

Academic Work Ethic: Predicating Student Assignment Choice and Evaluating the
Academic Work Ethic-Student Measure

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ABSTRACT

There were several objectives associated with the following three-study dissertation. The initial study was designed to replicate and extend previous research on the partial assignment completion effect (PAC), effort, and students' assignment choice behavior. Our focus was to determine if individual differences, specifically work ethic, may explain why some students chose to continue to work on a partially-completed assignment as opposed to completing a different, lower-effort assignment. Our experimental and correlational results extended research on PAC and effort by suggesting that individual differences in work ethic may influence students to choose to finish what they started, even when it requires them to do more work. Additionally, by demonstrating that scores on the Multidimensional Work Ethic Profile (MWEP) accounted for a significant amount of variance in academic assignment choice behavior we extended research on the MWEP across contexts (i.e., academic assignment as opposed to work).

The significant findings from Study I influenced us to pursue Study II which focused on the development and initial validation of an academically focused work ethic scale. The MWEP was used as a model to develop the 84 preliminary items. These items along with the MWEP were administered to college students. Five factors emerged with each dimension being reduced to 5 items. Significant correlations between our five academic work ethic factors and similar MWEP factors supported the validity of the Academic Work Ethic-Student (AWE-S) measure.

The AWE-S items were written at a fifth-grade reading level so that the measure could be completed by middle and high school students. With Study III we replicated

Study I by using similar assignment choice procedures with younger students (grades five-eight) and assessing working ethic using the newly created AWE-S. Next, we analyzed student choice data to determine if AWE-S scores could account for student choice (i.e., choosing to complete either a partially completed assignment or a new assignment that would require approximately 10% less effort to complete). Students also completed a 35-item scale designed to measure perfectionism. Findings suggest that specific AWE-S factors explain some student choice variance within the sample; yet psychometric findings suggest that additional work on the AWE-S scale is needed to enhance the internal consistency of the instrument.

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CHAPTER ONE

Introduction

This dissertation is presented in five chapters. Chapter One provides an overview of previous research on choice behavior, the interrupted task paradigm, the partial assignment completion (PAC) effect, and work ethic, all which supported and encouraged the subsequent three studies. During partial assignment completion studies, some students chose to complete longer, partially-completed math assignments over shorter assignment that would require less effort to complete. The primary purpose of Study I (Chapter Two) was to determine if individual differences in work ethic could account for some students choosing to do more academic work (i.e. choose to complete the higher effort assignment). Additionally, this study was the first to investigate whether the MWEP could predict human choice behavior.

Chapter Three, describes Study II in which we developed and began to evaluate the Academic Work Ethic-Student measure (AWE-S). College students completed the MWEP, the 84 academic work ethic items, a measure of Conscientiousness, and a measure of Efficiency. Exploratory factor analysis of the academic work ethic data revealed five factors. These five factors were then reduced to five items each, for a total of 25 items. Correlations between AWE-S factors and MWEP factors supported the validity of our new AWE-S scale. With Study III we applied PAC procedures, similar to those used in Study I, with the purpose of extending research on that AWE-S to determine if this measure could account for a significant amount of variance in elementary and middle-school students' assignment choice behavior. Thus, school-aged students were given a choice of the assignment they wished to complete, either a

partially-completed assignment with 10 computation problems remaining or a new assignment with 9 matched-effort computation problems. With Study III we were able to predict variance in student assignment choice using scales of the newly developed AWE-S.

Choice Behavior

Behavioral Perspective

When given the choice between two behaviors, and all else is held constant, organisms will choose to engage in the behavior that requires the least amount of effort to complete (Aparicio, 2001). Researchers extended these findings to students and showed that they are more likely to choose to engage in assignments requiring less time and effort to complete (Billington & Skinner, 2002; Billington, Skinner, Hutchins, & Malone, 2004). Myerson and Hale (1984) conceptualized students' classroom behavior as a constant choice between competing alternatives. Influencing students to choose to work on assigned tasks, as opposed to alternative behaviors which are potentially disruptive, is a frequent challenge for most educators (Skinner, Pappas, & Davis, 2005; Skinner, Wallace & Neddenriep, 2002). Additionally, getting students to choose to engage in assignments requiring effort is necessary to enhance learning and maintain quick and accurate responding to academic material (Binder, 1996; Greenwood, Delquadri, & Hall, 1984).

As suggested by Myerson and Hale (1984), Herrnstein's Matching Law (1961) can be used to predict and control student behavior. Based on the Matching Law, the probability of students choosing to engage in academic behaviors is determined by the

reinforcement strength associated with the academic behavior and the effort those behaviors require, relative to the effort required for alternative behaviors and the reinforcement strength of those behaviors.

The Matching Law has been supported by numerous researchers who were able to influence student choice behavior by enhancing rate, quality, and immediacy of reinforcement (Martens & Houk, 1989; Mace, McCurdy & Quigley, 1990; Neef, Mace, & Shade, 1993; Neef, Shade, & Miller, 1994; Skinner et al., 1999). However, because it is often difficult for educators to strengthen reinforcement for academic behaviors (i.e., deliver higher quality reinforcers, more immediately, and at higher rates) applying the Matching Law to educational contexts can be challenging (Skinner, 2002).

Researchers have been successful at increasing student choice behaviors by decreasing time and/or effort to complete an assignment, decreasing the overall assignment length, or substituting known items for unknown items (Cooke, Guzaukas, Pressley, & Kerr, 1993; Winterling, Dunlap, & O'Neill, 1987). However, these efforts are likely unacceptable to teachers because they essentially involve reducing assignment demand, sometimes referred to as watering down the curriculum (Cates et al., 1999). Provided that the assigned work is related to meaningful educational objectives, as opposed to busy work, effort reduction procedures are likely to reduce student learning (Logan & Skinner, 1998; Roberts & Shapiro, 1996).

Instead of substituting challenging items with items already mastered, researchers have interspersed additional, very brief items throughout the assignment, maintaining assignment integrity (Logan & Skinner, 1998; Skinner, 2002; Skinner et al. 1999;

Skinner, Robinson, Johns, Logan, & Belfiore, 1996; Wildmon, Skinner, McCurdy, & Sims, 1999; Wildmon, Skinner, & McDade, 1998; Wildmon, Skinner, Watson, & Garrett, 2004). This procedure, referred to as the additive interspersal (Skinner, 2002), was assessed by comparing two equal-effort math assignments, the first assignment containing all three-digit by two-digit (3×2) math computation problems and another assignment with matched-effort 3×2 problems interspersed with brief one-digit by one-digit (1×1) math problems. When given a choice between these two assignments, significantly more students chose to complete the additive interspersal assignment, even though it contained additional problems, and therefore required more effort to complete. Moreover, student's perceived the additive interspersal worksheet to be less difficult, requiring both less time and effort to complete (Billington & Skinner, 2006).

These findings provide educators with a procedure for increasing the probability of students choosing to work on assignments without reducing effort (i.e., watering down the curriculum) or strengthening teacher-delivered reinforcement (Skinner, 2002). Additionally, additive interspersal procedures had heuristic value, as it influenced researchers to develop the Discrete Task Completion (DTC) hypothesis (Skinner, 2002) and the Partial Assignment Complete effect (Hawthorn-Embree, Skinner, Parkhurst, & Conely, 2010).

The DTC hypothesis is founded on the assumption that that most students have a learning history in which they were reinforced for assignment completion. If assignment completion is followed by reinforcement, then based on classical conditioning theory, stimuli that reliably precede task completion should become conditioned reinforcers.

Therefore, when an assignment is comprised of multiple discrete tasks, each complete discrete task serves as a reinforcing stimulus. The DTC hypothesis has been supported by multiple researchers (Cates & Skinner, 2000; Cates et al., 1999; Logan & Skinner, 1998; McCurdy, Skinner, Grantham, Watson, & Hindman, 2001; Skinner, Fletcher, et al., 1996; Skinner et al., 1999; Skinner, Robinson, et al., 1996; Wildmon et al., 1999; Wildmon et al., 1998) and by a meta-analysis suggesting that the DTC hypothesis may be used to predict choice behavior across students and assignments (Skinner, 2002).

The assumption that students have a learning history of being reinforced for completing assignments suggests another plausible procedure for enhancing assignment completion (Hawthorn-Embree et al., 2010). Researchers investigating the Partial Assignment Completion effect (PAC) suggested that if students have a history of being reinforced for completing assignments and/or avoiding punishment by completing assigned work (see Skinner, 2002) they should be motivated to finish partially-completed assignments. To investigate the PAC effect Hawthorn-Embree, Skinner, Parkhurst, and Conely (2011) interrupted middle-school students after completing 10 problems of a 20 problem math computation assignment. Later they were given the choice to complete the assignment that they had already started (10 problems remaining) or a new assignment containing 10 matched-effort problems. This finding supported the hypothesis that students are motivated to complete unfinished assignments, as significantly more students chose to finish the partially-completed assignment over the new matched-effort assignment. Although the PAC effect can be explained via a causal model of behavioral theory and learning histories (Hawthorn-Embree et al., 2011), much earlier Gestalt

psychologist provided an alternative causal model that may explain PAC effects (Hawthorn-Embree et al., 2010).

Gestalt Perspective: The Zeigarnick Effect

Gestalt theorists suggest that our environment consists of objects and events (e.g., fields) which can facilitate or obstruct an individual's behavior. Kurt Lewin commented on field forces, saying "Good weather may entice us to walk and dogs to pet them" (as cited de Rivera, 1976). Lewin observed these environmental factors as leading individuals to acts of "intention", or specific behavioral responses. Intentions create "tension states" which function equally to physiological needs and thus, "tension systems" are considered a type of quasi-need. Lewin viewed humans as seeking to satisfy or discharge these tension systems. Further, any interrupted action would result in a tension system, leading to the later resumption of the action or retention in memory of the interrupted action (de Rivera, 1976). This early theoretical work was based primarily on observations, with little scientific support.

To examine internal tension systems Zeigarnick (1927) developed interrupted task methodology, often referred to as the Interrupted Task Paradigm (ITP). In her study, participants were asked to complete 18 to 22 discrete items or tasks as quickly as possible. Zeigarnick allowed participants to complete half of the tasks and interrupted the other tasks before completion. In this study and others studies using the similar procedures with nonsense words (Sandvoss, 1933; Schlote, 1930) participants recalled significantly more interrupted tasks than completed tasks. These studies supported

Lewin's hypothesis that interrupted activities are more likely to be recalled than complete activities, which became known as the Zeigarnick Effect (Butterfield, 1964).

In 1928, Ovsiankina (Rickers-Ovsiankina, 1976) studied the ITP using a different method with 108 adults and 16 children. For this study participants were asked to work on one discrete task, (e.g., solving puzzles, stringing beads) and then were interrupted by another task, specific instructions to stop, a diverting conversation, or being asked to introspect. After interruption participants were free to resume the activity if desired. Ovsiankina (Rickers-Ovsiankina, 1976) reported 100% resumption of task when the interruption was perceived to be by chance (i.e., diverting conversation) and 82% resumption when interruption appeared intentional (i.e., instructions to stop). While this research was empirical in nature, the inclusion of many variables gave rise to further questions about the impact of tension systems on the resumption of interrupted tasks.

Katz (1938), building from Ovsiankina's (1928) findings, completed a controlled experimental study which confirmed previous findings. Specifically, resumption of an interrupted task occurs at a high rate but can be confounded by alternate choices of tasks post-interruption and the nature of the interrupted task. Butterfield's (1964, 1965) ITP procedures differed from Zeigarnick (1927), Ovsiankina (1928) and Katz (1938) as he interrupted a single task and then allowed the participant to choose to resume the interrupted task or re-do a task which the participant had already completed. Also, breaking with the Gestalt theorist, Butterfield (1964, 1965) proposed psychoanalytic theories of repression, success-failure conceptualization, personality functioning, and achievement motivation to explain why people were generally motivated to complete

interrupted tasks. Regardless, the results of Butterfield's ITP research broadly suggested that most people are motivated to work on the partially-completed interrupted tasks.

Application to Education

If educators hope to enhance students' skill development it is critical that students chose to work on assignments (Skinner et al., 2002). Early researchers investigating the Zeigarnick Effect and using ITP methodology explored the recall of discrete tasks, as opposed to choice behavior. Furthermore, the majority of past ITP research was performed with adults. Researchers using child samples interrupted students who were working on single non-academic tasks, such as games or puzzles (e.g., Butterfield, 1964, 1965; Ovsiankina, 1928), as opposed to academic assignments that often include multiple discrete tasks. Most importantly, researchers analyzing the resumption of a task post-interruption failed to control for other variables known to influence choice, including the effort required to complete a task and interest in alternative activities (Hawthorn-Embree et al., 2010; Hawthorn-Embree et al., 2011; Katz, 1938; MacMillan, 1969). Perhaps for these reasons, the ITP was not discussed for its potential application to educational settings, where academic assignments are often interrupted. For example, it is hard to imagine a classroom situation where the students would be interrupted before he/she could complete exactly half the items on a 10-item math assignment (see Katz, 1938). However, it is not uncommon for a teacher transitioning between lessons to inform students that they need to finish the problem or item they are working on and finish the rest of the assignment for homework.

When given two assignments and all else is held constant (e.g., quality, immediacy, rates of reinforcement, time and effort to complete assignments, assignment difficulty, and interest in the assignment), the ITP suggests that students should be more likely to choose to engage in assignments that they have already started, but not completed, as opposed to starting a new assignment (McGraw & Fiala, 1982). Recently, researchers who have carefully matched assignments have found evidence that students may be more likely to choose to work on assignment that they have already started (Hawthorn-Embree et al., 2010; Hawthorn-Embree et al., 2011). Hawthorn-Embree, et al. (2011) designed procedures to extend task interruption research to educational contexts by evaluating PAC effects on academic assignment choice. A sample of 85 seventh-grade students completed the procedures. Initially, the students began working on a mathematics assignment containing 25 three-digit by two-digit problems. After working on this assignment for 5 min the students were told to finish the problem they were working on and raise their hand. The partially-completed assignment sheets were collected and matched with a control worksheet that had the same number of equivalent problems as the partially-completed worksheet. After a 15 min lapse, the students were given a choice to complete the assignment that they had already begun or the new assignment. Results supported the PAC effect, as significantly more students (61.2% versus 38.8%) chose to complete the assignment they had already started.

By using matched assignments Hawthorn-Embree et al., (2011) controlled for variables that may have confounded previous ITP findings (Butterfield, 1964; Katz, 1938; Ovsiankina, 1928; Zeigarnick, 1927). Specifically, perceived effort, time to

complete assignments, difficulty, and interest were held constant across the partially-completed and matched-effort assignments. Hawthorn-Embree, et al. (2010, 2011) extended the ITP by applying it to academic assignments and interrupting assignment completion as opposed to task completion. Therefore, Hawthorn-Embree, et al. (2010, 2011) has referred to their findings by the PAC effect, as opposed to the Zeigarnick effect.

Hawthorn-Embree et al. (2010) investigated the strength of the PAC effect on student choice behaviors. A sample of 91 seventh-grade students was allowed to work for 5 min on the 15-item partial-completion assignment. After the task was interrupted, partial-completion assignment sheets were matched with sheets containing 10% less effort. Student's then were given a choice between completing either sheet. The results showed that 37.5 % of the students in this sample choose to finish the assignment they started, while 62.5 % chose to complete the alternative assignment that required approximately 10% less effort to complete. When these findings are considered in conjunction with the results of Hawthorn-Embree, et al. (2011) they suggest that although students are more likely to choose to work on partially-completed assignments, this effect is not powerful enough to cause students to choose to engage in assignments that require just 10% more effort. Before concluding that because the PAC effect lacks power it also lacks utility to education, it is important to consider that a significant number of the students (37.5%) in the Hawthorn-Embree, et al. (2010) study chose to complete the partially-completed math assignment which required approximately 10% more effort.

This finding suggests that the PAC effect has at least some power and may prove to be effective with some students.

Gestalt (e.g., Katz, 1938; Lewin, 1926; Ovsiankina, 1928; Zeigarnick 1927), behavioral (Hawthorn-Embree et al., 2011), and psychoanalytic (Butterfield, 1964, 1965) causal models have been used to explain why individuals may be more likely to choose to resume interrupted tasks or assignments. Others have suggested that within-subject variables like ego strength and achievement motivation may influence interrupted task choice (Butterfield 1964, 1965; MacMillan, 1969). One variable that may influence individuals, including students, to choose to work on higher-effort assignments that they have started, but not yet finished, is work ethic.

Work Ethic

During the post-reformation era, the idea that all individuals, regardless of disadvantages, can improve their condition in life through hard work alone spawned the term “work ethic” (Byrne, 1990). While this unforgiving, pick yourself up by the bootstraps mentality was the foundation for Max Weber’s development of the Protestant Work Ethic (PWE), his conception of the construct was broad with sociological underpinnings. Weber, a German scholar in fields of sociology, history, religion, and politics, wrote the two part article *The Protestant Work Ethic and the Spirit of Capitalism* (1904-1905) espousing his beliefs about the capitalist expansion into Western Europe and North America. In opposition to the Marxist theorists of the day, Weber suggested that capitalism was influenced by metaphysical beliefs of asceticism (i.e., conscientious use of time and self-denial of luxury) and the belief in a calling from God (Bernstein, 1997;

Byrne, 1990; Furnham 1990a; Poggi, 1983; Weber 1958). Furnham (1990a) explained that Weber's belief in a calling from God to perform one's duty on earth (i.e., vocation) manifested itself in occupational/economic success, indicating salvation. Specifically, Weber (1958) discussed that most individuals who profited from this calling were "men who had grown up in the hard school of life...devoted to their business" (p. 69). Weber's belief in a religious basis for the expansion capitalism put him at odds with other scholars in fields of economics, history, theology, and sociology (Bouma, 1973; Giddens, 1972).

Despite the debate over PWE, there was little clarification or operational definition of domains within PWE. Broadly, definitions of PWE include values of hard work, self-reliance, morality, deferred gratification, asceticism, industriousness, pride, centrality of work, and the terminal value of work (Cherrington, 1980; Furnham 1984; Miller, 1997; Rose, 1985; Weber, 1958; Woehr, Arciniega, & Lim, 2007). Research in the fields of sociology and anthropology used these PWE values to explore group differences and consequences of individuals maintaining these values (Furnham, 1990a, 1990b).

In his book *The Achieving Society*, McClelland (1961) framed PWE in a psychological perspective. Crediting Winterbottom (1958) with the first modern parallel to Weber's discussion of the "capitalist spirit" and suggesting the link between needs for achievement (nAch) and economic development, this work posited that parenting practices which promote autonomy and delay of gratification lead to child achievement, resulting in later economic success (McClelland, 1961). In this book McClelland asserted that the PWE theory of economic growth was mediated by nAch, concluding that higher

nAch is related to higher levels of economic productivity. Although McClelland viewed nAch as superior to the construct of Protestant Work Ethic (McClelland, 1961; Jackson; 1974) his work enhanced the visibility of the PWE construct among psychology researchers. Currently, researchers understand PWE as related to, but distinct from unidimensional factors such as nAch, locus of control, and motivation (Furnham, 1984).

Industrial/Organizational psychologists have shown the greatest interest in the PWE construct because of its relationship to work values. Researchers have found that the PWE belief system is correlated with work-related behavior (Greenberg, 1977, 1978, 1979), personality (Furnham & Koritsas, 1990), demographic factors (Furnham & Bland, 1982; Ray, 1978), and education (Giorgi & Marsh, 1990). However, researchers investigating the relationship between PWE and job performance have found mixed results (Blood, 1969; Ganster, 1980, 1981; Merrens & Gerrett, 1975). These problems may be related to how PWE is operationalized and measured.

A significant problem with interpreting early PWE results lies in the systems of measurement that were devised. Furnham (1990b) meta-analyzed seven work ethic scales purporting to have psychometrically sound properties including: 1) the Protestant Ethic (Goldstein & Eichorn, 1961), 2) the Protestant Work Ethic (Mirels & Garrett, 1971), 3) the Pro-Protestant Ethic Scale (Blood, 1969), 4) the Spirit of Capitalism Scale (Hammond & Williams, 1976), 5) the Leisure Ethic and Work Ethic (Buchholz, 1978), 6) the Eclectic Protestant Ethic (Ray, 1982), and 7) the Australian Work Ethic (Ho, 1984). Furnham (1990b) administered these seven measures to 1,021 participants, finding the correlations between measures to range from .19 to -.66. Several other researchers have

noted inadequate reliability data of these early scales (Jones, 1997; Miller, Woehr & Hudspeth, 2002; Niles, 1999). Furnham's (1990b) explanation for the lack of significant positive convergence between measures is three fold: 1) each scale measures different components of a multidimensional construct, 2) differing strengths of psychometric properties within some scales could lead to low overall correlations, and 3) low correlations may be due errors in measurement across situations. Unidimensionality appears to be the greatest limitation across the measures, as they each report a single work ethic score. Since Weber (1958) initially supported the multidimensionality of PWE this is a major shortcoming (Bouma, 1973; Cherrington, 1980; Furnham, 1984; Miller et al., 2002). McHoskey (1994) suggested that the use of a single score limits what is known in regards to the robustness of the work ethic construct, dimensions of work ethic, deficiencies of the construct, and psychometric properties.

The seven PWE scales created from 1961-1984 reported factors such as work attitudes, leisure, wealth, time, morality, and religious beliefs unequally and diversely. In a factor analysis of Mirels and Garrett's Protestant Ethic Scale, McHoskey's (1994) analysis the Protestant Ethic Scale (Mirels & Garrett, 1971) yielded a four factor solution including asceticism, hard work, leisure, and success. Instead of indicating multidimensionality within the Protestant Ethic Scale, McHoskey noted significant absences in the PWE with factors such as morality, self-reliance, and delay of gratification (Miller, 1997). Heaven (1989) also analyzed the Protestant Ethic Scale (Mirels & Garrett, 1971) and the Eclectic Protestant Ethic Scale (Ray, 1982) and arrived at a three-factor solution. Frunham's (1990b) content, correlational, and factor analysis of

the seven PWE measures identified five interpretable factors consistent with Weber's construct including, belief in hard work, leisure, religious/moral beliefs, independence, and asceticism.

Work ethic is not a simple, harmonious construct, but rather is an overarching and robust belief system that has been limited by single factor scales (Carver 1989; Furnham & Rose, 1987; Furnham, 1990a; 1990b; Lim, Woehr, You & Gorman, 2007; McHoskey, 1994). Furnham (1984) insisted that current scales should not exclusively consider PWE as being Protestant and about only work. In later writings, Weber (1958) suggested that religious affiliation does not destine an individual to have strong work ethic, but rather certain faiths, including Protestantism, share values found in the work ethic construct. After much debate and empirical studies (see Ray, 1982) it was determined that all religious orientations and those lacking religious orientations (i.e., atheists) share attributes of work ethic to a similar degree (Pascarella, 1984, Ray 1982). Consequently, current conceptions of work ethic are now secularized.

Miller, Woehr, and Hudspeth (2002) suggested that the work ethic construct: (a) is multidimensional; (b) pertains to work and work-related activity in general, not specific to any particular job, yet may generalize to other domains including school; (c) is learned; (d) refers to attitudes and beliefs, not necessarily behavior; (e) is a motivational construct reflected in behavior; and (f) is secular. Miller et al. (2002) developed The Multidimensional Work Ethic Profile (MWEP), a self-report measure that included the six dimensions determined by earlier researchers to comprise work ethic (e.g., Furnham, 1984, 1990b; McHoskey, 1994; Weber, 1958). Miller et al. also included an additional

factor of Delay of Gratification. Thus, the MWEP was designed to measure seven factors: Centrality of Work, Self Reliance, Hard Work, Leisure, Morality/Ethics, Delay of Gratification, and Wasted Time.

Initial research on the MWEP suggested it is a reliable and valid measure (Miller et al., 2002) and a significant improvement over previous work ethic scales. This seven dimension, 65-item measure assesses the attitudes and beliefs that comprise the work ethic construct (Miller et al., 2002) and demonstrates high levels of cross-group validity (Meriac, Woehr, & Banister, 2010; Woehr, Arciniega, & Lim, 2007b). The MWEP has been used as a research tool to understand group differences across cultures (Woehr, Arciniega, & Lim, 2007a; Lim et al., 2007; Slabbert & Ukpere, 2011), genders (Meriac, Poling, & Woehr, 2009), and generations (Meriac et al., 2010). Also the MWEP has been used to compare employee and student samples (Van Ness, Melinsky, Buff, & Seifert, 2010).

Consistent conceptualizations of the construct and improved measures have broadened the application of work ethic research. Though most often associated with vocational research, individual differences such as work ethic can influence behavior across activities and settings, including educational activities in schools (Miller, 1997; Miller et al., 2002). However, researchers have not attempted to apply, modify, or evaluate the MWEP for academic settings.

The Current Studies

The following three studies were designed to replicate and extend the research on PAC and MWEP. Hawthorn-Embree et al. (2010) found that 37.5% of middle school

students chose to complete a partially-complete math assignment that required 10% more effort than the alternative new assignment. In Study I (Parkhurst, Fleisher, Skinner, Woehr, & Hawthorn-Embree, 2011) we applied PAC experimental procedures (Hawthorn –Embree et al., 2010) to college students. Additionally, we used the MWEP to determine if work ethic could account for a significant amount of variance in student choice behavior (i.e., choosing either the higher-effort partially-completed assignment or the new lower-effort assignment). Thus, we extended research on the validity of the MWEP by determining if it could predict which students would choose to finish interrupted assignments, even when it required more effort or work to complete.

Next, we developed an Academic Work Ethic-Student (AWE-S) measure modeled on MWEP factors and items. First, we developed a pool of 232 items and selected 84 academic work ethic self-report items to be completed by secondary students in grades 5 through 12. College students completed the academic work ethic items, the MWEP, a measure of Conscientiousness, and a measure of Efficiency. Analysis of the academic work ethic items in isolation yielded five factors, with 5 items representing each factor in the current AWE-S. For Study III we took this line of research full-circle to determine if our newly developed AWE-S scale would account for a significant amount of assignment choice variance in elementary and middle school students.

CHAPTER TWO

1. Introduction

Educators can assign work; however, because students ultimately choose whether to engage in assigned tasks, a more thorough understanding of factors that influence students' choice may allow educators to enhance learning. When all other factors are held constant, students are more likely to choose to engage in behaviors requiring less effort (Billington et al., 2004). As learning requires students' effortful engagement (Greenwood et al., 1984), teachers may be challenged to influence students to choose to work on assigned tasks, as opposed to alternative behaviors that require less effort (Skinner et al., 2005).

1.1 Partial assignment completion

Using an interrupted task paradigm (ITP), researchers have found evidence that people (including children working on puzzles) are motivated to work on partially completed assignments (Butterfield, 1964, 1965). Initial ITP research by Zeigarnick (1927), and later Ovsiankina (Rickers-Ovsiankina, 1928) explain that blocking a goal directed task creates a tension system (Lewin, 1926), influencing motivation to complete/continue the task that had not been completed. Skinner's (2002) Discrete Task Completion (DTC) hypothesis provides an alternative causal model based on behavioral theories and assumed common learning histories. Specifically, Skinner posited that most people have a history of reinforcement for finishing assigned work and/or punishment when work is not completed. Consequently, they are motivated to complete work so that they may access reinforcers and/or avoid aversive consequences.

Recently ITP research has been extended to academic assignments while controlling for effort and interest. Hawthorn-Embree et al., (2011) had 85 seventh-grade

students begin a math computation assignment but interrupted them before they could finish (after 5 min). About 20 min later, researchers gave each student their partially completed assignment and a second assignment with an equal number of matched problems, thus controlling for effort and interest. Students were told that they would have to finish an assignment, but they could choose which one. Results supported what researchers termed the Partial-Assignment Completion (PAC) effect as significantly more students (61.2% versus 38.8%) chose to complete the assignment they had already started. Using similar procedures, Hawthorn-Embree et al., (2010), allowed seventh-grade students ($N = 88$) to choose to work on an assignment that they had already started or a matched assignment requiring 10% less effort. Results showed that significantly more students (62.5% versus 37.5%) chose the new, lower-effort assignment.

Although the Hawthorn-Embree et al. (2010) results suggest that the PAC effect is not very powerful, 37.5% of students in this sample chose to finish the assignment they started, even though it required more effort. ITP researchers, who did not control for or manipulate effort, have found that variables such as age and intelligence may influence students to choose to work on interrupted tasks (Butterfield, 1964; Katz, 1938; MacMillan, 1969). These findings suggest that within-subject factors may have caused these students (37.5% in Hawthorn-Embree et al., 2010) to choose to do more work. Few internal factors are more entrenched in societal values as work ethic (Weber, 1958). Individual difference in work ethic may influence one's choice to engage in higher effort activities across work, home, and school environments.

1.2 Work ethic

Although work ethic is often conceptualized as a motivational construct, Max Weber's (1904-1905) Protestant Ethic suggests that work ethic may be better viewed as a multidimensional construct. This conceptualization has been supported by others who expressed concern that important information and relationships have gone undetected because researchers employed a single universal work ethic measure (Carver 1989; Furnham, 1990b; McHoskey, 1994). Miller, Woehr, and Hudspeth (2002) suggested the work ethic construct: (a) is multidimensional; (b) pertains to work and work-related activity in general; (c) is learned; (d) refers to attitudes and beliefs; (e) is a motivational construct reflected in behavior; and (f) is secular, not necessarily tied to any one set of religious beliefs.

Miller et al. (2002) identified seven dimensions comprising the work ethic construct: Centrality of Work, Self Reliance, Hard Work, Leisure, Morality/Ethics, Delay of Gratification, and Wasted Time, (see Table 1) and developed the Multidimensional Work Ethic Profile (MWEP) to assess individual differences across these dimensions. Evidence suggests that the MWEP provides a psychometrically sound measure of the attitudes and beliefs that comprise the work ethic construct (Miller et al.) and demonstrates high levels of cross-group validity (Meriac et al., 2010; Woehr et al., 2007a). However, no studies have been conducted to determine if the MWEP can predict behavior.

Table 1. *MWEP Dimensions, Dimension Definitions, and Sample Items.*

Dimension:	Definition:	Sample Items:
Centrality of Work	Belief in work for work's sake and the importance of work.	- Even if I inherited a great deal of money, I would continue to work somewhere. (10 items)
Self-Reliance	Striving for independence in one's daily work.	- It is very important for me to always be able to work.
Hard Work	Belief in the virtues of hard work.	- I strive to be self-reliant. (10 items)
Leisure	Pro-leisure attitudes and beliefs in the importance of non-work activities.	- Self-reliance is the key to being successful.
Morality/Ethics	Believing in a just and moral existence.	- If you work hard you will succeed. (10 items)
Delay of Gratification	Orientation toward the future; the postponement of rewards.	- By simply working hard enough, one can achieve their goals.
Wasted Time	Attitudes and beliefs reflecting active and productive use of time.	- People should have more leisure time to spend in relaxation. (10 items)
		- The job that provides the most leisure time is the job for me.
		- People should be fair in their dealings with others. (7 items)
		- It is never appropriate to take something that does not belong to you.
		- The best things in life are those you have to wait for. (7 items)
		- If I want to buy something, I always wait until I can afford it.
		- I try to plan out my workday so as not to waste time. (8 items)
		- Time should not be wasted, it should be used efficiently.

1.3 Current study

PAC researchers (Hawthorn-Embree et al., 2010, 2011) extended theoretical ITP research (e.g., Butterfield, 1964; Katz, 1938) to academic task interruption while controlling for and/or manipulating other factors that influence choice, including effort. The current study extended this research in several ways. We expanded the Hawthorn-Embree et al. (2010) findings to college students by investigating whether a 10% difference in effort required to complete assignments would overcome the PAC effect. More importantly, we attempted to determine if individual differences with respect to work ethic may explain why some students chose to complete the higher-effort assignment that they had started, as opposed to a new lower-effort assignment. Because those with strong work ethic are generally considered to be more willing to maintain motivation, or task specific focus, we posited that interruptions would cause higher levels of tension in those with stronger work ethic; thereby, enhancing their motivation to finish the interrupted assignment.

The primary purpose of our study was to test the hypothesis that higher MWEP scores are related to the choice of completing interrupted higher-effort assignments. For this initial study, we used the MWEP because it allowed us to investigate multiple dimensions that may influence students to choose to do more work. A final purpose of the current study was to extend research on the MWEP by investigating whether this measure can predict human choice behavior.

2. Methods

2.1 Participants

Of approximately 400 undergraduate students enrolled in one of five upper-level business courses at a Southeastern University, 106 students participated; however, 8 students' data were dropped because they did not complete any math problems accurately. Of the 98 remaining participants, 62% were male, 38% were female, 16% were juniors and 84% were seniors. Approximately 89% identified themselves as Caucasian, 5% Asian, 3% Black/African-American, and 3% Hispanic. The average age of participants was 22 ($SD = 1.23$). Students received extra course credit for their participation.

2.2 Measures

2.2.1 Multidimensional Work Ethic Profile

The MWEP is a 65-item self-report measure of work ethic (Miller et al., 2002). For each item, respondents rate themselves using a 5-point Likert scale (1 strongly disagree, 5 strongly agree). The 65 items assess 7 work ethic dimensions that are described in Table 1. Each dimension score is an average of the items corresponding to that dimension multiplied by 10. Thus, each dimension is scored on a 10 – 50 scale. Researchers have found adequate internal consistency estimates for the MWEP subscales (Christopher et al., 2010; Miller et al., 2002, Woehr et al., 2007a). Woehr et al. (2007a) reported internal consistency reliability estimates for three diverse sample populations (U.S., Korea, and Mexico) for the MWEP. These reliability estimates were generally acceptable (mean coefficient $\alpha = .79$, range = .64 to .89). Miller et al. (2002) found that the MWEP relates significantly to conscientiousness ($r = .29$) and need for achievement

measures ($r = .34$) and was discriminant from other measures of cognitive ability, personality, and manifest needs.

2.2.2 Experimenter-constructed assignments

For this study researchers constructed two assignments, a partial-completion assignment and a matched lower-effort assignment. First, researchers constructed the partial-completion assignment; a single worksheet containing 20 three-digit by two-digit multiplication problems. Problems were numbered 1-20. In order to equate the problems for difficulty, time to complete, and effort to complete, neither factor contained repeat digits (e.g., 77 was never used as a two-digit factor) and only digits above 3 were used, ensuring each addition operation required carrying.

After constructing the 20-item partial-completion assignment they constructed the 9-item lower-effort assignment. As this assignment was designed to be equivalent to the items 11-19 on the 20-item partial-completion assignment, researchers developed this assignment by first copying the problems 11-19 from the partial-completion assignment and re-numbering them 1-9. This procedure matched problem sequences across the two assignments. Next, the experimenter altered the order of digits in one or both factors in each problem. For example if the 13th problem on the partial-completion assignment was $579 \times 46 = \underline{\hspace{1cm}}$, then the 3rd problems on the lower-effort worksheet could have been $957 \times 64 = \underline{\hspace{1cm}}$. Working with college students, Billington et al. (2004) showed that these procedures can be used to construct equivalent worksheets, leaving insignificant differences with respect to perceived difficulty, time, and effort required to complete each sheet. Thus, completing all 9 problems on the lower-effort assignment required

approximately 10% less effort than completing the last 10 problems on the partial-completion assignment.

2.3 Procedure

Students were recruited by an experimenter who entered the class and informed students that they could earn extra credit by participating in an experiment that involved two activities. First, they would have to spend 20 min providing informed consent, demographic information, and completing a questionnaire (i.e., MWEP) online. Students were not told that the questionnaire measured work ethic. After completing the questionnaire, online instructions prompted the student to sign up for one of several classroom sessions that would be conducted in the early evening and require about 20-50 min. Each session was held in a classroom with auditorium style seating. Although 50 min was allotted for each participant to complete the procedures, the average time taken by each student to complete all of the worksheets was approximately 19.64 min ($SD = 5.73$).

During each session, after everyone was seated, students were given general instructions (e.g., turn off cell phones, computers, no calculators to be used, raise hand if needing a pencil or pen). Experimenters also told students not to open folders until instructed, to follow directions contained in the folder, and to return the folder to the experimenters in the front of the room when finished. Folders were then passed out. Each folder contained several sheets of paper, each with a space for the student to provide her/his name.

The first instruction sheet repeated general directions and prompted students to complete the mathematics problems sequentially without skipping problems. The second

sheet was the partial-completion assignment which contained 20 problems. After the 10th problem there was a printed line with the directions Stop Here and Turn Page in bolded and larger font letters. When students turned the page the next sheet provided additional instructions. Specifically, the instructions indicated that students had to finish one of two sheets, but that they could choose which worksheet to complete. They were then instructed to turn to the next page and choose their assignment, either the partially completed assignment (they had completed 10 problems and there were 10 problem left) or the new, lower-effort assignment that contained 9 matched problems. Neither worksheet had titles or labels. As students completed their tasks, two or more researchers moved about the room monitoring students' behaviors to ensure procedural integrity. After the students finished their chosen assignment they raised their hand for their folder to be collected and their time recorded by the experimenters.

2.4 Interscorer Agreement

Another graduate student randomly selected 30 folders and independently recorded assignment choice (new, lower-effort assignment or partial-completion assignment). These records were then checked against the primary experimenter's records. Interscorer agreement for choice was 30/30 or 100%.

3. Results

We eliminated 8 participants' data because they failed to complete any math problems correctly. Of the 98 remaining participants, 76 (77.6%) chose the new, lower-effort assignment and 22 (22.4%) chose the partially completed assignment. Chi square analysis indicated that this difference was significant, $\chi^2(1) = 4.25, p < .05$.

Descriptive statistics, reliability estimates (coefficient alpha), and correlations among variables are presented in Table 2. Reliability estimates are acceptable for all scale scores across the sample (i.e., mean coefficient $\alpha = .82$) and consistent with prior research (Christopher et al., 2010; Miller et al., 2002, Woehr et al., 2007a). All but one of the scale scores (Morality/Ethics $\alpha = .68$) were above .70, a reasonable level of reliability for research purposes (Nunnally & Bernstein, 1994).

Logistic regression was used to assess the relationship between work ethic and student choice behavior (see Table 3). More specifically, we regressed the dichotomous choice decision on each of the seven MWEP dimensions. Results indicated that student choice was significantly related to overall Work Ethic. As a group, the seven MWEP dimensions accounted for 24% of the variance in student choice behavior (Model 1, Table 3). As seen in Model 1, the model with all seven dimensions as predictors, Leisure and Delay of Gratification were significantly related to assignment choice. Hard Work also approached significance in this model.

Due to multicollinearity among the MWEP dimensions, we performed separate regression analyses for each dimension. Results of these analyses indicated that Leisure was significantly negatively related to choosing the unfinished, higher-effort assignment ($\beta = -1.41, p < .01$, Nagelkerke $R^2 = .16$). This suggests that students who place a higher value on leisure were more likely to choose the new, lower-effort task. Hard Work was significantly positively related to choosing the higher-effort unfinished assignment ($\beta = .96, p < .05$, Nagelkerke $R^2 = .07$). This shows that students who chose the partially completed, higher-effort assignment which was already begun scored higher on the Hard Work dimension. Finally, the Delay of Gratification dimension was also significantly

positively related to choosing the higher-effort assignment ($\beta = .96$, $p < .05$, Nagelkerke $R^2 = .06$). Self-Reliance, Morality/Ethics, Centrality of Work, and Wasted Time were not significantly related to choice.

Table 2. *Descriptive Statistics and Correlations among Study Variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Self-Reliance	3.38	0.65	.89								
2. Morality/Ethics	4.35	0.39	.03	.68							
3. Leisure	2.71	0.61	-.16 [†]	-.08	.88						
4. Hard Work	3.84	0.58	.43 ^{**}	.37 ^{**}	-.25 ^{**}	.87					
5. Centrality of Work	3.65	0.55	.29 ^{**}	.20 [*]	-.44 ^{**}	.39 ^{**}	.83				
6. Wasted Time	3.62	0.59	.43 ^{**}	.41 ^{**}	-.24 ^{**}	.40 ^{**}	.53 ^{**}	.80			
7. Delay of Gratification	3.58	0.55	.31 ^{**}	.36 ^{**}	-.18 [*]	.28 ^{**}	.19 [*]	.35 ^{**}	.73		
8. Work Ethic Total	25.14	2.49	.64 ^{**}	.49 ^{**}	-.55 ^{**}	.70 ^{**}	.69 ^{**}	.76 ^{**}	.59 ^{**}	.92	
9. Choice	0.22	0.42	.13 [†]	.00	-.32 ^{**}	.21 [*]	.14 [†]	.09	.20 [*]	.26 ^{**}	--

Note. $N = 98$; [†] $p < .10$; ^{*} $p < .05$; ^{**} $p < .01$ (1-tailed); Values on the diagonal are reliability estimates (coefficient alpha).

Table 3. *Logistic Regressions of Choice on Work Ethic*

Model			B	Wald	Exp(β)	-2 LL	R ²
1	All 7 MWEF Dimensions Together	Self-Reliance	-0.11	0.05	0.89		
		Morality/Ethics	-1.11	1.63	0.33		
		Leisure	-1.42**	6.65**	4.14**		
		Hard Work	0.82†	1.76†	2.27†		
		Centrality of Work	-0.20	0.09	0.82		
		Wasted Time	-0.20	0.10	0.82		
		Delay of Gratification	1.11*	3.07*	3.04*	87.55	.24
2	Individual	Self-Reliance	0.51†	1.68†	1.66†	102.62	.03
3	Dimensions	Morality/Ethics	0.00	0.00	1.00	104.38	.00
4		Leisure	-1.41**	9.04**	4.09**	93.72	.16
5		Hard Work	0.96*	4.19*	2.61*	99.76	.07
6		Centrality of Work	0.67†	1.88†	1.95†	102.37	.03
7		Wasted Time	0.40	0.82	1.49	103.52	.01
8		Delay of Gratification	0.96*	3.71*	2.62*	100.28	.06

Note. $N = 98$; LL = Log likelihood; R² = Nagelkerke R²; † $p < .10$; * $p < .05$; ** $p < .01$ (1-tailed).

4. Discussion

Motivation to complete an interrupted task may derive from internal tension systems (Katz, 1938; Lewin, 1926; Zeigarnik, 1927) and/or antecedent learning histories (Skinner, 2002). Researchers investigating the Partial-Assignment Completion (PAC) effect have extended this research to academic assignments and tested the strength of the effect by manipulating assignment effort (Hawthorn-Embree et al., 2010; Hawthorn-Embree et al., 2011). During the current study we found that significantly more (78%) college students chose the new, lower-effort assignment which supports the conclusion that relative effort may have more impact on student choice than the PAC effect.

We broadened PAC research by investigating individual differences in work ethic and found that 24% of the variance in student choice behavior could be accounted for by MWEP scores. These results support the previous research on the validity of the MWEP (Miller et al., 2002) and extend this research by demonstrating that MWEP scores can account for a significant amount of variance in human choice behavior. Analysis showed that three dimensions of the MWEP were significantly related to student choice behavior. Both Hard Work and Delay of Gratification were positively related to choosing the higher-effort, partial-completion assignment, while Leisure scores showed the strongest negative relationship to the choice of the partial-completion assignment. With respect to Hard Work, this finding suggests that the more one values hard work the more likely they were to choose the partially completed, higher-effort assignment.

In the current study, motivation to complete an unfinished assignment was competing with the motivation to complete an assignment requiring less effort. Each of the work ethic factors that were found to significantly predict choice could be explained

solely by the differences in time and effort required to complete the assignments.

Although this finding is consistent with previous research which showed that effort and time influence choice (Billington et al., 2004; Hawthorn-Embree et al., 2010), this impact may have masked more subtle effects of other factors such as Centrality of Work and Morality/Ethics. Isolating effort (e.g., participants are merely given two assignments which require different levels of effort) and partial-assignment completion (e.g., participants are given a partially complete assignment and a new assignment that requires equal effort) may allow future researchers to identify other work ethic factors that influence choice.

Both the Leisure and the Delay of Gratification domains may have had more to do with how much time each assignment would require, as opposed to how much effort or work they required. A student's ability to delay gratification was positively related to choosing the higher-effort, partially completed assignment. In the current study, the higher-effort assignment would require more time to complete and students were allowed to leave when they finished their chosen assignment. Consequently, students with high Leisure scores and/or low Delay of Gratification scores may have chosen the briefer (i.e. lower-effort) assignment because this choice would allow them more rapid access to preferred behaviors, including leisure activities (Fries, Dietz, & Schmid, 2008; Skinner, 2002). To address this concern, researchers should conduct similar studies where students cannot leave directly after finishing their chosen assignments (i.e., all students must stay for the allotted 50 min).

Perhaps the biggest limitation with this study was power. Because the dependent variable was dichotomous and only 22.4% of the 98 students chose the partially

completed assignment, power was limited. Our homogenous sample may have restricted the range of work ethic scores, further hindering our ability to detect subtle relationships. Researchers who conduct similar studies with larger and less homogenous samples may find that other work ethic factors influence assignment choice. Also, because students in this sample were participating for extra credit and completing tasks without consequences (e.g., no grades based on performance) the current findings cannot be generalized to typical school context. Additional studies are needed across participants, settings, and activities to better judge the relationship between work ethic and behaviors.

Researchers have suggested that individual values similar to work ethic, such as conscientious and need for achievement, may moderate work behaviors (MacMillan, 1969; Miller et al., 2002). Although no applied recommendation can be made from this initial study, the results suggest that work ethic may play an important role in education as this construct appears to predict which students will choose to engage in higher-effort behaviors that are often associated with learning and skill development. The current study may also have heuristic value in that it demonstrates how researchers can use PAC procedures to identify students who will choose to do more work.

CHAPTER THREE

1. Introduction

Max Weber's essay, *The Protestant Ethic and the Spirit of Capitalism* (1904-1905) advanced the idea of how religious and cultural values influence behavior in society (Weber, 1958). While his writings were broad and religiously biased, Weber introduced the idea of the Protestant Work Ethic (PWE) which has become part of our popular culture. At the core of Weber's PWE were puritan values, including a belief in a calling from God, asceticism, occupational success, and rationality (Byrne, 1990; Furnham, 1990a). The PWE construct has been investigated by researchers across various disciplines, who mainly focused on group differences (Furnham & Rose, 1987, Furnham, 1990a). McClelland (1961) was first to apply PWE to individuals by suggesting that parenting practices may lead to child achievement. At the time, psychological researchers viewed needs for achievement as superior construct to PWE (McClelland, 1961; Jackson; 1974). More recently researchers have come to view PWE as related to, but distinct from factors such as needs for achievement, locus of control, and motivation (Furnham, 1984, 1987).

Early psychological researchers focused on creating psychometric tools to assess individual PWE characteristics. These scales were used to investigate the relationship between work and non-work related behaviors and examine individual differences of personality, values, and attitudes (Furnham & Koritsas, 1990). In a meta-analysis, Furnham (1990b) studied seven PWE measures including: 1) the Protestant Ethic (Goldstein & Eichorn, 1961), 2) the Protestant Work Ethic (Mirels & Garrett, 1971), 3) the Pro-Protestant Ethic Scale (Blood, 1969), 4) the Spirit of Capitalism Scale (Hammond

& Williams, 1976), 5) the Leisure Ethic and Work Ethic (Buchholz, 1978), 6) the Eclectic Protestant Ethic (Ray, 1982), and 7) the Australian Work Ethic (Ho, 1984). Furnham (1990b) found little positive convergence between these unidimensional measures of work ethic (.10 - .30). This lack of convergence may have been related to the inadequate psychometric properties of many of the measures and the inconsistent conceptualization of the work ethic construct (Jones, 1997; Miller et al., 2002; Niles, 1999). Because the seven PWE scales created from 1961-1984 measured different constructs (e.g., work attitudes, leisure, wealth, time, morality, and religious beliefs unequally and diversely), inconsistent findings across PWE researchers are likely accounted for by an emphasis on different PWE factors within the measure (Carver, 1989; Lim et al., 2007).

Work ethic is not a simple construct, but rather is an overarching belief system that has been limited by single factor scales (Carver, 1989; Furnham & Rose, 1987; Furnham, 1990a). The Multidimensional Work Ethic Profile (MWEP), developed by Miller et al. (2002) measures seven dimensions to work ethic including Centrality of Work, Self-Reliance, Hard Work, Leisure, Morality/Ethics, Delay of Gratification and Wasted Time. In developing the MWEP, the authors posited that work ethic a) can be learned, b) refers to attitudes and beliefs, c) is motivational, d) is secular, and e) should generalize across work-related behaviors (including school and hobbies). With the MWEP, Miller et al. (2002) were able to address the psychometric shortcoming of earlier PWE research by providing a valid and reliable measure of work ethic. The MWEP has been used as a research tool to analyze group differences across cultures (Lim et al., 2007; Slabbert & Ukpere, 2011; Woehr et al., 2007a), genders (Meriac et al., 2009), and

generations (Meriac et al., 2010). Others used the MWEP to compare employee and student samples (Van Ness et al., 2010).

There has been a perpetuated belief among organizations that work ethic values are on the decline among employees. Concern has spread through the business community that decreasing work ethic reflects trends in absenteeism (Dibben, James, & Cunningham, 2001; Shimko, 1992) and counterproductive activities (Sheehy, 1990). Because of this, some businesses have supported school-based efforts to educate and reinforce values which may lead to personal and workplace success (LearnDoEarn, 2011; Borba, 2011). Fox and Grams (2007) attempted to measure and teach work ethics values in middle school consumer education courses. Their measure Work Ethic Behaviors Indicator Inventory (WEBII) was used as both a self-report for student work ethic and as a teacher report on student work ethic. However, Fox and Grams (2007) focused on a unitary measures of work ethic and did not attempt to evaluate the psychometric properties of their measure. Therefore, if researchers are to earnestly evaluate and enhance work ethic across educational settings they will need a reliable and valid measure and a process for assessing work ethic.

Recently, researchers tested the relationship between assignment choice and MWEP scores of college students (Parkhurst et al., 2011). Parkhurst et al. gave 98 college students a 20-problem math computation assignment and instructed the participants to stop working on the assignment after completing 10 problems. Next, the students were allowed to choose to finish either the partially-completed assignment, with 10 problems remaining, or a new assignment that contained 9 matched problems, and therefore required 10% less effort to complete. Results indicated that student choice was

significantly related to overall work ethic scores. The MWEP accounted for 24% of the variance in student choice behavior. When analysis was conducted separately with each dimension results suggested that students who endorsed the importance of Leisure were more likely to choose the new, lower-effort assignment and students endorsing Hard Work and Delay of Gratification dimensions were more likely to choose the higher-effort, unfinished assignment. The MWEP showed its applicability to academic assignments, as opposed to work tasks, by predicting which students were more likely to choose to complete the unfinished, but longer assignment.

1.1 Purpose

The belief in a strong work ethic permeates education with many parents, school administrators, and educators affirming the importance of hard work and the delay of gratification (Gabriel, 2011). While Fox and Grams, (2007) began work on developing an instrument for measuring work ethic in educational settings, they focused on assessing a unitary construct and provided minimal data to support the reliability and validity of their measures. The purpose of the current study was to develop a valid and reliable multidimensional measure of academic work ethic. In developing this measure, the authors built upon MWEP by creating a 25-item, multidimensional scale titled, Academic Work Ethic- Student measure (AWE-S).

2. Methods

2.1 Participants

Approximately 380 undergraduate students enrolled in an introductory level psychology course at a Southeastern university were recruited and participated in this study. Of the 380 cases, 8 students did not complete the demographic items. Of 372

students, 49% were male and 51% were female. Approximately, 85% of the students were underclassmen (freshman and sophomores), while 15% of the students were either juniors or seniors. The majority of the participants identified themselves as White/Caucasian 85%, followed by 7% Black/African-American, 5% Asian, 1% Hispanic, and 3% other. The average age of participants was 19.3 ($SD = 2.11$). Students received extra course credit for their participation in both online questionnaires.

2. 2 Measures

2.2.1 Multidimensional Work Ethic Profile

The MWEP is a 65-item self-report measure of work ethic (Miller et al., 2002), with 10 items used to assess five dimensions (i.e., Self-Reliance, Morality/Ethics, Leisure, Hard Work and Centrality of Work) 8 items used to assess Wasted Time and 7 items used to assess Delay of Gratification. All items require responses on a 5-point Likert scale (1-strongly disagree, 5-strongly agree). Each dimension can be scored independently by using the average of the items multiplied by 10. Therefore, each dimension is scored on a 10 – 50 scale. A total MWEP score can also be calculated. Researchers have found adequate internal consistency for both the MWEP and MWEP subscales (Christopher et al., 2010; Miller et al., 2002; Woehr et al., 2007a). Woehr et al. reported acceptable internal consistency and reliability estimates from sample populations in the U.S., Korea, and Mexico (mean coefficient $\alpha = .79$, range = .64 to .89). Miller et al. found that the MWEP relates significantly to conscientiousness ($r = .29$) and was discriminant from other measures of cognitive ability, personality, and manifest needs.

2.2.2 *Contentiousness*

A 10-item measure of contentiousness (Saucier, 1997) was retrieved from the International Personality Item Pool (Goldberg et al., 2006). Reported internal consistency of the contentiousness scale was $\alpha = .75$. The positive and negatively coded items were randomized and answered in a 5-point Likert scale format (1-strongly disagree, 5-strongly agree).

2.2.3 *Efficiency*

The Abridged Big 5 Circumplex model created by Hofstee, DeRaad, and Goldberg (1992) includes 45 items. The reported internal consistency of the AB5 is $\alpha = .83$. This scale was also retrieved from the International Personality Item Pool (Goldberg et al., 2006). There are 11 items in this model which represent the efficiency scale and were used in the current study. These 11 items suggest high or low conscientiousness or extraversion. The items are answered on a 5-point Likert scale (1-strongly disagree, 5-strongly agree).

2.2.4 *Academic Work Ethic-Student Measure*

The process of developing the AWE-S measure began with creating 217 academically focused and general items based on the seven dimensions on the MWEP (Miller et al., 2002). Additionally, 15 academic items were created for a new dimension of Perseverance, which was proposed as an Eighth factor related to work ethic. Previous Researchers added this Eighth factor because Perseverance with academic assignments appeared to be an especially salient factor to the completion of school work. Also, previous researchers suggested that Perseverance (e.g., working on a long assignment until finished) may be an important work ethic value (Merrens & Garrett, 1975). A total

of 232 draft items were developed. A team of four individuals reviewed all the items for repetitiveness, content, and construct validity. All items were assessed using Flesch-Kincaid readability standards and re-written to be at or below a fifth-grade reading level. From the draft items a final item pool of 84 items were randomly sequenced. Table 4 presents the dimensions, the operational definitions used, and sample items.

Table 4. *AWE-S Dimensions, Dimension Definitions, and Sample Items*

Dimension:	Definition:	Sample Item:
Hard Work*	Belief in the virtues of hard work.	- I can learn anything if I work hard enough.
Leisure*	Pro-leisure attitudes and beliefs in the importance of non-work activities.	- School takes too much time.
Self-Reliance*	Striving for independence in one's daily work.	- I solve my own problems.
Morality/Ethics*	Believing in a just and moral existence.	- Cheating is always wrong.
Delay of Gratification*	Orientation toward the future; the postponement of rewards.	- I wait my turn.
Perseverance*	Steady persistence in a course of action in spite of obstacles	- It is important to finish school assignments all the way.
Wasted Time	Attitudes and beliefs reflecting active and productive use of time.	- I like to get homework done quickly and not waste my time.
Centrality of Work	Belief in work for work's sake and the importance of work.	- Having a job is important.

Note: * reflects dimension in final version of AWE-S

2.3 Procedures

Students were recruited to participate using a campus wide psychology research website. Introductory-level psychology students were prompted to set up individual logins and passwords for this site. When logged on, students were able to see brief descriptions of psychological studies actively recruiting participants and the availability of course credit for participation. Students who chose to participate in the current study were first presented with an external website address. At this external address, students were asked to provide informed consent. In order to receive full extra credit, students were expected to complete one set of questionnaires at the present time and another set that would be emailed to them seven days later. Next, each student who chose to participate was presented with a demographic questionnaire. Students were then asked to complete one set of measures that included the MWEP and Contentiousness scale, or the other set of questionnaires, including the 84 Academic Work Ethic items, a questionnaire about movie viewing rates (data collected for another study), and the Efficiency scale. The order in which students received either the sets of questionnaires was counterbalanced. Once both sessions were completed, extra credit was assigned to the students. All identifying information, such as the students' names and email addresses, were safely discarded after data had been collected.

3. Results

To maintain independence, the data was randomly split into two sets. The first set (200 cases) was used for the exploratory factor analysis. The second set (180 cases) was used for item analysis and to estimate internal consistency.

Exploratory Factor Analysis

We used exploratory factor analysis to examine the unidimensionality of each factor and identify the most relevant scale items. The factor structure which emerged was visually analyzed to assess the strength of the factors found. Factors with weak eigenvalues (below 1.0) were dropped from further analysis. Eight potential factors emerged from the exploratory factor analysis. However, a scree plot analysis (Appendix 1) and a contextual reading of items within each dimension supported the development of a five-factor solution including: Morality/Ethics, Hard Work, Leisure, Self-Reliance, and Delay of Gratification. Our analyses did not support three factors, Wasted Time, Centrality of Work, and Perseverance.

In order to reduce the number of items, the highest primary factor loadings were selected within each dimension (except for Delay of Gratification which only had five items), reducing each factor set to the 5 items representing the largest common variance within the dimension. Items and their primary factor loadings are presented in Table 5. An examination of the Delay of Gratification items identified two low item-total primary correlations (.46 and .40), suggesting that items need to be modified or added to this dimension.

Item Analysis

A validation set of cases (180) was used to calculate Cronbach's alphas for the 5 items selected within each dimension. Alpha values varied across dimensions: Morality/Ethics ($\alpha = .80$), Hard Work ($\alpha = .79$), Leisure ($\alpha = .73$), Self-Reliance ($\alpha = .75$), and Delay of Gratification ($\alpha = .51$). Again, the Delay of Gratification dimension was problematic.

Table 5. *Component Loadings of Five Factor Solution*

Item	Component Loadings				
	M	HW	L	SR	DG
Cheating is always wrong	.810				
Cheating is OK is the test is too hard	.789				
It is OK to lie sometimes	.768				
It is not good to lie	.731				
Always tell the truth	.622				
I can learn anything is I work hard enough		.760			
There are things I can't learn even if I work hard		.722			
I think hard work makes anything possible		.694			
If I work hard enough I can reach my goals		.688			
I can solve all problems if I work hard		.665			
I wish I had more time to do what I want			.762		
I can't play as much as I want because of school			.729		
School takes too much time			.652		
I would rather play than be at school			.651		
I need time to have fun			.642		
I like to finish my school work myself				.688	
I don't wait for other people to help me				.658	
I don't ask for help unless I really need it				.640	
I solve my own problems				.607	
I don't like to ask for help on my homework				.590	
I am patient in waiting for things that I want					.723
I can get something better later if I save my money now					.638
I would rather have a big reward later than a small reward now					.613
I wait my turn					.463
I don't need to be rewarded for every good thing I do					.408

Note. M = Morality/Ethics; HW = Hard Work; L = Leisure; SR = Self-Reliance; DG = Delay of Gratification.

Correlations and factor reliabilities are presented in Table 6 and were calculated using 380 cases. The AWE-S scale correlated significantly with the overall MWEP ($r = .55$; $p < .01$) and with the MWEP calculated from corresponding five factors ($r = .56$; $p < .01$). Additionally, individual AWE-S factors were correlated with corresponding MWEP factors at the $p < .01$ level. The five AWE-S factors each were significantly correlated ($p < .01$) with Contentiousness: Morality/Ethics ($r = .39$), Hard Work ($r = .13$), Leisure ($r = -.12$), Self-Reliance ($r = .21$), and Delay of Gratification ($r = .30$). The AWE-S and each of the five factors were significantly correlated ($p < .01$) with Efficiency: Morality/Ethics ($r = .19$), Hard Work ($r = .22$), Leisure ($r = -.14$), Self-Reliance ($r = .21$), and Delay of Gratification ($r = .29$).

Table 6. *Reliabilities and Correlations of MWEP and AWE-S*

	Co. α	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Awe-S	.784														
2. AweM	.814	.63**													
3. AweS	.733	.63**	.18**												
4. AweL	.742	.32**	-.01	.00											
5. AweH	.793	.59**	.19**	.27**	-.08										
6. AweD	.595	.67**	.34**	.35**	.08	.25**									
7. Mwep	.912	.55**	.31**	.46**	.05	.42**	.36**								
8. Mwep 5	.879	.56**	.28**	.46**	.11	.41**	.32**	.92**							
9. MwepM	.825	.51**	.57**	.26**	.03	.24**	.31**	.54**	.56**						
10. MwepS	.892	.26**	.01	.38**	-.04	.28**	.11*	.66**	.70**	.09					
11. MwepL	.869	.04	-.09	.01	.40**	-.18**	.01	.05	.25**	-.08	.00				
12. MwepH	.866	.41**	.15**	.34**	-.10	.55**	.19**	.78**	.78**	.37**	.57**	-.14**			
13. MwepD	.769	.40**	.21**	.32**	-.05	.33**	.34**	.71**	.68**	.29**	.32**	-.12*	.51**		
14. Cont	.813	.32**	.39**	.21**	-.12*	.13*	.30**	.23**	.15**	.34**	.02	-.23**	.15**	.20**	
15. Eff	.795	.27**	.19**	.21**	-.14*	.22**	.29**	.36**	.23**	.30**	.16**	-.32**	.28**	.27**	.36**

Note. M = Morality/Ethics; S = Self-Reliance; L = Leisure; H = Hard Work; D = Delay of Gratification; Mwep 5 = Five Factor MWEP; Cont = Contentiousness; Eff = Efficiency; *Correlation is significant at $p < .05$ (2-tailed); **Correlation is significant at $p < .01$ (2-tailed).

4. Discussion

The purpose of the research was to develop and begin to evaluate an assessment of work ethic for educational settings. The findings of this research suggest a five-factor measure. Created using the MWEF as a prototype, dimensions of Morality/Ethics, Hard Work, Leisure, Self-Reliance, and Delay of Gratification were found to be internally consistent ($\alpha = .80 - .51$).

Morality/Ethics, foundational to Weber's construct of work ethic, was the strongest factor to emerge from the analysis. A sample item of the Morality/Ethic scale is "cheating is always wrong." Like morality, the belief in the virtues of hard work is essential to work ethic. Items on the Hard Work dimension queried the student's perception of hard work making learning and academic tasks possible. The endorsement of pro-leisure attitudes is negatively related to the construct of work ethic. A sample Leisure domain item included "the more free time I get, the better I feel." Self-Reliance items assessed the importance of being autonomous in completing school work. Delay of Gratification was the weakest significant factor analyzed. While Delay of Gratification suffered from weak item loadings there is precedent to include it with the work ethic construct (Miller et al., 2002). Delay of Gratification items on the AWE-S referred to the postponement of rewards (i.e. I'd rather have a big reward later than a small reward now).

Unlike the MWEF, the AWE-S factor structure did not include Centrality of Work and Wasted Time. Centrality of Work, the belief in work for work's sake, may not be easily approached in academic context because items focus on an individual's identity being built upon their vocation. While students likely view school as a significant part of their life, they may not place the same priority on it as adult employees. Wasted Time

items deal with contextual factors which interfere with the preservation of work time (i.e. I don't like being interrupted at school). Since most academic settings do not allow much student choice in how time is spent, the factor may not relate well to student work.

Lastly, the researcher proposed dimension of Perseverance was not supported. While perseverance to a task is logically related to work ethic, it is may be difficult to differentiate the factor from significant dimensions like Hard Work and Self-Reliance. Future researchers may want to better operationalize these factors for the educational context.

Four dimensions of the AWE-S showed adequate internal consistency, with the fifth dimension of Delay of Gratification being questionable. The AWE-S factors had expected convergence with the MWEP factors, suggesting that the AWE-S is measuring the work ethic construct. Additionally, the five AWE-S dimensions correlate significantly with the corresponding five MWEP dimensions. The total AWE-S and the five AWE-S factors had significant convergence with the scales for Efficiency and Contentiousness, similar to the convergence reported between Contentiousness and Efficiency scales and the total MWEP (Miller et al., 2002). The Contentiousness and Efficiency scales were positively correlated with factors of Morality/Ethics, Hard Work, Self-Reliance, and Delay of Gratification, while Leisure was significantly negatively correlated to both of these scales. The adequate internal consistency and convergence with similar measures show that the AWE-S should be able to measure the work ethic construct.

Before applied recommendations can be made for the AWE-S, external validity concerns should be addressed. The AWE-S was designed for a middle school population but the current study assessed this measure with a college student sample, not accurately

representing the target population of the AWE-S. College students are also most likely high academic achievers which may restrict the range of the scores. While students did not complete the academic work ethic sample items and the MWEP at the same time, they may have noticed similarities between the measures. Thus, the procedures may have influence over the findings. Care should be taken with analyzing the Delay of Gratification factor because of weak internal consistency, suggesting that further steps be taken to strengthen this factor (i.e., creation of new items).

Future researchers should consider evaluating the AWE-S across age groups and ability levels to better represent the school-aged population. Academic work ethic may also play a role in student assignment choice, effortful engagement, and intervention planning. Consequently, researchers should determine if AWE-S scores can predict student choice behaviors and learning.

4.1 Summary

Businesses, parents, and educators value and promote hard work, self-reliance, morality, and delay of gratification. While students' work ethic beliefs may not relate to acquired knowledge or ability, they may have a direct impact on aspects of learning and performance (e.g., beginning and completing a task). Parkhurst et al. (2011) has shown that MWEP scores can predict college student's choice of a higher effort assignment. Because of the convergence between the MWEP and the AWE-S it is believed that the AWE-S may similarly be able to predict choice behavior in middle school students.

CHAPTER FOUR

1. Introduction

Regular engagement in assigned academic tasks promotes student achievement (Binder, 1996; Greenwood et al., 1984). When students reject activities designed to enhance their basic academic skills, they are more likely to develop skill deficits which can interfere with future skill development and achievement (Skinner, 1998). Also, when students choose to engage in learning activities, they cannot engage in competing, incompatible, or disruptive behaviors (Dunlap & Kern, 1996). By enhancing student engagement in effortful, academic behavior, educators can promote academic skill development and avoid potential behavior problems (Skinner et al., 2002).

In their investigation of the Partial-Assignment Completion (PAC) effect, Hawthorn-Embree et al. (2011) found that when given a choice between assignments, one already started and a new assignment requiring equal effort, significantly more middle school students (61.2% versus 38.8%) chose to complete the assignment they had already started. In their follow-up study, Hawthorn-Embree et al. (2010) found that when middle school students were given a choice between two assignment alternatives, one assignment that they had already started and another that they had not yet started but would require about 10% less effort to complete, students were more likely to choose the assignment requiring the least amount of effort. Specifically, of 88 seventh-grade students, significantly more students (62.5% versus 37.5%) chose the new lower-effort assignment. Although these studies suggest that PAC may not be very powerful, the experimental procedures used by PAC researchers may have a heuristic value in that they provide a

platform for measuring student choice behavior while controlling for perceived interest in assignment, assignment difficulty, effort, and interest.

Many factors can influence students' choice behavior including interest in competing alternatives, task difficulty, and effort required to complete assignments (Billington & Skinner, 2006). Butterfield (1964), and later MacMillan (1969), suggested that complex internal factors such as need for achievement and ego strength may impact student choice behavior. Hawthorn-Embree et al., (2010) suggested that future researchers determine if work ethic can account for 37.5% of her participating students choosing higher effort assignments.

Parkhurst et al. (2011) found that differences in work ethic can partially explain why college students chose to complete a higher-effort assignment that they had already started, as opposed to a new lower-effort assignment. The Multidimensional Work Ethic Profile (MWEP) (Miller et al., 2002) accounted for 24% of the variance in student choice behavior. It is expected that individual differences in work ethic also contribute to the behavioral choice of other age groups. The Academic Work Ethic-Student (AWE-S) measure was created to assess work ethic in educational contexts for students 10 years and older. Preliminary research conducted with college students suggests that the AWE-S has adequate internal consistency, convergent validity with the MWEP, and evidence of convergence with measures of contentiousness and efficiency (Parkhurst, Skinner, Woehr, & Taylor, Study II)

The purpose of the current study was three fold. First, we followed up Parkhurst et al. (2011) by assessing if AWE-S scores could predict students who would be more likely to choose to complete an assignment that they have already begun, even though it

required 10% more effort to complete than an alternative assignment that they have not yet started. Second, we further evaluated the factor structure of the AWE-S with students in grade five through eight. Finally, we assessed the relatedness (convergent validity) of the AWE-S and measures of perfectionism, as measured by Schuler's (1994) Goals and Work Habits Survey (GWHS).

2. Methods

2.1 Participants

From a student population of roughly 255, 171 students from the fifth (41), sixth (36), seventh (54), eighth (40) grades of rural school in the Southeastern United States participated in this research project. The students ranged in age from 9 to 15, with 44% being male and 56% being female. Approximately 97% identified themselves as Caucasian, 1% Black/African-American, 1% Native American, and 1% Other.

2.2 Materials

2.2.1 Partial Assignment Completion

Researchers constructed two assignments, a partial-completion assignment and a matched lower-effort assignment. First researchers developed the partial-assignment sheet by writing 15 two-digit by two-digit multiplication problems with all digits being above 3. The problems were numbered 1-15 and none of the 2-digit factors contained identical digits (e.g., 55). Researchers also constructed a lower-effort worksheet designed to be equivalent to items 6 through 14 on the 15-item partial-completion assignment. To develop the lower-effort assignment, researchers first copied the problems 6-14 from the partial-completion assignment and re-numbered them 1-9. This procedure matched problem sequences across the two assignments. Next, the experimenters altered the order

of digits in both factors on each item. For example if the 6th item on the partial-completion assignment was $98 \times 64 = \underline{\hspace{1cm}}$, then the 1st item on the lower-effort worksheet would be $89 \times 46 = \underline{\hspace{1cm}}$). Previous researchers working with both college and high-school students used the matched problems procedure to create assignments that were similar with respect to actual and perceived a) difficulty, b) effort, and c) time required for completion (Billington et al., 2004; Billington & Skinner, 2006). Similar procedures were also used by previous PAC researchers with working with middle schools and college students (Hawthorn-Embree et al., 2010, 2011; Parkhurst et al., 2011).

2.2.2 AWE-S

The AWE-S is a student self-report measure used to assess attitudes on academic work ethic using a 5-point Likert scale (1 strongly disagree, 5 strongly agree). The 25-item self-report questionnaire (see Parkhurst et al., Study II) measures five work ethic dimensions including: 1) Morality/Ethics, 2) Hard Work, 3) Self-Reliance, 4) Leisure, and 5) Delay of Gratification. The AWE-S was found to have adequate internal consistency estimates within the AWE-S subscales (mean coefficient $\alpha = .73$, range = .59 to .81).

The AWE-S showed positive convergent validity with the Multidimensional Work Ethic Profile (MWEP) (Miller et al., 2002). Findings from previous research with the AWE-S (Parkhurst et al., Study II) suggested the inclusion of additional items to further assess the AWE-S factor structure. The current project added two items to the dimension of Delay of Gratification and six revised items to assess the dimension of

Perseverance, bringing the total number of AWE-S items to 33. Refer to Table 4 for definitions of the AWE-S dimensions, definitions, and sample items.

2.2.3 Goals and Work Habits Survey

The construct of perfectionism assess individual beliefs of self-worth as measured by one's productivity and accomplishments, sometimes to an unhealthy compulsion (Burns, 1980). Schuler (1994) created the 35-item the Goals and Work Habits Survey (GWHS) from the Multidimensional Perfectionism Scale (Frost, Marten, Lahart, & Rosenblate, 1990) to measure perfectionism in child and adolescent populations. Student responses are reported on a 5-point Likert scale (1- strongly disagree, 5- strongly agree). The GWHS includes five factors with internal consistencies above .70: Concern Over Mistakes ($r = .82$), Organization ($r = .87$), Personal Standards ($r = .78$), Parental Criticism ($r = .82$), Parental Expectations ($r = .74$). The GWHS has been used with sixth-, seventh-, and eighth- grade students (Siegle & Schuler, 2000).

2.3 Procedures

Fifth-, sixth-, seventh-, and eighth- grade students, for whom parental consent and student assent had been obtained, participated in this study during their regularly scheduled math classes. The class periods lasted 50 min and the study procedures were conducted immediately following the bell signaling the beginning of class. Classroom seating was assigned by the teacher. No classroom contained more than 25 students.

Initially, each participant was provided with a sharpened pencil and read the student assent form. Once student assent was obtained a demographic form was passed out to the students. Once finished, the demographic form was collected from each participating student and their desks were cleared. Students were informed that no

calculators, computers, or mathematics tables could be used. Each student was given the partial-completion assignment face down. Once all participating students had the sheet in front of them they were asked to flip the sheet over, write their name (first and last) on the top corner, and begin completing math problems from left to right at the top of the page without skipping. Students were instructed to do their best and pay attention to further instructions written on the sheet. After the fifth item on the partial-completion assignment sheet, instructions printed in bold font stated “Stop and Raise Hand.”

Researchers monitored student progress and met with each student individually once they had raised their hand. Each student was presented with a choice by a researcher. Specifically, a researcher placed a new lower-effort assignment sheet on the student’s desk next to their partially complete assignment. With both assignments face up the researcher read the following instructions to each student individually:

Here are two assignments [referring to the partial-completion sheet and new lower-effort sheet]. You only need to finish one of them. Look them both over, pick one and begin completing it. Any questions? Raise your hand when you have finished your chosen sheet.

The primary dependent variable was which worksheet each student chose to complete (the partially-completed worksheet or the lower-effort matched worksheet with 10% fewer problems remaining). When the student finished her/his chosen assignment and raised her/his hand a researcher turned over both math sheets face down and presented the student with two scales using the following instructions:

Here are two scales probably like something you’ve seen before. First write your full name on each sheet. [Read printed directions and

demonstrated] *If a question on this sheet was do you like Pizza, and you really like pizza you would circle 5. If you really don't like pizza you would circle 1. If you get confused or have a question raise your hand.*

Each student then completed the 33-item Academic Work Ethic-Student measure and the 35-item Goals and Work Habits Survey. Once the scales were completed, all materials were collected. Because evaluating the AWE-S was a primary purpose of this study and researcher we concerned with fatigue, the AWE-S was always presented in order before the GWHS.

2.4 Data Analysis

PAC procedures required students to choose between two competing assignment, either their partially-completed assignment or the new lower-effort assignment. Chi square was used to test for significant difference. Based on previous research we expect significantly more students to choose the lower-effort (Hawthorn-Embree et al., 2010, 2011; Parkhurst et al., 2011). Thus, we conducted a one-tail analysis with difference in choice being significant at the $p < .05$ level.

We used logistic regression to assess the relationship between student choice behavior and the AWE-S. We also regressed the dichotomous choice variable with the five factors of the AWE-S (Morality/Ethics, Self-Reliance, Leisure, Hard Work, and Delay of Gratification) and the additional factor of Perseverance. Because of potential multicollinearity we conducted separate regressions on each AWE-S factor, Perseverance, and the GWHS dimensions.

2.5 Interscorer Agreement

An independent researcher randomly selected 32 participant responses and recorded assignment choice (new, lower-effort assignment or partial-completion assignment), total percent correct on math problems, and responses to both the AWE-S and GWHS. These records were then checked against the primary experimenter's records, with perfect agreement across all responses.

3. Results

Of the 171 students who participated in the study, 165 students correctly followed instructions. Of these 165 students 115 (69.7 %) chose the lower-effort assignment with 50 (30.3%) choosing the partially completed higher-effort assignment. Chi square analysis indicated that this difference was significant, $\chi^2(1) = 25.6, p < .001$.

Descriptive statistics, internal consistencies (coefficient alpha), and correlations among variables are presented in Table 7. Reliability estimates are acceptable for a new measure (Nunnally & Bernstein, 1994), with the median coefficient .65 (mean coefficient $\alpha = .60$). The reliability of the Delay of Gratification dimension was notably low at .36. A corrected item total correlation was also performed in order to most accurately estimate the relationship between individual factors and the total of all other factors.

Reliabilities for and correlations between the Goals and Work Habits measure and the AWE-S are displayed in Table 8. The mean correlation between the six GWHS dimensions and the AWE-S is .11. The AWE-S was significantly correlated with GWHS dimensions of Personal Standards ($r = .44, p < .01$), Order and Organization ($r = .23, p < .01$), and Perceived Parental Expectations ($r = .15, p < .05$).

Logistic regression was applied to the AWE-S, GWHS, and independent dimensions of each measure. The dichotomous choice variable (i.e., selection of lower-effort or higher-effort assignment selection) was regressed against AWE-S and GWHS dimensions. Although, the AWE-S total did not account for significant variance in student choice behavior (Model 1, Table 9) it approached significance ($p = .054$). Using separate step-wise regression analysis Self-Reliance and Hard Work significantly predicted student choice of higher effort assignment (Model 3, Table 9).

Self-Reliance was significantly positively related to choosing the unfinished, higher-effort assignment ($\beta = .862, p < .01$, Nagelkerke $R^2 = .076$). Hard Work was significantly positively related to choosing the higher-effort unfinished assignment ($\beta = .644, p < .05$, Nagelkerke $R^2 = .04$). When combined the dimensions of Hard Work and Self-Reliance accounted for 10% of the choice variance. Dimensions of Leisure, Morality/Ethics, Delay of Gratification, and Perseverance were not significant predictors of student choice. Regression analysis of the Goals and Work Habits scale, including separate analysis of factors: Concern Over Mistakes, Personal Standards, Perceived Parental Expectations, Perceived Parental Criticisms, Doubts Over One's Actions, and Order and Organization, do not display any predictive ability with student choice behavior.

Table 7. *Descriptive Statistics and Correlations among Study Variables*

Variable	<i>M</i>	<i>SD</i>	Coefficient Alpha	1	2	3	4	5	6
1. Hard Work	4.11	0.61	.558						
2. Leisure	3.32	0.85	.743	-.13 [*]					
3. Self-Reliance	3.50	0.64	.541	.05	.02				
4. Morality/Ethics	4.30	0.65	.652	.17 [*]	-.37 ^{**}	.07			
5. Delay of Gratification	4.09	0.44	.365	.23 ^{**}	-.16 [*]	.29 ^{**}	.36 ^{**}		
6. Perseverance	4.33	0.55	.689	.35 ^{**}	-.31 ^{**}	.18 [*]	.44 ^{**}	.40 ^{**}	
7. AWE-S Total	3.96	0.30	.657	.52 ^{**}	.11	.54 ^{**}	.51 ^{**}	.67 ^{**}	.64 ^{**}
8. Corrected Item Total Correlation				.28	-.28	.22	.16	.45	.37

Note. $N = 165$; * $p < .05$; ** $p < .01$ (1-tailed); M = Mean; SD = Standard Deviation; Coefficient Alpha = Internal Consistency estimates; Corrected Item Total Correlation = correlation against total AWE-S excluding items of factor which is being correlated against.

Table 8. *Correlations Between AWE-S scales and Goals and Work Habits Survey scales*

Variable	CM	PS	PE	PC	D	O	GWHS
<i>GWHS Reliabilities</i>	<i>.79</i>	<i>.78</i>	<i>.76</i>	<i>.77</i>	<i>.68</i>	<i>.89</i>	<i>.86</i>
Hard Work	-.13	.31**	.00	-.13	-.22**	.13	-.02
Leisure	.34**	.09	.23**	.29**	.27**	-.21**	.35**
Self-Reliance	.09	.14*	.12	.10	.18*	.04	.17*
Morality/Ethics	-.15*	.20**	-.01	-.16*	-.15*	.24**	-.07
Delay of Gratification	-.18**	.20**	.06	-.14	-.12	.37**	-.04
Perseverance	-.29**	.37**	.00	-.21**	-.21**	.24**	-.09
AWE-S	-.06	.44**	.15*	-.05	-.05	.23**	.13

Note. $N = 165$; Values in Italics: Reliability estimates (coefficient alpha); * $p < .05$; ** $p < .01$ (1-tailed); CM = Concern Over Mistakes; PS = Personal Standards; PE = Perceived Parental Expectations; PC = Perceived Parental Criticisms; D = Doubts Over One's Actions; O= Order and Organization.

Table 9. *Logistic Regressions of Choice on Academic Work Ethic*

Model		B	Wald	Exp(β)	Sig.	R ²
1. Full Model: 6 AWE-S Dimensions	Hard Work	0 .69	4.47	2.00	.034**	
	Leisure	0 .05	0.06	1.06	.80	
	Self-Reliance	0.95	8.05	2.58	.005***	
	Morality/Ethics	-0.22	0.46	0.80	.47	
	Delay of Gratification	-0.45	0.90	0.63	.34	
	Perseverance	0.05	0.01	1.05	.89	
2. Stepwise Regression: SR	Self-Reliance	0.86	8.06	2.36	.005***	.076
3. Stepwise Regression: SR & HW	Hard Work	0.59	3.75	2.61*	.053*	
	Self-Reliance	0.83	7.44	1.95†	.006***	.108

Note. $N = 171$; $R^2 =$ Nagelkerke R^2 ; * $p < .10$; ** $p < .05$; *** $p < .01$ (1-tailed).

4. Discussion

With this study we expanded upon previous research by using the Academic Work Ethic-Student (AWE-S) instrument by examining its potential utility in predicating choice behavior in students in grades five through eight. While the AWE-S was not a significant predictor ($p = .05$) of student choice, the findings of this research both support and extend previous research, expand our understanding of specific internal factors related to student choice behavior, and provide directions for future researchers.

Initial analysis replicated previous findings regarding the strength of the Partial-Assignment Completion (PAC) effect and supported its value as a research platform. We found that 69.7% of the student sample chose the lower effort assignment, requiring 10% less effort to complete, while 30.3% of our sample chose the higher-effort, partially-complete assignment. This data is consistent with previous researchers who found that

37.5% of seventh-grade students (Hawthorn-Embree et al., 2010) and 22.4 % of the college students choose to work on the higher effort assignment that required approximately 10% more effort to complete (Parkhurst et al., 2011). Combined, these results support the conclusion that factors like relative effort have a greater impact on student choice than the PAC effect. However, significant percentages of between 22.4% and 37.5% of students will choose to work on a higher effort assignment.

Individual differences in AWE-S dimensions of Self-Reliance and Hard Work were both significant positive predictors of students who were more likely to choose the higher-effort, partial-completion assignment. Together, these two dimensions account for 10% of variance in assignment choice within the sample. However, one must be cautious when considering the findings because of low internal consistency. Working with college students, Parkhurst et al. (2011) had previously found acceptable reliability for both dimensions (Hard Work $\alpha = .79$, Self-Reliance $\alpha = .71$). Thus, comprehension of scale items may be more of an issue for younger populations. Internal consistency may have also been affected by the limited number of items for each dimension (i.e. five items each). Future researchers may want to continue building upon the potentially predicative dimensions by including more items.

Future researchers should consider eliminating dimensions that have consistently shown weak internal consistency and predictive validity such as Delay of Gratification and Perseverance. The factors of Morality/Ethics and Leisure have shown strong relationships with work ethic and academic work ethic beliefs (Miller et al., 2002; Parkhurst et al., 2011) but may not translate well to a younger population because the

constructs may be difficult for children to comprehend. Alternatively, researchers could try to write items that are more direct, concise, and easy for children to understand. Specifically, researchers may want to take an iterative approach where they test items with small groups of students, solicit feedback, and revise items until most students respond to items as intended.

PAC procedures allow researchers to hold perceived and actual interest in assignments, difficulty of assignments, and time and effort required to complete assignments constant. Yet, a limitation of this study is that we could not control for mathematics ability in this student sample. Most likely because of a heavy reliance on calculators and multiplication tables, a significant portion of our sample could not accurately complete many two-digit by two-digit multiplication problems. The frustration associated with the inability to finish math problems may have resulted in reduced investment in the assignment. To better control for student success with multiplication items, researchers may want to provide brief instruction prior to experimental procedures to review the appropriate process for answering multiplication problems by hand. Additionally, because the students were not graded on their performance, external validity is questionable.

Power is a significant limitation with our dichotomous variable of choice. Specifically, we were limited to a small N (55, 30.3%) of students who selected the higher-effort assignment, with a larger group (N = 115, 70.7%) of students selecting the partial-completion assignment. A larger, less homogenous sample would improve our ability to generalize results to a more diverse population. Additionally, a more diverse

sample may enhance our range of AWE-S and GHWS scores which may improve our power. Regression analysis suggested that the Goals and Work Habits scale (Schuler, 1994) did not predict student choice behavior and was not strongly related to the AWE-S. However, previous studies have suggested that individual values similar to work ethic, such as conscientious and efficiency, correlate well with the AWE-S and MWEF (Parkhurst et al., 2011) and may moderate work behaviors (MacMillan, 1969; Miller et al., 2002). Therefore, while perfectionism does not appear to relate well to work ethic, other within-subject factors may contribute to human choice behavior.

Summary

As assignment engagement is critical to learning (Binder, 1996; Dunlap & Kern, 1996; Greenwood et al., 1984, Skinner et al., 2002), exploring individual differences that predict student choice should be a continued goal for future researchers. Work ethic is one variable that may account for significant amount of variance in student choice (Parkhurst, et al., 2011). The current study suggests that factors of Self-Reliance and Hard Work explain some variance in student choice behavior with a sample of fifth- to eighth- grade students. While refinement is necessary, the AWE-S highlights the value of measuring academic work ethic in school and has promise in being able to predict student assignment choice.

CHAPTER FIVE

When given a choice of two behaviors, one requiring greater effort and one requiring less effort, with other factors held constant, students are more likely to choose to engage in behaviors requiring less effort (Billington et al., 2004). Researchers have found evidence of a small number of students (30-40% of samples) choosing to complete started (but yet unfinished) assignments even when the students have a choice to engage in an alternate assignment requiring less effort (Hawthorn-Embree et al., 2010, 2011; Parkhurst et al., 2011). Although student choice has a pronounced impact on aspects of performance which promote student achievement (Binder, 1996; Greenwood et al., 1984), within-subject variables that influence student choice have not been extensively researched.

Work ethic can impact choice behavior (Parkhurst et al., 2011). Work ethic is also considered by parents and educators to be a valid construct that supports student academic success (Borba, 2011; Gabriel, 2011; LearnDoEarn, 2011). Even so, the research on work ethic has been mostly undertaken by Industrial/Organizational researchers, without application across educational contexts. Furthermore, work ethic scales that have been developed have not been used to predict behavior choice. The current studies have aimed to fill the gap in our present understanding of work ethic, its influence on behavior choice, measurement strategies, and its educational application.

Study I

With Study I (Parkhurst et al, 2011) we replicated the findings of two earlier PAC studies by Hawthorn-Embree, et al. (2010, 2011) and extended this research by

evaluating variables related to assignment choice behavior. The primary purpose of Study I was to determine if work ethic could account for college students choosing to do more academic work (i.e., choosing to complete the higher effort math assignment). PAC procedures, using three by three (3 x 3) multiplication problems, were used to control for assignment difficulty with a sample of 98 college students. The students were stopped during the partially-completed assignment and given a choice to either finish the partially-completed assignment with 10 computation problems remaining or complete a new assignment with 9 matched-effort computation problems. This college sample also completed the Multidimensional Work Ethic Profile (Miller et al, 2002).

Study I was the first to show that work ethic scores could predict assignment choice. Specifically, work ethic explained 24% of the choice variance. This suggests that students who score higher in work ethic are more likely to choose higher effort assignments. Additionally, individual dimensions of Hard Work and Delay of Gratification were both significantly positively related to student choice of the higher effort assignment while the dimension of Leisure was significantly negatively related to the choice of the higher effort assignment. These findings led us to further explore work ethic and individual differences that may predict behavioral choice.

Study II

Study II entailed the process of creating an initial evaluation of the Academic Work Ethic-Student measure. This instrument was built using the Multidimensional Work Ethic Profile as a model and with the support of an MWEPP author, David J. Woehr. Approximately 30-32 academically focused and general items for each MWEPP dimension

(Hard Work, Leisure, Self-Reliance, Morality/Ethic, Delay of Gratification, Centrality of Work, and Wasted Time) and a new dimension of Perseverance were created. From a possible 272 items, 84 sample items were selected based on researchers' judgments related to content validity and readability (i.e., fifth-grade).

In an online study 380 college students completed the MWEP, 84 academic work ethic items, a Conscientiousness scale, and an Efficiency scale. Exploratory factor analysis of the academic work ethic data supported five factors (Hard Work, Self-Reliance, Leisure, Morality/Ethics, and Delay of Gratification), for a total of 25 items. Significant correlations between the five academic work ethic factors and similar MWEP factors supported the validity of the Academic Work Ethic-Student (AWE-S) self-report measure.

Study III

Study III was designed to replicate Study I (Parkhurst et al., 2011) by using the PAC procedures to determine if choice is related to the AWE-S. The purpose of this research was two-fold in that it further evaluated the AWE-S and assessed whether the measure could predict assignment choice behavior of an elementary and middle school population. Approximately 171 fifth-, sixth-, seventh-, and eighth- grade students completed (a) PAC procedures with three-digit by two-digit multiplication problems (3 x 2), (b) a 33-item research version of the AWE-S, and (c) a 35-item perfectionism scale (Schuler, 1994).

Both Hard Work and Self-Reliance were significantly related to students choosing to complete the higher effort assignments. Together these two dimensions accounted for

10% of the choice variance. There were a few significant correlations between perfectionism and the AWE-S, but no perfectionism dimension was related to choice behavior. While the AWE-S scale suffered from weak internal consistency, these findings suggest future directions for improving the AWE-S and evaluating the impact of within-subject variables on student choice behavior.

Future Directions

These three studies represent a line of research, from finding that work ethic helps to explain choice behavior, to developing an educationally-focused measure, and finally to evaluating if the newly created Academic Work Ethic-Student measure. Two major research questions were addressed throughout these three studies: 1) Does work ethic predict student assignment choice and 2) is the Academic Work Ethic-Student measure a viable assessment of work ethic.

Parkhurst et al. (2011) determined that MWEP scores could be used to help predict student assignment choice behavior. Dimensions of Hard Work, Leisure, and Delay of Gratification were especially powerful predictors of student choice, while dimensions of Morality/Ethics, Centrality of Work, Wasted Time, and Self-Reliance were not significant predictors of assignment choice. Working with an elementary and middle-school sample in Study III, dimensions of Hard Work and Self-Reliance were significantly related to student choice of the higher effort assignment, while dimensions of Morality/Ethics, Leisure, Delay of Gratification, and Perseverance did not predict assignment choice. Future researchers should consider building around dimensions which

have been shown to be the strongest predictors of student assignment choice and have maintained adequate internal consistency.

Morality/Ethics, a core tenant of Weber's PWE, does not appear to be associated with student ratings of work ethic values. The dimension of Wasted Time isn't thought to be relevant to schooling because students rarely have a choice of how they wish to spend their time. Centrality of Work overlaps with the theory of identity formation (Erickson, 1978). Since identities are chosen and students have little choice in how they are educated, students are unlikely to view student-hood as their identity. Perseverance with a task has been noted as being elemental to work ethic (Merrens & Garrett, 1975). While this may be true, the Perseverance factor is difficult to differentiate from dimensions of Self-Reliance and Hard Work. Delay of Gratification is a challenging construct to build around for school-aged populations but has also been shown to help predict assignment choice in a college student sample (Parkhurst et al., 2011) and therefore is still believed to be worth continued investigation. Since dimensions of Hard Work, Self-Reliance, Leisure, and Delay of Gratification have shown the greatest predictive power and have had some degree of internal consistency across studies, future researchers attempting to enhance the AWE-S may want to concentrate their efforts on improving these scales in order to create the most concise, reliable, and valid measure.

Because the AWE-S must be written for a broad range of students, researchers must attempt to write items for students with limited vocabulary and reading skills. Future researchers should pursue the development of AWE-Teacher and AWE-Parent versions. Teachers and parents are expected to be able to respond honestly and

consistently to more complex constructs which are difficult to measure or may not be assessed on future versions of the AWE-S, such as Delay of Gratification, Wasted Time, and Morality/Ethics.

Work Ethic scores can predict which students are more likely to finish assignments that they have started which require 10% more effort to complete. Future researchers should continue with studies to determine if student choice of higher effort assignments remains consistent over time. Academic work ethic should be examined without using PAC procedures. For example, researcher could merely ask students to choose between two assignments, one higher effort and one lower effort, without introducing the variables of assignment interruption (see Cates & Skinner, 2000). Another direction for researchers evaluating academic work ethic may be to assess how long a student will continue to work on a task after they are given an option of engaging in more preferable alternative activities. As this line of research develops, researchers should consider conducting longitudinal studies to determine the stability of AWE scores and assess relationship between academic work ethic and academic achievement.

The AWE-S appears to be a useful tool in evaluating student work and should continue to be pursued. Despite strong correlations with MWEP scores, our results showed that the AWE-S has weaker internal consistency and predictive power than the MWEP. Low internal consistencies of the AWE-S may be a result of students having difficulty understanding items or the limited number of total items on the AWE-S. In order to strengthen items researchers should consider applying an iterative process (e.g., focus groups) in which a researcher reads AWE-S items to elementary and middle school

aged students and asks questions in order to ascertain how students are operationalizing dimensions, understanding item language, and arriving at responses. This process may help researchers to clarify or add scale items which most directly assess their intended dimensions. Another approach future researchers may use to strengthen AWE-S items and improve internal consistency is to re-examine and add discarded items that had high correlations but also multiple cross-loadings. Researchers may find that adding items to the AWE-S measure (Nunnally & Bernstein, 1994) will also enhance the internal consistency of the measure.

Important to the development of the AWE-S will be the focus on researcher identified scales (Hard Work, Self-Reliance, and Leisure) which appear to be the best dimensions to build around. Additional items could be added to these scales to increase internal consistency, creating a concise and powerful self-report measure. Furthermore, AWE-Teacher and AWE-Parent versions should improve researcher's ability establish convergent validity and triangulate AWE scores to get the best possible assessment of student work ethic.

Summary

Work ethic is an internal construct that is thought to be universal, learned, and span contexts (Miller et al., 2002). We found that dimensions of work ethic can predict students who will choose a higher effort assignment in educational settings. By measuring academic work ethic and exploring its relationship to assignment choice we are uncovering previously unknown within-subject information which may aide in individualized instruction. The successful measurement of academic work ethic and

predicative relationship to student behavior may also allow future researchers to measure and teach skills that relate to success in the classroom and in life.

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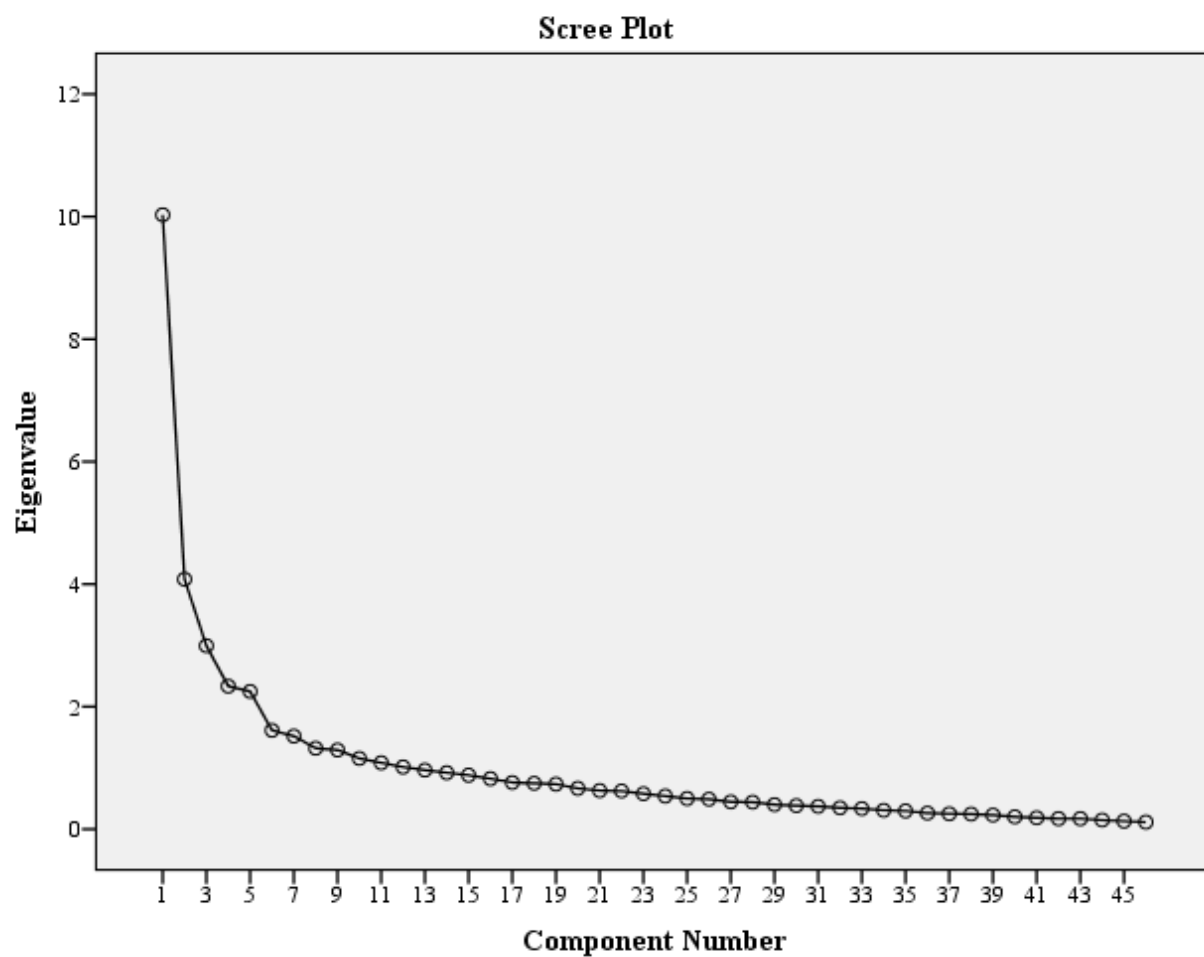
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APPENDIX

Appendix A. *Scree Plot Analysis of AWE-S Factor Structure Study II*

VITA

John Parkhurst was born in Sheffield, Alabama but raised in the Chicago suburbs. After graduating from Naperville Central High School in 2003 he went on to Augustana College in Rock Island, Illinois. At Augustana College John was a wrestling student-athlete, achieving Academic All-American honors in 2007. He graduated in 2007 with a Bachelor of Arts degree in Psychology and Speech Communication. With this degree John went on to work in the mental health field in Naperville, Illinois. Continuing his education in 2008, John was accepted into the School Psychology program at the University of Tennessee. In 2010 he received his Masters of Science in Applied Educational Psychology. After a year-long pre-doctoral internship with Boys Town in Omaha, Nebraska John will receive a Doctor of Philosophy degree in School Psychology (2013).