as they do not exceed individuals' ability or willingness to cope with them they may not have any negative impact on the individual. If demands do exceed this threshold, however, then demands act as harmful

stressors and have a negative impact on psychological well-being (Schaufeli & Bakker, 2004). Resources can fall into four categories: valued objects (e.g., housing, clothing), stress-mediating conditions (e.g., job security, social support, seniority), stress-aiding individual differences (e.g., traits such as self-efficacy and optimism, and skills), and resource generating energy (e.g., time, money, knowledge) (Hobfoll, 1989).

Another foundational model to the Job Demands-Resources Model is the Demand-Control Model (Karasek, 1998), which focuses on how individuals react to demands. This model postulates that job strain, which is a negative reaction to job demands, is highest in jobs with high demands and low job control (i.e., autonomy, which would be classified as a resource by Hobfoll (1989)). Individuals may use a number of different coping strategies when faced with demands. When an individual perceives to have adequate control within his or her work environment, the individual will likely react by increasing effort to overcome the demands. This requires sympathetic nervous system activation, increased subjective effort, or both. These reactions result in physiological costs for the individual, and a draining of the individual's energy, which can lead to burnout. In order to combat the depletion of resource loss and to prevent burnout, resources must be sought out and replenished. Alternatively, if the individual does not believe that he or she has the ability to control the situation, then he or she will likely choose a protection strategy by which he or she withdraws from demands in order to prevent further resource loss. These reactions, either motivated action to meet demands or withdrawal to avoid further resource loss, are similar to the outcomes that are observed in studies of the Job Demands-Resources Model, as will be discussed in the next section of this chapter.

The Demand-Control Model has been criticized for its over-simplicity, and for its lack of empirical support. In fact, a recent review of the literature demonstrates that only 9 out of 90

empirical studies of this model provide support for the model's demands-by-control predictions (Bakker, van Veldhoven, & Xanthopoulou, 2010). The Job Demands-Resources Model emerged as a reaction to the criticisms that the Demand-Control Model fails to capture the complexity of the relationships between the work environment and psychological well-being.

Rather than focusing on one central interaction, (i.e. an interaction between job demands and job control), the Job Demands - Resources Model expands this concept to look at a broader range of relationships between job characteristics and psychological states. Job control is reframed as one of many job resources that are antecedent to engagement. Job resources are defined as physical, psychological, social, or organizational aspects of the job that are functional in achieving work goals, reducing job demands, and/or stimulating personal growth and development (Bakker & Demerouti, 2004). The Job Demands-Resources Model predicts that resources are important moderators, or buffers, between job demands and burnout, but importantly, this model also postulates that resources are important in their own right in that they foster work engagement. Resources can be categorized as external (organizational or social) or internal (personal characteristics). Empirical tests of the Job Demands-Resources Model largely focus on external resources, because according to Demerouti et al. (2001), there is no agreement on which internal resources can be considered stable, and independent of the work environment.

Interestingly, the most commonly studied resources in tests of the Job Demands-Resources Model—autonomy, feedback, social support, relationship with supervisor, training, and developmental opportunities—are the same job characteristics as those studied by Hackman and Oldham's (1977) work on the Job Characteristics Model. According to that model, work motivation results from job characteristics such as autonomy and feedback, which in turn lead to

outcomes such as intrinsic motivation, job satisfaction, and performance (Borman, Ilgen, & Klimoski, 2003).

Support for the Basic Relationships of the Job Demands-Resources Model

Findings from the Job Demands-Resources literature that are central to the current study include the findings that resources are antecedents to engagement, demands are antecedents to burnout, and that engagement and burnout mediate the relationships between resources, demands, and work outcomes. The prediction that resources can moderate or 'buffer' the predicted relationship between demands and burnout is also important to the current study.

Studies of the Job Demands-Resources Model almost exclusively use the MBI and the UWES to measure burnout and engagement. The analytical methods used throughout the Job Demands-Resources literature often involve structural equation modeling, or regressions of the subcomponents of engagement and burnout on outcomes.

Furthermore, studies throughout the literature focus on the same set of job resources (e.g., autonomy, supervisory support, collaborative work environment, etc.). Resources, as operationalized in studies of the Job Demands-Resources Model, can best be described as resource presence or resource awareness. In these studies, the standard set of resourceful job characteristics, which trace back to Hackman and Oldham's Job Characteristics Model, are presented to survey respondents. Respondents rate the degree to which those resources are present in their work environments. Active use of resources has not been studied. Bakker, Demerouti, and Euwema (2005) say that:

> "Researchers have used the same set of variables in many different occupational domains and thus assumed that these variables are relevant to the universe of job positions….To really speak about a flexible model, the present findings should be replicated on other studies using different sets of demands and resources…," (p. 177).

The current study measured students' awareness and use of specific resources offered to them at their college, rather than the perception of resources typically studied in tests of the Job Demands-Resources Model, making it a unique contribution to tests of this model.

To summarize the empirical support of the main tenets of the Job Demands-Resources Model, studies have demonstrated that burnout mediates the path between job demands and health problems, withdrawal behaviors, commitment, performance, and attitudes, and engagement mediates the path between employees' awareness of job resources and turnover intentions, commitment, attitudes, and performance (Salanova & Bakker, 2004; Salanova, Agut, & Peiro, 2005; Bakker, van Emmerick, & Euwema, 2006; Llorens, Bakker, Schaufeli, & Salanova, 2006; Rothmann & Joubert, 2007). As mentioned earlier, burnout tends to relate to similar outcomes as engagement. However, burnout, unlike engagement, has been linked to health outcomes in tests of the Job Demands-Resources Model.

To highlight a few studies that demonstrate the impact of engagement on job attitudes and commitment, Demerouti, Bakker, Janssen, and Schaufeli (2001), Bakker, Demerouti, and Euwema (2003) and Schaufeli and Bakker (2003) found that engaged workers were more satisfied with their jobs, felt more committed to the organization, and were less likely to intend to quit. Koyuncu, Burke, and Fiskenbaum (2006) also identified job satisfaction and intent to stay as consequences of engagement. Salanova and Bakker (2004) found that engagement mediated the relationship between employees' awareness of job resources and turnover intentions. Hakanen, Schaufeli, and Ahola (2008) found that engagement predicted organizational commitment in Finnish dentists. Finally, Lloren, Schaufeli, Bakker, and Salanova (2007) found that engagement was both an antecedent to and consequence of efficacy beliefs at work.

Additionally, a longitudinal study of employees from a pension fund company showed that social support from colleagues and job autonomy led to engagement, and that level of engagement did not diminish over time as long as resources were still present. This supports the notion that state engagement is in fact a state that lasts longer than a peak experience such as flow. In addition, Rothmann and Joubert (2007) found that the vigor dimension of work engagement was predicted by organizational (mostly supervisory) support, dedication was predicted by organizational support and advancement opportunities, and exhaustion, a burnout dimension, was predicted by workload, job insecurity, and lack of the aforementioned other job resources.

To highlight a few studies that demonstrate burnout's relationship with withdrawal and health outcomes, Salanova and Bakker (2004) found that burnout mediates the relationship between job demands and sick days, and turnover intentions. Also focusing on withdrawal and health outcomes, Peterson, Demerouti, Bergstrom, Ashberg, and Nygren (2008) found that burnout was related to more missed days of work, and more days at work sick, as compared to non-burned out employees. Hakanen, Schaufeli, and Ahola (2008) found in a longitudinal study of Finnish dentists that burnout predicts future depression.

As mentioned above, both burnout and engagement have been linked to performance outcomes. Studies that link engagement to performance include Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009), in which engagement scores predicted financial returns at a fast food restaurant, and Schaufeli (2008), in which engagement scores predicted in-role and out-of-role performance in flight attendants. Additionally, Salanova, Agut, and Peiro (2005) surveyed restaurant workers and hotel lobby workers, as well as their customers. On the employee side, they measured awareness of organizational resources (training, job autonomy,

and technology), service climate, and work engagement. On the customer side, they measured perception of employee performance and customer loyalty—these are performance variables in a hospitality-industry setting. They found that in this setting, work engagement impacts customers' perceptions and customers' loyalty through service climate, as reported by employees.

In a study that linked burnout to performance, Bakker, Demerouti, and Verbeke (2004) measured burnout and disengagement using the Oldenburg Burnout Inventory. They studied how exhaustion and disengagement impact in-role and extra-role performance. They predicted that exhaustion would negatively impact in-role performance, and cited evidence from studies that showed how stressors (demands) hamper task performance – theoretically because stressed individuals withdraw effort as a coping strategy to conserve resources. On the other hand, they predicted that extra-role performance would be influenced by disengagement. They argued that organizational citizenship behaviors occur when a person is satisfied and emotionally connected with his or her workplace (i.e., engaged). They found that job demands indeed were antecedent to exhaustion, and perceived lack of job resources were antecedent to disengagement. Exhaustion negatively impacted (i.e., had a negative direct effect on) in-role performance, and disengagement negatively impacted extra-role performance.

The 'Buffer' Effect

In addition to the basic relationships of the Job Demands-Resources Model, which were discussed above, another central tenet of the Job Demands-Resources Model is the idea that resources can buffer the impact of demands on burnout. The idea for this concept comes from the Demand Control Model (Karasek, 1998). This model theorizes that the range of control over one's environmental situation is a crucial dimension in determining health on the one hand, and

active behavior and learning on the other (Karasek, 1998). Specifically, jobs that combine high demands and low control (i.e., high strain jobs) are the worst context for a worker in terms of health outcomes. Alternatively, jobs that combine high (but not overwhelming) demands as well as high control provide the context for workers to have some latitude regarding how and when to deal with current and new challenges (de Jonge, Dollard, Dormann, Le Blanc, & Houtman, 2000). In theory, a work environment rich in resources allows workers more control to cope with and meet demands, thus buffering against burnout and facilitating engagement and productive work.

There is research evidence to support the 'buffer effect' hypothesis. For example, Bakker, Demerouti, and Euwema (2005) found evidence of the buffer effect when they surveyed employees on demands (work overload, emotional demands, physical demands, and work-home interference) and resources (autonomy, social support, quality of relationship with supervisor, and performance feedback). Job resources moderated the relationship between job demands and burnout, such that demands had a weakened or no effect on the emotional exhaustion and cynicism factors of burnout when resources were high. In particular, they found evidence that specific resources work to buffer against certain demands. Almost all resources seemed to buffer against exhaustion due to work overload, emotional demands, and work-home interference. However, only autonomy proved to be an effective buffer against cynicism due to work overload. The impact of other demands on cynicism were buffered by multiple resources: autonomy, social support, and performance feedback helped to buffer against emotional demands, and autonomy, quality of relationship with supervisor, and feedback helped to buffer against work-home interference. Therefore, this study suggests that when faced with particular job demands, certain resources will be helpful buffers but not others.

Bakker, Hanaken, Demerouti, and Xanthopoulou (2007) found that all of the job resources that they measured – job control, supervisor support, information, climate, and autonomy, buffered against burnout in teachers. Furthermore, the researchers examined plots of the significant interactions on engagement of job resources within high and low student misbehavior. Job resources were strongly related to work engagement for those experiencing high levels of student misbehavior, and were unrelated or weakly related for those experiencing low levels of student misbehavior. These results demonstrate that job resources particularly influence engagement under conditions of high job demands.

Relationship between Demands and State Engagement

The Job Demands-Resources Model does not predict a relationship between demands and engagement. Instead, demands are predicted to exclusively lead to burnout. However, there are some studies from the Job Demands-Resources Model literature that suggest that a positive relationship between demands and engagement is worth investigating.

In one example, Peterson, Demerouti, Bergstrom, Ashberg, and Nygren (2008) used the Oldenburg Burnout Inventory to measure burnout and disengagement in a sample of employees from various occupational groups. The Oldenburg Burnout Inventory measures burnout and engagement as the same two-factor construct. Based on survey scores, employees were placed into non-burned out (low exhaustion and cynicism), burned-out (high exhaustion and high cynicism), exhausted (but not cynical), and disengaged (cynical but not exhausted) groups.

Linear discriminant analysis was used to look for different patterns of work characteristics between the four burnout categories. They found that disengagement was related to an absence of both job demands and job resources, suggesting to them that lack of challenge caused individuals to become disinterested with their jobs. To foreshadow the argument made in

the following chapter, challenge and intellectual stimulation are particularly important to high need for cognition individuals (Cacioppo, Petty, Feinstein, and Jarvis, 1996). It is likely that lack of challenge would be particularly disengaging to these individuals.

Schaufeli, Taris, Le Blanc, Peeters and De Jonge (2001) analyzed qualitative data from interviews with engaged employees, and found that engaged employees reported experiencing tiredness and exhaustion from work, but they described it differently than burned-out employees. Rather than describing the state as completely negative, they viewed it more positively because it related to their positive accomplishments. This qualitative evidence suggests that exhaustion may be an inevitable outcome of demanding work, but that engaged employees avoid the cynicism and reduced professional efficacy that burned out employees typically experience. Again, this seems in line with how high need for cognition individuals might feel under high demand conditions – they may feel exhausted by engaging in stimulating activities, but they also enjoy these activities.

In another study, Bakker, van Veldhoven, and Xanthopoulou (2010) concluded that individuals enjoy and are committed to demanding jobs when adequate resources are available. They tested interactions between workload and emotional demands, job resources, and task enjoyment and commitment, and found that when resources were present, employees reported enjoyment and commitment in the face of demands.

In a study that explicitly tested for a relationship between demands and engagement, Crawford, Lepine, and Rich (2010) argued that the Job Demands-Resources Model is over-parsimonious and that it dismisses a relationship between engagement and demands, when in fact such a relationship may exist. Their meta-analysis investigated a potential relationship between engagement and demands by considering whether the demands that were measured in previous

studies were hindrances or challenges. The categorization of hindrance versus challenge is based on the Transactional Theory of Stress, which says that people's reaction to stress is based on their appraisals of stressors. They found that the challenge demands were positively related to engagement, whereas the hindrance demands related to burnout. This study is important supporting justification for the current study because it shows that demands can foster engagement, and that a determining factor in that relationship rests with the individual him or herself (in this case, with the appraisal of the demands as either hindrances or challenges). However, this study is limited in that it did not tap into participants' actual appraisals of demands. Instead, the researchers categorized the demands. In addition, this study does not reveal anything about how individual differences could lead to different appraisals of the same demands.

In Chapter 4, it will be proposed that need for cognition, an individual difference, may moderate reactions to demands, such that demands lead to state engagement for some individuals, but not others. The traditionally omitted relationship between demands and state engagement was tested in the current study.

Hypotheses 1 – 11: Replications and Extensions of the Job Demands-Resources Model

The first set of hypotheses is outlined below. Some of these hypothesizes are replications of findings from the literature reviewed above (H1, H4, H8, H9, H10). However, as mentioned earlier, the current dissertation study also integrated a new resource construct to the Job Demands-Resources Model. In addition to a measure of resource awareness, which listed resources available to students at the college and asked about the degree to which students were aware of them, the study incorporated the concept of behavioral engagement, operationalized as resource use, into the model. Students were asked about their actual usage of the resources

available to them at the college. The concept of behavioral engagement is taken from Macey and Schneider (2008), which was reviewed in the previous chapter under the heading 'Engagement.' Macey and Schneider (2008) propose a theoretical model in which state engagement (as measured, for example, by the UWES) leads to behavioral engagement. According to this theoretical model, engagement is first experienced as a psychological reaction to the work environment, and then it leads to engagement behaviors. The integration of this theoretical model into the Job Demands Resources Model led to novel hypotheses about the role that resource use, separate from resource awareness, might play in the Job Demands-Resources Model (H2, H3, H5, H6, H7, H11).

Furthermore, given that the current study was conducted using a student sample, the operational definitions of the key constructs within the Job Demands-Resources Model were customized to fit the sample. For example, grades were used as the operational definition of academic performance. Grades are analogous to performance in organizations, which has been studied in the Job Demands Resources Model multiple times (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009; Bakker, Heuven, Demerouti, & Schaufeli, 2008; and Salanova, Agut, & Peiro, 2005). Similarly, 'satisfaction with the current semester' is analogous to job attitudes such as satisfaction and commitment, which have been identified as consequences of engagement by Salanova and Bakker, (2004); Salanova, Agut, and Peiro, (2005); Bakker, van Emmerick, and Euwema, (2006); Llorens, Bakker, Schaufeli, and Salanova, (2006); and Rothmann and Joubert, (2007). The specific satisfaction items focused on satisfaction with the semester overall, one's professors, and one's courses. Finally, an 'academic punctuality' variable, which was measured with questions about coming to class on late, missing class, and turning assignments in on time, is theoretically related to withdrawal behaviors that have been studied in the Job Demands-

Resources Model, such as tardiness, missed days of work, and turnover. The relevant references from the above review are Demerouti, Bakker, Janssen, and Schaufeli (2001); Bakker, Demerouti, and Euwema (2003); Schaufeli and Bakker (2003); and Koyuncu, Burke, and Fiskenbaum (2006), which focus on turnover and intent to stay in a Job Demands-Resources framework, and Peterson, Demerouti, Bergstrom, Ashberg, and Nygren (2008), which focuses on missed days from work in a Job Demands-Resources framework. The following hypotheses stem from the previous chapter:

1. Resources awareness will be positively related to state engagement.
2. State engagement will be positively related to resource use.
3. State engagement will mediate the positive relationship between resource awareness and resource use.
4. Academic demands will be positively related to burnout.
5. Resource use will mediate the positive relationship between state engagement and grades.
6. Resource use will mediate the positive relationship between state engagement and satisfaction with the academic semester.
7. Resource use will mediate the positive relationship between state engagement and punctuality (turning assignments in on time, coming to class on time, not missing classes).
8. Burnout will mediate the negative relationship between demands and GPA.
9. Burnout will mediate the negative relationship between demands and satisfaction with the academic semester.

10. Burnout will mediate the negative relationship between demands and academic punctuality (turning assignments in on time, coming to class on time, not missing classes).
11. Resource use will moderate the relationship between academic demands and burnout such that the relationship between academic demands and burnout will be weaker for students who report using resources more extensively.

In the next chapter, the role of individual differences in the Job Demands-Resources Model – a relatively new area of study – will be introduced. The need for cognition will be identified as an individual difference variable that may uncover a previously unpredicted relationship between demands and state engagement in the Job Demands-Resources Model. Then, the final study hypothesis will be stated.

CHAPTER 4: The Need for Cognition as a Moderator between Academic Demands and State Engagement

The above section of this literature review discussed the well-supported, basic relationships predicted by the Job Demands-Resources Model. Notably, discussion about how individual differences may impact the predictions of the Job Demands-Resources Model was absent. This is because until recently, individual differences have not received much research attention by Job Demands-Resources researchers, although the Conservation of Resources Theory, one of the theoretical underpinnings of the Job Demands-Resources Model, does identify individual differences as important. According to the Conservation of Resources Theory (Hobfoll, Johnson, Ennis, & Jackson, 2003), individual differences that relate to resiliency and an individual's sense of their ability to control and impact their environment help determine how individuals will react to stress and environmental demands. In the context of the Conservation of Resources Theory, individual differences are considered 'personal resources' and are expected to have a similar impact to other resources (i.e., job characteristics) on demands and burnout. That is, they are expected to buffer against burnout caused by demands. Demerouti et al. (2001) attributed the lack of research on individual differences to the fact that there is no agreement as to which individual differences can be considered stable, and independent of the work environment.

Individual differences are starting to receive research attention in the Job Demands-Resources literature. In one such study, Xanthoupoulou, Bakker, Demerouti, and Schaufeli (2007) attempted to expand the Job Demands-Resources Model and predicted that organization-based self esteem and optimism would both moderate the relationship between demands and exhaustion, and would mediate the relationship between resources and engagement. In other

words, these individual difference variables would directly help to buffer against demands, and would also impact the degree to which individuals saw their work environment as rich with resources. The job resources that they looked at were autonomy, social support, supervisory support, and opportunity for development. The demands that they looked at were workload, emotional dissonance, and organizational changes. They also measured self-efficacy, organizational-based self-esteem, and optimism. Through moderated structural equation modeling, they found support for the mediation role of optimism and self-esteem on the relationship between resources and engagement, but they did not find the moderation role, i.e., the direct buffer effect, of these individual differences on burnout.

Hallberg, Johansson, and Schaufeli (2007) studied Type A personality, an individual difference variable comprised of an achievement orientation factor and an irritability factor, as an antecedent to engagement and burnout. The researchers chose Type A personality as their focus because of its relationship to both overachievement and job satisfaction, which are the theoretical consequences of engagement, and negative health outcomes such as cardiovascular stress, which are the theoretical consequences of burnout. They found that the achievement factor of Type A personality led to engagement, and the irritability factor led to burnout, and suggested that this explains why Type A personality has been found to impact both satisfaction with the job and negative health consequences. They also predicted that job resources would buffer the impact of irritability on burnout, but they were unable to find that relationship. This inability to find a buffer relationship between the individual difference variable and burnout is similar to Xanthopoulou's (2007) inability to find a buffer effect of optimism and self esteem on the relationship between demands and burnout. This suggests that job resources are more impactful in preventing burnout from job demands than personal resources. However, it is possible that

these individual differences may make it more likely that individuals will perceive, and potentially use, job resources in their environment.

Although the Conservation of Resources Theory points to resiliency as relevant to engagement and burnout, other researchers have focused on individual differences that do not directly relate to resiliency, and have found these concepts to impact engagement as well. For example, value-fit with one's work or organization is an individual difference variable that has been found to be an antecedent to engagement (Koyuncu, Burke, & Fiskenbaum, 2005; Lyndon & Zanna, 1990; Britt, 2003). Value-fit may explain why some workers actively seek out and use helpful resources to overcome job demands, whereas others do not. Individuals who connect to their organizations, through shared values, may be more engaged with their jobs and therefore more aware of and likely to use available resources. As a result, these individuals may persist in meeting job demands even in the face of difficulty. For example, Britt (2003) found that value-fit predicted engagement even when job demands were high for soldiers.

Psychological Needs

A new area of individual differences to study within the context of Job Demands-Resources Model concerns psychological needs. Psychological needs are defined as "inobservable forces internal to the person, which create a tension when the need is not being met. People try to reduce or eliminate this tension through some action. Because this tension directs attention, effort, and persistence, needs are thought to be motivating," (Borman, Ilgen, & Klimoski, 2003, p. 238). Latham and Pinder (2005) note that recently there has been an increased interest in needs based research, and they state that:

> "While needs-based theories explain why a person must act; they do not explain why specific actions are chosen in specific situations to obtain specific outcomes. Moreover, they do not easily account for individual differences. Hence, along with increased attention to needs, there has also been a resurgence of interest in individual differences,

> particularly with regard to the effects of job characteristics on employee motivation," (p. 488).

To Latham and Pinder's point above, there are a number of different needs-based theories in the work motivation literature, and only some of them focus on individual differences. Examples of such theories will be discussed in the following section. It will be argued that theories which focus on need strength, an individual difference, rather than need satisfaction, will be useful for predicting how individuals will react to job characteristics, i.e., job demands and resources. This section will lead into a discussion about how need for cognition was integrated into the Job Demands-Resources Model in the current dissertation study.

The most famous need-based theory is Maslow's Needs Hierarchy. In 1943, Maslow proposed that individuals have five sets of basic needs starting with physiological needs, and ending with complex needs, called self-actualization needs. His idea was that needs are arranged in predetermined levels, and that individuals can focus on higher-order needs only once lower-order needs are met. Aldfer (1969) proposed a similar theory to Maslow's, suggesting that there are three levels of needs instead of five: Existence (i.e., basic) needs, relatedness needs, and growth needs. The 'process' of ascending through levels of needs based on satisfying lower needs is known as fulfillment-progression. The reverse process, frustration regression, occurs when one's higher-level needs are not met and so the individual regresses to a focus on the lower level needs (Latham, 2007).

The above approach to conceptualizing needs holds that most individuals have the same ordering of psychological needs. A later needs theory that follows the same tradition is Self Determination Theory. Self Determination Theory brings in the concepts of intrinsic and extrinsic sources of motivation. Extrinsic motivators are factors such as pay and other rewards,

recognition, and career advancement. Intrinsic motivators are conditions that support the individual's experience of autonomy, competence, and relatedness, which are the psychological needs at the focus of Self Determination Theory. The Self Determination approach to understanding work motivation proposes that the degree to which any of these three psychological needs are unsupported or thwarted will have a detrimental impact on motivation. The focus of Self Determination Theory is on need satisfaction rather than need strength – it is assumed that all individuals have more or less the same needs for autonomy, competence, and relatedness, and so measurement is focused on individuals' level of satisfaction with regard to these needs in a given environment (Van den Broeck, Vanteenkiste, De Witte, and Lens, 2008).

McClelland (1985) proposed an alternative perspective on needs, namely that individuals differ with regard to their psychological needs, and that these differences in psychological needs can help explain why individuals are differentially motivated when exposed to the same environmental stimuli. McClelland believed that an individual's specific needs are acquired over time and are shaped by one's life experiences. Therefore, his theory is referred to as Acquired Need Theory or as Learned Needs Theory (Latham, 2007). McClelland believed that most psychological needs could be classified as achievement-, affiliation-, or power- related needs. The main idea proposed by this approach is that individuals will be motivated to behave in ways that help them to satisfy their dominant psychological needs. For example, if an individual has a high need for power, he or she will theoretically pursue positions of power, such as head of a household, CEO of a corporation, head of a congregation, etc. If an individual has a high need for affiliation, he or she may seek roles that involve more collaboration and teamwork, whereas someone with a high need for achievement may seek roles that will result in acknowledgement of one's individual accomplishments. The focus of Acquired Needs Theory is on need strength

rather than on need satisfaction. The important factor when predicting behavior is the strength of an individual's need for a particular motivator.

In a study that introduces the concept of needs into the literature around the Job Demands-Resources Model, Van den Broeck, Vanteenkiste, De Witte, and Lens (2008) use Self-Determination Theory to propose that need satisfaction may act as a mediator between demands and burnout, and resources and engagement. In other words, demands would thwart need satisfaction and lead to burnout, and resources would satisfy needs and lead to engagement. The need satisfaction areas that they looked at were autonomy satisfaction, belongingness satisfaction, and competency satisfaction. They found that needs satisfaction fully accounted for a negative relationship between job resources and exhaustion, and partially explained the relationships between job demands and exhaustion, and between job resources and vigor. This suggests that employees who are surrounded by resources are more likely to experience a general feeling of psychological freedom (autonomy), interpersonal connectedness (belongingness), and effectiveness (competence) which in turn explains why they feel less exhausted, and more vigorous in their jobs. Employees who encounter demands, in contrast, seem more likely to have their psychological needs thwarted and therefore experience more exhaustion (Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008).

The above study supports the idea that psychological needs are important variables to consider when thinking about antecedents to work engagement. However, a need satisfaction approach was not ideal for the current study because this approach does not explain why individuals are differentially satisfied by the same environmental stimuli. A better approach to looking at needs within the Job Demands-Resources model is to focus on need strength.

Although McClelland's work focused on three different areas of need strength – achievement, affiliation, and power, other researchers have extended this approach and have researched other needs thought to be acquired through one's life experience. One such need is the need for cognition. The need for cognition was incorporated into the Job Demands-Resources Model in the current dissertation study because of its relationship to academic work such as thinking, studying, and information seeking.

Need for Cognition

The first conceptualization of need for cognition was proposed by Cohen, Stotland, and Wolfe (1955). They defined need for cognition as "a need to understand and make reasonable the experiential world," (p. 292) and argued that "stronger needs lead people to see a situation as ambiguous even if it is relatively structured, indicating that higher standards for cognitive clarity are associated with greater need for cognition," (p.292). In other words, individuals with high need for cognition question everything, and seek to understand the root causes behind events. Studies that used Cohen's definition focused on how individuals might avoid ambiguity by using expert testimony and other heuristics to make sense of the world, rather than carefully scrutinizing information. This idea is in opposition to the evidence that later need for cognition researchers would find, which suggests that high need for cognition individuals actually avoid using heuristics. Instead, individuals with high need for cognition deeply process information to form judgments (Cacioppo, Petty, Feinstein, & Jarvis, 1996).

Cacioppo and Petty (1982) offered the next, and current, definition of need for cognition. Although they used the term 'need for cognition' in deference to Cohen's work, their definition is a related but different concept. They define the need for cognition as a stable individual difference in people's tendency to engage in and enjoy effortful cognitive activity. Need for

cognition is a continuum from the absence of motivation for effortful cognitive activities to a high motivation for effortful cognitive activities. Someone with a high need for cognition would consider him or herself to be a 'thinker' or an 'intellectual.'

By Cacioppo and Petty's definition, someone with a high need for cognition is likely to engage in deep thinking in order to solve problems or make sense of his or her world, because they enjoy doing so. Someone with low need for cognition, in contrast, is more likely to take the 'cognitive miser' approach to problem solving, and relies on heuristics such as stereotypes, social comparison, and expert testimony. According to Cacioppo, Petty, Feinstein, and Jarvis (1996), individuals with high need for cognition "have more positive attitudes towards stimuli or tasks that require reasoning or problem solving, and more frequent or extensive experiences using resources or technologies that require or involve effortful thinking or reasoning (i.e., library use or computer-aided instruction), and, thus, richer behavioral histories of cognitively effortful endeavors and effective problem solving," (p. 198). This idea from Cacioppo et al. (1996) suggests that high need for cognition students would be more likely to make use of academic resources than low need for cognition students.

Studies of need for cognition range from simple correlational studies to complex laboratory studies. Correlational studies have shown that need for cognition is positively related to intellectual ability. Studies that have focused on the relationship between need for cognition and intellectual ability show that need for cognition is related to verbal intelligence scores (e.g., Cacioppo et al, 1983), ACT scores (e.g., Cacioppo & Petty, 1982), high school grade point average (e.g., Petty & Jarvis, 1996), and college grade point average (e.g., Cacioppo & Petty, 1984). Cacioppo et al. (1986) found that although both need for cognition and verbal ability predicted the number of arguments participants could recall after exposure to a persuasive

message, need for cognition accounted for significant additional variance in message recall after intelligence had been statistically controlled for. In other words, need for cognition adds incremental validity over and above general intelligence in predicting important outcomes. Also, the need for cognition has been shown to be positively related to personality characteristics that are linked to being cognitively curious and open such as low dogmatism, low need for closure, and low preference for predictability (Cacioppo, Petty, Feinstein, & Jarvis, 1996).

For example, need for cognition has been correlated with personality traits indicating cognitive stimulation and openness to cognitive tasks, such as the factor 'openness to experience' of the Five Factor Model (Fleischauer et al., 2010). Additionally, it has been positively correlated with traits indicating goal orientation and preciseness, such as 'persistence' from Cloninger's biosocial theory of personality and 'conscientiousness' from the Five Factor Model. It has been negatively correlated with anxiety-related traits such as 'neuroticism' of the Five Factor Model and Cloninger's 'harm avoidance' (Fleischauer et al., 2010).

Need for cognition is conceptualized as a tendency to search for cognitive stimulation, as opposed to sensory stimulation. Therefore, need for cognition has not been found to have relationships with sensation seeking (Fleischauer et al., 2010). Also, need for cognition has no relationship with traits related to externally motivated behavior, such as Cloninger's 'reward dependence.' Finally, need for cognition has not been correlated with 'agreeableness' from the Five Factor Model, a construct that deals with interpersonal orientation as opposed to cognitive motivation.

High need for cognition individuals are hypothesized to engage in deeper, more central thought processing, and low need for cognition individuals tend to prefer more superficial, peripheral processing (Petty & Cacioppo, 1986). In their seminal study, Cacioppo, Petty, and

Morris (1983) told college students who were high or low in need for cognition that they would be reading an editorial prepared by a journalism student. The students then read a message containing either six strong or six weak arguments favoring the recommendation that seniors should be required to pass a comprehensive exam in their major as a requirement for graduation. After message exposure, the students completed a number of measures and were given five minutes to list each of the message arguments presented. Regardless of the strength of the arguments in the message, students high in need for cognition recalled significantly more of the arguments than students low in need for cognition.

Cacioppo et al. (1996) extend the general finding that individuals high in need for cognition recall more information than those low in need for cognition. They state that exceptions to this finding might be anticipated when the information presented is so simple that even individuals low in need for cognition have no trouble remembering it, or when the information is so complex that even individuals high in need for cognition have trouble remembering it. Furthermore, they argue that situational factors can moderate cognitive motivation such that the motivation to think is so low that neither individuals who are high or low in need for cognition think extensively about the material. For example, no differences were found by Srull, Lichtenstein, and Rothbart (1985) when the information presented was irrelevant to a task at hand. Similarly, they found that differences in recall between high and low need for cognition participants was particularly pronounced when the information presented was relevant to the task at hand, and inconsistent with expectations. These studies suggest that situational and contextual factors determine how differently individuals with varying degrees of cognitive motivation will react to demands. In other words, perhaps when academic demands are

extremely low, high need for cognition students will not experience either state or behavioral engagement.

Additionally, researchers have tested the idea that need for cognition relates to the ability to understand the intensity of one's cognitive efforts. Individuals who are high in need for cognition use this understanding of how hard they are working to predict future performance. In a study that provides evidence of this, Reinhard and Dickhauser (2009) studied how the need for cognition impacts the formation of performance expectancies when the performance task is difficult versus easy. Performance expectancies are beliefs about one's own future performance. In general, beliefs about one's abilities, combined with the perceived difficulty of the task, are key determinants of performance expectancy. The authors of this study theorized that individuals high in need for cognition would be better at understanding the actual difficulty level of a task, and would be better able to form accurate judgments of how they would perform on the task. Reinhard and Dickhauser (2009) indeed found that individuals with high need for cognition were better able to accurately predict how they would perform, on two kinds of tasks, than individuals with low need for cognition. However, they found that this effect was only prominent when the task was difficult. It follows that individuals with high need for cognition may be better able to accurately assess the nature of demands facing them, and more quickly and accurately identify the need to use available resources to help meet those demands.

Hypothesis 12: Need for Cognition as a Moderator

The rationale for including need for cognition in the Job Demands-Resources Model is as follows: Students who are high in need for cognition prefer intellectual challenge, and enjoy thinking, analyzing, and studying. For these individuals, academic demands may be experienced as stimulating challenges, leading to state engagement, which in turn leads to behavioral

engagement, i.e., using academic resources. In addition, need for cognition is related to a greater ability to evaluate one's own performance in order to realize that one needs to adjust performance (Reinhard & Dickhauser, 2009). This may lead to resource use through state engagement as well. Therefore, the following hypothesis was tested:

12. Need for cognition will moderate the relationship between academic demands and state engagement. That is, academic demands will lead to state engagement, only when need for cognition is high.

CHAPTER 5: Review of Rationale and Hypotheses

This study applied the Job Demands-Resources Model, which has been used to understand the relationships between job characteristics, psychological states, and job outcomes in organizational settings, to an academic sample. This model hypothesizes that perception of job resources and job demands lead to state engagement and burnout, respectively, and that resources and demands lead to job outcomes through state engagement and burnout, in mediated relationships (e.g., Salanova & Bakker 2004; Demerouti, Bakker, Janssen, & Schaufeli, 2001; Bakker, Demerouti, & Euwema, 2003; Schaufeli & Bakker, 2003). In addition, several previous studies have found that resources 'buffer,' or moderate, the relationship between demands and burnout, such that workers who report greater resources seem to experience less burnout from demands (Bakker, Demerouti, & Euwema, 2005; Rothmann & Joubert, 2007). The goals of this study were to determine whether a demands-resources framework could be useful for understanding how and why students become engaged or burned out, to extend the Job Demands-Resources Model by including 'use' in addition to 'perception' of resources, and to extend the Job Demands-Resource Model by investigating the relationship between demands and state engagement. The following hypotheses were tested:

1. Resources awareness will be positively related to state engagement.
2. State engagement will be positively related to resource use.
3. State engagement will mediate the positive relationship between resource awareness and resource use.
4. Academic demands will be positively related to burnout.
5. Resource use will mediate the positive relationship between state engagement and grades.

6. Resource use will mediate the positive relationship between state engagement and satisfaction with the academic semester.
7. Resource use will mediate the positive relationship between state engagement and punctuality (turning assignments in on time, coming to class on time, not missing classes).
8. Burnout will mediate the negative relationship between demands and GPA.
9. Burnout will mediate the negative relationship between demands and satisfaction with the academic semester.
10. Burnout will mediate the negative relationship between demands and academic punctuality (turning assignments in on time, coming to class on time, not missing classes).
11. Resource use will moderate the relationship between academic demands and burnout such that the relationship between academic demands and burnout will be weaker for students who report using resources more extensively.
12. Need for cognition will moderate the relationship between academic demands and state engagement. That is, academic demands will lead to state engagement, only when need for cognition is high.

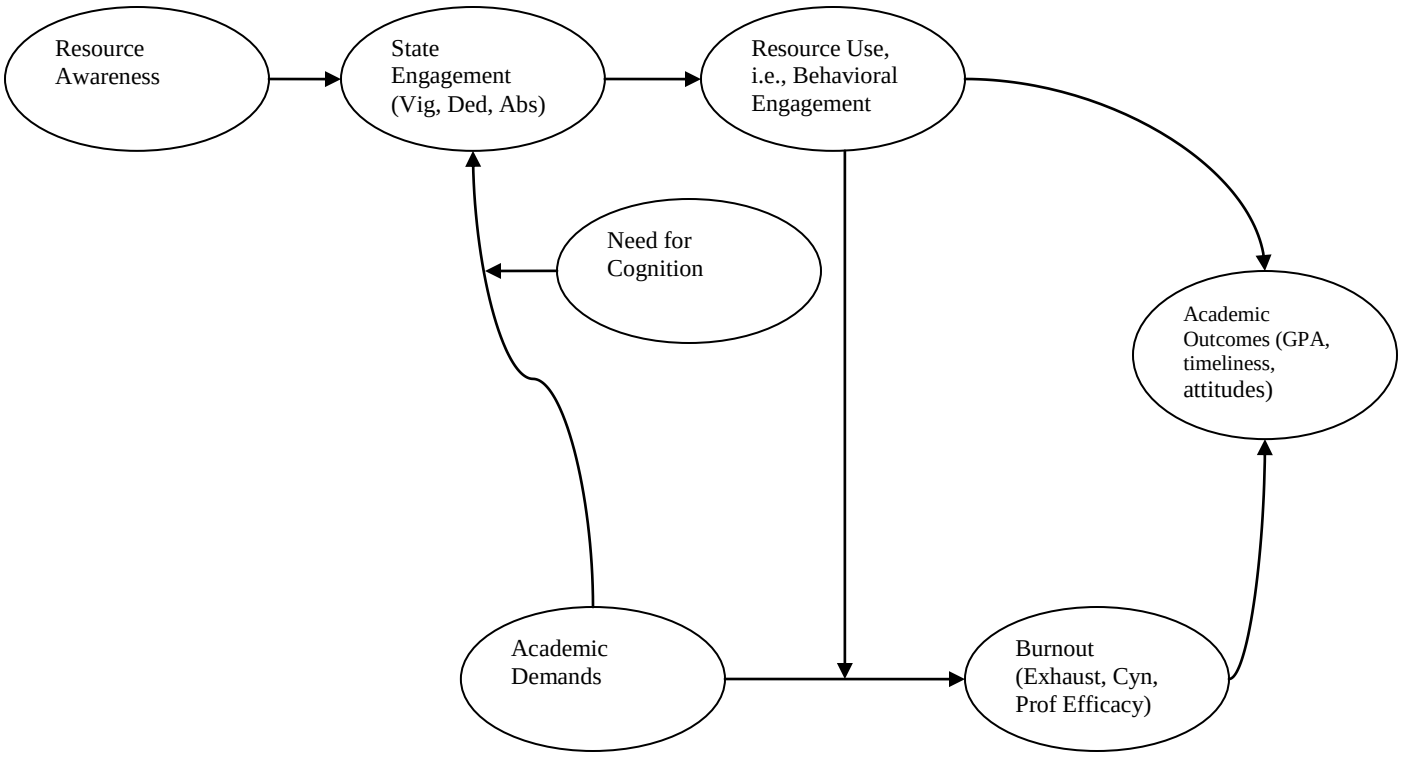

Figure 1: Proposed Model

CHAPTER 6: Method

Three hundred and forty-five students completed an online survey at on-campus computer labs. An initial group of 15 students pilot tested and provided feedback on the preliminary research survey, and this information was used to revise the resource awareness and use sections of the survey. Then, 330 students completed the revised survey in the main study. The final survey measured burnout, state engagement, need for cognition, academic demands, resource awareness, resource use, and academic outcomes (Appendix A).

Sample

The sample for this study consisted of 345 undergraduate students at an urban college in the northeastern United States. Students received one research participation credit for their participation in the study. In order to participate, students were required to have completed at least one semester at the college, to ensure that they had had an opportunity to adjust to college life and to learn about the kinds of resources that were available to them. It was also required that they be at least 18 years old.

Students were surveyed at on-campus computer labs, over a series of 12 lab sessions. The final sample size used for analyses was 310. The sample size decreased because some cases were dropped during data cleaning (to be described in the Results section), and some cases were dropped because no final grades could be retrieved from the Registrar for those cases. This sample size is appropriate for structural equation modeling (SEM) with complex models. According to Jaccard and Wan (1996), although procedures have been proposed to conduct power analyses specifically for SEM in order to determine the required sample size, in practice these procedures are impractical. They require the researcher to estimate the population values for all parameters in the model, and “two or three poor estimates can undermine the power

analysis. The situation is complicated by possible non-normality in the data that can adversely impact the power estimates," (pg. 71).

Therefore, Jaccard and Wan (1996) suggest employing a traditional power analysis for a hierarchical regression, in which an effect size estimate is defined for interaction terms as if they were additional predictors added to a main effect regression equation. The required sample size for a hierarchical regression with an alpha of .05, 10 predictors, two interactions, power of .8, and anticipated effect size of .10 (moderate effect size) for the interactions, is 200 cases (Judd & McClelland, 1989). Complex models such as the one tested in the current dissertation study require large sample sizes (Kline, 1998). A sample size of 200 (or higher) is considered to be a 'large' (Kline, 1998), and this number is typical of sample sizes used in organizational research, which are usually under 200 participants (Cortina, Chen, & Dunlap, 2001). Therefore, the final sample of 310 cases exceeds the minimum requirement for sample size to test a complex model.

Procedure

Students signed up for the study using the college's online participant pool management tool. Students were brought into on-campus computer labs. They were given the informed-consent form (Appendix B), which was also read aloud to them.

Pilot study. The preliminary survey was administered to an initial group of 15 students. Students were told that they were pilot testing the survey instrument that they were about to complete, and that they should provide feedback about the survey items using the feedback questions found at the end of each survey section. They were also told that they should stay after they completed the survey, because there would be a quick feedback discussion about the survey before they left. The URL to the Qualtrics-hosted survey was written on the whiteboard in the

room for participants to type into their browsers, and then they completed the survey. A 15 - minute feedback discussion followed.

The pilot survey contained two feedback questions at the end of each survey section. The first asked participants to rate the clarity of the items in the survey section, and the second was an open-ended question soliciting feedback from participants about the items in the section. In addition, there were two additional questions following the resource awareness/use section in the pilot survey. The first question was 'Are you aware of any other academic resources offered to you at Baruch College?' The second question was 'Are you currently using any other resources available to you at Baruch College?' In addition to these survey questions, participants provided feedback in the discussion following the pilot survey.

The discussion revealed that students were aware of and used a broader range of resources than initially included in the survey. Specifically, they mentioned student clubs, honors societies, and the gym. When it was suggested to them that these resources were not specifically intended to help them academically, the students pushed back and insisted that these resources were important to keeping them engaged, which in turn helped them academically. Feedback from the open-ended questions in the survey supported this. Therefore, the resource awareness and use measures were revised to include additional resources. The students did not have any feedback around the demands section of the survey, and agreed that the list was comprehensive.

Main study. One change was made in the procedure for the main study. Namely, during the pilot, participants experienced difficulty typing in the long strand of random characters that made up the Qualtrics URL. Even with the URL written on the whiteboard, it took students some time to get into the survey. Therefore, ShortURLs.com was used to create a short, five-

character URL for the study. This URL was printed on paper tabs. In the main study, upon arrival each student was handed the informed consent form and a short URL tab. They read and signed the informed consent, and then entered the short URL to begin the survey. They were allowed to leave upon completion.

Measures

The online survey was composed of the subscales described below. All of the measures were framed in the context of the participants' current semester. In other words, students were asked to think about their current semester, and to respond to the survey questions with regard to their current semester. The following order was used for the layout of the final survey: burnout, state engagement, need for cognition, resource awareness, resource use, demands (workload and difficulty), outcomes (satisfaction, punctuality, and grades – a question which dropped from the final analysis in favor of actual change in GPA, described later) and then a few background information questions, which were not used in the analyses. This order was chosen to minimize the possibility that certain items would bias responses to subsequent items. For example, if students were asked to first respond to questions about college resources, and especially to questions about their semester's workload and difficulty, later responses on burnout and state engagement questions might have been biased by the initial questions. Therefore, all of the affect and attitude items – burnout, engagement, and need for cognition - were placed first, followed by the more objective and potentially priming items about resource awareness and use, demands, and semester outcomes. Each survey section was headed with instructions, which explained the section and how to respond to the questions (see Appendix A). The measures used in the survey are described below.

Burnout. The Maslach Burnout Inventory – Student Form was used to measure burnout (Maslach, Jackson, & Leiter, 1997). This survey had 15 items (exhaustion – 5 items, personal efficacy – 6 items, and cynicism – 4 items). The MBI used a 7-point rating scale, from 'Always, every day,' to 'Never.' An example item is 'I feel emotionally drained from my studies.' When the MBI was first developed, it was described as a three-factor scale, supported by factor analysis (Maslach, Jackson, & Leiter, 1997). Subsequent studies have confirmed the same factor structure (Lee & Ashforth, 1996).

The total scale alpha-reliability for the MBI in the current sample was high, at .866. The subscales also had high alphas: exhaustion = .815, personal efficacy = .712, and cynicism = .898.

State engagement. State engagement was measured with the Utrecht Work Engagement Scale (UWES) – Student Form (Schaufeli & Bakker, 2003). This measure contained 17 items, broken out into three factors (vigor – 6 items, absorption – 6 items, and dedication – 5 items). The rating scale for the UWES was the same as the scale used for the MBI. An example item is 'I feel energetic and capable when I am studying or going to class.'

The total scale alpha-reliability was .91. The subscales also had acceptable alphas: vigor = .764, dedication = .790, and absorption =.811. The factors measured on the UWES were moderately to highly correlated with the factors measured on the MBI. See Table 1 for correlations. The correlations found in this study were very similar to the correlations reported by Schaufeli and Bakker (2003) in the manual for the UWES.

Table 1
Correlations between the Factors of State Engagement and Burnout

Variables	1	2	3	4	5
1 Vigor					
2 Dedication	.758**				
3 Absorption	.655**	.573**			
4 Exhaustion	-.457**	-.408**	-.186**		
5 Cynicism	-.514**	-.659**	-.354**	.590**	
6 Personal Efficacy	.482**	.574**	.500**	-.231**	-.409**

Note. N= 310; p < .01.**

Need for cognition. Need for cognition was measured with Cacioppo, Petty, and Feng Kao's (1984) 18-item Need for Cognition Scale Short-Form. This measure used a 4-point rating scale, from 'Strongly agree' to Strongly disagree'. An example item is 'I would prefer complex to simple problems.' The alpha coefficient for the total need for cognition scale was .841.

Development of new measures - resource awareness, resource use, and demands. Measures were developed to collect data on participants' resource awareness, resource use, and demands. The use of existing measures was not an option for measuring these constructs because the resources central to the study were the specific resources and programs offered by the college. Similarly, the demands questions needed to be phrased specifically for the current semester. The steps taken to develop these measures are described below.

Resource awareness and resource use. The first step in the development of measures of resource awareness and resource use was a search of the college's 'Student Resources' website. This website listed the SEEK program, the Honors College, other honors programs, the Writing Center, the Center for Academic Advisement, the STARR Career Development Center, the Academic Consulting Center, and various technology resources. The website described each resource in detail. However, questions still remained about the different aspects of each resource, and how frequently typical students used each resource. Therefore, the next step in developing the awareness and use measures involved interviews with Subject Matter Experts (SMEs), to obtain the answers to these questions. Specifically, the director of each resource was interviewed. Additionally, Introduction to Psychology professors were contacted to review the 'faculty interaction' resource and the demands questions. In total, eight SMEs were interviewed. Each SME was asked 'Tell me about your program – what services do you offer students? How often does the average student user use your resource per semester? How often do your most

frequent users use your resource per semester? How often do students who are minimally involved use your resource per semester?'

At the conclusion of this initial discussion, the SMEs were informed that the researcher would be drafting resource questions, including frequency of use rating scales and descriptions, based on the information they had just provided. The researcher asked the SMEs if they would agree to review and provide feedback on the questions, descriptions, and answer choices that would be drafted, and all agreed to do so. These reviews and revisions took place over email. Each director or professor reviewed one resource awareness question, and one or more resource use questions.

The pilot measure of resource awareness contained 14 questions, one for each of the following resources: faculty interaction, Writing Center, SEEK, Honors College, STARR Career Development Center, Student Academic Consulting Center, Center for Academic Advisement, laptop loan, computer labs, off-campus library access, wireless on campus, chat with a librarian service, on campus printing allocation, and formal or informal peer study groups. The pilot measure of resource use contained 18 questions, because some of the aforementioned resources were multifaceted. For multifaceted resources, multiple questions were included to fully measure use of those resources. For example, the Center for Academic Advisement had one awareness question, but two use questions – one for the walk-in/appointment academic planning services, and one for the academic worksheet tool, which they offer to students.

Based on feedback from the pilot study, additional resources were added to the awareness and use measures: Honors societies, leadership clubs, fraternities and sororities, and recreation facilities. In addition, the existing Honors College resource questions were expanded to include the MacCauley@Baruch program and the Baruch Scholars program.

The final resource awareness measure contained 18 items. An example item is 'How much do you know about the Writing Center?' The measure used a 5-point rating scale, from 'A substantial amount,' to 'Nothing, only what I've read above.' The alpha for the final resource awareness scale was high, at .879.

The final resource use scale had 22 items. The total number of resource use items was greater than the total number of resource awareness items because some resources were multifaceted, and students may have used some parts of these multifacted resource but not others. The SMEs suggested that breaking out the different facets of the resources was the most accurate way to construct the use scale. An example item is 'How involved with the Writing Center have you been this semester?' The measure used a 6-point rating scale, from 'Extremely involved' to 'Not involved.' Each point on the rating scale had a statement that followed the rating, to provide context to students with regard to what 'Extremely involved,' for example, might look like. These statements were developed with the help of SMEs. The alpha for the final resource use scale was high, at .829. It is important to note the usage rates of the resources captured in the survey during the study period. See Table 2, below, for usage rates.

Table 2
Resource Usage

Resource	Percent who used	Grouped into Factor
On-campus printing allocation	92%	Technology
On-campus computer labs	90%	Technology
On campus wireless network	90%	Technology
Faculty Interaction -Emailing professors and/or TAs	81%	Faculty Interaction
Studying with Peers	68%	Enrichment
Faculty Interaction -Visiting professors and/or TAs office hours	61%	Faculty Interaction
Center for Academic Advisement -Counseling, walk in questions	60%	Academic Advisement
Starr Career Development Center -Website with career tools	58%	Career Prep
Remote library access	58%	Academic Help
Starr Career Development Center -Counseling and Workshops	53%	Career Prep
Starr Career Development Center -Job/internship search tool	53%	Career Prep
Laptop Loan	51%	Technology
Recreation Facilities	48%	Enrichment
Other Undergraduate Clubs	47%	Enrichment
Center for Academic Advisement -Academic Worksheet	44%	Academic Advisement
Writing Center	41%	Academic Help
Academic Consulting Center (SACC)	40%	Academic Help
Honors Societies	28%	Enrichment
SEEK Program	27%	Academic Help
Leadership –Oriented Clubs	25%	Enrichment
Honors Program or Scholars Program	23%	Enrichment
Chat with a librarian	22%	Academic Help
Fraternities or Sororities	19%	Enrichment

Note. N = 310

Even though the resource awareness and resource use scales showed acceptable internal consistency, these constructs (along with difficulty, which will be discussed in an upcoming section) could be considered formative constructs. Formative constructs are constructs in which the individual indicators form the construct, rather than interchangeably reflect the construct.

Removing an indicator from a formative measure would fundamentally change the meaning of the construct being measured (Bollen & Lennox, 1991), because each indicator contributes something unique to the measurement of the construct. For example, the 'resource use' measure asked students about a series of discreet resources, none of which necessarily related to the other. For example, one would not expect that students that used laptop loan would necessarily have used the writing center. In comparison, reflective constructs follow the assumptions of classical test theory, in that the indicators of the construct reflect the same aspect of a construct. Therefore, internal consistency is a requirement for reflective measures, and items are more or less interchangeable. Dropping an indicator does not fundamentally change the nature of a reflective construct (Bollen & Lenox, 1991).

Without taking steps to address the identification of formative measures in Structural Equation Modeling (SEM), they are under-identified, and thus cannot be estimated in SEM (Bollen & Lennox, 1991). There are a number of controversial and not fully resolved issues concerning the conceptualization, estimation and validation of formative measures in SEM (Diamantopoulos, Riefler, & Ross, 2007). For example, although the LISREL program, which was used in the current study, was not designed to model formative constructs, it can be used to test MIMIC models (Multiple Indicators and Multiple Causes), in which two reflective indicators are added to the set of formative indicators (Jöreskog and Sörbom, 1996) in order to render the model identifiable. However, the current data set did not include reflective indicators of resource awareness, resource use, or difficulty, so the MIMIC procedure was not an option for analysis. Instead, a less sophisticated way of forming the resource awareness, resource use, and difficulty constructs was used. These constructs were represented as single-item constructs. In other words, overall scores were created to represent these constructs, ensuring that each item was

represented in the construct.

In order to prepare the resource awareness and resource use constructs for SEM, the items for each respective scale were converted into Z scores and then averaged into two overall scores. Z scores reflect the number of standard deviations that a point of data lays from the mean. Z scores were used in the computation of these variables because it was important to give participants credit for greater resource use compared to average use. In other words, all resources are not created equal, and spending 5 hours per week renting a laptop may be less intensive than spending 5 hours per week meeting with professors after class. This issue was addressed by using Z scores, as opposed to the raw ratings. The final resource awareness and use measures are found in Appendix A.

Demands (Workload and Difficulty). The initial measure of demands (workload and difficulty) was based on questions from the National Survey of Student Engagement (Kuh, 2001). The National Survey of Student Engagement (NSSE) is specifically designed to assess the extent to which students are behaviorally engaged in good educational practices as well as what they gain from their college experience (Kuh, 2001). Many colleges and universities use the NSSE to learn about the behavior of their students, including the college at which the current research was conducted. The NSSE has a section that asks students to indicate how many hours in a typical week they spend doing various activities. To develop the measure of workload used in the current study, seven questions from the NSSE that focused on academic tasks (e.g., writing assignments and reading assignments as opposed to attending on-campus theater events) were used. Instead of using a response scale, students were allowed to enter their actual estimates of number of hours per week spent on the various tasks during their current semester. Next, to measure the difficulty of students' semesters, for each academic demand pulled from the NSSE,

a second question was asked, which required students to rate how difficult each task had been during their current semester.

The draft demands items were reviewed by two Introduction to Psychology professors at the college at which the study was conducted. They agreed that the demands covered the academic demands space adequately. Finally, student pilot participants were offered the chance to provide feedback on these items during the pilot test. They did not have any suggestions or concerns around the demands questions.

The final workload measure contained seven open-ended questions, which asked for the number of hours per week participants spent performing different types of academic activities. An example item is 'About how many hours a week do you spend completing reading assignments for your classes this semester?' These data were summed into a total score, representing the total number of hours per week spent on academic activities. In addition to questions about number of hours per week spent on different types of academic activities, three additional questions were asked: How many hours a week do you spend working at a paid or unpaid job?; How many hours per week do you spend commuting to and from school?; How many hours per week do you spending taking care of family members? These questions were summed together and were used as a control variable in the structural model, representing non-academic demands that might impact students' attitudes and behavior.

The difficulty measure included seven items. An example item is 'How difficult are your reading assignments this semester?' The measure used a 5-point rating scale, from 'Very difficult' to 'Very easy,' with an additional 'Not applicable' choice. As mentioned in the discussion of resource awareness and resource use as formative constructs, difficulty was also a formative construct. In order to best represent this construct, a total difficulty score, the mean,

was calculated. This total score represents the average level of overall difficulty experienced by students during the target semester.

Academic Outcomes – Satisfaction, Punctuality, and Grades. The academic outcome measures included satisfaction and punctuality. These measures were developed for the current study, pulling from an existing measure (the National Survey of Student Engagement), and by interpreting constructs used in previous tests of the Job Demands-Resources Model, such as withdrawal, workplace attendance, and objective job performance, for a student sample. In addition, overall and semester GPA were collected for each participant at the end of the semester.

Satisfaction. The satisfaction scale consisted of three items that were taken and adapted from the NSSE (Kuh, 2001). An example item is 'How satisfied are you with your courses this semester?' This measure used a 5-point rating scale, from 'Very satisfied' to 'Very dissatisfied.' The measure had an alpha of .745.

Punctuality. The 'punctuality' questions, which focused on positive student behaviors, i.e., how often do you come to class late, how often do you turn in assignments late, how often do you miss class, were new items developed for this study. An example item is 'How punctual have you been to your classes this semester?' This measure used a 6-point rating scale, from 'Extremely punctual' to 'Extremely unpunctual.' The punctuality measure had marginal alpha reliability, at .667. This is most likely due to the small number of items in the scale (3 items). Some researchers deem this alpha level acceptable (i.e., Hair, Anderson, Tatham, & Black, 1998; Decker, 2012).

Change in GPA (Grades). Participants' semester GPA and cumulative GPA were collected from the Registrar following the end of the semester. The data point used in the study

was semester GPA minus cumulative GPA, representing change in GPA during the target semester. The rationale for creating the construct in this manner was that semester performance, and not general academic ability, was at the focus of this study. More specifically, because the UWES and the MBI measured state engagement and state burnout, it was important to isolate and separate current semester performance from general or typical performance. By subtracting students' semester GPA from their cumulative GPA, the resulting number reflected the degree to which their grades had improved or worsened during the target semester as compared to their own average performance. This controlled for students' overall academic ability. In other words, a certain proportion of a semester GPA is due a student's overall academic ability. A high-performing student will generally receive good grades from semester to semester, but GPA will fluctuate from semester to semester, presumably due to differing levels of demands and subsequent engagement and burnout between individual semesters. Such fluctuations were the data point of interest to the current study.

CHAPTER 7: Results

In order to test the proposed hypotheses, structural equation modeling (SEM) and moderated structural equation modeling (MSEM), were used. SEM was chosen for several reasons. First, the various relationships proposed can be tested simultaneously. Second, this method allows the researcher to assess and correct for measurement error. Third, SEM provides statistics that reflect how well the data fit the proposed model (Kline, 1998).

In order to prepare the data for SEM and MSEM, the data were cleaned. Next, Exploratory Factor Analysis was used to understand the relationship between state engagement and burnout, which led to revision of the indicators of state engagement and burnout. Next a measurement model was tested and revised. Then the proposed structural model was tested and revised. Finally, additional models were created to test the mediation and moderation hypotheses.

Data Preparation and Cleaning

Missing data were analyzed using Little's MCAR Test in SPSS, and it was determined that the pattern of missing data was completely random. In fact, the SPSS output indicated the entered variables had less than 5% missing data. Missing data were addressed before importing the data into LISREL. When LISREL encounters missing data, it runs the EM algorithm to impute missing values. However, once this has been done by LISREL, any subsequent model fitting tests using variables with imputed values will only report the chi-square and RMSEA statistics. Other fit indices will not be reported. Therefore, the EM algorithm (Tabachnik & Fidell, 2007) was performed in SPSS, to impute missing values for variables with scales. For the open-ended variables (workload and the control variable) imputation was not used. Instead,

these missing data were treated as zeros and were summed into the total scores for those variables.

In order to reduce the complexity of the data to be entered into LISREL, factor-based parcel composites were formed for need for cognition (Bagozzi & Edwards, 1998). Parceling involves summing or averaging two or more items and using the scores as the unit of analysis, such as an indicator in a model (Bandalos & Finney, 2001). Parcels create distributions that are more normally distributed and continuous, reduce the measurement error, and may have higher reliability than individual items (Bagozzi & Edwards, 1998; Bandalos & Finney, 2001; Little, Cunningham, Shahar, & Widaman, 2002). Items can be parceled randomly or based on theory (Little et al., 2002). Since the need for cognition scale has been repeatedly demonstrated to have a one-factor structure (Cacioppo, Petty, & Feng Kao's, 1984), random parceling was used to create three parcels for this single latent construct. Specifically, every third item was selected, for a total of three parcels. Each parcel was the mean of the items that were assigned to that parcel. The reliability of these composites as indicators is .849. Note that a relatively small number of parcels were created – three in this case. Generally, the literature around parceling suggests a few more parcels - four or five ideally (Bagozzi & Edwards, 1998). However, increasing the number of parcels increases the complexity of the measurement model, which increases the likelihood of inflated fit statistics. A greater number of parcels may also lead to identification problems. Therefore, the number of parcels created for need for cognition was kept small. The final 17 need for cognition items, divided into three parcels, are found in Appendix D.

Once parcels were created, they, along with the rest of the data, were checked for normality, skew, and kurtosis. To check for normality, p-plots were observed and skew and

kurtosis metrics were analyzed. Skew and kurtosis values of below absolute value 3 for skew and below absolute value 10 for kurtosis were deemed normal (Klein, 1998). The skew and kurtosis values analyzed during data screening were well below those upper-limits for all measures except for workload and the workload control variable (number of hours spent caretaking, commuting, and working a job). Because these two measures were significantly positively skewed, the data were transformed using a natural log function, as described by Kline (1998). Finally, the data were checked for univariate outliers and multivariate outliers. To check for univariate outliers, composite scores were converted to Z scores. Z scores that were greater than absolute value of 3 were suspected of being outliers. Five cases that seemed truly outside the range of responses for the rest of the sample were deleted. To check for multivariate outliers, Mahalanobis' Distance, D^2, was calculated. A case would have been suspected to be a multivariate outlier if the probability associated with its D^2 is 0.001 or less. No multivariate outliers were detected. Once outliers were deleted, reliabilities for the parcel-level indicators were re-checked.

Finally, the data were checked for multicolliniarity, using the colliniarity statistics option in SPSS. All tolerance values were above .1, and all VIF values were under 10, suggesting that multicolliniarity was not an issue in this data set (Kline, 1998).

Exploratory Factor Analyses

An Exploratory Factor Analysis using ML estimation with direct oblimin rotation was conducted to identify the factor structures that underlay the burnout and engagement scales. EFA helped to determine which items should be grouped together as indicators of these latent constructs.

Burnout and state engagement. Exploratory Factor Analysis (EFA) of the MBI suggested that a three-factor structure best fit the data. The items loaded on their expected factors. That is, exhaustion items formed one factor, cynicism items formed one factor, and personal efficacy formed one factor. However, unlike the EFA for the MBI, the EFA of the UWES did not support earlier research that suggested that state engagement is best described as a three-factor construct. EFA of the UWES resulted in four factors rather than three. Furthermore, the item loadings on the four factors were difficult to interpret, and not as expected. Vigor, dedication, and absorption items were scattered across all four factors, and cross-loaded on multiple factors.

In order to better understand the nature of the state engagement and burnout constructs, an EFA was conducted which included the burnout and state engagement items together. The results of this factor analysis can be found in Appendix C, including factor loadings, eigenvalues, and factor intercorrelations. The goal of this EFA was to clarify the relationships between the different facets of the MBI and the UWES. The results of this factor analysis shed some light on the difficult-to-interpret EFA of state engagement alone. As is shown in Appendix C, most of the dedication items from state engagement loaded on a factor with cynicism from burnout. Other state engagement items – a dedication item and some of the vigor items – loaded on a factor with the personal efficacy items from burnout. Exhaustion from burnout loaded on its own factor, with one dedication item (from state engagement). Most of the vigor items from state engagement (except for those that loaded with personal efficacy) loaded on their own factor, with a few on the absorption factor, and the absorption items from state engagement loaded on their own factor with a few on the vigor factor.

The interpretation of this EFA is that there are two clear burnout factors: exhaustion and cynicism. The personal efficacy dimension was made up of just as many state engagement items as burnout items, and the personal efficacy composite was highly correlated with both state engagement and burnout factors (see Table 1, in the Measures section, for correlations). Therefore, the results of this factor analysis did not clarify whether personal efficacy was part of state engagement or burnout. Although theory suggests that it belongs with burnout, this has been disputed in the literature (Lee & Ashforth, 1996). Because of these results regarding personal efficacy, this subscale was dropped from the burnout construct for all subsequent analyses.

Next, it is not surprising that the dedication items (from UWES) negatively loaded with the cynicism items, because the dedication items from the UWES are reworded items taken directly from the MBI (Schaufeli & Bakker, 2003). This represents an area of conceptual overlap that suggests that the UWES and the MBI do not measure completely distinct constructs. Therefore, revisions to these subscales were made.

First, the dedication items were removed as a subscale for engagement, and added to the cynicism subscale for burnout. This was done because dedication and cynicism items loaded on one clear factor. Two dedication items were excluded, because they did not load on this factor (these items were 'I am proud of my studies,' which loaded on the personal efficacy factor at .595, and 'To me, my studies are very challenging,' which had its highest loading, .469, on the exhaustion factor). Since burnout precedes engagement in the literature, this dedication/cynicism dimension was assigned to burnout, for which they were originally conceptualized.

Burnout thus had two indicators in the current study – exhaustion, and cynicism (which included the dedication items). Exhaustion was composed of 6 items – the original exhaustion scale of the MBI, and cynicism was composed of 7 items – the original cynicism scale from the MBI (5 items) and three dedication items (dedication items 3 thru 5: 'I find my studies full of meaning and purpose,' loading = .568; 'I am enthusiastic about my studies,' loading = .500; 'My studies inspire me,' loading = .471). State engagement was left with two factors – vigor and absorption. The assignment of individual items to one of the two state engagement factors was guided by the aforementioned EFA, rather than by the labels that the authors of the UWES originally assigned the individual items. This resulted in the exclusion of two vigor items, because those items strongly loaded on the personal efficacy factor ('As far as my studies are concerned, I always persevere,' .692; 'I am resilient mentally, as far as my studies are concerned,' .603), and it resulted in the reassignments of a vigor items to the absorption factor, an absorption item to the vigor factor. Specifically, the absorption item 'I feel happy when I am studying intensely' loaded on the vigor factor at .687, and the vigor item 'I can continue studying for very long periods at a time' loaded on the absorption factor at .654. Therefore, vigor had 4 items, and absorption had 6 items. Again, please refer to Appendix C for all factor assignments and loadings.

Single latent variables with indicators based on the aforementioned EFA were created for state engagement and burnout for subsequent analyses. The decision to model state engagement and burnout as single latent variables with factor-based indicators was modeled after Salanova, Agut, and Peiro (2005), who used a single latent variable for engagement with three indicators in their research model. Schaufeli and Bakker (2003) suggest that using these constructs as single

variables is acceptable, based on the nature of one's hypotheses and whether one has specific predictions about the different factors of the constructs or not.

The alpha internal consistency of state engagement, represented by two composite indicators (revised factor alphas: vigor = .822, absorption = .803) was high. Total scale alpha based on the composite indicators equaled .783. Note that although the total scale alpha decreased a little from the alpha before item reassignment and creation of factor composites, probably due to a decrease in the number of items included in the alpha analysis, the alphas for the individual factors actually improved because of the EFA item reassignments and eliminations. The reliability of burnout, represented by two parcel composite indicators (revised factor alphas: exhaustion = .812 and cynicism/dedication = .892) was also acceptable, with an alpha of .767.

Test of the Measurement Model

The test of the proposed model proceeded in two steps. First, the adequacy of the measurement model was tested, and then the adequacy of the proposed structural model was tested. It is important to retain a good fitting measurement model before adding structural paths, as it sets the upper bound for the fit of the structural model. By using a two-step approach to model testing, misspecification errors can be determined, and the fit of the measurement model can be improved, before the hypothesized relationships are tested (Kline, 1998).

The proposed measurement model was created and tested in LISREL, according to the Confirmatory Factor Analysis (CFA) procedure outlined in Kline (1998). The purpose of testing the measurement model is to confirm the relationships between the latent variables and their indicators, before moving on to testing the structural model. Eleven latent variables were created: state engagement with 2 indicators, resource use with a single indicator, burnout with 2

indicators, the outcome variable punctuality with 3 indicators, the outcome variable satisfaction with 3 indicators, resource awareness with a single indicator, need for cognition with 3 indicators difficulty with a single indication, change in GPA as a single indicator, workload with a single indicator, and workload control with a single indicator. Though the single item variables had fixed loadings (1) and error variances (0) (Kline, 1998; Bell & Kozlowski, 2008), they were included in the measurement model order to be able to assess the correlation of these variables with other constructs, and to assess the discriminant validity of all constructs. Each latent variable with multiple indicators was scaled by fixing the variance of one indicator per factor to 1 (Kline, 1998).

The fit indices chosen for this CFA and for subsequent model tests were Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Standardized Root Mean Squared Residuals (SRMR), and chi-square difference to test model improvements. These metrics were chosen based on Kline (1998), who advocates the use of the chi-square test, the RMSEA, the CFI and the SRMR. Kline suggests that researchers should choose a combination of incremental (meaning best fit is 1, and acceptable fit is .90 or higher, such as CFI) and absolute (meaning best fit is 0, and acceptable fit is .06 or lower in the case of RMSEA, and .08 or lower in the case of SRMR (Hu & Bentler, 1999)), as well as a combination of indices in which some indices describe the overall proportion of explained variance (RMSEA and CFI), and others adjust the proportion of explained variance for model complexity (SRMR). The chi-square test is reported as well, but should be evaluated with caution, because it is sensitive to sample size, especially in samples larger than 200 (Kline, 1998). The chi-square difference test was used to evaluate the significance of model improvement (Kline, 1998). This test involves calculating the differences between the chi-square values and degrees of freedom of two

comparison models, and then looking up the critical chi-square value based on the difference in degrees of freedom, to determine if the difference in fit between the two models is significant. In general, good fit is indicated by favorable values on multiple fit indices (Kline, 1998).

The proposed measurement model fit the data well, as shown in Table 3. The SRMR was acceptable at .06, the RMSEA was acceptable at .05, and the CFI was acceptable at .93. Thus, this measurement model was used in subsequent procedures. See Figure 2 for a diagram of the measurement model. The factor loadings for the measurement model are shown in Table 4, and the correlations between the constructs are shown in Table 5, on the following pages.

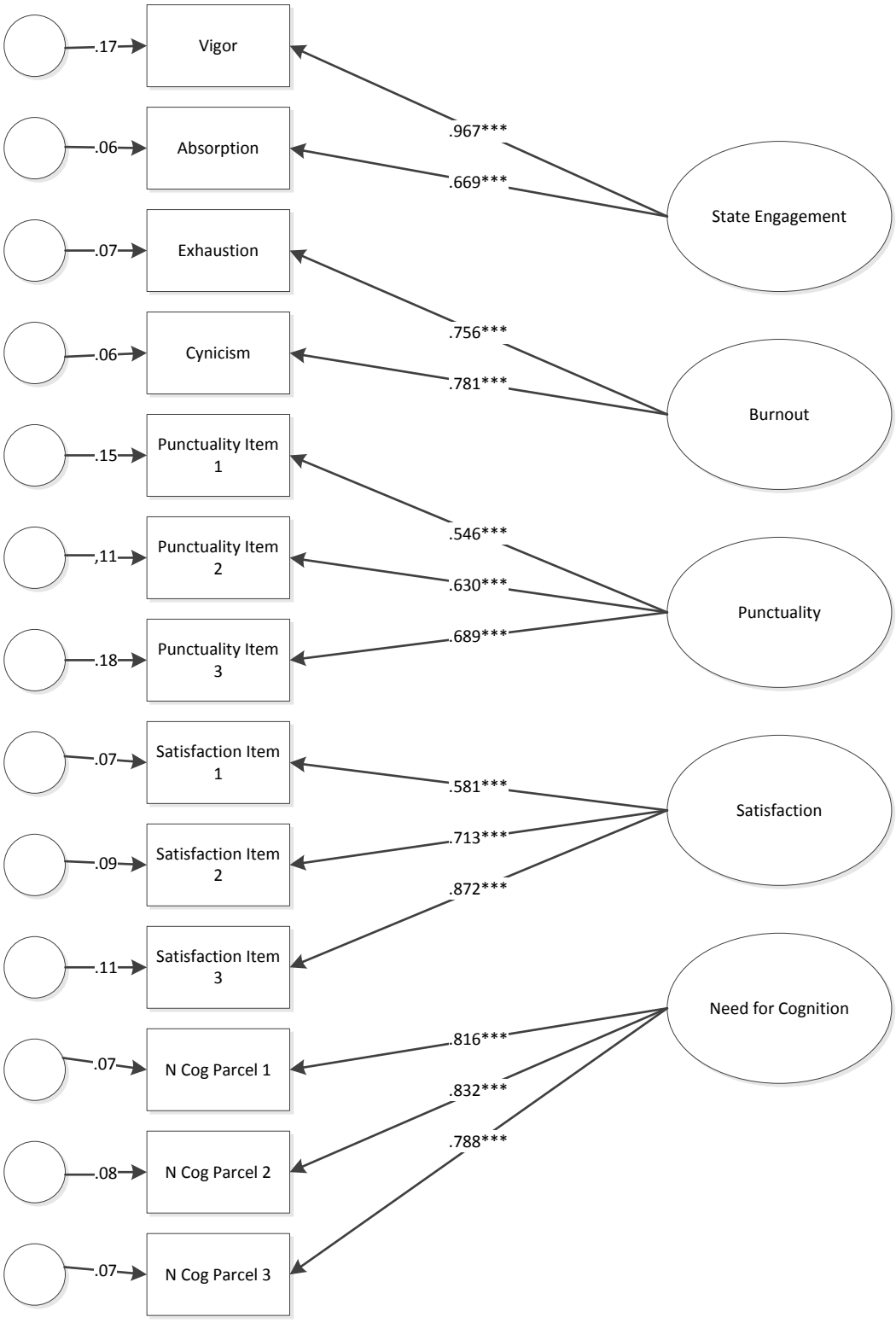

Figure 2. Measurement Model with Standardized Coefficients

Table 3
Chi-square Statistic and Fit Indices for the Measurement Model

Index	Value
Chi-square	492.09
Degrees of freedom	257.00
Sig.	.00
Comparative fit index (CFI)	.93
Root mean squared error of approximation (RMSEA)	.05
Lower bound of 90 percent confidence interval	.05
Upper bound of 90 percent confidence interval	.06
Standardized root mean square residual (SRMR)	.06

Note. N = 310

Table 4
Standardized Coefficients for the Revised Measurement Model

Path	*Standardized*	*SE*	*T*
State engagement to:			
Vigor	0.967	0.169	9.7***
Absorption	0.669	0.063	9.639***
Burnout to:			
Exhaustion	0.756	0.07	11.68***
Cynicism	0.781	0.063	9.7***
Punctuality to:			
Punctuality Item 1	0.546	0.15	6.48***
Punctuality Item 2	0.63	0.118	6.715***
Punctuality Item 3	0.689	0.18	6.715***
Satisfaction to:			
Satisfaction Item 1	0.581	0.07	9.09***
Satisfaction Item 2	0.713	0.09	10.44***
Satisfaction Item 3	0.872	0.11	10.438***
Need for Cognition to:			
N. Cog Parcel 1	0.816	0.07	14.635***
N. Cog Parcel 2	0.832	0.076	14.261***
N. Cog Parcel 3	0.788	0.07	14.261***

Note. N = 310; * = $p < .05$, ** = $p < .01$, *** = $p < .001$

Table 5
Correlations between the Constructs

	1	2	3	4	5	6	7	8	9	10
1. State Engagement										
2. Resource Use	0.21***									
3. Burnout	-0.64***	-0.01								
4. Punctuality	0.16**	0.12	- 0.26***							
5. Satisfaction	0.22***	-0.02	-0.43***	0.11						
6. Change in GPA	0.12*	0.00	-0.23***	0.10	0.29***					
7. Difficulty	0.03	0.11*	0.28***	0.13*	-0.20***	-0.15**				
8. Workload	0.13*	0.22***	-0.04	0.29***	-0.11*	0.03	0.30***			
9. Control	0.04	-0.02	-0.17**	-0.04	0.01	0.00	0.00	0.01		
10. Need for Cognition	0.34***	0.13*	-0.41***	0.06	0.14*	0.06	-0.17**	0.11*	0.01	
11. Resource Awareness	0.14*	0.65***	-0.1	0.16*	0.04	0.00	0.01	0.24**	-0.08	0.15

Note. N = 310; * = $p < .05$, ** = $p < .01$, *** = $p < .001$

Test of the Structural Model

Next, the proposed structural model (depicted in Figure 3 in a VISIO diagram instead of LISREL for ease of interpretation) was tested. Note that the hypothesized moderated paths were not included in the proposed or revised structural models (i.e., the interaction terms for demands X need for cognition, and resource use X demands). This is because the MSEM procedure used to test these moderation hypotheses required fixing the parameters of the involved variables in a way that was not ideal for testing the non-moderation hypotheses. Therefore, the moderation tests were run on separate structural models, following the procedure outlined by Mathieu, Tannenbaum, and Salas (2001).

Initially, the proposed structural model did not fit the data well, as shown in Table 6. The RMSEA was a high at .10, the CFI was low at .80, and the SRMR was high at .12. Since the proposed structural model did not fit the data well, it was revised. The modification indices for the proposed structural model were reviewed, in order to identify potential additions to the model that might improve fit. However, only those additional paths that would make sense based on previous research were added to the model. Kline (1998) states that the use of modification indices in model building is controversial, as it is more likely to capitalize on chance than a purely theory-driven approach to model building. Kline states that this is particularly an issue when the "automatic modification" option that is available in many statistical programs is used. Therefore, a combination approach was taken in the current study, in which the modification indices were used to flag potentially important paths, but theory was used to make the final decision as to whether or not to add a path. According to Kline (1998), the appropriate test to determine whether adding and deleting paths significantly improves the

model is the chi square difference test. This test was used at each step to respecify the proposed structural model.

First, a direct path was added from resource awareness to resource use. Theoretically, students must be aware of the resources that they use, thus awareness occurs first and leads to resource use. The addition of this path lowered the chi square by 119.7 points, and this change was significant at .001 level ($\Delta\chi^2$ (1) = 119.7, $p < .001$). Next, the error covariance of state engagement and burnout was set free to covary. The covariance of error terms was allowed due to a suspected methodological issue in the measurement of state engagement and burnout. The state engagement and burnout scales were placed in the same survey subsection, directly following one another. In addition, the rating scales for these two constructs were exactly the same. Finally, as discussed in the Measures section, these two constructs were significantly correlated, even after an attempt was made to reduce the correlation between them by moving engagement's dedication items over to burnout, where they shared a common factor with burnout's cynicism items. The chi square value dropped by 94.94 points by setting this covariance free, and this was significant at the .001 level ($\Delta\chi^2$ (1) = 94.94 , $p < .001$).

Next, a direct path was added from workload to punctuality, indicating a direct effect between these two constructs that was not hypothesized. However, this path made sense: students who reported spending more time working on the academic tasks that were asked about in the workload measure were more likely to attend class and arrive on time, and to turn assignments in on time. The chi square value dropped by 18.71 points, which was significant at the .001 level $\Delta\chi^2$ (1) = 18.71, $p < .001$. Finally, a direct path was added from need for cognition to state engagement. This relationship was supported theoretically as well. Macey and Schneider (2001) outlined a theoretical model of the different forms of engagement. In this

model, personal traits that predispose one to engagement lead to state engagement, which leads to behavioral engagement. Need for cognition is a trait that would predispose students to becoming engaged in academic work. In fact, Cole and Korkmas (in press) reported the same finding in their recent article that linked need for cognition to state engagement measured by the UWES. The chi square dropped by 10.7 points, which was significant at the .01 level $\Delta\chi^2$ (1) = 10.7, $p < .01$.

The revised structural model is depicted in Figure 4 (also shown in VISIO). The chi-square statistic and the fit indices are summarized in Table 6 and the path coefficients are shown in Table 8. The revised model fit the data better than the proposed model. First, the CFI was acceptable at .928, the RMSEA was low and acceptable at .060, and the SRMR was also low and acceptable at .068. Further, the change in chi-square between the proposed and the revised structural model was statistically significant, $\Delta\chi^2$ (4) = 291.542, $p < .001$. Thus, this structural model was used in subsequent tests of mediator and moderator effects.

Table 6
Chi-square Statistic and Fit Indices for the Structural Models

Index	Proposed	Revised
Chi-square	583.204	291.662
Degrees of freedom	137	133
Sig.	.00	.00
Comparative fit index (CFI)	.80	.928
Root mean squared error of approximation (RMSEA)	.10	.060
Lower bound of 90 percent confidence interval	.09	.051
Upper bound of 90 percent confidence interval	.10	.070
Standardized root mean square residual (SRMR)	.12	.068

Note. N = 310; Critical χ^2 (4) = 18.47, $p < .00$

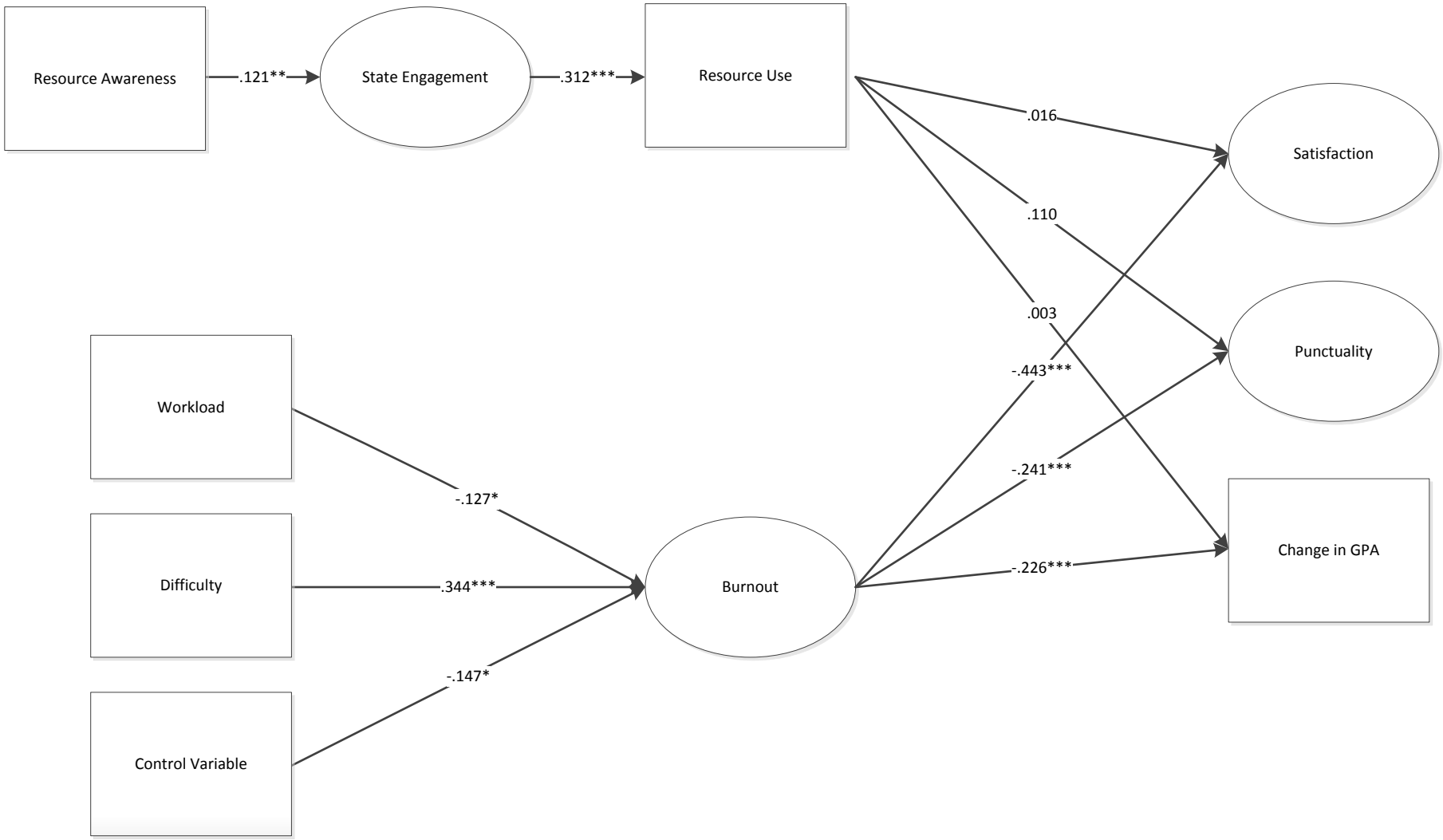

Figure 3. Results for the proposed structural model (with standardized coefficients).

Table 7
Standardized Coefficients for the Proposed Structural Model

Path	*Standardized*	*SE*	*T*
Difficulty to burnout	0.344	0.106	5.02***
Workload to burnout	-0.127	0.264	-1.94*
Control variable to burnout	-0.147	0.119	-2.35*
State engagement to resource use	0.312	0.043	4.51***
Resource use to punctuality	0.11	0.091	1.62
Resource use to satisfaction	-0.016	0.09	-0.268
Resource use to GPA	0.003	0.41	0.047
Burnout to punctuality	-0.241	0.058	-2.98**
Burnout to satisfaction	-0.443	0.063	-5.91***
Burnout to GPA	-0.266	0.026	-4.038***
Resource awareness to state engagement	0.121	0.062	2.92**

Note. N = 310; * = $p < .05$, ** = $p < .01$, *** = $p < .001$

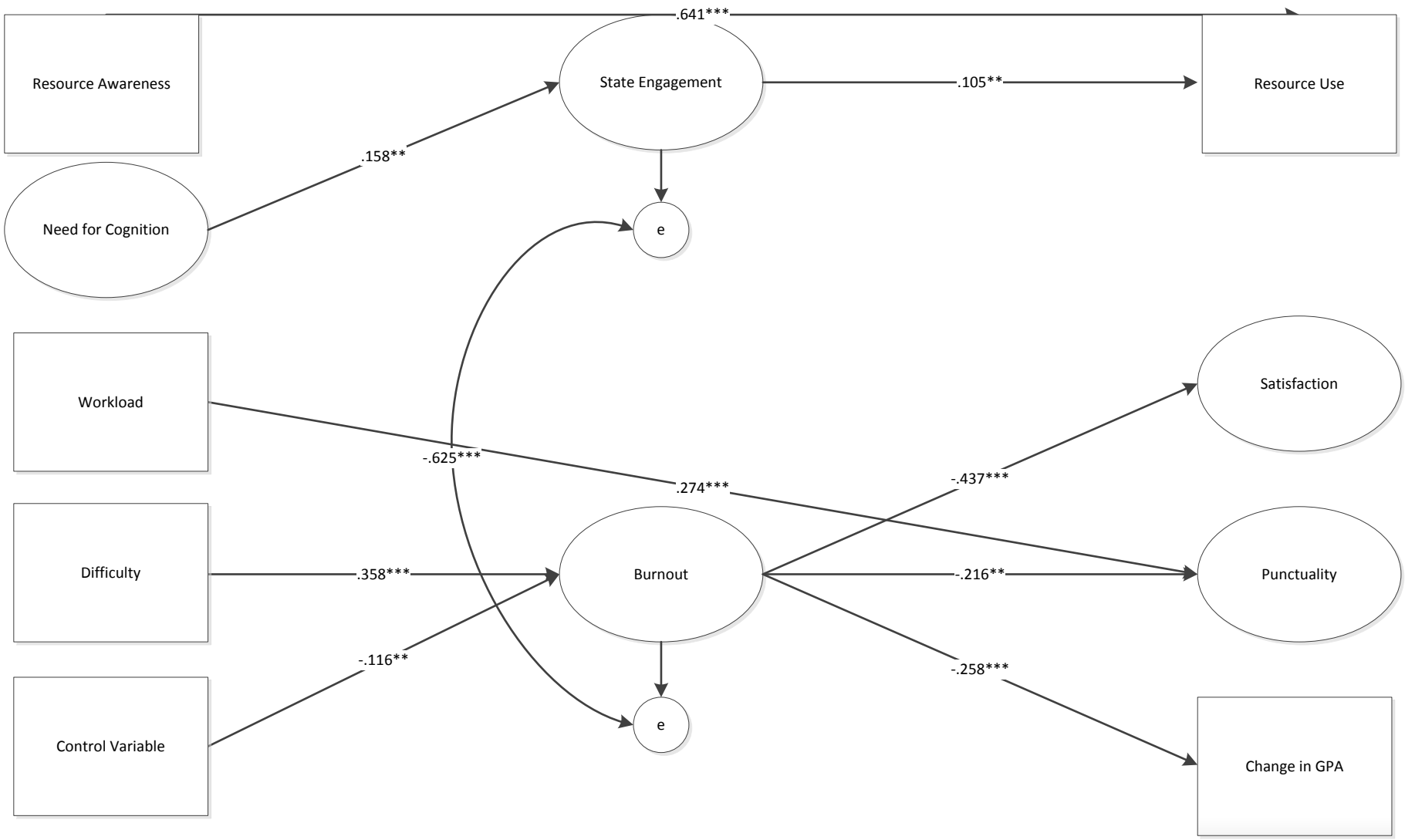

Figure 4. Results for the revised structural model (with standardized coefficients, non-significant paths not shown).

Table 8
Standardized Coefficients for the Revised Structural Model

Path	*Standardized*	*SE*	*T*
Difficulty to burnout	0.358	0.09	6.193***
Control variable to burnout	-0.116	0.1	-2.215**
State engagement to resource use	0.105	0.036	2.437**
Burnout to punctuality	-0.216	0.053	-2.803**
Burnout to satisfaction	-0.437	0.59	-6.140***
Burnout to GPA	-0.258	0.025	-4.066***
Resource awareness to state engagement	0.06	0.049	1.243
Error covariance of state engagement to burnout	-0.625	0.108	-8.641***
Workload to punctuality	0.274	0.198	3.901***
Need for cognition to state engagement	0.158	0.036	2.834**
Resource awareness to resource use	0.641	0.036	14.916***
Workload to burnout	-0.075	0.226	-1.342
Resource use to punctuality	0.043	0.088	0.630
Resource use to satisfaction	-0.026	0.091	-0.454
Resource use to GPA	-0.006	0.041	-0.065

Note. N = 310; * = $p < .05$, ** = $p < .01$, *** = $p < .001$

Tests of the Hypotheses

Direct relationships. Hypotheses 1 stated that resource awareness would be directly and positively related to state engagement. Hypothesis 1 was not supported. Resource awareness did not have a positive, direct effect on state engagement (Standardized Coefficient = .060, *T* = 1.243). However, resource awareness had a strong, positive direct effect on resource use (Standardized Coefficient = .641, $p < .001$). This was not a hypothesized relationship, although it made theoretical sense – students must be aware of the resources that they are using. Hypothesis 2 stated that state engagement would be positively related to resource use. This hypothesis was supported. State engagement had a positive direct effect on resource use (Standardized Coefficient = .105, $p < .01$). This supports Macey and Schneider's (2008) suggestion that state engagement leads to behavioral engagement.

Hypothesis 4 stated that demands (difficulty and workload) would be directly and positively related to burnout. This hypothesis was partially supported. In support of hypothesis 4, the path between difficulty and burnout was positive and significant (Standardized Coefficient = .358, $p < .001$) indicating a direct effect. This means that the greater difficulty students experienced, the more burned-out they felt. However, the path between workload and burnout was not significant, and it was negative (Standardized Coefficient = -.075, T= -1.342). Interestingly, the 'control' workload variable, which was the summed hours per week that students spent on commuting, working a job, and caretaking, did have a significant direct relationship to burnout, also in the negative direction (Standardized Coefficient = -0.116, $p<.01$). This is means that students who reported spending more time on non-school responsibilities reported less burnout. Explanations for this finding will be discussed in the discussion section.

Finally, additional direct relationships were included in the revised structural model based on the modification indices and theoretical considerations, even though they were not hypothesized. First, workload had a direct, positive effect on punctuality (Standardized Coefficient = 0.274, $p < .001$). This means that students who reported spending more time per week in classes, working on assignments, studying, etc., were more likely to attend class, arrive to class on time, and turn in assignments on time. Many of the demands included in the workload measure were on-campus demands, placing the students who used them on campus, which would theoretically cause them to be more punctual.

Next, need for cognition had a direct positive effect on state engagement (Standardized Coefficient = 0.158, $p < .01$). This means that students with high need for cognition felt more engaged in their school work. This is consistent with the finding reported by Cole and Korkmas (in press), and it is also consistent with Macey and Schneider's (2008) theoretical model of types of engagement, which places personal traits that predispose the individual to becoming engaged as antecedents to state engagement.

Tests of the mediation hypotheses (hypotheses 3, 5 – 10). According to Hopwood (2007), mediation consists of a case in which a third variable is a pathway for the effect of a predictor on an outcome. For example, in the current study, resource awareness was found to have a direct effect on resource use. This study predicted that a third variable, state engagement, would explain much of this relationship – that resource awareness would result in state engagement, and through this relationship, awareness of resources would lead to use of resources. Baron and Kenny (1986) proposed four steps for testing mediation using hierarchical regression. First, there must be a significant relationship between the predictor variable (e.g., resource awareness) and the outcome variable (e.g., resource use). Next, there must be a significant relationship between

the predictor variable and the mediator variable (e.g., resource awareness and state engagement). Next, there must be a significant relationship between the mediator and the outcome after the predictor has been controlled for. Finally, to establish full mediation of the relationship between the predictor and the outcome, the effect of the predictor on the outcome, controlling for the relationship between the mediator and outcome, should be zero. If this effect is significantly diminished, but not zero, then partial mediation is suspected (Hopwood, 2007). Most contemporary researchers believe that the essential steps in establishing mediation are steps 2 and 3 (establishing the relationship of the predictor to the mediator, and the relationship of the mediator to the outcome), (Hopwood, 2007). If these two steps are not satisfied, then mediation cannot be established.

In regression, the above steps are used to detect mediation. A concern surrounding this approach is that the significance of the mediation effect, or indirect path, is directly not tested. The SEM approach to testing for mediation generally uses Baron and Kenny's (1986) criteria to guide mediation testing, but it also focuses on determining the significance of the indirect effect, in order to establish mediation (Cheung & Lau, 2008). The indirect effect is equal to the total effect of the predictor variable on the outcome variable minus the direct effect of the predictor variable on the outcome (Cheung & Lau, 2008). SEM programs estimate these values, along with the significance level of these relationships, automatically.

The mediating effect of state engagement on the relationship between resource awareness and resource use (hypothesis 3).

Hypothesis three stated that the relationship between resource awareness and resource use would be mediated through state engagement. Although resource awareness did significantly predict resource use, resource awareness did not have a significant direct effect on

state engagement. Thus, the second condition of Baron and Kenny's (1986) requirement was not met. Therefore, mediation of resource awareness through state engagement could not be established.

The mediating effect of resource use on the relationship between state engagement and outcomes (hypotheses 5 – 7). Hypotheses 5 through 7 focused on resource use as a mediator between state engagement and outcome variables. Specifically, resource use would mediate the positive relationship between state engagement and change in GPA; resource use would mediate the positive relationship between state engagement and satisfaction; and resource use would mediate the positive relationship between state engagement and punctuality.

As discussed earlier, state engagement did significantly predict resource use (Standardized Coefficient = .105, $p < .01$). However, resource use did not have a significant direct effect on any of the outcomes, nor did state engagement have a significant direct effect on any of the outcomes (state engagement to punctuality: Standardized Coefficient = -.04 standardized, T = -.0.385; state engagement to satisfaction: Standardized Coefficient = -.135, T = -1.43; state engagement to change in GPA: Standardized Coefficient = -.121, T = -1.391) Therefore, Baron and Kenny's (1986) first and third requirements for mediation testing were not met. Thus, mediation could not be established, and hypotheses 5 – 7 were not supported.

The mediating effect of burnout on the relationship between demands and outcomes (hypotheses 8 – 10). Hypotheses 8 through 10 focused on burnout as a mediator between demands (difficulty and workload) and outcomes. Specifically, it was predicted that burnout would mediate the relationship between demands and change in GPA, burnout would mediate the relationship between demands and satisfaction, and burnout would mediate the relationship between demands and punctuality. Burnout had strong, significant negative direct effects on

punctuality (Standardized Coefficient = -.216, $p < .01$), change in GPA (Standardized Coefficient = -.258, $p < .001$), and satisfaction (Standardized Coefficient = -.437, $p < .001$). However, workload did not have a significant direct effect on burnout. Thus, Baron and Kenny's (1986) second step was not met, and so the mediation of workload and outcomes through burnout could not be established. However, difficulty did have a significant positive direct effect on burnout, as reported earlier. Therefore, mediation could be tested for the relationships between difficulty and outcomes.

To establish the mediating effect of burnout on the relationship between difficulty and the three outcomes, three structural models were created, each with a direct path from difficulty to one of the three outcomes. Then, the total and indirect effects were run in LISREL.

The findings in Table 9 reveal the total, direct, and indirect effects for difficulty on the three outcome variables. First, difficulty had a significant positive direct effect on punctuality (Standardized Coefficient = .136, $p < .05$). This means that the more difficulty students experienced, the more punctual they were in terms of coming to classes, making it on time, and turning assignments in on time. However, the indirect effect of difficulty on punctuality was significant in the negative direction (Standardized Coefficient = -.092, $p < .01$). In addition, because of this sign change, the total effect of difficulty on punctuality was not significant (Standardized Coefficient = .037, T = .616). Little, Card, Bovaird, Preacher, and Crandall (2007) identify this type of mediated relationship as a suppression effect, or inconsistent mediation. Within a mediation model, a suppression effect is present when the direct and mediated effects of an independent variable on a dependent variable have opposite signs (MacKinnon, Krull, & Lockwood, 2010). Such models are known as inconsistent mediation models, as compared to consistent mediation models, in which the direct and mediated effects

have the same sign (MacKinnon, Krull, & Lockwood, 2010). The definition of a suppressor variable is "a variable which increases the predictive validity of another variable by its inclusion in a regression equation," (MacKinnon, Krull, & Lockwood, 2010).

The meaning of this result may be that students who experienced difficulty were generally more punctual, theoretically because they were working on their demanding assignments, attending difficult classes, and potentially even using resources for academic help. However, when difficulty led to burnout, students become less punctual. Therefore, the inclusion of burnout cancels out the direct effect of difficulty on punctuality, as evidenced by the non-significant total effect of difficulty on punctuality.

Next, the direct effect of difficulty on change in GPA was not significant (Standardized Coefficient = -.087, T = -1.531), but the total effect of difficulty on change in GPA was significant and negative (Standardized Coefficient = -.166, $p < .01$), and the indirect effect of difficulty on change in GPA was significant and negative (Standardized Coefficient = -.127, $p < .01$). According to Little et al. (2007), this is evidence of full mediation of difficulty through burnout on change in GPA. In other words, perceived difficulty does not necessarily lead to a drop in GPA during a semester, but when difficulty leads to and works through burnout, GPA does drop.

Finally, the direct effect of difficulty on satisfaction was not significant (Standardized Coefficient = -.086, T = -1.376), but the total effect of difficulty on satisfaction was negative and significant (Standardized Coefficient = -.223, $p < .001$), and the indirect effect of difficulty on satisfaction was negative and significant (Standardized Coefficient = -.128, $p < .001$). Therefore, burnout fully mediated the relationship between difficulty and satisfaction. In other

words, difficulty on its own does not lead to dissatisfaction with a semester, but when difficultly leads to and works through burnout, dissatisfaction is likely.

Table 9
Results for Mediation Tests

Relationships			
Burnout Mediates the Relationship Between Difficulty and Punctuality			
	Standardized	*T*	*Result*
Total Effect	0.037	0.616	
Direct Effect	0.136	1.785*	
Indirect Effect	-0.092	-2.898**	inconsistent mediation
Burnout Mediates the Relationship Between Difficulty and Change in GPA			
	Standardized	*T*	*Result*
Total Effect	-0.166	-2.905**	
Direct Effect	-0.087	-1.531	
Indirect Effect	-0.127	-2.926**	full mediation
Burnout Mediates the Relationship Between Difficulty and Satisfaction			
	Standardized	*T*	*Result*
Total Effect	-0.223	-3.548***	
Direct Effect	-0.086	-1.376	
Indirect Effect	-0.128	-4.023***	full mediation

Note. N = 310; * = $p < .05$, ** = $p < .01$, *** = $p < .001$

Moderated structural equation modeling (hypotheses 11 & 12). According to Hopwood (2007), moderation involves a third variable that acts as a contributing condition for the effects of variables on other variables. In the case of the current study, for example, it was hypothesized that resource use, a third variable, would impact the negative relationship between

demands and burnout, such that this relationship would significantly diminish when the interaction of demands and resource use was added to the equation.

The MSEM procedure proposed by Mathieu, Tannenbaum, and Salas (1992), as described by Cortina, Chen, and Dunlap (2001) was used, which models all latent variables, including the interaction terms, as latent factors with one indicator. This procedure was chosen because it is easier to compute, produces values similar to those generated by other available procedures for MSEM (e.g., Ping, 1995), recovers parameters equally as well as other available procedures, and has been used by other studies (e.g., Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Bell & Kozlowski, 2008; Demerouti, 2006; Zoogah, 2010). This procedure is especially useful when testing complex theoretical models with moderated relationships, such as the model proposed in this study (Cortina et al., 2001).

There are several steps to Mathieu et al.'s (1992) procedure. First, composites were created for each of the latent variables that would make up the latent products in the hypotheses. For example, composites for resource use and difficulty were created by summing the indicators of their latent constructs. Next, these composites were centered and standardized. Centering and standardizing the composites minimizes the potential correlations between the product terms and the variables that make up the product terms (Cortina, Chen, & Dunlap, 2001). Specifically, Z scores were used. Then, product terms to represent the hypothesized interactions were calculated using the composites (e.g., resource use X difficulty).

Next, the paths from the latent variables to their composite indicators were fixed at the square roots of the reliabilities of the original scales. When testing the interactions that involved Workload, which was a single-item construct rather than a multiple-indicator construct, the reliability was estimated. Consistent with Mathieu et al. (1992), a reliability of .90 was used for

this variable. Then, the error variances for the latent constructs were fixed to the observed variance (calculated by centering the unstandardized data, squaring it, and taking the mean of the square) times 1 minus the reliability.

Next, a model was tested that included direct paths from the new latent constructs to the outcome variable, e.g., paths from resource use and difficulty to burnout. This model was used to obtain the correlation between the components of the interaction term. Then, as described by Cortina et al. (2001), the following equation was used to calculate the reliabilities for the product term: product term reliability = (reliability composite "a" (e.g., resource use) X (reliability composite "b" (e.g., difficulty)/(1+ correlation between "a" and "b" squared). These calculated reliabilities were used to fix the product term.

Next, a model was run which included the interaction term, but without a path to the outcome (e.g., burnout). This model was run to obtain the correlations between the interaction term and the components of the interaction term (e.g., the correlations between the product term and resource use, and the correlation between the product term and difficulty). These correlations were then fixed in the syntax as stipulated by Cortina et al. (2001), and the model was run again. This model became the main effects model to which to compare to the later moderated model.

Next, a moderated model was created. This moderated model was the same as the main effects model, except that a path from the product term to the outcome, e.g., burnout, was included. The improvement in model fit was then assessed via the change in chi-square. The moderation would be deemed significant if the change in chi-square between the main effects structural model and the moderated structural model was positive and statistically significant (Cortina et al., 2001).

All interactions were tested in this way. This procedure was performed separately to test moderation hypotheses that involved demands (i.e., a first set of models included workload, and a second set of models included difficulty).

The moderating effect of resource use on the relationship between demands and burnout (hypothesis 11). Hypothesis 11 stated that resource use would moderate (i.e., buffer) the relationship between demands and burnout such that the relationship between demands and burnout would be weaker for students who report using resources more extensively. To determine whether resource use moderated the relationship between demands (difficulty and workload) and burnout, the process described above was followed. Specifically, two pairs of structural models were compared. In the first pair, a path from the product term resource use X workload to burnout was omitted in the first model, and included in the second. In the second pair, a path from the product term resource use X difficulty to burnout was omitted in the first model, and included in the second. The improvement in model fit was then assessed via the change in chi-square. Resource use would be deemed to be a moderator if the change in chi-square between the first structural model and the second structural model was positive and statistically significant. The findings for the moderator analyses are summarized in Table 10. The findings reveal that the structural models with the product terms had no better fit than the structural models without the product terms. Therefore, resource use did not moderate the relationships between difficulty and workload and burnout. Therefore, hypothesis 11 was not supported.

Table 10
Results for the Moderating Effect of Resource Use on Demands and Burnout

Model	χ^2	*Df*	CFI	$\Delta\chi^2$	Δdf
Resource Use X Workload					
Model without product terms	437.451	146	.90		
Model with product terms	439.480	145	.90	2.03	1
Resource Use X Difficulty					
Model without product terms	313.974	146	.57		
Model with product terms	315.270	145	.57	1.30	1

Note. Critical χ^2 (1) = 3.841, $p < .05$.

The moderating effect of need for cognition on the relationship between demands and state engagement (hypothesis 12). Hypothesis 12 was a moderation hypothesis, namely that need for cognition would moderate a hidden relationship between demands and state engagement. That is, demands would lead to state engagement, only when factoring in need for cognition. Similarly to the previously described moderation test, two sets of models were compared. In the first pair, a path from the product term need for cognition X workload to state engagement was omitted in the first model, and included in the second. In the second pair, a path from the product term need for cognition X difficulty to state engagement was omitted in the first model, and included in the second. The improvement in model fit was then assessed via the change in chi-square. Need for cognition would be deemed to be a moderator if the change in chi-square between the first structural model and the second structural model was positive and statistically significant.

The findings for the moderator effect of need for cognition on the relationship between demands and state engagement are summarized in Table 11. The findings reveal that the structural models with the product terms had no better fit than the structural models without the product terms. The chi-square statistic did not significantly change for either interaction. Therefore, need for cognition did not moderate the relationships between difficulty or workload and state engagement. Hypothesis 12 was not supported.

Table 11
Results for the Moderating Effect of Need for Cognition on Demands and State Engagement

Model	χ^2	*Df*	CFI	$\Delta\chi^2$	Δdf
Need for Cognition X Workload					
Model without product terms	263.960	146	.90		
Model with product terms	263.950	145	.89	.01	1
Need for Cognition X Difficulty					
Model without product terms	265.160	146	.90		
Model with product terms	265.170	145	.90	.01	1

Note. N = 310; Critical χ^2 (1) = 3.841, $p < .05$.

CHAPTER 8: Discussion

This study applied the Job Demands-Resources Model, which has been used to understand the relationships between job characteristics, psychological states, and job outcomes in organizational settings, to an academic sample. This model hypothesizes that perception of job resources and job demands lead to state engagement and burnout, respectively, and that resources and demands lead to job outcomes through state engagement and burnout, in mediated relationships (e.g., Salanova & Bakker 2004; Demerouti, Bakker, Janssen, & Schaufeli, 2001; Bakker, Demerouti, & Euwema, 2003; Schaufeli & Bakker, 2003). In addition, several previous studies have found that resources 'buffer,' or moderate, the relationship between demands and burnout, such that workers who report greater resources seem to experience less burnout from demands (Bakker, Demerouti, & Euwema, 2005; Rothmann & Joubert, 2007). The goals of this study were to determine whether a demands-resources framework could be useful for understanding how and why students become engaged or burned out, to extend the Job Demands-Resources Model by including 'use' in addition to 'perception' of resources, and to extend the Job Demands-Resource Model by investigating the relationship between demands and state engagement.

Specifically, two changes were made to the original Job Demands-Resources Model in the current study. First, the concept of behavioral engagement, as proposed by Macey and Schneider (2008), was used to theoretically frame the construct of resource use. Previous studies of the Job Demands-Resources Model focused on perception of resources, not on actual use of resources. In order to measure resource use, students were asked to rate the degree to which they actively used resource programs that were available to them. Macey and Schneider (2008)

proposed that behavioral engagement is a consequence of state engagement, and this path was added to the model and tested in the current study.

Next, need for cognition, an individual difference variable representing the level of motivation around thinking and intellectual pursuit, was tested as a moderator to a previously omitted relationship between demands and state engagement. The rationale was that need for cognition is related to greater motivation towards academic work (Cacioppo, Petty, Feinstein, & Jarvis, 1996), and also a greater ability to evaluate one's own performance in order to realize that one needs to adjust performance (Reinhard & Dickhauser, 2009). These two consequences of need for cognition could lead to feelings of engagement when faced with academic demands, which could result in behavioral engagement, i.e., seeking help through the use of academic resources.

The results of the current study will be reviewed below, followed by interpretation of some of the main themes found in the results. Construct issues regarding state engagement, burnout, and workload will be highlighted. Next, the limitations of this study will be discussed, followed by implications for future research.

Review of Results

The hypotheses tested in the current study were partially supported. First, resource awareness was predicted to act as an antecedent to state engagement. This hypothesis was not supported. However, resource awareness did have a positive direct effect on resource use. These results suggest that students were aware of the resources that they used, and this led to a direct effect of awareness on use. The intention behind splitting out resource use from the typically studied resource perception or awareness was to determine if use of resources played a different role in the model than perception of resources. These findings suggest that future

researchers can choose to measure either awareness or use, but do not need to measure both, since awareness did not have a direct effect on state engagement as predicted, and its relationship with resource use suggests that awareness and use are somewhat redundant. However, these results may also reflect a measurement issue. Specifically, the resource awareness and use question stems were phrased similarly (although they had different response scales), and both scales were embedded in the same survey section. This may have caused participants to respond similarly to awareness and use questions, leading to the strong relationship between them. Future studies should attempt to measure awareness and use differently – perhaps using a self-report measure for awareness and objective data for use. Objective data for resource use was not available for all of the resources included in the current study, which led to the adoption of a self-report approach. However, objective data might be available for a narrow subset of the resources measured in the current study. Narrowing the scope of resources and incorporating objective data in future studies may help to clarify whether resource awareness and resource use play unique roles in the Job Demands-Resources Model, or if they essentially reflect slightly different aspects of the same construct.

State engagement was predicted to act as an antecedent to resource use, and this direct effect was significant and in the expected direction. This finding means that the more engaged students felt, the more behaviorally engaged they were. Therefore, this finding supports Macey and Schneider's (2008) prediction that state engagement leads to behavioral engagement.

Next, resource use was predicted to act as a mediator between state engagement and academic outcomes. However, resource use did not significantly predict punctuality, change in GPA, or satisfaction. Furthermore, state engagement did not significantly relate to any of those

outcomes either. Therefore, resource use was not established as a mediator between state engagement and academic outcomes.

Perhaps the reason that resource use did not relate to satisfaction, change in GPA, and punctuality is that students who experienced academic difficulty used resources more frequently, hence the positive correlation between difficulty and resource use ($r = .108$, $p < .05$), but their difficulty persisted. The idea that difficulty persisted in the face of resource use is supported by the finding that resource use did not moderate the relationship between difficulty and burnout – in other words, resource use did not buffer against burnout in the face of difficulty. This is not to say that the resources did not help students – they may have done better than they otherwise would have, had they not used resources. Future studies could attempt to determine if used resources actually helped students, and what impact helpful versus unhelpful resources have on state engagement, burnout, and outcomes. Perhaps using resources that truly helped ease students' perceptions of difficulty would result in a positive relationship between resource use and academic outcomes. However, determining the effectiveness of individual resource programs was not a focus of the current study.

The finding that state engagement did not significantly predict any of the academic outcomes is inconsistent with the literature around state engagement and its relationship to work outcomes, and it may reflect a construct issue concerning state engagement and burnout. This will be discussed in the next section of this discussion, under the heading 'Construct Issues.' However, the fact that state engagement did lead to resource use suggests that resource use can be thought of as a consequence of state engagement in its own right. State engagement leads to behavioral engagement, although for a number of reasons that were not captured within the scope of the current study, engaged behavior may not always impact academic outcomes.

The next set of hypotheses focused on demands, burnout, and outcomes. Difficulty, one of the academic demands measured in the current study, impacted academic outcomes through burnout, as predicted. Specifically, difficulty had a positive direct effect on burnout, as predicted. This means that the greater the difficulty experienced by students, the greater their feelings of burnout. Burnout had negative direct effects on punctuality, change in GPA, and satisfaction. Furthermore, burnout fully mediated the relationships between difficulty and change in GPA, and difficulty and satisfaction, as predicted. This means that student perceptions of difficulty did not negatively impact satisfaction about the semester or GPA on their own, but when difficulty first resulted in burnout, difficultly had an indirect negative impact on those academic outcomes. In other words, difficulty hampered semester GPA and satisfaction through burnout. The results for difficulty and punctuality were even more interesting, in that burnout acted as a suppressor to the relationship between difficulty and punctuality. This type of mediated relationship is called an inconsistent mediation (Little et al., 2007, Mckinnon et al., 2010). Difficulty had a positive direct effect on punctuality, meaning that students who reported semester difficulty were more likely to have attended class, arrived on time, and turned in assignments in on time. Their hard work and punctual presence on campus may be a reflection of their commitment to persevering in the face of a difficult semester. However, when students who experienced difficulty became burned-out, the indirect relationship between difficulty and punctuality changed direction – these burned-out students withdrew from their academic tasks, and became less likely to attend class, arrive on time, and turn assignments in on time. This is consistent with theory around burnout, which suggests that burnout leads to withdrawal from one's work in an attempt to cope with demands (Maslach & Leiter, 1996).

Workload did not have a significant direct effect on burnout, therefore burnout could not be established as a mediator between workload and academic outcomes. The finding that workload did not have a positive direct effect on burnout is inconsistent with the literature around workload and burnout, which provides evidence of such a relationship (Lee & Ashforth, 1996). This may indicate a construct issue with regard to the way workload was measured in the current study, and also with regard to the interpretation of workload as an academic 'demand.' This will be discussed in the following section on construct issues.

However, workload did have a positive direct effect on punctuality. The interpretation of this is similar to the interpretation of the aforementioned direct effect of difficulty on punctuality: when students face a demanding semester, both in terms of difficulty and workload, they tend to attend their classes, come to class on time, and turn assignments in on time.

The moderation tests conducted in this study were not successful. Resource use did not moderate the relationships between demands and burnout. Since workload did not significantly relate to burnout, one would not expect to find a 'buffer effect' of resource use on the relationship between workload and burnout. Perhaps resource use did not buffer the relationship between difficulty and burnout because although students did use resources in the face of greater difficulty, doing so did not reduce their strain.

Additionally, need for cognition did not moderate previously unpredicted relationships between demands and state engagement. However, need for cognition had a positive direct effect on state engagement. This supports Macey and Schneider's (2008) theoretical model, which places personal traits as antecedents to state engagement. Since individuals with high need for cognition seek out and enjoy cognitive activities, it makes sense that this trait would lead to engagement in the academic environment.

In fact, a very recent study, in press at the time of this dissertation, included a hypothesis that a relationship between need for cognition, a personal characteristic of some first year college students that might predispose students to become engaged, and subsequent academic engagement would be mediated by perceptions of the academic environment (Cole & Korkmas, in press). Need for cognition was measured with the NCS, the same scale that was used in the current dissertation study. Perceptions of the academic environment were measured via questions from the NSSE, specifically the environment measures. The first environment measure asked students about the extent to which their coursework emphasized analyzing, synthesizing, making judgments, and applying information, and the second environment measure emphasized the institution itself, i.e., the degree that the institution emphasized academic work, encouraged contact among other students, provided the support to succeed academically, etc. Student engagement was measured via the same NSSE items that were adapted to measure workload in the current dissertation study, namely the questions about the amount of time students spent engaging in different academic activities.

The results of Cole and Korkmas (in press) suggested that perceptions of the environment did mediate the relationship between need for cognition and behavioral academic engagement. To relate these findings to the current study, this suggests that resource awareness might mediate a relationship between need for cognition and resource use. The relationships between need for cognition, resource awareness, and resource use were outside the scope of the current study. However, this idea could be tested in future studies that apply the Job Demands-Resources Model to a student sample.

Construct Issues: Resource Use

A concern around the results of this study is the interpretation of resource use as a form of behavioral engagement. The support for resource use as a form of behavioral engagement comes from Macy and Schneider (2008), who suggest that behavioral engagement is evidenced by behaviors that stretch above and beyond the formal requirements of a role. They mention extra-role behavior, organizational citizenship behavior, proactive/personal initiative, and role expansion as organizational examples of behavioral engagement. A leap of interpretation was required to include resource use in students as evidence of behavioral engagement. Use of resources is not required of students, and so resource use could be considered an example of personal initiative. The National Survey of Student Engagement (Kuh, 2001) seems to agree with this interpretation, because this survey measures engagement as involvement in academic and non-academic student behaviors. However, one could argue that using college resources is in fact a standard part of the role of a student. A deeper exploration into the meaning of resource use should be conducted to frame the construct in future studies.

Construct Issues: Burnout and State Engagement

As mentioned earlier, state engagement did not have direct effects on any of the outcome variables measured in this study. This is inconsistent with the literature, which reports relationships between engagement and attitudes and performance (Salanova & Bakker, 2004; Salanova, Agut, & Peiro, 2005; Bakker, van Emmerick, & Euwema, 2006; Llorens, Bakker, Schaufeli, & Salanova, 2006; Rothmann & Joubert, 2007). One possible explanation for this inconsistent finding is that state engagement and burnout were so related to each other that they controlled for each other's effects when they were linked to the same outcomes in the model. State engagement and burnout were highly correlated in the revised structural model ($r = -.65$).

The correlation of -.65 was within the range of correlations previously found between these constructs, as reported by Schaufeli and Bakker (2004). However, the results of this study suggest that this degree of correlation was problematic.

An attempt was made to clarify the constructs of state engagement and burnout by using factor analysis to reassign items based on their factor loadings, as described in the Results section of this paper. The construct of state engagement was thus significantly altered by removing one of the three theoretical factors of engagement – dedication – and placing those items along with the cynicism items from burnout. This was done because these items clearly loaded on one factor. However, the correlation between state engagement and burnout was still strong despite this change: before the item reassignment the correlation between engagement and burnout was -.75, and after the reassignment the correlation dropped to -.65.

Thus, part of the problem with state engagement and burnout in the current study was that there was considerable overlap between the constructs. Another problem might have been methodological. The two measures directly followed each other in the same subsection of the survey. In addition, the two measures used the same rating scale. Therefore, it is possible that students' responses on the burnout measure, which came first, impacted their responses on the state engagement measure, which followed burnout.

According to Schaufeli and Bakker (2003), it is important to measure state engagement and burnout as separate constructs for three reasons. First, it is not plausible that both concepts are perfectly negatively correlated, and therefore they must not be completely redundant. The EFA suggested that dedication and cynicism, from engagement and burnout respectively, formed one clear factor. Theoretically, this finding is not surprising, because cynicism and dedication are thought of as direct opposites, and therefore shared aspects of state engagement and burnout

(Schaufeli & Bakker, 2003). The aspects of state engagement and burnout that are not theoretically related to each other are absorption from state engagement, which has no direct opposite in burnout, and reduced personal efficacy in burnout, which has no direct opposite on state engagement. However, in the current study, personal efficacy was dropped from burnout because it is not seen as a central concept to burnout (Lee & Ashforth, 1996), and EFA suggested that the personal efficacy items loaded on a factor with almost an equal number of state engagement items. In addition, EFA showed that vigor and absorption shared multiple cross-loading items. Therefore, even the 'unique' aspects of state engagement and burnout were not clearly differentiated in the current sample.

Next, according to Schaufeli and Bakker (2003), it is important to measure state engagement and burnout separately because doing so allows you to assess the discriminant validity and unique contributions of each. In other words, Schaufeli and Bakker (2003) seem to suggest that state engagement as a separate construct from burnout is still very much an exploratory measure. The current study adds support for the side of the argument that holds that state engagement as measured by the UWES does not add much to a structural model which also contains burnout as measured by the MBI. This is in agreement with Halbesleben and Demerouti, (2005), who developed the Oldenberg Burnout Inventory, which measures state engagement via low scores on burnout.

Finally, Schaufeli and Bakker (2003) state theoretical reasons to measure state engagement and burnout separately. For example, it should be possible for workers to exhibit components of state engagement at the same time that they exhibit components of burnout. For example, consider the hypothetical case of a worker or student who is very dedicated and absorbed in his or her work, to the point that he or she takes on more than he or she can handle.

Unable to cope for whatever reason, this person may experience burnout, despite or because of his or her strong sense of state engagement. It should be possible to measure both state engagement and burnout concurrently, in order to better understand situations like the one just described.

However, Schaufeli and Bakker (2003) say that in practice, burnout and state engagement will be significantly negatively correlated. This correlation presents limitations with regard to testing their differential effects and relationships with other variables in structural equation modeling. A limitation in this study and others that look at state engagement and burnout as separate constructs is the use of the UWES and the MBI to operationalize the constructs. These two measures do not adequately differentiate between state engagement and burnout. Future research should work towards more clearly differentiating measures of state engagement from burnout, through both empirical and theoretical methods.

Construct Issues: Workload

The direct effect of workload on burnout in the revised structural model was non-significant, a finding that is inconsistent with the literature around workload as an antecedent to burnout (Lee & Ashforth, 1996). In addition, workload was positively correlated with state engagement ($r = .125$, $p < .05$), resource use ($r = .222$, $p < .001$), punctuality ($r = .289$, $p < .001$), and difficulty ($r = .303$, $p < .001$). The positive relationship between workload and resource use may reflect the fact that using resources is, in effect, an increase in workload. Furthermore, many of the resources measured in this study were of the 'extra-help' variety, therefore students who experienced difficulty in their semesters were more likely to use resources ($r = .108$, $p < .05$). The correlations with state engagement and punctuality, however, may reflect that workload, which has been studied as a 'demand' variable in previous tests of the

Job Demands-Resources Model, may also have actually tapped into behavioral engagement in the current study.

Each workload question presented an academic activity and asked students to enter how many hours per week they spent doing that activity. Although the sum of the hours spent on academic activities was intended to represent the degree of academic demand facing students, it could alternatively be interpreted as the degree of student involvement in academic activities. The leading survey of student engagement, the National Survey of Student Engagement (Kuh, 2001), interprets workload as a form of student engagement. Specifically, a central component measured on this 'engagement' survey is the amount of time students spend engaging in academic and extra-curricular activities. The results of the current study support the idea that workload is a good way to measure behavioral engagement.

The above interpretation of workload suggests an important difference between using workload as an indicator of demands in an academic setting versus an organizational setting. As discussed in earlier chapters of this dissertation, workload has been measured as a demand in organizational tests of the Job Demands-Resources Model, and studies suggest that it has a positive relationship with burnout (i.e., higher workload relates to higher levels of burnout). This may be because in an organizational setting, one's workload has few voluntary aspects to it. For example, a lawyer is required to bill a certain number of hours per week, and if he or she falls short of that goal, there will likely be immediate negative consequences. In an academic setting, workload is more at the discretion of the students. Students can choose spend long hours studying, writing papers, and working in study groups with other students, or they can choose to spend very little time doing those things. This fact is a limitation of the current study – it is possible that workload as measured in this study taps into a different construct than it does in

other studies involving the Job Demands-Resources Model. However, this interpretation also has implications for future tests of the Job Demands-Resources Model, either in student samples or in organizational samples: It may be valuable to split workload into time spent on discretionary workload (such as voluntary overtime hours per week, or developmental assignments) versus time spent on required workload (such as required hours per week, or required tasks), to determine if discretionary workload leads directly to state engagement, as it did in the current study.

If workload should indeed be interpreted as behavioral engagement, then the revised structural model is slightly out of alignment with Macey and Schneider's (2008) theoretical model. In Macey and Schneider's (2008) model, personal attributes lead into state engagement, which leads into behavioral engagement, which leads into organizational outcomes. In the revised structural model from this study, workload (which seems to be a type of behavioral engagement) leads into state engagement, which leads into resource use (another type of behavioral engagement), which leads into punctuality (an outcome). In other words, behavioral engagement leads to state engagement, which then leads to more behavioral engagement.

Other engagement researchers such as Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009) have proposed that engagement can be thought of as operating on a feedback loop. They examined longitudinal relationships between job resources, 'personal resources' (self-efficacy, organization-based self-esteem, and optimism), and work engagement, and hypothesized that job resources, personal resources, and work engagement are reciprocal over time. The study was conducted among 163 employees, who were followed-up over a period of 18 months on average. Results of structural equation modeling analyses found that T1 job and personal resources related positively to T2 work engagement. Additionally, T1 work engagement related positively to T2

job and personal resources. The model that fit their data best was a reciprocal model, which showed that not only resources and work engagement but also job and personal resources were mutually related. These findings support the assumption of Conservation of Resources Theory that various types of resources and well-being evolve into a cycle that determines employees' successful adaptation to their work environments (Xanthopoulou, Bakker, Demerouti, & Schaufeli 2009).

Limitations

A limitation of this study concerns the measures of state engagement and burnout. Theory suggests that these two constructs are related but separate variables (Schaufeli & Bakker, 2003). However, the measures used to capture these constructs in the current study were highly correlated. Furthermore, the error terms of these constructs covaried significantly, suggesting a methodological issue in the way that these constructs were measured. For example, since engagement and burnout followed each other directly in the survey instrument and used the same rating scale, students may have been influenced by the first set of items (burnout) when responding to the second set of items (engagement). In fact, the UWES very closely mirrors the MBI by design. Some of the UWES items are nothing more than reverse-coded MBI items (Schaufeli & Bakker, 2003). The similarities between these two measures may have masked important differences with regard to the relationships between state engagement, burnout, their antecedents, and consequences.

There were methodological limitations to the current study as well. Namely, three of the constructs – resource awareness, resource use, and difficulty – were formative in nature. Because LISREL does not work well with formative constructs, a simpler approach to modeling these constructs was used. Total item scores were calculated, and the variables were modeled as

single indicator latent variables. Although this approach is acceptable, it may have sacrificed some of the complexity of these variables in the analyses.

Another potential limitation of the current study is that all data were collected via a single survey administration, except for semester and cumulative GPA. Potential same source bias was minimized by ordering the survey sections in such a way as to minimize the impacts of priming from earlier items on later items. Specifically, all of the potentially priming items – questions on demands and academic outcomes – came after items that tapped into affect and attitudes. However, there still may have been same-source bias effects influencing the current data set. Furthermore, since the survey was not counter-balanced, one cannot rule out that survey subsection order-effects did not influence the data.

Additionally, resource use was assessed during the target semester. Therefore, students who reported a certain degree of resource use at the point in time when the data were collected might have gone on to use more resources before the end of the semester. In other words, semester resource use may have been underestimated because of timing issues. The study attempted to minimize this by launching data collection after midterms during the target semester. By waiting until later in the semester, students were more likely to have engaged resources. However, it is likely that some degree of underestimation of resource use was still in effect in the current sample. A related concern is that number of semesters that participants completed was not collected. Therefore, one does not know how many semesters went into the cumulative GPA, which was subtracted from the semester GPA to form the change in GPA variable. Therefore, one does not know the degree to which tenure at the university impacted that critical outcome variable.

Finally, this study did not consider all of the possible resources or psychological need variables that may be important constructs to consider in the Job Demands-Resources Model as applied to a student sample. For example, resources such as autonomy, control, and other factors that support entrepreneurial exploration, and needs such as need for specific rewards or need for achievement, are mostly likely important, in addition to the academic and non-academic resources measured in this study, and need for cognition.

Implications and Future Research

As stated earlier, a goal of this research was to investigate whether a demands-resources framework could be useful in understanding student engagement and burnout. The results suggest that the Job Demands-Resources Model is a useful framework for studying student engagement and burnout. Many of the proposed relationships held up in the academic environment, particularly the mediated paths from difficulty to satisfaction, punctuality, and change in GPA through burnout. However, future tests of the Job Demands-Resources Model in student samples might consider avoiding the use of workload as an indicator of demands. In the academic environment, a student's workload is more under his or her control than an employee's workload. This fact may shift the meaning of student workload from a demand to an indicator of behavioral engagement. The importance of 'control' in the workplace was originally highlighted in Karasek's Demands-Control Model (1990), and the results of this study seem to highlight the importance of control in determining the meaning of workload in tests of the Job Demands-Resources Model.

Another goal of this research was to determine the relationship between demands and state engagement, a relationship that was not part of the original Job Demands-Resources Model. It was hypothesized that need for cognition would moderate hidden relationships between

workload, difficulty, and state engagement. This hypothesis was not supported. Although need for cognition did not act as a moderator to hidden relationships between demands and engagement, it did directly relate to state engagement. This finding mirrors the results of Cole and Korkmas (in press), who found that need for cognition led to state engagement in a student sample. Thus the results of the current study support Macey and Schneider's (2008) theoretical model of trait, state, and behavioral engagement. Need for cognition, a trait variable, led to state engagement, which in turn led to behavioral engagement.

As for why need for cognition did not act as a moderator between workload, difficulty and state engagement, a few explanations come to mind. First, for the reasons discussed above, it seems as though workload maybe not have actually tapped into a true student 'demand.' Therefore, although workload was found to be correlated to state engagement, one would not necessarily expect that a path from workload to engagement would be moderated by need for cognition; instead, the relationship between workload and engagement would be direct. Next, need for cognition did not moderate a relationship between difficulty and need for cognition, potentially because high need for cognition students would be less likely to view academic demands as 'difficult' – a word that has a negative connotation. Perhaps if the questions were framed in terms of 'challenge' or 'demand' rather than 'difficult,' an interaction with need for cognition would have been found. Future studies that apply a demands-resources framework to a student sample should explore different ways of measuring academic demands.

Future studies might incorporate the concept introduced by Crawford, Lepine, and Rich (2010), namely that the framing of demands as either hindrances or challenges determines whether those demands will lead to burnout or engagement, should be integrated into the Job Demands-Resources framework. Perhaps students with high need for cognition would be more

likely to label certain academic tasks as challenging rather than difficult, and this would relate to state engagement. Low need for cognition students, on the other hand, may see those same demands as difficult, and this would lead to burnout.

Future research should continue to focus on the nature of the relationship between state engagement and burnout. There are important theoretical reasons for measuring these constructs separately; however, the UWES and the MBI do not adequately distinguish these constructs, limiting the types of hypotheses that can be tested. Future research should focus on developing measures of state engagement and burnout that more accurately measure each construct independently.

Finally, future tests of the Job Demands-Resources Model should allow for greater complexity in the relationships between job characteristics, engagement and burnout, and outcomes. The current study suggests that behavioral engagement can lead to state engagement, and this can lead to different kinds of behavioral engagement. It would be interesting to employ longitudinal methods or daily-diary methods to try to track how state engagement is impacted by behavioral engagement, and if initial state engagement grows into greater state and behavioral engagement, given a favorable set of environmental characteristics. Such methods would also address the same-source bias issue mentioned earlier.

Appendix A: Final Survey

Burnout and Engagement Section

Instructions to participants. Thank you for your participation today! The first survey section contains questions which ask about your thoughts and feelings about your school work, based your experiences this semester. Think about how your semester has been going, and choose the response that best describes you.

Response Scale. Always, every day; Very Often; Often; Sometimes; Rarely; Almost Never; Never

Burnout

1. I feel emotionally drained from my studies
2. I can effectively solve the problems that arise in my studies
3. I feel tired when I get up in the morning and have to face another day of school
4. I have become less interested in my studies since I started this semester
5. Studying or attending a class is really a strain for me
6. I feel I am making an effective contribution to the classes that I attend
7. I feel burned out from my studies
8. In my opinion, I am a good student
9. I feel used up at the end of a day at school
10. I have become more cynical about the potential usefulness of my studies
11. During class I feel confident that I am effective in getting things done
12. I doubt the significance of my studies
13. I feel stimulated when I achieve my study goals
14. I have become less enthusiastic about my studies
15. I am learning many interesting and worthwhile things this semester

Engagement

1. When doing my work as a student, I feel like I am bursting with energy
2. I can continue studying for very long periods at a time
3. Time flies when I am studying
4. I feel energetic and capable when I'm studying or going to class
5. When I am studying, I forget everything else around me
6. I am proud of my studies
7. I am immersed in my studies
8. When I get up in the morning, I feel like going to class
9. I feel happy when I am studying intensely
10. To me, my studies are very challenging
11. I find my studies full of meaning and purpose
12. I am enthusiastic about my studies
13. As far as my studies are concerned, I always persevere, even when things do not go well

14. I am resilient mentally, as far as my studies are concerned
15. My studies inspire me
16. I get carried away when I am studying
17. It is difficult to detach myself from my studies

Need for Cognition Section

Instructions to participants: The next survey section contains questions that ask you about your thoughts and attitudes about different kinds of tasks. Please read each question carefully, and respond by choosing the answer choice that best describes you.

Response scale: Strongly Agree; Agree; Disagree; Strongly Disagree

1. I would prefer complex to simple problems
2. I like to have the responsibility of handling a situation that requires a lot of thinking
3. Thinking is not my idea of fun
4. I would rather do something that requires little thought than something that challenges my thinking abilities
5. I try to anticipate and avoid situations where there is a chance that I will have to think in depth about something
6. I find satisfaction in deliberating hard and for long hours
7. I only think as hard as I have to
8. I prefer to think about small, daily projects as opposed to long-term ones
9. I like tasks that require little thought once I've learned them
10. The idea of relying on thought to make my way to the top appeals to me
11. I really enjoy a task that involves coming up with new solutions to problems
12. Learning new ways to think doesn't excite me very much
13. I prefer my life to be filled with puzzles that I must solve
14. The notion of thinking abstractly is appealing to me
15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much
16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort
17. It's enough for me that something gets the job done; I don't care how or why it works
18. I usually end up deliberating about issues even when they do not effect me personally

Resource Awareness and Use Section

Instructions to participants. In the next section, you will be asked about your awareness of and involvement with different student resources that are available to you as a Baruch Student. Each resource will first be described to you, and then you will be asked to respond to a few questions about your awareness of and involvement with that resource.

With regard to the questions that ask you about your involvement with resources, we've included examples next to each answer choice to help you think about how your level of involvement with each resource may be categorized. For example:

How involved are you with the Writing Center?

- Extremely Involved (e.g., 1 appointment, workshop, online chat consultation, or eTutoring session PER WEEK during a semester)
- Very Involved (e.g., 1 appointment, workshop, online chat consultation, or eTutoring session EVERY OTHER WEEK during a semester)
- Etc.

Please think about your involvement with each resource as it relates to THIS SEMESTER ONLY. Choose the level of involvement that most closely resembles your actual involvement, even if the example slightly differs from the way you actually use the resource. We are looking for your best estimate.

Resource Descriptions and Questions

Seek Program

Description of Resource: The SEEK Program (Search for Education, Elevation and Knowledge) was designed to assist students with the intellectual potential to succeed college who lack the educational foundation and economic resources necessary to pursue a degree. The SEEK Program assists students by registering them for classes, paying for books and other tools, and helping students to figure out the policies and procedures of the college. Students have an assigned academic counselor, participate in SEEK seminars and workshops, and periodically participate in other activities.

1A. How much do you know about the SEEK Program?

Rating scale for all awareness questions (Will only be shown once in this Appendix): A substantial amount; A moderate amount; Very little; Nothing - only what I've read above

1U. How involved are you with SEEK program activities, including meeting with your academic counselor, attending seminars, and using other services set up by the SEEK program?

- Extremely Involved (e.g., MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., ONCE A WEEK during a semester)
- Moderately Involved (e.g., EVERY OTHER WEEK during a semester)
- Lightly Involved (e.g., A COUPLE OF TIMES during a semester)
- Minimally Involved (e.g., ONCE during a semester)
- Not Involved (e.g., DOES NOT participate in the SEEK program)

Honors Colleges and Scholars Programs

Description of Resource: Baruch College hosts the Honors College, Macauley @ Baruch Program, Baruch Scholars, and Provost Scholars programs. These programs differ from one

another, but all offer activities such as brownbags, workshops, academic counseling, community service, on-campus cultural events, and other events.

2A. How much do you know about Baruch College's Honors Colleges and Scholars Programs?
2U. How involved are you with activities and events hosted by one of Baruch's Honors Colleges or Scholars Programs?

- Extremely Involved (e.g., MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., ONCE A WEEK during a semester)
- Moderately Involved (e.g., EVERY OTHER WEEK during a semester)
- Lightly Involved (e.g., A COUPLE OF TIMES during a semester)
- Minimally Involved (e.g., ONCE during a semester)
- Not Involved (e.g., DOES NOT participate)

The Writing Center

Description of Resource: Baruch College's Writing Center provides students with coaching from writing specialists, either by appointment or on a walk-in basis. The Writing Center also offers various writing workshops throughout the semester, chat consultations with writing specialists, and eTutoring sessions.

3A. How much do you know about the Writing Center?
3U. How involved with the Writing Center have you been this semester?

- Extremely Involved (e.g., 1 appointment, workshop, online chat consultation, or eTutoring session PER WEEK during a semester)
- Very Involved (e.g., 1 appointment, workshop, online chat consultation, or eTutoring session EVERY OTHER WEEK during a semester)
- Moderately Involved (e.g., an appointment, workshop, online chat consultation, or eTutoring session ONCE PER MONTH during a semester)
- Lightly Involved (e.g., an appointment, workshop, online chat consultation, or eTutoring session 2 times during a semester)
- Minimally Involved (e.g., an appointment, workshop, online chat consultation, or eTutoring session 1 time during a semester)
- Not Involved (e.g., NO appointment, workshop, online chat consultation, or eTutoring session during a semester)

The STARR Career Development Center

Description of Resource: The STARR Career Development Center offers up to 200 workshops per semester around career planning, job-searching, job skills, graduate school, and other related topics. The center offers career counseling by appointment. In addition, the center offers on-campus recruiting events and career fairs. The STARR center also offers STARRsearch, an online job and internship posting site and event calendar. In addition, the STARR center's website contains information about events, model resumes, model interview questions, 'Optimal Resume,' and many other resources.

4A. How much do you know about the STARR Career Development Center?

4Ua. How involved have you been with the STARR Center's career counseling sessions, on campus events, or workshops this semester?

- Extremely Involved (e.g., 1 counseling appointment, on campus event, or workshop PER WEEK during a semester)
- Very Involved (e.g., 1 counseling appointment, on campus event, or workshop EVERY OTHER WEEK during a semester)
- Moderately Involved (e.g., a counseling appointment, on campus event, or workshop ONCE PER MONTH during a semester)
- Lightly Involved (e.g.. a counseling session, on campus event, or workshop 2 times during a semester)
- Minimally Involved (e.g., a counseling session, on campus event, or workshop 1 time during a semester)
- Not Involved (e.g., NO counseling session, on campus event, or workshop during a semester)

4Ub. How involved with the STARR Center's online job and internship posting website, STARRsearch, have you been this semester?

- Extremely Involved (e.g., checks or applies to job and internship postings in STARRsearch EVERY DAY during a semester)
- Very Involved (e.g., checks or applies to job and internship postings in STARRsearch MULTIPLE TIMES PER WEEK during a semester)
- Moderately Involved (e.g., checks or applies to job and internship postings in STARRsearch ONCE A WEEK during a semester)
- Lightly Involved (e.g., checks or applies to job and internship postings in STARRsearch ONCE A MONTH during a semester)
- Minimally Involved (e.g., checks or applies to job and internship postings in STARRsearch ONCE during a semester)
- Not Involved (e.g., DOES NOT check or apply to job and internship postings during a semester)

4Uc. How involved with the STARR Center's website have you been this semester? (This website contains information about events, model resumes, model interview questions, 'Optimal Resume,' and many other resources).

- Extremely Involved (e.g., visits the STARR Career Development Center website EVERY DAY during a semester)
- Very Involved (e.g., visits the STARR Career Development Center website MULTIPLE TIMES PER WEEK during a semester)
- Moderately Involved (e.g., visits the STARR Career Development Center website ONCE A WEEK during a semester)
- Lightly Involved (e.g., visits the STARR Career Development Center website ONCE A MONTH during a semester)

- Minimally Involved (e.g., visits the STARR Career Development Center website ONCE during a semester)
- Not Involved (e.g., DOES NOT visit the STARR Center Career Development Center website during a semester)

Interaction with your Professors and/or TAs

Description of Resource: Baruch students are encouraged to take the opportunity to directly interact with their professors and teaching assistants. One way that this can happen is by visiting your professors and/or TAs during their office hours. In addition, students often reach out to professors or TAs by staying after class or via email.

5A. How much do you know about your professors' and TAs' availably, via office hours, after class, and via email?

5Ua. How involved have you been with your professors or TAs during office hours or after class this semester?

NOTE ABOUT RESPONDING TO THIS QUESTION: Think about how you interact with all professors and TAs, not just one. For example, "visits a professor or TA during office hours or after class MORE THAN ONCE A WEEK during a semester" does not necessarily mean that an 'extremely involved' student visits the same professor or TA more than once a week. It means that over the course of most weeks, the student meets with faculty more than once - it could be the same faculty member, or a few different ones.

- Extremely Involved (e.g., visits a professor or TA during office hours or after class MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., visits a professor or TA during office hours or after class ONCE A WEEK during a semester)
- Moderately Involved (e.g., visits a professor or TA during office hours or after class EVERY OTHER WEEK during a semester)
- Lightly Involved (e.g., visits a professor or TA during office hours or after class ONCE A MONTH during a semester)
- Minimally Involved (e.g., visits a professor or TA during office hours or after class ONCE OR TWICE during a semester)
- Not Involved (e.g., DOES NOT visit a professor or TA during office hours or after class during a semester)

5Ub. How involved with your professors or TAs via email have you been this semester?

- Extremely Involved (e.g., contacts a professor or TA via email MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., contacts a professor or TA via email ONCE A WEEK during a semester)
- Moderately Involved (e.g., contacts a professor or TA via email EVERY OTHER WEEK during a semester)

- Lightly Involved (e.g., contacts a professor or TA via email ONCE A MONTH during a semester)
- Minimally Involved (e.g., contacts a professor or TA via email ONCE OR TWICE during a semester)
- Not Involved (e.g., DOES NOT contact a professor or TA via email during a semester)

Student Academic Consulting Center (SACC)
Description of Resource: The Student Academic Consulting Center (SACC) provides tutoring services, and also hosts a series of workshops designed to help students achieve their full academic potential. SACC's mission is to help the undergraduates of Baruch College succeed academically and in their chosen professions by helping them throughout their college years to develop the skills and knowledge necessary for future success.

5A. How much do you know about the Student Academic Consulting Center (SACC)?
5U. How involved have you been with the Student Academic Consulting Center (SACC) for tutoring, workshops, or for another reason this semester?

- Extremely Involved (e.g., a tutoring session and/or workshop MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., a tutoring session and/or workshop ONCE A WEEK during a semester)
- Moderately Involved (e.g., a tutoring session and/or workshop EVERY OTHER WEEK during a semester)
- Lightly involved (e.g., a tutoring session and/or workshop ONCE A MONTH during a semester)
- Minimally Involved (e.g., a tutoring session and/or workshop ONCE OR TWICE during a semester)
- Not Involved (e.g., DOES NOT attend tutoring or a workshop during a semester)

Center for Academic Advisement
Description of Resource: The Center for Academic Advisement offers a wide range of advisement services to Baruch College undergraduate students. The Center's staff is available to assist students in making important decisions concerning their academic achievement at Baruch. It is the place where students can obtain answers to a broad range of questions - from degree requirements to general policies and procedures. In addition to answering students' academic questions, the Center for Academic Advisement offers a tool, the Academic Worksheet. This is a worksheet that students can use to plan their schedules over the semesters, to ensure that they are meeting the requirements for their degrees and that they are fitting in the classes that interest them. Students can draft an initial Academic Worksheet with staff from the Center, and then can meet with staff as needed to fine-tune it or track progress (this is usually optional).

6A. How much do you know about the Center for Academic Advisement?
6Ua. How involved have you been with the Center for Academic Advisement this semester?

- Extremely Involved (e.g., visits the Center for Academic Advisement

ONCE A WEEK during a semester)
- Very Involved (e.g., visits the Center for Academic Advisement EVERY OTHER WEEK during a semester)
- Moderately Involved (e.g., visits the Center for Academic Advisement ONCE A MONTH during a semester)
- Lightly Involved (e.g., visits the Center for Academic Advisement TWICE during a semester)
- Minimally Involved (e.g., visits the Center for Academic Advisement ONCE during a semester)
- Not Involved (e.g., DOES NOT visit the Center for Academic Advisement during a semester)

6Ub. Do you have an Academic Worksheet from the Center for Academic Advisement?
- Yes, I have created an Academic Worksheet with an advisor from the Center for Academic Advisement, and I have met with this advisor to discuss it this semester.
- Yes, I have created an Academic Worksheet with an advisor from the Center for Academic Advisement, and I monitor my progress on my own. I have not met again with an advisor to discuss my progress.
- I do not have an Academic Worksheet from the Center for Academic Advisement.

Honors Societies

Description of Resource: Baruch College hosts a number of honors societies that students can join to enrich their experience at the college. They often require minimum GPAs, and offer opportunities for volunteer work, networking, and academic enhancement. Such honors societies include: Alpha Iota Delta, Golden Key, Psi Chi, and more. These honors societies are different from the honors colleges and scholars programs.

7A. How much do you know about Baruch College's honors societies?
7U. How involved have you been with Baruch College's honors societies?
- Extremely Involved (e.g., an activity and/or meeting MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., an activity and/or meeting ONCE A WEEK during a semester)
- Moderately Involved (e.g., an activity and/or meeting EVERY OTHER WEEK during a semester)
- Lightly Involved (e.g., an activity and/or meeting ONCE A MONTH during a semester)
- Minimally Involved (e.g., an activity and/or meeting ONCE OR TWICE during a semester)
- Not Involved (e.g., NO activities and/or meetings during a semester)

Leadership Organizations

Description of Resources: Baruch College hosts a number of organizations designed to allow students to develop their leadership capabilities while helping their fellow students. Such

organizations include student ambassadors, peer mentoring, college committees, T.E.A.M., student government, and the peer assistant program.

8A. How much do you know about Baruch College's leadership opportunities (listed above)?
8U. How involved have you been with Baruch College's leadership-oriented groups?

- Extremely Involved (e.g., an activity and/or meeting MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., an activity and/or meeting ONCE A WEEK during a semester)
- Moderately Involved (e.g., an activity and/or meeting about EVERY OTHER WEEK during a semester)
- Lightly Involved (e.g., an activity and/or meeting ONCE A MONTH during a semester)
- Minimally Involved (e.g., an activity and/or meeting ONCE OR TWICE during a semester)
- Not Involved (e.g., NO activities during a semester)

Fraternities and Sororities

Description of Resource: Baruch College hosts fraternities and sororities. Students can join these organizations to establish long-lasting friendships, provide service to the community, and develop leadership skills.
9A. How much do you know about Baruch College's fraternities and sororities?
9U. How involved have you been with Baruch College's fraternities and sororities this semester?

- Extremely Involved (e.g., an activity and/or meeting MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., an activity and/or meeting ONCE A WEEK during a semester)
- Moderately Involved (e.g., an activity and/or meeting about EVERY OTHER WEEK during a semester)
- Lightly Involved (e.g.., an activity and/or meeting ONCE A MONTH during a semester)
- Minimally Involved (e.g., an activity and/or meeting ONCE OR TWICE during a semester)
- Not Involved (e.g., NO activities and/or meetings during a semester)

Other Undergraduate Student Clubs

Description of Resource: In addition to the organizations mentioned above, Baruch College hosts a wide variety of undergraduate student clubs. Some examples of such clubs include the Accounting Society, the Young Americans for Liberty, the Wall Street Club, the Turkish Student Organization, and many more.

10A. How much do you know about Baruch College's Undergraduate Student Clubs?
10B. How involved have you been with Baruch College's Undergraduate Student Clubs?

- Extremely Involved (e.g., a club activity and/or meeting MORE THAN ONCE A WEEK during a semester)
- Very Involved (e.g., a club activity and/or meeting ONCE A WEEK during a semester)

- Moderately Involved (e.g., a club activity and/or meeting about EVERY OTHER WEEK during a semester)
- Lightly Involved (e.g.., a club activity and/or meeting ONCE A MONTH during a semester)
- Minimally Involved (e.g., a club activity and/or meeting ONCE OR TWICE during a semester)
- Not Involved (e.g., NO club activities and/or meetings during a semester)

Athletics and Recreation

Description of Resource: Baruch College offers state-of-the-art recreation facilities to its students, to help them stay active and healthy. The main facilities offered by the college are the gym, the pool, and racquetball courts.

11A. How much do you know about Baruch College's recreation facilities?
11U. How involved have you been with Baruch College's recreation facilities this semester?

- Extremely Involved (e.g., uses this resource EVERY DAY during a semester)
- Very Involved (e.g., uses this resource MULTIPLE TIMES PER WEEK during a semester)
- Moderately Involved (e.g., uses this resource ONCE A WEEK during a semester)
- Lightly Involved (e.g., uses this resource ONCE A MONTH during a semester)
- Minimally Involved (e.g., uses this resource ONCE during a semester)
- Not Involved (e.g., DOES NOT use this resource during a semester)

Technology Resources

Description of Resource: Baruch College offers a number of technology-based resources to students, to facilitate learning and academic work. These resources include laptop loan, on-campus computer labs, off-campus library access, a wireless network on campus, chat-with-a-librarian, and campus printing allocation.

12A. How much do you know about Laptop Loan?
12B. How involved have you been with Laptop Loan this semester?
NOTE: Same rating scale used for all Technology Resource questions. Shown once in this Appendix, below.

- Extremely Involved (e.g., uses this resource EVERY DAY during a semester)
- Very Involved (e.g., uses this resource MULTIPLE TIMES PER WEEK during a semester)
- Moderately Involved (e.g., uses this resource ONCE A WEEK during a semester)
- Lightly Involved (e.g., uses this resource ONCE A MONTH during a semester)
- Minimally Involved (e.g., uses this resource ONCE during a semester)
- Not Involved (e.g., DOES NOT use this resource during a semester)

13A. How much do you know about on-campus computer labs?
13U. How involved have you been with on-campus computer labs this semester?

14A. How much do you know about off-campus library access?
14U. How involved have you been with off-campus library access this semester?
15A. How much do you know about the wireless network available on campus?
15U. How involved have you been with the wireless network available on campus?
16A. How much do you know about the the the chat-with-a-librarian service?
16U. How involved have you been with the the chat-with-a-librarian service?
17A. How much do you know about your on-campus printing allocation?
17U. How involved have you been with your on-campus printing allocation?

Studying with Friends or Classmates

Description of Resource: Students may participate in formal or informal study groups. A formal study group is generally assigned or organized by a professor, TA, or other college staff. Formal study groups may also be offered by one of the resource programs mentioned in the previous questions. An informal study group is a peer study session that you arrange yourself with friends or classmates. It can be you and one other person studying together, or you and a group of people studying together.

18A. How much do you know about the availability/willingness of others to study with you?
18U. How involved with formal or informal peer study groups have you been this semester?

Other Resources

19A. Are you aware of any other resources that are available to you, that are designed to help you academically and/or to prepare for life after graduation? Please type the names of the resource below:
19B. Are you currently using these other resources? Type the names of the other resources that you are using below:

Demands/Workload and Difficulty Section

Instructions to participant. In the next section, the questions ask about your workload this semester. Many of the questions ask you to estimate how many hours a week you devote to different activities. Please do your best to think about how many hours during an average week this semester you spend on these activities, and enter a numerical response. For example:

* If you spend about a half-hour studying each week, you should enter .5 hours.
* If you spend about seven and a half hours studying each week, you should enter 7.5 hours.
If you are unsure about how much time you spend doing the different activities during a week this semester, please give us your best estimate.

Rating scale for difficulty questions. Very Difficult, Difficult, Moderately Difficult, Easy, Very Easy, Not Applicable

1. About how many hours a week do you spend completing writing assignments for your classes this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
2. How difficult are your writing assignments this semester?

3. About how many hours a week do you spend completing reading assignments for your classes this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
4. How difficult are your reading assignments this semester?
5. About how many hours a week do you spend completing homework assignments other than reading, writing, or studying for exams/quizzes this semester? For example, an 'other' assignment could be participation on a Blackboard discussion, an assignment to watch the news or a film, etc. Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
6. How difficult are these other homework assignments this semester?
7. About how many hours a week do you spend studying for exams (i.e, midterms, finals, quizzes) this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
8. How difficult have your exams been this semester?
9. About how many hours a week do you spend attending classes/lab sessions this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
10. How difficult have your classes/labs been this semester?
11. About how many hours a week do you spend attending group project meetings or other group activities with classmates this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
12. How difficult have these group projects or other group activities been this semester?
13. About how many hours a week do you spend studying for the GRE/GMAT/LSAT/other standardized tests this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
14. How difficult has studying for the GRE/GMAT/LSAT/other test been?
15. About how many hours a week do you spend working at a paid or unpaid job this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
16. About how many hours a week do you spend taking care of family (children or other family members) this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.
17. About how many hours a week do you spend commuting to and from school this semester? Please enter the number of hours, for example 1, 1.5, 2, 2.5, etc.

Outcomes Section: Grades (not used in the analysis), Punctuality, and Satisfaction

Instructions to participant. In this section, the questions ask about your grades this semester so far, and other school-related behavior.

Response scale for satisfaction items. Very Satisfied, Satisfied, Neutral, Dissatisfied, Very Dissatisfied

Satisfaction

1S. How satisfied are you with Baruch College this semester?

2S. How satisfied are you with your professors this semester?
3S. How satisfied are you with your courses this semester?

Grades

1G. On average, what have your grades been this semester?

- Mostly A's
- A's and B's
- Mostly B's
- B's and C's
- Mostly C's
- C's and D's
- Mostly D's
- D's and F's
- Mostly F's

Punctuality

1P. How punctual have you been to your classes this semester?

- Extremely Punctual - I am always on time
- Very Punctual - I am almost always on time
- Mostly Punctual - I am usually on time; have been late a handful of times
- Unpunctual - I am often late
- Very Unpunctual - I am almost always late
- Extremely Unpunctual - I am always late

2P. How timely have you been on your assignments this semester?

- Extremely Timely - I always turn my assignments in on time
- Very Timely - I almost always turn my assignments in on time
- Mostly Timely - I usually hand my assignments in on time; have been late a handful of times
- Untimely - I often turn my assignments in late
- Very Untimely- I almost always turn my assignments in late
- Extremely Untimely - I always turn my assignments in late

3P. How has your attendance to class been this semester?

- Extremely Good - I have not missed a single class or required session
- Very Good - I have almost never missed a class or required session
- Fair - I usually don't miss class or required sessions; have done so a few times
- Poor - I have missed a handful of classes and required sessions
- Very Poor - I have missed many classes and required sessions
- Extremely Poor - I regularly miss class and required sessions

Background Questions (Information Only – Not Used in Analysis)

Instructions to participant. In the last section, the questions ask for some basic background information about your status at Baruch College.

Response scale. Yes/No

1. Are you currently enrolled in the Baruch Honors College or Macauley@Baruch?
2. Are you enrolled in the SEEK program?
3. Are you currently on academic probation?
4. Is your current overall GPA under 2.0?
5. Have you recently returned to Baruch College after academic dismissal?

Instructions to participant. NOTE: We are asking for your name and last four digits of Social Security Number so that we can request your grades from the Registrar and match them to your survey responses. Once this has been done, we will delete your name and last four digits of SSN. Your survey responses will be kept completely confidential, and your name and numbers will not be part of the final data set or report.

Please enter your first name:
Please enter your last name:
Please enter the last four digits of your Social Security Number:

Thank you for your participation today! Please click on the red arrow to submit your survey responses. If you have any questions or concerns, please see the experimenter before you leave this survey session!

Appendix B: Sign Up Text, Informed Consent

Informed Consent Form

Prospective Research Participant,

Please read this consent form carefully as I read it aloud to you.

This study focuses on how academic challenges and academic resources impact your attitudes and behaviors as a student. You will be asked to answer an online survey about how the demands of your current semester impact your attitudes, behavior, and performance this semester. This study takes between 45 and 60 minutes to complete. **You must be at least 18 years old to participate in this study. You will receive 1 credit for participating in this study.**

In order to assess how your experiences during the semester relate to your final grades, your final grades and semester and overall GPA will be requested from the Registrar at the end of this semester. In order to retrieve your final grades and GPA from the Registrar, the Registrar will be provided with your **name and last four digits of your Social Security Number (SSN).** By signing this form you are consenting to the release of your final grades and GPA from the Registrar office at Baruch College.

Because we are asking for identifying information (your name and last four digits of SSN), there is a small risk of breach of confidentiality. In order to mitigate this risk, the data will be encrypted and stored on a secure computer at Baruch College. Once the Registrar has provided your final grades and GPA, that information will be matched to your survey data in the database. Then, your name and last four digits of SSN will be deleted from the file, and your data will no longer be able to be identified as yours.

Your name and last four digits of SSN will not be shared with anyone outside of the Registrar's office, and your survey data will not be shared with anyone. While the data still contains your name and last four digits of SSN, the data will be stored on a secure computer in an office at Baruch College. The final data, without your name and last four digits of SSN, will be encrypted and stored on a secure laptop at the home of the primary investigator. **The informed consent forms will be stored in a locked cabinet in an office at Baruch College.** The aggregate results of this study may be published for scientific purposes but neither your name nor any other identifiable references will appear in any form.

You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate**. In addition, once you begin the survey, you may skip any questions that you wish.** Participants have the right to terminate their participation at any time without penalty.

If you have any questions regarding this research, please contact the primary investigator, Jessica Osedach at 718 490 4496, or josedach@gmail.com. If you have any questions concerning your

rights as a participant in this study, please **contact Keisha Peterson, the IRB Administrator, at 646-312-2217, or Keisha.peterson@baruch.cuny.edu.**

By signing below you agree to the following statements:

(1) I have read and understand this consent form
(2) I consent to releasing my final grades and semester/overall GPA from the Baruch Registrar's Office
(3) I volunteer to participate in this research study

Participant Name_____(PLEASE PRINT)

Participant Signature_____

Last 4 Digits of Social Security Number_____

Date: _____

Recruitment Form

Study Title: EXPANDING THE JOB DEMANDS - RESOURCES MODEL: THE IMPACT OF ACADEMIC RESOUCRES AND DEMANDS, AND NEED FOR COGNITION, ON ENGAGEMENT, BURNOUT, AND OUTCOMES

This study focuses on how academic challenges and academic resources impact your attitudes and behaviors as a student. **Participants must be at least 18 years old, and must have completed at least one semester at Baruch College.** As a participant in this study, you will complete an online survey during a one-hour session on campus that asks questions about the academic demands facing you this semester, your attitudes and feelings about the current semester, and your involvement with college-based resources this semester. You will be asked to sign a consent form, to allow researchers to collect your final grades from the registrar. You will receive 1 credit for your participation.

Confidentiality will be maintained to the best of our ability. In order to retrieve your final grades from the registrar, your name and last four digits of your Social Security Number (SSN) will be collected, and will be sent to the registrar. Once your final grades and survey data are matched up, your name and last four digits of SSN will be deleted from the database. All data will be stored electronically in a secure location, and only the principal investigator will have access to the data.

You may skip any items you feel uncomfortable answering, and you may stop at any time if you feel uncomfortable with the study. Your participation in this study is voluntary. If you have any

questions or concerns regarding your participation in this experiment, you may contact Jessica Osedach at josedach@gmail.com. **If you have any questions about your rights as a volunteer, please contact please contact Keisha Peterson, IRB administrator, at 646-312-2217, or Keisha.peterson@baruch.cuny.edu.**

Appendix C: Exploratory Factor Analysis of Engagement and Burnout

Final Factor Assignments for State Engagement and Burnout

	Dedication/ Cynicism	Personal Efficacy	Vigor	Exhaustion	Absorption
ded 3_I find my studies full of meaning and purpose	0.568				
pereff 6_I am learning many interesting and worthwhile things this semester	0.567				
ded 4_I am enthusiastic about my studies	0.500				
ded 5_My studies inspire me	0.471				
cyn 4_I have become less enthusiastic about my studies	-0.648				
cyn 1_I have become less interested in my studies since I started this semester	-0.683				
cyn 2_I have become more cynical about the potential usefulness of my studies	-0.740				
cyn 3_I doubt the significance of my studies	-0.741				
vig 4_As far as my studies are concerned, I always persevere, even when things do not go well		0.692			
pereff 4_During class I feel confident that I am effective in getting things done		0.630			
pereff 3_In my opinion, I am a good student		0.624			
vig 5_I am resilient mentally, as far as my studies are concerned		0.603			
ded 1_I am proud of my studies		0.595			
pereff 1_I can effectively solve the problems that arise in my studies		0.528			
pereff 2_I feel I am making an effective contribution to the classes that I attend		0.498			
pereff 5_I feel stimulated when I achieve my study goals		0.420			

Note. Green = dedication items, yellow = cynicism items, blue = vigor items, orange = exhaustion, mint = absorption, grey = dropped from study

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.670	33.344	33.344	10.246	32.020	32.020	4.092	12.787	12.787
2	3.527	11.023	44.367	3.078	9.620	41.640	3.783	11.822	24.609
3	2.368	7.401	51.768	1.805	5.639	47.279	3.717	11.616	36.225
4	1.673	5.229	56.997	1.199	3.746	51.025	3.105	9.703	45.928
5	1.135	3.546	60.542	.776	2.424	53.449	2.377	7.429	53.357
6	1.033	3.229	63.772	.534	1.670	55.119	.564	1.762	55.119

Chi square = 495; df = 319 sig = .000

Factor Correlation Matrix

Factor	1	2	3	4	5	6
1	1.000	-.080	-.211	-.444	-.455	.089
2	-.080	1.000	.103	.316	.089	.038
3	-.211	.103	1.000	.358	.324	.145
4	-.444	.316	.358	1.000	.330	.074
5	-.455	.089	.324	.330	1.000	-.037
6	.089	.038	.145	.074	-.037	1.000

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

Appendix D: Need for Cognition Parcels

Need for Cognition Parcel 1:
cog 1_I would prefer complex to simple problems
cog 4_I would rather do something that requires little thought than something that challenges my thinking...
cog 7_I only think as hard as I have to
cog 10_The idea of relying on thought to make my way to the top appeals to me
cog 13_I prefer my life to be filled with puzzles that I must solve
cog 16_I feel relief rather than satisfaction after completing a task that required a lot of mental effort

Need for Cognition Parcel 2:
cog 2_I like to have the responsibility of handling a situation that requires a lot of thinking
cog 5_I try to anticipate and avoid situations where there is a chance that I will have to think in depth...
cog 8_I prefer to think about small, daily projects as opposed to long-term ones
cog 11_I really enjoy a task that involves coming up with new solutions to problems
cog 14_The notion of thinking abstractly is appealing to me
cog 17_It's enough for me that something gets the job done; I don't care how or why it works

Need for Cognition Parcel 3:
cog 3_Thinking is not my idea of fun
cog 6_I find satisfaction in deliberating hard and for long hours
cog 9_I like tasks that require little thought once I've learned them
cog 12_Learning new ways to think doesn't excite me very much
cog 15_I would prefer a task that is intellectual, difficult, and important to one that is somewhat import...

Dropped to Improve Reliability:
cog 18_I usually end up deliberating about issues even when they do not effect me personally

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