

VERIFYING WORK ETHIC'S FACTOR STRUCTURE AND  
EXAMINING THE MWEF SHORT-FORM USING THE NEO-PI-R

by

David A. Wright

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Thesis Committee:

Dr. Michael Hein, Chair

Dr. Judith Van Hein, Member

Dr. Richard G. Moffett II, Critical Reader

## ABSTRACT

The proposed study sought to expand construct validity evidence in support of Miller et al.'s (2002) Multidimensional Work Ethic Profile (MWEP) and examine a recently developed short form version of the MWEP. As such, it sought to evaluate whether the short form MWEP relates to relevant external constructs in the same manner as the full version. The current study was successful in providing additional validity evidence for the MWEP as well as for Meriac et al.'s short form version (i.e., the MWEP-SF). Miller's factor structure of work ethic, represented by seven dimensions, was supported by the confirmatory factor analytic results on the full and short form measures, as both resulted in acceptable model fit. The correlational analysis between each work ethic measure and Big Five personality constructs (measured by the NEO-PI-R) also provided validity evidence in support of the MWEP and MWEP-SF. On average, the MWEP and MWEP-SF related to conscientiousness above other personality traits of the five factor model. Relevant facet-level relationships were also examined. Comparisons between the correlational findings for the full MWEP and MWEP-SF suggest that the short form is a promising addition to the psychometric literature, as it seems commensurate in its measurement of the seven work ethic dimensions proposed by Miller. Finally, important suggestions regarding improvements to the measurements and directions for future research are discussed.

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## CHAPTER I: INTRODUCTION

According to Flynn (1994), hiring managers and human resource professionals are increasingly looking for employees with the right attitude and strong work ethic. Flynn (1994) cites two surveys, one showed that “nearly 60% of respondents ranked work ethic as the most important factor when hiring an administrative employee, assuming the candidates had the basic skills necessary to perform the job” (p. 16); moreover, work ethic ranked over “other valued attributes such as intelligence (23%), enthusiasm (12%), and education (4%)” (p. 16).

Not surprisingly, work ethic is increasingly becoming a construct of interest to employers. As Colin Powell once said, “There is no secret to success, it is the result of preparation, hard work, and learning from failure” (Cristopher et al., 2008, p. 189). These small survey findings and a quote from a prominent United States figure are notable, yet they should not persuade you that work ethic is an important construct within organizations. What is more convincing is the growing body of psychological literature on work ethic, especially within the field of industrial/organizational psychology.

As one might expect, employers are increasingly seeking disciplined employees who value hard work—those employees who view work in a positive light. However, what good is talking about (or desiring) *work ethic* unless we can be confident in our ability to measure it? Without reliable and valid measures of work ethic, then the construct adds little to no value to our ability to make important decisions within organizations. This brings up a question of utility. The *utility* a psychological construct can offer is of great importance to pragmatic fields like industrial/organizational (I/O)

psychology and organizational behavior, because in these fields their goal is to bring about positive outcomes for organizations and the people who are a part of them. Sometimes these positive outcomes are tangible and easily seen (e.g., increased production, less injuries, reduced turnover), but often they are expressed in less tangible, yet still important, ways (e.g., improved organizational attitudes such as increased job satisfaction and organizational commitment). Our ability to understand and measure constructs like work ethic relates directly to our effectiveness as I/O psychologists and practitioners.

Furthermore, if measures of psychological constructs are used to make administrative decisions such as who to hire or promote, then they must have substantial validity research backing their ability to discriminate between participants on deliberate and ethical grounds. Therefore, if we are going to benefit from *work ethic scales* being used in organizations, especially for uses that would fall under EEO laws and regulations, we must know that these measures are consistently measuring what they purport to measure.

A central goal of the current research study is to review the literature on work ethic, a construct that has gained popularity within the field of I/O psychology in the last 30 years. After a brief introduction on the construct's origin, we will narrow our focus on the psychological literature, more specifically, on how work ethic has been measured, on the psychometric properties of such measures, and on the construct's purported multidimensional nature. An additional goal of our literature review is to highlight empirical research that connects work ethic with meaningful organizational outcomes, such as individual job performance (Miller, Woehr, & Hudspeth, 2002),

group performance (Meriac, Thomas, & Milunski, 2015; Smrt & Karau, 2011), and its tendency to be negatively associated with unwanted outcomes like counterproductive work behaviors and social loafing (Meriac, 2012; Smrt & Karau, 2011). Finally, we will focus on one measure of work ethic that has gained considerable attention since its relatively recent development – Miller et al's (2002) Multidimensional Work Ethic Profile (MWEP).

## CHAPTER II: A LITERATURE REVIEW OF WORK ETHIC

### **Origin of Protestant Work Ethic**

Work ethic has been a topic of social-science research since Max Weber (1905) coined the term Protestant Work Ethic (PWE) in his account of the origins of capitalism. Until the later portion of the 20<sup>th</sup> century, the construct *work ethic* was a concern of sociologists, anthropologists, economists, and theologians, and unfortunately, no (or few) psychologists (Furnham, 1990b, as cited in Miller et al., 2002). McClelland (1961) was the first psychologist to break this trend, giving a social-psychological explanation for the connection between Protestantism and Capitalism. McClelland's explanation was that people who endorse PWE ideas and values (e.g., success only comes from hard work) raise their children differently than those who do not value such ideas. More specifically, these parenting practices aim at instilling independence, the importance of saving money (delaying gratification), and mastery training. These parenting practices in turn "leads to children developing a strong *need for achievement*" (McClelland, as cited in Furnham, 1990a, p. 384). Although, we owe McClelland a vote of thanks for breaking the ice, we agree with Furnham's (1984, 1990a, 1990b) expansions to the PWE literature, specifically, that work ethic cannot be subsumed fully into another personality trait, in this case, need for achievement. McClelland's propositions are noteworthy for more than historical reasons, his explanation related need for achievement and PWE (or work ethic in general), and while we agree that these two constructs are intimately related – we do not view them as one in the same or within a fully mediated model.

Fortunately, now that an array of psychometrically robust research studies have been conducted and published on PWE (and work ethic in general), we have strong evidence in favor of a multidimensional conceptualization of work ethic (Miller et al., 2002) and the same goes for PWE (Furnham, 1990a). Also, to our prior point, evidence suggests that PWE “is related to, but distinct from other psychological variables like locus of control or need for achievement” (McClelland, as cited in Furnham, 1990a, p. 384).

***Protestant Work Ethic (PWE)***. Beit-Hallahmi (1979) stated that PWE is “an orientation toward work which emphasizes dedication to hard work, deferment of immediate rewards ... and the avoidance of idleness and waste in any form” (p. 263). Now that PWE has been introduced, we would like to assure you that our main construct of interest – work ethic – has not suddenly changed, nor will we be talking about protestant movements, Calvinists, or Lutherans. Instead, the primary reason for bringing up the word “Protestant” and the term PWE is because the concept *work ethic* was unveiled to the social-science literature as such, in Max Weber’s (1905) thesis. Therefore, we want to stay historically accurate while also trying not to confuse our readers. Fortunately, at least from a psychometric perspective, PWE and work ethic (secular) are practically the same abstract concept.

***Is Work Ethic Really Protestant?*** Although, Weber’s (1904-1905) thesis tied religion into an argument about changes in work ethic ideology, and how those changes catalyzed the rapid expansion of capitalism, empirical research has yet to find substantive support for such claims. Miller et al. (2002) notes several studies (Beit-Hallahmi, 1979; Cameron, 1969; Featherman, 1971; Giorgi & Mash, 1990; McHoskey,

1994; Ray, 1982) which “failed to find any consistent relationship between religious orientation and work ethic beliefs” (p. 453).

Whether work ethic was important to the expansion of capitalism is no argument, surely, Weber was on to something there. However, regarding religion and work ethic, as both Pascarella (1984) and Ray (1982) suggest “what was once conceived as a religious construct is now likely secular and is best viewed as general work ethic and not Protestant work ethic” (Pascarella, 1984, as cited in Miller et al., 2002, pp. 453-454). Therefore, instead of using the term PWE and work ethic (secular) as separate constructs, and having to clarify that we are typically talking about both, we will use them synonymously.

Although, psychologists have argued that the correct conceptualization of work ethic is one without religious underpinnings, the consensus is that there still resides a moral/ethical component to the construct. Furnham (1990a) speculates that it is probably the “moral overtones” in the PWE construct that differentiate it from other related constructs like need for achievement, need for cognition, locus of control, and job involvement, and in some cases offer it added predictive validity (Furnham, 1990a). While predictive validity is not at the heart of the current research study, we feel that examining work ethic’s incremental validity within organizational settings is a promising area of research. Later on in our literature review, we will discuss recent research that examined the incremental validity of work ethic beliefs in predicting meaningful organizational variables (e.g. job satisfaction), but first, let’s look deeper into how work ethic has been operationalized and recent developments in its measurement.



*Comparing Work Ethic Scales.* Furnham's contributions to the understanding of work ethic are hard to overstate. Probably his greatest contribution (Furnham, 1990a) was a study which conducted content analysis, correlational analysis, and factor analysis on the collective items of seven different work ethic scales. All three analyses corroborated each other and provided strong support to his main conclusion which was that PWE was a multidimensional construct. This proposition, that work ethic is a multidimensional construct, was not only in line with Weber's (1905) initial, and later published (1958) writings on PWE, but also a view that several other psychologists had postulated (Bouma, 1973; Ho, 1984). Since Furnham (1990a), a "multidimensional" conceptualization of work ethic has become the popular view among psychologists (McHoskey, 1994; Miller et al., 2002; Meriac, Poling, & Woehr, 2009; Meriac, 2012; Meriac, et al., 2013; Lim, 2007; Woehr, Archinega, & Lim, 2007). Following this main conclusion, Furnham (1990a) discussed issues with measuring a multidimensional construct with a unidimensional scale that produces only a single composite score. We will discuss Furnham's (1990a) recommendations after summarizing his factor analysis results.

Furnham (1990a) found PWE to be a multidimensional construct composed of 5 distinct, yet moderately intercorrelated, factors (i.e. dimensions). The five interpretable factors emerging from the orthogonally rotated solution were: (F1) respect for, admiration of, and willingness to take part in hard work, which accounted for almost 20% of the observed variance and over a third of all items loadings; (F2) comprised of items which pertained to the role of leisure, items *against* leisure positively loaded on PWE, whereas those for leisure loaded negatively; (F3) included items concerned with

religion and morality, however, it should be noted that all eight items which loaded on this factor were from only one of the seven PWE scales; (F4) was also dominated by one scale's items, all seven items were from Buchholz (1978) which stressed self-reliance; (F5) accounting for the least amount of observed variance, was a factor interpreted as "asceticism" or the dangers of abundance. (Refer to Furnham, 1990a, pp. 391-394 for all 78 items in the factor analysis)

Furnham's (1990a) study was a convincing call for additional research on work ethic. More specifically, he argued that we needed a more comprehensive and psychometrically sound measure of work ethic, a scale that adequately captures its multidimensional nature. We feel that this recommendation was strongly warranted, as his (1990a) findings suggested major measurement deficiencies in (and across) existing work ethic scales. Meanwhile, other studies were pointing to the importance of work ethic within organizations (Furnham, 1990b).

While Furnham's five factor solution may not stand the test of time as the best reductionist model for PWE, it surely provides strong support for work ethic's multidimensionality. Another factor analysis, four years later, by McHoskey (1994), helps to substantiate Furnham's conclusions about work ethic being a multidimensional construct. McHoskey (1994) conducted a factor analysis on a PWE scale and concluded a 4 factor model, instead of 5. This makes sense considering only one work ethic scale was included in the analysis rather than a combination of seven scales. McHoskey's (1994) four factor model included factors labelled as "success", "asceticism", "hard-work", and "anti-leisure". To clarify his meaning of success, its interpretation was – hard work brings success or "the benefits of hard work".

As Miller et al. (2002) suggests, McHoskey's findings did not stand in opposition to Furnham's, instead they strongly corroborated one another, as McHoskey (1994) pointed out "that though this scale was multidimensional, other important aspects of work ethic were absent"; meaning that other dimensions of work ethic are omitted from Mirels & Garrett's (1971) PWE scale (quotation taken from Miller et al., 2002, p. 455; referencing McHoskey, 1994). Thus, McHoskey's conclusions were, for the most part, in direct alignment with Furnham's.

The findings of the two factor analysis studies described above highlight the ambiguity among prior PWE scales. They found major differences in content both within and across PWE scales. In other words, the work ethic scales developed by psychologists were far too dissimilar from each other to be measuring the same, unidimensional construct. Each researcher came to similar conclusions about the multidimensional nature of work ethic, and the need for a scale that measures work ethic in accordance with its nature (e.g., measuring each distinct dimension of work ethic, allowing for scoring and analysis of each, rather than only offering a composite work ethic score).

### **Multidimensional Scale Development**

Not too long after Furnham (1990) and McHoskey's (1994) factor analytic studies, the next major contribution to our scientific understanding of work ethic (as a psychological construct of interest) was made by Miller, Woehr, and Hudspeth (2002). Miller and colleagues (2002) set out to develop a scale of multidimensional work ethic, an answer to the prior calls for scale development. Miller et al. (2002) began by providing a thorough outline of both Weber's conceptualization of PWE as well as, the

more recent, psychological literature pertaining to work ethic. This undertaking provided a firm foundation for their ambitious undertakings, one firm enough to propose the following:

*“Given the apparent multidimensionality of the work ethic construct and the absence of a firmly accepted conceptual definition, we posit that “work ethic” reflects a constellation of attitudes and beliefs pertaining to work behavior. Characteristics of the work ethic construct are that it (a) is multidimensional; (b) pertains to work and work-related activity in general, not specific to any particular job (yet may generalize to domains other than work—school, hobbies, etc.); (c) is learned; (d) refers to attitudes and beliefs (not necessarily behavior); (e) is a motivational construct reflected in behavior; and (f) is secular, not necessarily tied to any one set of religious beliefs.” (p.455)*

After Miller et al.’s (2002) extensive literature review was complete, they conducted a series of six studies which offered not only a scale called the Multidimensional Work Ethic Profile (MWEP), but also provided strong initial support for their new scale, including analysis of its psychometric properties and construct validity evidence. Their research can be seen as a substantive response to Furnham’s (1990a) call for a comprehensive and representative, multidimensional measure of work ethic.

***Study #1: Replicating Furnham’s Factor Analysis.*** Miller et al. (2002) used an almost identical approach as Furnham (1990a); they began by developing a representative sample of existing items from previously developed work ethic scales, then they conducted factor analysis on the items to determine whether they grouped together in meaningful ways.

Miller’s factor analysis ended up corroborating Furnham’s, not only in regard to work ethic being multidimensional, but also the characteristic nature of each dimension.

The only main difference was that an additional factor emerged, suggesting six dimensions of work ethic rather than the previously posited five. “Specifically, we found evidence for two dimensions pertaining to the value of work (i.e. Hard Work and Centrality of Work) while Furnham reported only one” (Miller et al., 2002, p.460).

We feel that Miller’s separation of the Hard Work and Centrality of Work dimensions was justified. This determination was made after viewing the definitions of each dimension and carefully examining the the items that loaded on each dimension. Table 1, provides examples items comprising each dimension and helps to illustrate their distinguishability. We should also note that the dimension “Leisure” has also been conceptualized as “Anti-leisure,” because the items that comprise this dimension are reverse scored when included in a composite measure of work ethic. In other words, Leisure items are negatively related to the other items (on average).

Miller et al. (2002) was satisfied with the results of Study #1, it surely helped to justify their mission. However, they showed some hesitation regarding the comprehensiveness of their six factor solution. More specifically, they pointed back to another fundamental component of Weber’s conceptualization of work ethic – delay of gratification – and noted its absence in their factor solution. Delay of gratification can be found as an important aspect of work ethic throughout much of the previous literature (e.g., Furnham, 1984; McClelland, 1961; McHoskey, 1994; Weber 1958), not only Weber’s (1905) thesis, however, it has largely been left out of previous work ethic scales. Therefore, it makes sense why it failed to emerge as a factor in both Furnham and Miller’s factor solutions. Miller chose to include Delay of Gratification as the seventh dimension of work ethic in Study #2. This decision aligned with their stated

purpose – to provide a comprehensive measure of work ethic – a “measure of each of the multiple dimensions comprising work ethic” (p. 460).

*Study #2: Developing a New Multidimensional Scale.* Miller and colleagues made a comprehensive pool of items measuring a constellation of attitudes and beliefs about work. This resulting in a large bank of items which included 20-25 items for each of the seven dimensions identified above. Miller made the decision to exclude any items with specific religious connotations (e.g., “I believe in God” and “I believe in life after death”) “due to the increasing secularization of the work ethic construct” (p. 461). We feel that this decision was an appropriate one; as it is likely to both increase the measure’s criterion relevance as well as make it more appropriate for use within organizations. Organizations are becoming increasingly cautious about discriminating against any of the protected groups, as they want to avoid equal employment opportunity (EEO) violations, and/or legal trouble. For these types of reasons, Miller et al. (2002) re-conceptualized the dimension Religion/Morality as Morality/Ethics.

A content analysis on the entire item bank was conducted using trained upper-level graduate students. Graduate students were collectively briefed on the work ethic construct, then independently, they sorted items into seven groups. The results showed 98% dimensional agreement. All items that failed to be grouped appropriately were excluded from the final item bank, and any items in which the graduate students flagged as having issues were also excluded. The final item pool included 145 items.

Next, a large sample of participants were recruited to respond to the 145 Likert-type items related to work beliefs and values, then those responses were subjected to seven EFAs, one for each dimension. The exploratory factor analyses were used to

examine the items within each dimension, and to select subsets of 10 items that best represented each dimension. Hence, the analysis resulted in 70 items.

Miller's goal was to produce both a comprehensive and *reliable* measure of work ethic. Five of the seven dimension scales resulted in adequate internal consistency, ( $\alpha$  values of at least 0.80). However, Delay of Gratification ( $\alpha = 0.73$ ) and Wasted time ( $\alpha = 0.75$ ) had less than desirable reliability estimates. Consequently, Miller dropped a few items from each of these two dimension scales, resulting 7 items assessing attitudes toward Delay of Gratification and 8 items assessing views toward Wasted Time. Final coefficient  $\alpha$  results for the seven separate dimensions were 0.83 (Hard Work), 0.89 (Self-Reliance), 0.85 (Leisure), 0.81 (Centrality of Work), 0.80 (Morality/Ethics), 0.76 (Delay of Gratification), and 0.80 (Wasted Time).

The results of Study #2 produced a 65 item scale of work ethic, and subscales for each of the purported seven dimensions. Examples of items for each of the seven dimensions can be seen in Table 1, along with brief definitions of each construct.

Table 1.  
*MWEP Dimensions, Definitions, and Example Items*

Dimension	Definition	Example 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. -It is very important for me to always be able to work. -I feel content when I have spent the day working.
Self-Reliance	Striving for independence in one's daily work.	-I strive to be self-reliant. -Self-reliance is the key to being successful. -One must avoid dependence on other persons whenever possible.
Hard Work	Belief in the virtues of hard work.	-If you work hard you will succeed. -By simply working hard enough, one can achieve their goals. -Hard work makes one a better person.
Leisure	Pro-leisure attitudes and beliefs in the importance of non-work activities.	-People should have more leisure time to spend in relaxation. -The job that provides the most leisure time is the job for me. -Life would be more meaningful if we had more leisure time.
Morality/Ethics	Believing in a just and moral existence.	-People should be fair in their dealings with others. -It is never appropriate to take something that does not belong to you. -It is important to treat others as you would like to be treated.
Delay of Gratification	Orientation toward the future; the postponement of rewards.	-The best things in life are those you have to wait for. -If I want to buy something, I always wait until I can afford it. -A distant reward is usually more satisfying than an immediate one.
Wasted Time	Attitudes and beliefs Reflecting active and productive use of time.	-I try to plan out my workday so as not to waste time. -Time should not be wasted, it should be used efficiently. -I constantly look for ways to productively use my time.

<sup>a</sup> Adapted from Miller et al.'s (2002), Table 3, p. 464.



**Study #3: Construct Validity.** Now that Miller provided reliability evidence for his newly developed multidimensional measure of work ethic, his third study examined its validity. Study #3 provided preliminary construct-related validity evidence for the MWEP by: (a) using confirmatory factor analysis (CFA) to replicate the factor structure with an independent sample, (b) by showing comparisons between MWEP scores and scores on measures of separate, theoretically related constructs (e.g., conscientiousness, need for achievement), and by (c) providing discriminant validity evidence showing how the MWEP is not significantly correlated with constructs that are theoretically unrelated to work ethic (e.g., cognitive ability, need for affiliation).

The seven dimensional model of work ethic showed adequate fit with the data which provided more evidence in favor of the MWEP's favorable psychometric properties as well as preliminary construct-related validity evidence. Similarly, findings from the correlational analysis that compared scores on the MWEP to scores on other measures (i.e., the manifest needs questionnaire, cognitive ability test, and personality test) also showed favorable results for Miller et al.'s new scale. By comparing the MWEP, and its subscale scores with that of other measures – some measuring related and some measuring unrelated constructs – we are able to view the MWEP within a larger network of theory (i.e., its nomological network). As hypothesized, the analysis found a significant positive relationship between the MWEP and conscientiousness (mean  $r = 0.34$ ). As hypothesized, the MWEP was also positively related with need for achievement.

Not only did the MWEP positively relate to constructs that theory suggested it would providing convergent validity evidence; it failed to show significant relationships

with theoretically unrelated constructs (e.g., cognitive ability, and the other four personality traits besides conscientiousness).

*Study #4, 5, & 6: Addressing other Validity Questions.* Study #4 evaluated scores on the MWEP in a nonstudent sample using United States Air Force personnel. In general, the findings suggest that the MWEP shows measurement equivalence across both the student and air force samples, however mean differences were present indicating that university students may be higher in work ethic than air force samples of similar mean age (primarily 18-22 year olds).

Study #5 evaluated the extent of overlap between the seven dimensions of the MWEP and other organizationally relevant attitudinal measures: job satisfaction, organizational commitment, and job involvement. Miller et al. (2002) again compared work ethic to conscientiousness, as a secondary goal of the study was to determine whether the MWEP explains variance in the three listed organizational attitude measures, above and beyond that of conscientiousness. They found that the MWEP does indeed have incremental validity over conscientiousness in predicting certain, meaningful organizational attitudes. It showed predictive power over conscientiousness on all three measures (job involvement, organizational commitment).

Study #6, the last of the series of studies, presented us with another crucial piece of evidence that argues not only the construct validity of the MWEP, but that it can also be used to predict supervisor job performance ratings. The findings of Miller et al. (2002) provide preliminary criterion-related validity evidence for the MWEP. This finding suggests that there is likely practical utility in using the MWEP within organizations, as

predicting (and/or shedding insights on) job performance is central to strategic human resource objectives.

Overall, Miller et al.'s (2002) MWEP is a promising scale and has even been adopted by other cultures, as it has been translated successfully into Spanish, Korean, Persian languages (Lim et al., 2007; Woehr et al., 2007; Chanzanagh & Akbarnejad, 2011).

### **Relationships between Work Ethic and Personality**

The five-factor model (FFM) of personality measures the “Big Five” personality traits, which include conscientiousness, extraversion/introversion, agreeableness, openness to new experience, and emotional stability/neuroticism. The FFM of personality has gained wide acceptance and is used by many disciplines within psychology for several reasons, one major reason being its broad applicability in a variety of contexts (e.g., I/O psychology and personnel selection, clinical psychology, health and positive psychology). Another major benefit to Big Five measures of personality is that there is a large amount of reliability and validity evidence supporting their use. (Costa & McCrae, 1992)

The sound psychometric foundation underlying FFM scales helps to explain why they have become so popular, even across diverse samples and in different applications. The large amount of evidence supporting FFM scales' construct validity and criterion-related validity make their application quite relevant to our own study. Moreover, the NEO-PI-R (the longer version of the NEO-FFI) represents a great tool for validation research of other measures. As seen in Miller et al. (2002) the NEO-FFI was used, almost

like a reference point, in order to determine if MWEP scores have a pattern of association with other psychological constructs that matches what theory would suggest.

We found only three studies that focus on the relationship between conscientiousness and work ethic. Roth, Hearp, and Switzer (1999) used Mirels and Garrett's (1971) PWE scale, the most popular work ethic scale of the 20<sup>th</sup> century, and found that scale dimensions of asceticism, anti-leisure, and a belief in hard work were only weakly correlated with conscientiousness ( $r$  values ranged between .04 and .22). However, as mentioned before, Miller et al. (2002) also examined the relationship between work ethic and conscientiousness. They found that conscientiousness was related to all seven work ethic dimensions (correlations ranging from .21 - .52, and mean  $r = .34$ ). Thus, Miller's study suggested that the MWEP (i.e., a multidimensional view of work ethic) and conscientiousness were much more than weak correlates, and provided some empirical evidence that neatly aligns with psychological theory on both constructs (i.e., their nomological network overlap) and logical analysis of their common beliefs and values.

Christopher et al. (2008) highlight how both of the studies presented above, Roth et al. and Miller et al., only look at work ethic in relation to "global conscientiousness" and not conscientiousness at a facet-level. Christopher and colleagues (2008) sought to take a deeper look into the relationships between work ethic and conscientiousness (at both the composite and facet-levels of each construct). Their hope was that this level of analysis would provide improved insights into the relationships between the two psychological constructs.

Using correlational and dominance analysis, Christopher et al. (2008) posited that scores on certain conscientiousness facets predicted work ethic scores at varying magnitudes. This is notably different than simply arguing that the two constructs are positively correlated. According to their analysis, some facets were better predictors than others. Their findings suggested that two conscientiousness facets (C-facets), in particular—achievement-striving and dutifulness—predicted variation in work ethic scores better than their counterparts (i.e. the other 4 facets of conscientiousness). Interestingly, none of the conscientiousness facets predicted Anti-leisure. The findings corroborate Christopher et al.'s (2008) arguments regarding the usefulness of facet-level analysis when investigating the relationships between multidimensional related constructs, like conscientiousness and work ethic.

Whether Christopher et al.'s (2008) study showed that conscientiousness facets actually *predict* work ethic beliefs and values (i.e. the 7 dimensions), or whether they are simply correlated constructs is debatable. We felt that their logical positioning of the model was sound, based on the theoretical nature of the separate constructs. They posit that conscientiousness is more of a basic tendency and work ethic a “characteristic adaptation,” or “learned position about work and work behavior.” However, their analysis method did not actually show whether conscientiousness predicts work ethic, or the other way around. We feel that a different statistical analysis approach, such as structural equation modeling, rather than regression (and dominance analysis) could have providing a stronger argument for their model. Nevertheless, their extensions to the psychological literature on work ethic are undoubtedly valuable. They successfully showed how two facets of conscientiousness helped explain variation in 6 of the seven work ethic

dimensions, much better than the others. This type of research is what is needed in order to better understand a multidimensional, abstract concept (i.e. a construct such *work ethic*).

There have been several studies pointing to the positive relationships between work ethic and conscientiousness, and the evidence suggests relationships are of moderate magnitude and practical significance. Moreover, the MWEP and measures of conscientiousness likely have something deeper in common than similar response patterns on self-report measures. The two psychological constructs are connected by common sets of beliefs and values, and perhaps even behavioral preferences. Conscientiousness is one the best known individual difference predictors of job performance, it is reasonable to hypothesize that work ethic may also be a good predictor of work-related behavior.

Personality research within the field of I/O psychology and personnel selection is increasing in popularity over the last two decades (Zaccaro, 2007; Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001; Borman, Penner, Allen, & Motowidlo, 2001; Ones & Viswesvaran, 2001; Salgado, 1997, 2002). These studies represent only a small portion of the influential publications and discussions regarding personality's trending popularity.

The Five Factor Model of Personality has helped advance this pro-personality movement within I/O psychology and has impacted numerous selection systems across the globe. A major reason for this is because of several meta-analyses that have come out in the last 25 years that have strongly suggested the predictive versatility of two of the five traits – conscientiousness and emotional stability. These two traits have shown to predict performance in practically every industry and in a variety of positions.

Conscientiousness even has incremental validity above and beyond general cognitive ability (Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001; Borman, Penner, Allen, & Motowidlo, 2001; Ones & Viswesvaran, 2001; Salgado, Moscoso, & Berges, 2013), highlighting its utility in predicting who will be successful on the job. Moreover, another benefit of using the FFM in personnel selection (hiring and promotion decisions) are that it has the tendency to produce significantly less adverse impact compared to cognitive ability tests. Moreover, personality tests may have added predictive value in situations where the range restriction of cognitive ability measures has limited their predictive validity (Jex & Britt, 2008). It is worth of noting that other personality traits, such as extraversion and agreeableness, can also predict job performance, at least for certain types of positions or job activities (e.g. sales). However, the predictive power of traits like extraversion and agreeableness are not as stable as conscientiousness across a wide variety of jobs (Judge et al., 2002).

Considering the importance of conscientiousness as a predictor of job performance, it seems relevant to investigate whether work ethic could add value. Miller et al.'s (2002) study also found that work ethic was able to explain variance in organizational attitudes (e.g., job satisfaction, job involvement, and organizational commitment) above and beyond that the Big Five Personality traits. Meriac et al. (2009, 2012, and 2015) and Smrt & Karau (2011) provide other instances where the MWEP has shown incremental validity, over and above the Big Five, in predicting either positive work behavior or meaningful organizational attitudes.

The current study does not wish to determine whether work ethic adds incremental validity above, and beyond, conscientiousness in predicting organizationally

meaningful criteria. Instead, much like Miller et al.'s (2002) study #3, and Christopher et al.'s (2008) study, we want to evaluate the overlap between work ethic beliefs and conscientiousness and determine the efficacy of a recently developed shortened version of the MWEP.

### **Present Study: Phase One**

The proposed research study seeks to evaluate the factor structure and composition of work ethic (as conceptualized by Weber, 1905-1958, and operationalized by Miller et al., 2002). The proposed research possesses the ability to either add to, or call into question, the construct validity evidence (i.e. convergent and discriminant validity evidence) supporting the MWEP. Due to mounting validity evidence supporting the MWEP over the last decade (Meriac, 2010, 2013; Woehr et al., 2007; Lim et al., 2007) we expect the CFA findings of the current study to corroborate Miller et al.'s (2002) initial seven factor solution,

After conducting the confirmatory factor analysis, we will conduct correlational analysis between the seven dimensions of the MWEP and the NEO-PI-R. We'll conduct correlational analysis on the MWEP dimensions and the Big 5 personality traits in order to examine whether the current study's self-report data corroborate previously correlational findings between the MWEP and the FFM. For example, we expect the MWEP to have a moderate positive correlation with conscientiousness. This would suggest that it has both convergence with a relevant external construct that it theoretically should be similar with, however, too high of a correlation between conscientiousness and the MWEP dimensions might suggest that the MWEP is largely an alternative measure of conscientiousness, rather than a measure of seven different dimensions of work ethic.



## **MWEP Hypotheses**

***Hypothesis 1:*** Reliability estimates for the seven MWEP dimension scales will be consistent with those in previous samples

***Hypothesis 2:*** The current study's confirmatory factor solution will corroborate Miller et al.'s (2002) seven factor solution, and thus, the model will at least adequately fit the data (based on RMSEA, CFI, and SRMR fit indices).

***Hypothesis 3:*** The work ethic composite, and each of its seven dimensions will have a significant positive relationship with conscientiousness and its facets.

***Hypothesis 4:*** The C-facets—Achievement Striving and Dutifulness—will have a stronger relationships with the MWEP than the other four C-facets (i.e., Order, Competence, Self-discipline, and Deliberation).

***Hypothesis 5:*** Relationships between work ethic and conscientiousness, and their respective dimension or facet-level correlations will show substantial unique variance, enough to support claims of discriminant validity between the separate constructs of the MWEP and the NEO-PI-R.

***Hypothesis 6:*** Besides conscientiousness, additional statistically significant relationships between work ethic and the other 4 personality traits of the NEO-PI-R (i.e., Openness, Agreeableness, Extraversion, and Neuroticism) may be found, however, their magnitude will be modest in comparison to relationships between the MWEP and conscientiousness.

## **A New Abridged Version of the MWEP: Phase Two**

Miller et al.'s (2002) series of studies that outline the development of the MWEP and provide several forms of validity evidence in favor of the measure represents a

prominent expansion to the scholarly literature on work ethic, especially within applied psychology, organizational behavior, and business journals. In little over a decade, Miller et al., (2002) has been cited in over 160 scholarly articles and the MWEP has been translated into several different languages. As noted above, Meriac, Woehr, Gorman, and Thomas (2013) developed a shortened version of the MWEP, called the Multidimensional Work Ethic Profile – Short Form (MWEP-SF), which reduced the number of items from 65 to only 28 (a 55% reduction in length).

Meriac et al. (2013) utilized a statistical analysis method called Item Response Theory in order to analyze the MWEP items, then work simultaneously toward two goals that are seemingly in opposition to each other: condensing each dimension scale to a list of only a few items, while trying to still get just as much information about respondents who complete the condensed measure. Before using IRT, they performed a confirmatory factor analysis in order to verify the factor structure of work ethic. These statistical analysis methods helped Meriac and his colleagues examine which items from each subscale were most central to their respective dimension. After determining which items best represent their respective dimension, they carefully removed item after item until the measure was less than half its original length. By the end of the process, over half the items were eliminated, and dimension scales that were all originally between 7 and 10 items, were now all a uniform 4.

As excerpted above, Miller et al. (2002) state “our goal was to construct a measure that demonstrated reliable subscale scores with a minimum number of items for each of the seven dimensions” (p. 461). As such, an explicit goal stated by the creators of the original MWEP was to create a concise measure. Therefore, Meriac et al.’s (2013)

main objective—which was to create a significantly shortened version of the MWEF with equivalent measurement capabilities—is in direct alignment with the goals of Miller and his colleagues, a decade prior.

There are many practical benefits of having a shortened version of a self-report measure available, that is, if the shortened version still does an effective job of measuring the psychological constructs that it intends to measure (i.e., has comparable construct validity). Practitioners and researchers, alike, benefit from having *efficient* psychometric instruments because they take less time to administer than longer versions. This allows more room for other self-report measures to be included in a test battery. This practice of including several measures into a larger battery of tests is common in both academic research as well as in organizational research and personnel selection. Another benefit of short forms is that responders appreciate concise questionnaires over redundant ones, and shorter measures help avoid test-taking fatigue and boredom (Meriac et al., 2013; Russel, 2004; Stanton, Sinar, Balzer, and Smith, 2002). If well designed, short form questionnaires can even improve the validity of the data collected. Such improvements to validity are typically due to the measure being carefully designed so that a sufficient amount of reliability is retained, the measures still target the construct of interest, and the nature of the self-report measure mitigates common sources of respondent bias. For instance, on a 100-item measure of integrity and trust-worthiness you may find that a 25% of respondents being to get aggravated or bored, and start responding carelessly on the measure anywhere from 40 to 60 items into the measure. Many of these individuals may start answering “strongly agree” to all the items (i.e., a form of acquiescence bias). However, a shortened measure that measures the same two psychological constructs in

only 40-50 items may cut these this proportion of bad test-takers down to only 5% of your respondents. As such, the data you collect would likely be much more representative of the respondent's *true scores* on integrity and trustworthiness. Because shorter tests are better tests when all else is equal, an additional objective of the current study is to assess the extent to which the MWEP-SF measures work ethic, and each of its dimensions, in a commensurate manner with the full version developed a decade prior.

### **MWEP Short-Form Hypotheses**

*Hypothesis 7:* Reliability estimates for the seven MWEP-SF dimension scales will be consistent with those in previous studies, e.g., Meriac et al. (2013) and comparable to the full version's.

*Hypothesis 8:* Model fit indices (e.g., RMSEA, CFI, SRMR) will suggest at least adequate fit between Meriac et al.'s (2013) short form model of work ethic and the current study's, 28 item subset of, data. As such, the MWEP-SF CFA findings will corroborate Miller et al.'s (2002) seven factor model of work ethic.

*Hypothesis 9:* Conscientiousness will have the strongest relationship with the MWEP-SF dimensions and the MWEP-SF composite compared to other Big 5 Personality traits.

*Hypothesis 10:* The MWEP-SF and full length MWEP will share the same pattern of associations with the Big 5 personality traits. In other words, the correlational analysis will provide construct validity evidence for the MWEP-SF by showing that its dimension scales and its composite scale relate to theoretically relevant external constructs in the same manner as the full version.

### **What the Current Study Adds**

The current study is largely a replication of past research. It replicates significant portions of three separate research ventures, conducted over the last 15 years. However, the current study also attempts to add to our understanding of work ethic and to our understanding of how to effectively measure it.

First, the study will provide additional reliability information about the MWEP and its seven purported dimensions, using an independent sample. The study will also provide information about the psychometric characteristics of the recently developed short form, developed by Meriac and colleagues in 2013. The current study has the potential to add to the growing construct validity evidence for Miller et al.'s (2002) multidimensional conceptualization of work ethic.

A major benefit of the current study is that it uses a robust, 240-item measure of personality—the NEO-PI-R. Past research on work ethic and its relationships with the FFM of personality almost exclusively makes use of the NEO-FFI. The NEO-FFI is an older and much shorter personality inventory than the NEO-PI-R (Costa & McCrae, 1992), which includes only 60 self-report items. This breaks down to only 12 items per personality trait; and its brevity inhibits any analysis at the facet-level (i.e. within each of the five personality traits of the FFM). In Christopher et al.'s (2008) study, they used the NEO-PI-R to measure personality, however, their study focused only on the 48 items related to conscientiousness.

The current study hopes to add to our understanding of the relationships between work ethic and personality by conducting correlational analysis on all five factors of

personality and all 240 items of the NEO-PI-R. We expect that the inclusion of the full item list in our analysis will provide further insights into what is actually being measured by the MWEP and MWEP-SF. Similarly, we also feel that these additional items will help us to determine if the MWEP-SF relates to relevant external constructs (i.e., its nomological network) in the same ways as the full MWEP.

## CHAPTER III: METHODS

### **Participants**

The data used in the current study was archival data—collected about a decade prior to the establishment of the research questions of the current study. The data was collected by two graduate candidates of an industrial/organizational psychology master's program in the southeastern United States. Participants were student volunteers at the same southeastern university. By participating in research, via the psychology department's subject pool, the students received credits toward their psychology class. After signing up for the subject pool, each student had the opportunity to choose which experiment they signed up for based on brief descriptions of those available.

The 414 participants were approximately 54% female and 46% male. Approximately 75% of participants classified themselves as Caucasian, 16% African American, 3% Asian, 1% Hispanic, 1% categorized themselves as Other, and the remaining were missing data pertaining to race.

### **Measures**

The data was collected in two separate studies, both consisting of a battery of self-report survey items which included: a 40-item Survey of Organizational Attitudes and Perceptions (SOAP; Burke, 1996), a 9-item measure of attitudes toward questionnaires (Donegan, 2001), a few demographic items, the 65-item MWEF or Multidimensional Work Ethic Profile (Miller et al., 2002), and a 240-item personality inventory—the NEO-PI-R (Costa & McCrae, 1992). In the current study, the measures of interest are the MWEF, the NEO-PI-R, and the 28 item subset of MWEF items that comprise the MWEF-SF (i.e., Meriac et al's, 2013, short form of the MWEF). The short form was not

actually administered to participants, as it was not developed at the time of data collection. However, to evaluate the MWEP-SF items in comparison to the full-MWEP we refer to the MWEP-SF as a separate measure.

**MWEP.** As described above, the Multidimensional Work Ethic Profile is a 65-item self-report measure developed by Miller et al. (2002); items measure seven dimensions of work ethic, each captured by 7-10 items. Dimensions: hard work, self-reliance, morality/ethics, centrality of work, and leisure are each measured by 10 items, while delay of gratification and wasted time are measured with 7 and 8 items, respectively. All items are rated on a 5-point Likert-type scale 1 (*strongly disagree*) to 5 (*strongly agree*). Reliability estimates (internal consistency) reported by Miller et al. (2002) range from .75 to .89 across the seven dimensions. See Appendix A for the full list of items on the MWEP.

Additional preparation of the data involved screening data for extreme cases and reverse scoring variables designated by Miller et al.'s (2002) scoring and analysis instructions. A more detailed description of the data preparation and analysis procedure is provided, below, in its own section.

**MWEP-SF (*short form*).** Meriac et al.'s (2013) MWEP-SF uses the same 5-point Likert-type scale 1 (*strongly disagree*) to 5 (*strongly agree*). Its notable difference from the MWEP is that it includes only 28 items of the original 65 (approximately 57% reduction in number of items). The MWEP-SF dimension scales are each comprised of 4 items. Internal consistency estimates for the scale range from .75 to .86, suggesting that the internal consistency of the short-form scale is comparable to that of the MWEP (full-



version). See Appendix B for a list of items on the MWEP-SF and its instructions, and Appendix C for a breakdown of those same items categorized by dimension.

**NEO-PI-R.** The NEO-PI-R, full-length version, includes 240 items measuring personality across 5 factors, neuroticism (48 items,  $\alpha = .93$ ), extraversion/introversion (48 items,  $\alpha = .90$ ), openness (48 items,  $\alpha = .89$ ), agreeableness (48 items,  $\alpha = .95$ ) and conscientiousness ( $\alpha = .92$ ). Each of the five factors (personality traits) of the NEO-PI-R are represented by 6 facets; for example, conscientiousness facets include - competence, order, dutifulness, achievement striving, self-discipline, and deliberation. Each facet scale is comprised of 8 items. The NEO-PI-R uses a 5-point Likert-type scale 1 (*strongly agree*) to 5 (*strongly disagree*). See the official NEO-PI-R Testing Manual for more detail on the test and its scoring (Costa & McCrae, 1992).

### **Procedure**

The participants in this study were greeted and given a brief description of the study, including instructions regarding the completion of the survey items. Participants were told that the study related to work values and attitudes. Participants were notified that their responses would be handled in such a way that would ensure anonymity (i.e., no responses would be able to be tied back to any one participant). The participants were given a desk in order to complete the questionnaire, told that the questionnaire should take about an hour to complete, and thanked for their participation.

The participants gave responses to each item by filling in circles, in pencil (i.e., a bubble sheet). The packet of materials given to each participant included the questionnaire, written instructions, the optical mark recognition (answer sheet), and a

written informed consent form. The consent form indicated each subject's willingness to participate, and the data was not analyzed if the participant did not sign the consent form.

### **Preparation of Data for Analysis**

The dataset was examined for cases that had a substantially larger number of missing values than others. Cases that failed to respond to at least 199 of the 240 NEO-PI-R items were excluded from the subsequent analysis as recommended by McCrae & Costa's (1992) testing manual. Hence, cases included in our analysis left no more than 17% of the NEO-PI-R items blank.

Similarly, for the MWEP, we chose to exclude cases from the analysis that left more than 17% of the MWEP items blank. As such, cases included in the following analysis answered at least 54 of the 65 total items on the MWEP. Five of the initial 414 cases were excluded because of excessive NEO-PI-R missing data, and three more cases were excluded due to missing MWEP data. After excluding cases with extreme numbers of missing values  $N=414$  dropped to  $N=406$ .

Additional preparation of the data involved reverse coding 106 variables (44%) of the NEO-PI-R items, as directed by the NEO-PI-R scoring instructions. By contrast, the MWEP only includes 3 reverse scored items (not including the optional reversal of items comprising the Leisure dimension).

We decided to reverse code the Leisure items so that scores obtained showed positive relationships with the other six work ethic dimensions. Moreover, we relabeled the dimension Anti-Leisure in the results section. This recoding procedure has been done in past MWEP studies, and it is stated as optional by the test developers, Miller et al. (2002). Reversing scoring the Leisure items is necessary for computing an overall

work ethic score which was also a reason for our decision. In addition, we felt that the transformation assisted with the interpretation of correlation matrices depicted within our results section. *Note:* see Miller et al. (2002) for more detail on scoring and interpretation instructions.

### **Analysis Procedure**

Once data cleaning and preparation of scales were complete the archival data was analyzed in three phases: reliability analysis, confirmatory factor analysis, and lastly, correlational analysis.

First, we analyzed the reliability (internal consistency) of the MWEP dimensions as well as the reliability of the short form's dimensions. We expect all seven dimensions on both measures to have internal consistencies above .70, and they should be comparable to those found by Miller et al. (2002) and Meriac et al (2013). It should be noted that the short form version of the MWEP was expected to have slightly lower reliability estimates compared to the full version, as there are only 4 items per dimension, as opposed to the full version's 7-10 per dimension.

After reliability analysis, we examined the dimensionality of work ethic via a CFA on the full MWEP. A CFA was also conducted on the MWEP-SF in order to allow comparison. Miller et al (2002) was referenced for CFA parameter estimates and model fit indices (e.g., CFI, RMSEA) to help to determine whether their 7-factor model fits the current sample's data. The CFA on the MWEP-SF analyzes only the 28 items that comprise the short form, and its findings will be compared to the CFA findings of both Miller et al's (2002) MWEP and Meriac et al's (2013) MWEP-SF.

Before engaging in the CFA analyses, we decided to choose which model fit indices to report in order to remain objective in our evaluation of the factor analysis findings. Our choice of model fit indices was guided by Kline's (2005) recommendations which are to report the chi-square test statistic (regardless of its known flaws), and three goodness-of-fit indices that are well-regarded, less biased than alternatives, and well-rounded with respect to each other (i.e., those that assess absolute fit, incremental fit, and fit based on residuals). Following Kline's (2005) recommendations, we chose Steiger's (1990) root mean square error of approximation (RMSEA), Bentler's (1990) comparative fit index (CFI), and the standardized root mean square residual (SRMR; Joreskog & Sorbom, 2004).

The last phase of the analysis consists of correlational analysis in order to determine if the MWEP and MWEP-SF share the same pattern or relationships with personality (i.e., the NEO-PI-R). Work ethic dimensions will be correlated with all five factors of the NEO-PI-R, as well as relevant facet-level comparisons (e.g., conscientiousness).

Past findings, psychological theory, and particular hypotheses of the current study require us to also examine MWEP relationships with conscientiousness at a deeper level. Therefore, we will provide a summary of the pattern of relationships between the seven MWEP dimensions and the six facets of conscientiousness: Competence, Order, Dutifulness, Achievement Striving, Self-Discipline, and Deliberation. Analogous correlations between conscientiousness facets (i.e., C-facets) and the MWEP-SF will be used in order to evaluate and compare the same relationships between the full and shortened versions of the MWEP. The purpose of this final stage

of our analysis is to determine whether the two work ethic measures relate to the six C-facets in the same way, as this would offer construct validity evidence for the short form, and convergent validity evidence for both measures—as both measures should relate to conscientiousness facets. According to Christopher et al. (2008) work ethic is likely to relate to certain C-facets more so than others—and these relationships could in fact be systematic and predictable. Therefore, we will evaluate whether work ethic dimensions relate to dutifulness and achievement striving at higher magnitudes than the other facets comprising conscientiousness.

## CHAPTER IV: RESULTS

**Reliability**

The internal consistency estimates of the seven MWEP dimensions are seen in Table 2. The internal consistency estimates of the short-form dimensions are shown in Table 3. As seen, Chronbach's  $\alpha$  values ranged from .88 to .78 for the full MWEP and .83 to .71 for the short form. Both sets of internal consistency estimates are acceptable. As expected, the short form's internal consistency estimates are slightly lower than those of the full MWEP, decreasing .048 on average.

Table 2.

*Internal Consistency of MWEP Dimensions*

	<i>N</i> of Items	Chronbach's Alpha
Hard Work	10	.861
Centrality of Work	10	.842
Self-Reliance	10	.877
Wasted Time	8	.781
Delay of Gratification	7	.783
Anit-Leisure	10	.853
Morality/Ethics	10	.813

*Note.* Listwise  $N = 400$  to 403 depending on row of interest

Table 3.

*Internal Consistency of Short-Form Dimensions*

	<i>N</i> of Items	Chronbach's Alpha
Hard Work	4	.829
Centrality of Work	4	.802
Self-Reliance	4	.804
Wasted Time	4	.706
Delay of Gratification	4	.808
Anti-Leisure	4	.771
Morality/Ethics	4	.751

*Note.* Listwise *N* = 400 to 406 depending on row of interest

Hypothesis 1 and hypothesis 7 were supported by the reliability analysis, as the internal consistency estimates of all seven dimensions for both work ethic measures exceeded .70 and were relatively consistent with past findings (Miller et al. 2002, Meriac et al. 2013).

### **Confirmatory Factor Analyses on the MWEP and MWEP-SF**

The MWEP CFA found that only 62 of the overall 65 items successfully loaded onto their theorized dimensions and several modifications were deemed necessary. The modifications included six pairs of within-dimension correlated residuals, two items (48 and 57) were removed from the model due to substantially lower standardized regression weights (.18 and .21, respectively) than the other work ethic items (mean standardized loading = .59), and item 53 was transferred from the Hard Work dimension to the Morality/Ethics dimension. After modifications, the MWEP CFA (*N* = 396) converged after 12 iterations with a  $\chi^2$  value of 4652.78 (*df* = 1863; *p* < .001; RMSEA = .062, CFI = .746, SRMR = .078).

The  $\chi^2$  value was significant, which indicates that the model did not provide a perfect fit with the data, however, this provides little useful information because the  $\chi^2$  test for model fit has well-known problems, such as its overly strict assumptions and it is overly sensitive when applied to models with many degrees of freedom or large samples (Bollen & Long, 1993; Benler and Bonnet, 1980)

As for the other, more informative fit indices, two of the three suggest that the model adequately fits the data (RMSEA < .06 indicate good fit and < .08 acceptable fit; and SRMR < .08 are typically considered good), while the CFI indicated poor incremental fit (CFI's < .90 is considered poor). Miller et al. (2002) only reports a comparable significant  $\chi^2$  value and comparable RMSEA of .063 (no CFI was reported). Therefore, we conclude that the current study's CFA findings are similar to the past findings of Miller et al. (2002), given the data provided. Hypothesis 2 is at least partially supported by the CFA findings, while the poor CFI value makes us conclude that the model fit is—at best—borderline adequate.

The model estimates were recomputed each time a modification was made to the model (i.e. only one at a time). Appendix D & E depict the model before and after modifications were made. Item number 53 was transferred from the Hard Work dimension to the Morality/Ethics dimension, not only due to its corresponding modification index (i.e. it improvement to the model's fit), but also because of logical analysis of the item's wording and content. Item 53 "A person should always do the best job possible," asks whether people *should* always do their best, and given that morality and ethics are almost entirely about *choice* and handling questions regarding what people *should* do, we felt that the item's content supported our decision.



All 28 items of the short form fell into their theorized dimensions. The short-form CFA solution resulted in a  $\chi^2$  value of 980.87 ( $df = 327$ ,  $N = 396$ ; RMSEA = .066, CFI = 0.87, SRMR = .79) after only two minor modifications to the model. Each modification allowed a pair of within-dimension error terms to be correlated. See Appendix F for a visual representation of the short form CFA model after modifications. The MWEP-SF CFA findings of the suggest that the short form has at least as good, if not slightly better fit than the full MWEP.

### Correlational Analysis

Table 4 shows the correlations between the MWEP and the MWEP-SF dimensions. As expected, the MWEP short form responses are strongly correlated with the full MWEP (mean  $r = .88$ ).

Table 4.  
*Correlations between the MWEP and MWEP-SF*

MWEP	Short Form							
	HW	CoW	SR	WT	DoG	Anti-L	M/E	Overall
Hard Work	<b>.89</b>	.46	.49	.50	.39	.05	.53	.74
Centrality of Work	.42	<b>.80</b>	.24	.52	.36	.24	.33	.67
Self-Reliance	.48	.26	<b>.93</b>	.35	.25	-.11	.33	.57
Wasted Time	.49	.54	.33	<b>.89</b>	.39	.16	.34	.72
Delay of Gratification	.44	.39	.31	.39	<b>.89</b>	.05	.32	.65
Anti-Leisure	.02	.22	-.19	.12	.06	<b>.92</b>	-.08	.26
Morality/Ethics	.46	.34	.28	.40	.27	.06	<b>.80</b>	.57
Composite	.72	.68	.55	.72	.60	.32	.56	<b>.94</b>

$N = 406$ , correlations between MWEP dimensions and corresponding short form dimensions are seen in bold on the diagonal.

Table 5 depicts correlations between the full MWEP and the Big 5 personality traits. The MWEP composite is related to conscientiousness more so than any other personality trait. As expected, on average, conscientiousness had higher correlations with work ethic dimensions (mean  $r = .34$ ) than any of the other four personality traits. And, conscientiousness had a relatively strong positive relationship with the MWEP composite, thus hypothesis 3 was supported by the correlational analysis. Agreeableness and extraversion also had significant positive correlations with work ethic dimensions (mean  $r = .23$  and  $.15$ , respectively).

Table 5.

*Correlations Between the Full MWEP and the Big Five Personality*

MWEP	N	E	O	A	C
Hard Work	.01	.21	.05	.28	.40
Centrality of Work	-.09	.25	.06	.28	.36
Self-Reliance	.12	-.03	.12	-.03	.14
Wasted Time	-.06	.24	.03	.23	.49
Delay Gratification	-.13	.10	.04	.26	.40
Anti-Leisure	-.25	.02	-.07	.09	.23
Morality/Ethics	-.05	.27	.12	.51	.37
MWEP Composite	-.10	.23	.07	.35	.54
Dimension mean $r$	-.06	.15	.05	.23	.34

$N = 406$ , correlations of  $|.10|$  or more are significant at  $p < .05$  correlations of  $|.13|$  or more are significant at  $p < .01$

Hypothesis 6 was only partially supported by the correlational findings.

Conscientiousness was undoubtedly the most related personality factor with work ethic (as a whole), but one trait-by-dimension correlation slightly exceeded any of those between conscientiousness and the seven MWEP dimensions.

Table 6, depicts the correlations between the Big 5 personality traits and the short form dimensions of the MWEP. As expected, of the Big 5, conscientiousness was the most related to the MWEP-SF composite. On average, conscientiousness also had higher correlations with the seven work ethic dimensions (mean  $r = .32$ ) than any of the other four personality traits. Therefore, hypothesis 8 is supported by the short form correlational analysis.

Table 6.

*Correlations between the Short-Form MWEP and the Big Five Personality*

MWEP-SF	N	E	O	A	C
Hard Work (SF)	.03	.21	.08	.23	.35
Centrality of Work (SF)	-.08	.29	.09	.27	.34
Self-Reliance (SF)	.09	-.01	.10	.00	.17
Wasted Time (SF)	-.10	.23	.06	.26	.51
Delay Gratification (SF)	-.09	.08	.07	.20	.29
Anti-Leisure (SF)	-.21	.04	-.07	.07	.24
Morality/Ethics (SF)	.01	.27	.23	.42	.33
MWEP-SF composite	-.09	.24	.12	.32	.50
Dimension mean $r$	-.05	.16	.08	.21	.32

$N = 406$ , correlations of  $|.10|$  or more are significant at  $p < .05$  correlations of  $|.13|$  or more are significant at  $p < .01$

Similar to the correlational findings on the full MWEP, the short form dimensions were positively related to agreeableness and extraversion (mean  $r = .21$  and  $.16$ , respectively; at  $p < .01$ ).

A visual inspection of the two tables of correlations helps to illustrate how similar the two measures are; or specifically, it suggests their respective scales relate to the FFM

in the same manner. But, taking this one step further, to determine whether any of the observed correlational differences were statistically significant, we compared each bivariate correlation in Table 5 with the corresponding bivariate correlation in Table 6 using Fisher's *r*-to-*Z* transformation. The two-tailed significance tests on the 45 pairs of Fisher's *Z* scores showed that none of the deviations between Table 5 and Table 6 were statistically significant at ( $p < .05$ ).

### **Facet-Level Analysis**

Now, for examining relationships between work ethic and relevant personality correlates, only this time, at the facet-level. Table 7 depicts the correlations between the seven MWEP dimensions and the six facets of conscientiousness (i.e., C-facets).

The C-facets that had the strongest correlations with work ethic were “dutifulness” and “achievement striving”, slightly more moderate correlations were found between “competence” and “self-discipline,” and correlations of significantly less magnitude were found for “order” and “deliberation”.

Table 7.

*Correlations between Conscientiousness Facets and the Full MWEP*

---

MWEP	Conscientiousness Facets					
	Competence	Order	Dutifulness	Achievement Striving	Self-discipline	Deliberation
Hard Work	.29	.22	.40	.35	.30	.18
Centrality of Work	.28	.17	.33	.37	.30	.13
Self-Reliance	.13	.03	.15	.18	.11	.08
Wasted Time	.35	.32	.42	.45	.37	.24
Delay of Gratification	.34	.26	.40	.26	.28	.20
Anti-Leisure	.14	.18	.07	.20	.24	.12
Morality/Ethics	.33	.13	.44	.28	.26	.21
MWEP Composite	.42	.30	.49	.47	.42	.26

---

Table 8 depicts similar facet-level analysis as Table 7, however this table shows the correlations between the C-facets and the short form MWEP.

Once again, the strongest relationships were with “achievement striving” and “dutifulness”, close behind in magnitude were “competence” and “self-discipline”, and the C-facets “order” and “deliberation” had relationships of lesser magnitude with the seven short form dimensions.

Hypothesis 3, was again, supported by the correlational analysis, this time at the facet-level. In line with Christopher et al.’s (2008) findings, the conscientiousness facets Achievement Striving and Dutifulness were found to have the most in common with work ethic, which provides support for hypothesis 4 in current study.

Table 8.

*Correlations between Conscientiousness Facets and the Short-Form*

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	Conscientiousness Facets					
	Competence	Order	Dutifulness	Achievement Striving	Self- discipline	Deliberation
Hard Work	.30	.17	.36	.34	.25	.14
Centrality of Work	.32	.16	.30	.36	.28	.04
Self-Reliance	.16	.05	.17	.21	.12	.09
Wasted Time	.37	.31	.43	.44	.39	.25
Delay of Grat	.27	.24	.27	.21	.17	.12
Anti-Leisure	.13	.22	.07	.20	.23	.14
Morality/Ethics	.32	.15	.36	.25	.20	.12
MWEP-SF Composite	.41	.30	.44	.46	.38	.22

---

A visual comparison of the two correlation matrices depicted in Table 7 and 8 helps to illustrate how similar the MWEP and MWEP-SF are. Here, additional focus is placed on the personality trait—conscientiousness—as it is the Big 5 trait that theoretically shares the most in common with work ethic. Even though the visual inspection checked-out, we again conducted Fisher’s  $r$ -to- $Z$  transformations on all 48 comparisons in order to determine if any possess statistically significant differences. Of all 48, only one showed a statistically significant difference (two-tailed;  $p < .05$ ), which was that between Delay of Gratification and Dutifulness, which dropped from .40 to .27 across measures. The average deviation between  $r$ -values in Table 7 and corresponding short form  $r$ -values in Table 8 was only -.03.

## CHAPTER V: DISCUSSION

The internal consistency estimates of MWEP and MWEP-SF suggest that the items within each of the dimensions sufficiently correlated with one another, which corroborates past findings by Miller et al. (2002) and Meriac et al. (2013) and supports hypotheses 1 and hypothesis 7. The confirmatory factor analyses conducted on the MWEP and MWEP-SF suggest that both the MWEP and MWEP-SF provided at least reasonable fit with the data. We are hesitant to claim that the results of the CFA provide conclusive evidence of Miller et al's (2002) factor structure, however, 2-of-3 fit indices used to evaluate the model fell within the acceptable-to-good range for both the MWEP and the MWEP-SF. Therefore, the CFA provides at least partial support for hypothesis 2 and hypothesis 8. We were surprised to find that the subset of short form items slightly outperformed the full MWEP on the CFA. The short form's fit was not much (if any) better, yet it required only minor modifications, whereas the full MWEP required more substantive modifications. On the whole, the CFA findings provide additional evidence in support of Miller et al's (2002) multidimensional conceptualization of work ethic, and they also support the factor structure of Meriac et al's (2013) condensed—MWEP-SF.

Now, we will discuss the correlational findings and their implications. Hypothesis 3 was supported, as the correlational analysis found positive correlations between conscientiousness and the work ethic composite as well as positive relationships between conscientiousness and all seven work ethic dimensions. These findings help to show that the MWEP relates to personality in the way we would expect, based on psychological theory and past research on the MWEP.

Hypothesis 6 was partially supported by the analysis, as conscientiousness showed stronger relationships with the seven work ethic dimensions than the other four personality traits of the FFM, at least on average. Contrary to our expectations, the strongest dimension-by-trait relationship found for the full MWEP was between Agreeableness and Morality/Ethics. Even so, we feel that it is reasonable to conclude that hypothesis 6 was largely supported by our findings due to conscientiousness having stronger positive correlations with the seven work ethic dimensions *on average* (mean  $r = .34$ ), compared to Agreeableness (mean  $r = .23$ ).

As noted in the results section, agreeableness and extraversion were both found to be correlated with the MWEP composite as well as the MWEP dimensions (on average), agreeableness (mean  $r = .23$ ) and extraversion (mean  $r = .15$ ). The relationship between extraversion and the MWEP was not all that surprising, as it was quite small in magnitude and Miller et al. (2002) found a similar relationship between extraversion and the MWEP dimensions (mean  $r = .12$ ). On the other hand, the significant correlational findings for agreeableness were somewhat unexpected for two reasons: (1) Agreeableness was not found to be significantly related to work ethic by Miller et al. (2002), and (2) as mentioned, the highest correlation between any one work ethic dimension and personality was that between agreeableness and Morality/Ethics ( $r = .51$ ), not conscientiousness. Plausible explanations regarding the correlation between agreeableness and Morality/Ethics are discussed in the Limitations section, and implications are covered in our Recommendations for Future Research section.

In comparison to the MWEP, similar statistically significant relationships were found between the short form dimensions and personality: conscientiousness (mean  $r =$



.32), agreeableness (mean  $r = .21$ ), and extraversion (mean  $r = .16$ ). As mentioned in the results sections, we dug deeper to examine whether the short form related to personality in the same manner as the full MWEP by determining if the correlations differed across measures. After 186 r-to-Z transformations, and Fisher's Z tests on 93 pairs of correlations, we found only one statistically significant difference between the MWEP and MWEP-SF correlations—Delay of Gratification and Dutifulness. On average, the short form did tend to have slightly smaller correlations with personality than its predecessor (absolute mean  $\Delta = .03$ ). Even though the MWEP-SF failed to maintain statistically equivalent correlations across all 93 comparisons, 92 of 93 relationships were found to be equivalent, which we felt provided adequate support for hypothesis 10. As such, we conclude that the MWEP-SF maintains the same pattern of relationships with personality as the full MWEP, and therefore, the current study provides construct validity evidence in favor of the recently developed MWEP-SF.

Another difference between the short and long forms correlational analysis was the strongest dimension-by-trait relationship. The strongest relationship for the short form was that between Wasted Time and conscientiousness. In contrast to the full MWEP, this MWEP-SF relationship exceeded even that of agreeableness and Morality/Ethics (see Table 6). This finding aligns with past findings, as both Miller et al. (2002) and Meric et al.'s (2013) found Wasted Time and conscientiousness to be the strongest dimension-by-trait relationship. As such, this suggests that the short form perhaps even outperformed the full MWEP. We feel that such a conclusion borders on overly evaluative, and instead, we conclude that the MWEP-SF correlational findings align with both theory and past research. Hypothesis 9 is supported by the current study's findings, and the MWEP-SF

related to relevant external constructs in an appropriate manner. Specifically, it related to the personality trait—conscientiousness—more so than any other personality trait.

The main point of highlight the relationship above, the differences between MWEP and MWEP-SF correlates, was not to devalue the original version of the MWEP. Instead, it was to show that deviations between the MWEP and MWEP-SF do not (by default) mean that the short form is performed poorly or showed inconsistency in its measurement. All psychological measures are imperfect, at least to some degree. By nature, the validity of data collected by a psychological instrument is subject to change due to variables outside of the instrument's control. For example, if a respondent falls asleep half-way through a self-report questionnaire, or if a respondent carelessly answers the second half of a questionnaire with all "strongly agrees" in order to finish it quickly, then the obtained data will be invalid. In summary, the many differences across situations and respondents, and even within respondents (e.g., their current mood), play a role in whether the MWEP or MWEP-SF will obtain valid data. As such, some days the short form may obtain scores that are closer to the respondent's true score, and sometimes the MWEP may produce more accurate scores.

Another question we set out to examine in our hypotheses was the discriminant validity of the MWEP and its dimensions. In other words, does the MWEP measure something distinct from the personality constructs measured by the NEO-PI-R? The strongest correlation between the MWEP dimensions and NEO-PI-R personality traits could be considered moderate in magnitude ( $r = .51$ ), even the MWEP composite and conscientiousness ( $r = .54$ ) did not exceed levels within the moderate range. In other words, conscientiousness and the MWEP composite have approximately 29% shared

variance. Similarly, the strongest facet-level correlation we found was around 24% shared variance with the MWEP composite. Therefore, it is easy to conclude that there is meaningful overlap between conscientiousness and the MWEP, which was expected. Yet, these magnitudes do not run counter to claims of discriminant validity. Furthermore, the magnitudes of the observed relationships in the current study align with past research. Thus, hypothesis 5 is supported by the correlational analysis, which suggests favorable discriminant validity between the MWEP and personality.

The facet-level correlational analysis of the MWEP corroborated past findings by Christopher (2008): Achievement Striving and Dutifulness had stronger relationships with work ethic dimensions than other conscientiousness facets. Thus, the current study supports the claim that some facets of conscientiousness are more related to Miller's multidimensional work ethic than others. It is necessary to mention an important detail that Christopher et al. (2008) rightfully addressed in their discussion, which was that we arrived at these correlational relationships (between C-facets and work ethic dimensions) using the NEO-PI-R's operationalized definitions of personality. According to the NEO-PI-R, Achievement Striving is a facet of conscientiousness. Conversely, there are alternative, well-known (Big 5) personality measures that do not include (nor do they agree with) Achievement Striving as a facet of conscientiousness. This was worth mentioning because the way in which personality was operationalized may have impacted the current study's findings, and therefore, it should be considered when interpreting the findings.

Finally, we have arrived at the discussion of our last hypothesis. We have provided factor analytic evidence that supports the factor structure of the MWEP-SF. The

correlational findings suggest that the MWEP-SF dimensions relate to personality in a commensurate manner as full MWEP dimensions. We have also shown that the short form's relationships with personality fit nicely within the nomological network set out by Miller et al (2002) when developing the full MWEP. As such, hypothesis 10 is supported by the current study's findings.

We conclude that Meriac et al's (2013) MWEP-SF is a suitable alternative to the full MWEP, and we encourage both researchers and practitioners to use the short form measure when choosing between the two, especially when space for items is limited, when you want to maximize the response rate, or when administration time is limited. We encourage use of the short form not because it is necessarily superior to the full version of the MWEP, but because validity evidence is able to build for the promising young measure. We especially encourage its use in instances where the questionnaire's length is a major consideration, e.g., a battery of tests is already chosen but more information about work related attitudes is sought after.

### **Limitations**

*The Sample.* The archival data used in the current study included a homogenous sample of college enrolled students (most of whom were between the ages of 18 and 22) and are not representative of the much larger population for which the MWEP and MWEP-SF could be used. Due to our sample being so homogenous, there are major issues with the generalizability of our study to other groups and situations outside the landscape of universities and research pools. Moreover, because the participants were receiving extra credit for their involvement in the research pool, they may have had systematic differences in their level of interest and engagement in the self-report task as

compared to other respondents. Of course, incumbents in an employment setting may approach the MWEP questionnaire differently than the current study's sample, as they are likely to have different work experience, different motivations related to the task, and they would likely represent different career stages, all of which could have effects on how they perceive and respond to questions about work ethic.

**Archival Data.** The MWEP-SF was not created at the time the data was collected, and therefore, the archival data only allows us to analyze the *subset* of 28-items that comprise the short form. Unfortunately we were not able to collect two independent samples (i.e., one condition taking the full MWEP and a separate condition who would only take the 28-item MWEP-SF). Therefore, our analysis comparing the full MWEP and short form is better thought of as the full MWEP and a subset of the MWEP items. As such, our claims regarding the commensurate pattern of relationships between the MWEP and MWEP-SF have serious limitations, and the subset of our analysis that compares relationships between each measure and personality (the portion of our analysis that used Fisher's *r-to-Z* transformation) should be interpreted with caution.

Meriac et al. (2013) explicitly note the importance of using the two separate measures when comparing the MWEP and MWEP-SF. We agree completely with their recommendation, as this type of research design would allow for much stronger conclusions to be drawn, especially any conclusions regarding comparisons between the two measures such as their pattern of associations and whether they are commensurate in their measurement of relevant external constructs. Moreover, the items of the MWEP-SF may behave differently when taken within the 28-item self-report measure, than they do as a part of the whole 65-item measure. As mentioned earlier, shorter tests can improve

response rates, but they can also change the way test-takers view the experience, and therefore, change the way respondents' act (i.e., change their response behavior). For example, the shorter MWEP-SF mitigate test-taker fatigue or boredom, which could result in a reduced number of careless responses.

The current study did not split the sample and cross-validate correlational analyses using the alternate half. Cross-validation would have greatly enhanced our findings. A regression model could have been developed using the long versions of the MWEP dimensions, then the separate split of data could have tested the regression model to see if it held for the short form dimension scales.

***Salience of the MWEP and Acquiescence Bias.*** A potential limitation of the MWEP instrument became apparent after looking into systematic limitation of the current study's data, a ceiling effect on score distributions for several of the MWEP dimension scales. In other words, respondents were scoring unreasonably high on several of the MWEP dimensions, which caused negatively skewed distributions, especially for the dimension Morality/Ethics.

Acquiescence bias is the name of a phenomenon where respondents tend to answer items by yea-saying, rather than by thinking about the item and how it relates to their own personality and preferences (and answering candidly). Because the vast majority of items on the MWEP, 52 of the 65, are worded such that positive responses (*agree* or *strongly agree*) show endorsement of pro-work ethic beliefs, if a responder adopts a yea-saying approach to a significant portion of the items, then that would almost definitely invalidate the respondent's data.

While the MWEP has only 13 reverse scored items out of 65 total (20%), many other self-report questionnaires that measure psychological constructs attempt to use a more balanced approach with a greater proportion of reverse scored items. For example, the NEO-PI-R has 106 of its total 240 items reverse coded (44%) during scoring, which helps the NEO-PI-R be more discrete about what it is measuring with each item. The NEO-PI-R is also very deliberate about the placement of its items throughout the entire test. For instance, items comprising the same factor (and even at a facet-level) are spaced-out throughout the 240 items, equidistant from each other, so that the test does not throw a lot of similar questions at the test-taker—all at once. While this approach may cause administration time to increase slightly, it also discourages yea-saying in a socially desirable manner. It urges respondents to think about the items. In essence, the NEO-PI-R is much more discrete about what it is attempting to measure than the MWEP. The current study's MWEP data suggest that the MWEP's salient content and lack of reverse scored items may be limiting observed variability and contributing to test-taker bias.

We found indications within the current study's item-level and dimension-level MWEP data that acquiescence bias and socially desirable response tendencies were likely present. While inspecting whether the items and dimension scale scores met basic assumptions of most parametric statistical tests, we plotted the frequency distributions of all the items and scales. A visual inspections of the histograms showed that many of the MWEP's items suffered from mild-to-moderate ceiling effects. Figure 1 depicts one of these moderate ceiling effects on the frequency distribution of the—hard work—dimension. Keep in mind, that this is not a single item, it is the distribution of scores ( $N = 406$ ) for the hard work dimension (possible range of scores is 10 – 50).

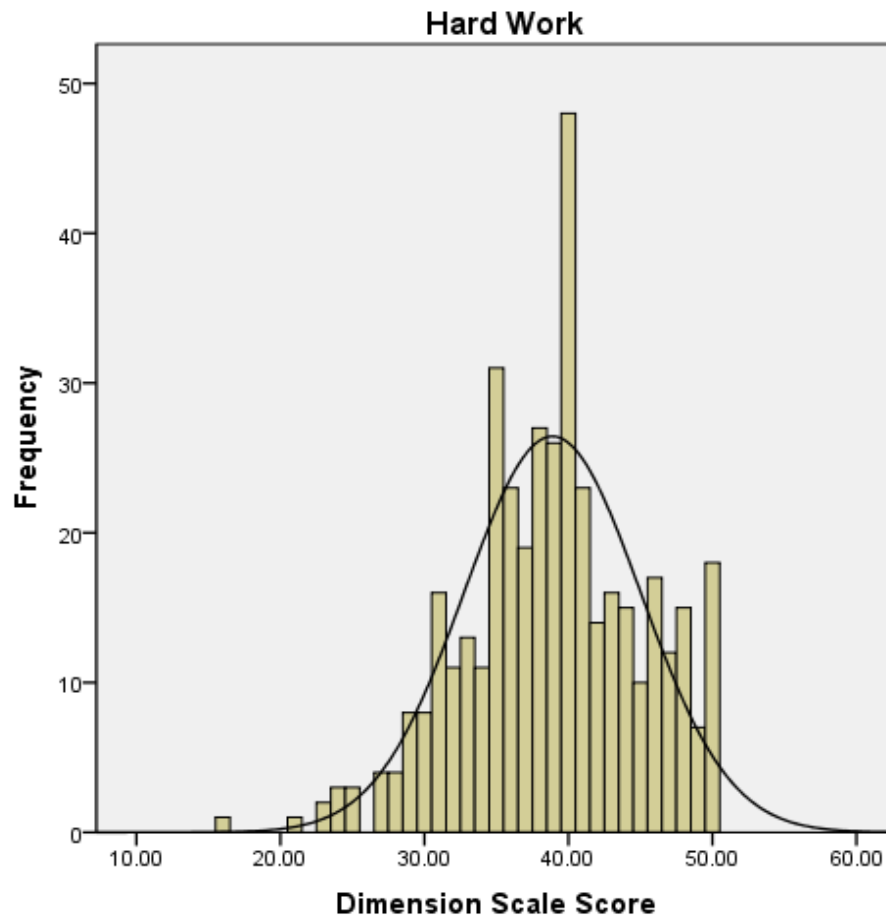


Figure 1. Frequency Distribution of Scores for Hard Work Dimension

Figure 2 shows the frequency distribution for scale scores on the Morality/Ethic dimension. The ceiling effect for Morality/Ethics was by far the most evident among all seven dimensions. As seen, variability is severely diminished and few scores of below 30 (e.g., the midpoint of the possible range of scores) were found in the sample ( $N = 406$ ). For Morality/Ethics, over 50% of responders scored in the crowded, upper range between 43-50, and approximately 11% of the total sample ended up with a score of 50 on the Morality/Ethics dimension of work ethic.



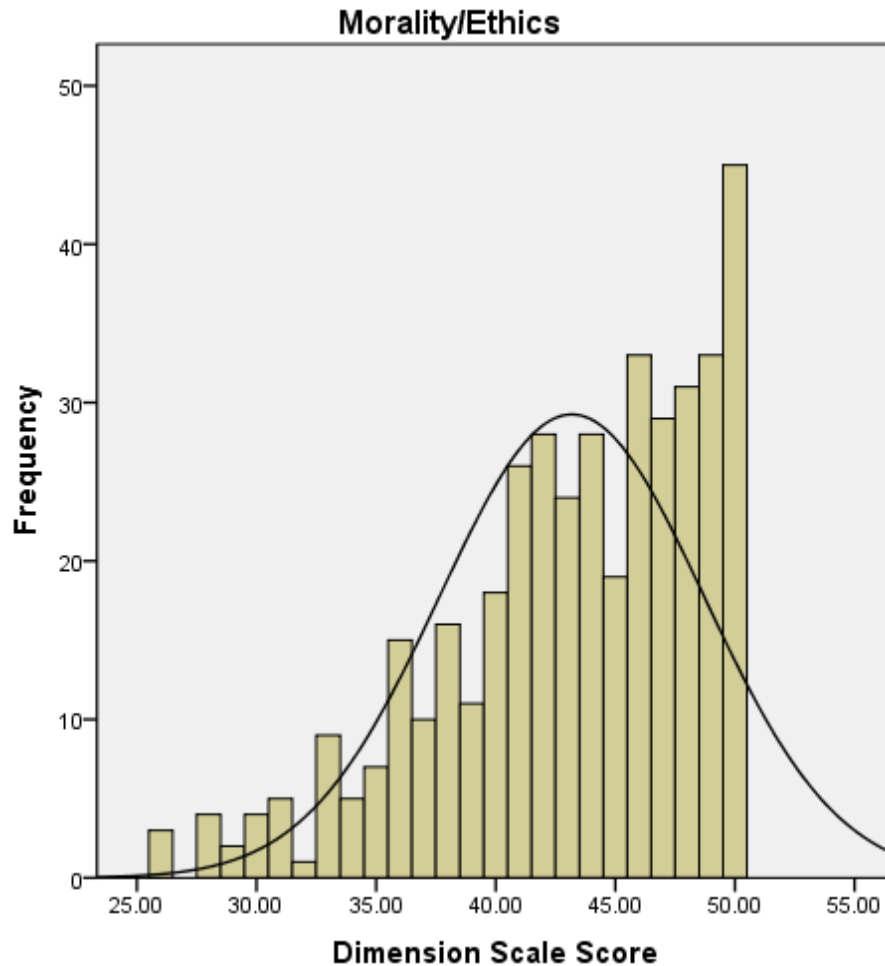


Figure 2. Frequency Distribution of Scores for Morality/Ethics Dimension

After rechecking the analysis, ensuring no mistakes were made, we then proceeded to brainstorm about plausible explanations for the ceiling effects, especially regarding Morality/Ethics extreme negatively skewed distribution. Sampling bias based on the geographical region or educational level of the respondents might have resulted in some level of bias, as systematic beliefs about morality and ethics could possibly change from one group or region to the other, but it did not explain why we found small-to-moderate ceiling effects on approximately half the MWEP and MWEP-SF dimensions.

As we continued to examine each item and each dimension, we noticed that the same tendencies did not plague the responses on the Anti-Leisure dimension.

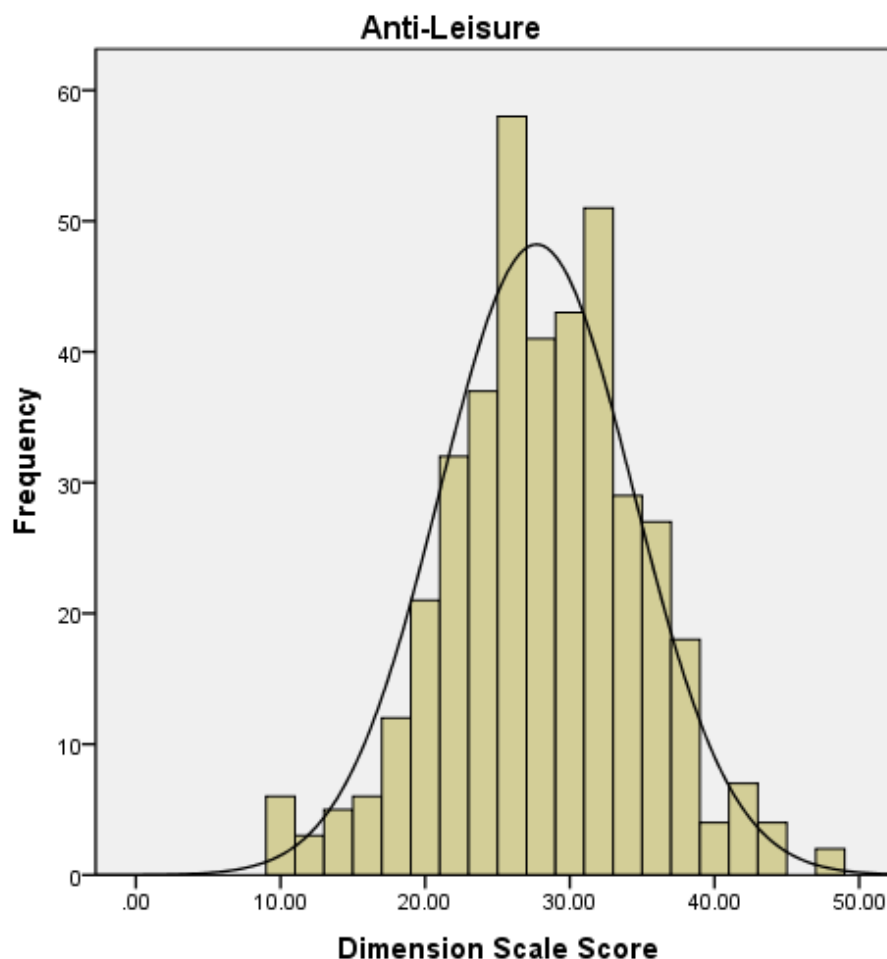


Figure 3. Frequency Distribution of Scores for Anti-Leisure Dimension

We also realized that all 10 items of the Anti-Leisure scale were reverse scored, so evaluated each item's content and wording. After much deliberation, we came to the conclusion that the MWEP's ceiling effects were likely due (at least in part) to the systematic pro-work ethic wording of the MWEP items. If you remove the 10 Leisure items from the MWEP, then you are only left with three out of the 55 remaining items as reverse scored. In other words, for 52 of the 55 remaining items, agreement (answering

*agree* or *strongly agree*) represents endorsement of pro-work ethic beliefs and values. Because of the MWEP's unbalanced nature systematic response patterns such as acquiescence bias (yea-saying) are especially prone to skewing the score distributions. Also, because of the salient nature of the MWEP's content, the test is also rather easy to *fake*, or for respondents to answer (either knowingly or unknowingly) in accordance with what is socially desirable (i.e., self- favorability bias).

Now that we have covered a major limitation of the current study's data, especially that of the Morality/Ethics dimension, we should revisit an important correlational finding. The only unexpected finding that arose during the many correlations drawn was that between agreeableness and Morality/Ethics. It was the strongest dimension-by-trait correlation we found, and it partially derailed hypothesis 6 which expected the strongest dimension-by-trait relationship to be between conscientiousness and one of the seven work ethic dimensions.

First, we looked back to Miller et al's (2002) correlational findings, although they did not find an overall relationship between the MWEP dimensions and agreeableness, they did find a relationship for agreeableness and the Morality/Ethics dimension ( $r = .32$ ). Similarly, Meriac et al's (2013) also found a relationship between agreeableness and Morality/Ethics ( $r = .39$ ). Therefore, one explanation for the relatively strong relationship between Morality/Ethics and agreeableness in the current study is that they measure the same construct, at least to an extent. This could either mean that the Morality/Ethics dimension of the MWEP is contaminated by agreeableness. Less likely, but still a possibility, is that agreeableness of the NEO-PI-R measures personal characteristics such as ethics and morality. After all, many psychologists would argue that agreeableness is

one the Big 5 personality traits we understand less than others, especially compared to neuroticism, conscientiousness, and extraversion.

Although, contamination may be helpful in explaining the apparent relationships found between agreeableness and Morality/Ethics, it does not help to explain the strong ceiling effect we observed for Morality/Ethics, and the other negatively skewed distributions of MWEP dimensions (e.g., Figure 1). So, we looked to the psychological literature for plausible explanations. Our focus quickly narrowed to socially desirable responding (SDR), which Paulhus (1991) define as “the tendency to give answers that make the respondents look good” (p.17). A number of studies have found significant positive correlations between agreeableness and socially desirable responding (SDR) (Tran, Stieger, & Voracek, 2012; Paulhus & John, 1998; Graziano & Tobin, 2002; Konstabel & Mõttus, 2014), some of which found agreeableness as the strongest or second strongest personality trait related to SDR. According to a meta-analysis by Ones, Viswesvaran, and Reiss (1996) found a significant positive relationship between agreeableness and SDR, however, it was third and much weaker than SDR’s relationship with emotional stability and conscientiousness.

Differences among studies in the strength of association between agreeableness and SDR could largely be due to SDR not being a unidimensional construct, as researchers now view the construct to have two main processes: impression management and self-deception. Impression management has been found to be tied to agreeableness and several conscientiousness facets. Furthermore, Paulhus & John (1998) suggest that there are both egoistic biases and moralistic biases within the self-deceptive process, and that this moralistic bias is expressed as a “saint-like” attribute, and “overly positive

ratings on agreeableness, dutifulness, and restraint” (Graziano & Tobin, p. 699). This sounded strikingly similar to what seemed to be occurring in the current study.

The psychological literature on response biases in self-reports suggest multiple plausible explanations for the current study’s findings tying agreeableness to the MWEP’s Morality/Ethics dimension, as well as for the strong ceiling effect of this dimension (seen in Figure 2). In particular, these explanations point to SDR, impression management, and a self-deceptive process named moralistic bias as potential reasons why we found a strong relationship between agreeableness and Morality/Ethics, and inflated scores on the Morality/Ethics dimension. Although, we cannot argue that there is conclusive evidence for SDR bias in the current sample, the following recommendations for future research suggest possible strategies for determining whether future samples have been affected by these bias patterns of response.

### **Recommendations for Future Research**

Due to the salient nature of the topics measured by the MWEP, and the consequential validity concerns associated with SDR bias and acquiescence bias (especially “yea-saying”), we encourage researchers to develop research designs that would aim to determine whether these response biases are affecting MWEP and MWEP-SF data.

So, how can we determine if acquiescence bias exist is affecting MWEP scores. One approach would be to developing an equivalent form of the MWEP with a more balanced design, at least a few reverse scored items on each of the seven dimensions and conduct statistical hypothesis tests to determine if there is an effect for acquiescence bias. Proper construction of such a measure would be time consuming, yet the resulting

analysis could greatly benefit our understanding of Miller et al's (2002) multidimensional conceptualization of work ethic, and potentially enhance our approach to measuring it. In order to determine whether there is a common response style factor embedded in the responses on work ethic items, we suggest using a hierarchical confirmatory factor analysis approach, also known as SEM, which could determine if acquiescence bias is affecting scores on MWEP dimensions (given a large enough sample). If so, acquiescence bias could be statistically controlled for using an SEM approach described in detail by Billiet & McClendon (2000).

Another advantage of having an equivalent form of the MWEP that has a more balanced design is that it could be used in a research design with other measures of work ethic (e.g., ratings by supervisors or co-workers). This approach to examining the MWEP could help to determine whether common method variance was likely to play a factor in past validity studies on the MWEP, as many of these studies used self-report measures of relevant external constructs to provide convergent validity evidence. These studies that used self-report measures of job involvement, organizational commitment, and relevant personality traits have made up the vast majority of construct validity evidence in support of the MWEP. Therefore, being able to determine whether their convergence was due to actual construct relationships (i.e., a nomological approach) or simply by common method variance, is crucial in solidifying the MWEP and the MWEP-SF as valid measures of multidimensional work ethic.

## **Conclusion**

To summarize our recommendations for future researchers, we claim that having more reverse scored items on the MWEP will increase variability of scores on the seven

dimension scales, and that that increase in variability will likely better represent true differences in work ethic across people (i.e., the observed scores will include less bias). Another advantage of having a more balanced and discrete work ethic measure is that it may make the MWEP a more appropriate test for practical applications within organizations—like personnel selection. The current MWEP items are most likely too prone to respondent faking and social desirability bias to be used for purposes administrative decisions such as evaluating job candidates, or evaluating which employees to promote.

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APPENDICES



**APPENDIX A:**  
**MWEP Scale and Instructions**

*Instructions*

This booklet lists a series of work-related statements. Please circle the alternative that best represents your opinion to the right of each item. For example, if you strongly agree with item number one in the booklet you would circle SA to the left of the item. This booklet contains **65** statements. Please read each statement carefully. For each statement circle the response that best represents your belief or opinion.

Circle **SA** if you *strongly agree* with the statement.

Circle **A** if you *agree* with the statement.

Circle **N** if you *neither agree nor disagree* with the statement.

Circle **D** if you *disagree* with the statement.

Circle **SD** if you *strongly disagree* with the statement.

1. It is important to stay busy at work and not waste time.
2. I feel uneasy when there is little work for me to do.
3. If I want to buy something, I always wait until I can afford it.
4. I feel content when I have spent the day working.
5. Life would be more meaningful if we had more leisure time.
6. To be truly successful, a person should be self-reliant.
7. One should always take responsibility for one's actions.
8. I would prefer a job that allowed me to have more leisure time.
9. Time should not be wasted, it should be used efficiently.
10. Even if I were financially able, I would not stop working.
11. I get more fulfillment from items I had to wait for.
12. I schedule me day in advance to avoid wasting time.
13. A hard day's work is very fulfilling.
14. The more time I can spend in a leisure activity, the better I feel.
15. One should always do what is right and just.
16. I would take items from work if I felt I was not getting paid enough.
17. Nothing is impossible if you work hard enough.
18. The less time one spends working and the more leisure time one has, the better.
19. Things that you have to wait for are the most worthwhile.
20. Working hard is the key to being successful.
21. Self-reliance is the key to being successful.
22. If one works hard enough, one is likely to make a good life for oneself.
23. I constantly look for ways to productively use my time.
24. Hard work makes one a better person.
25. One should not pass judgment until one has heard all of the facts.
26. People would be better off if they depended on themselves.

27. Work takes too much of our time, leaving little time to relax.
28. One should live one's own life independent of others as much as possible.
29. A distant reward is usually more satisfying than an immediate one.
30. It is very important for me to always be able to work.
31. More leisure time is good for people.
32. One must avoid dependence on other persons whenever possible.
33. Even if I inherited a great deal of money, I would continue to work somewhere.
34. I do not like having to depend on other people.
35. By working hard a person can overcome every obstacle that life presents.
36. I try to plan out my workday so as not to waste time.
37. You should never tell lies about other people.
38. Any problem can be overcome with hard work.
39. How a person spends their time is as important as how they spend their money.
40. Even if it were possible for me to retire, I would still continue to work.
41. Life without work would be very boring.
42. I prefer to save until I can afford something and not buy it on credit.
43. The world would be a better place if people spent more time relaxing.
44. I strive to be self-reliant.
45. If you work hard you will succeed.
46. The best things in life are those you have to wait for.
47. Anyone who is able and willing to work hard has a good chance of succeeding.
48. Stealing is all right as long as you don't get caught.
49. The job that provides the most leisure time is the job for me.
50. Having a great deal of independence from others is very important to me.
51. It is important to treat others as you would like to be treated.
52. I experience a sense of fulfillment from working.
53. A person should always do the best job possible.
54. It is never appropriate to take something that does not belong to you.
55. Only those who depend on themselves get ahead in life.
56. Wasting time is as bad as wasting money.
57. There are times when stealing is justified.
58. People should have more leisure time to spend in relaxation.
59. It is important to control one's destiny by not being dependent on others.
60. By simply working hard enough, one can achieve one's goals.
61. People should be fair in their dealings with others.
62. The only way to get anything worthwhile is to save for it.
63. Leisure time activities are more interesting than work.
64. A hard day's work provides a sense of accomplishment.
65. A distaste for hard work usually reflects a weakness of character.

## APPENDIX B: MWEF-SF Scale and Scoring Key

This section lists a series of statements.

Please choose the alternative that best represents your agreement with how well each statement describes you.

1. It is important to stay busy at work and not waste time.
2. I feel content when I have spent the day working.
3. One should always take responsibility for one's actions.
4. I would prefer a job that allowed me to have more leisure time.
5. Time should not be wasted, it should be used efficiently.
6. I get more fulfillment from items I had to wait for.
7. A hard day's work is very fulfilling.
8. Things that you have to wait for are the most worthwhile.
9. Working hard is the key to being successful.
10. Self-reliance is the key to being successful.
11. If one works hard enough, one is likely to make a good life for oneself.
12. I constantly look for ways to productively use my time.
13. One should not pass judgment until one has heard all of the facts.
14. People would be better off if they depended on themselves.
15. A distant reward is usually more satisfying than an immediate one.
16. More leisure time is good for people.
17. I try to plan out my workday so as not to waste time.
18. The world would be a better place if people spent more time relaxing.
19. I strive to be self-reliant.
20. If you work hard you will succeed.
21. The best things in life are those you have to wait for.
22. Anyone who is able and willing to work hard has a good chance of succeeding.
23. It is important to treat others as you would like to be treated.
24. I experience a sense of fulfillment from working.
25. People should have more leisure time to spend in relaxation.
26. It is important to control one's destiny by not being dependent on others.
27. People should be fair in their dealings with others.
28. A hard day's work provides a sense of accomplishment.

Self-Reliance: 10, 14, 19, 26; Morality/Ethics: 3, 13, 23, 27; Leisure: 4, 16, 18, 25;  
 Centrality of Work: 2, 7, 24, 28; Hard Work: 9, 11, 20, 22; Wasted Time: 1, 5, 12, 17;  
 Delay of Gratification: 6, 8, 15, 21.

Note. Items should be rated on a 5-point Likert-type scale from 5=Strongly Agree to 1=Strongly Disagree. To score the short form, take means of the four items corresponding to each subscale as follows.

## APPENDIX C: MWEP-SF Items Grouped by Dimension

### Hard Work

- 9. Working hard is the key to being successful.
- 11. If one works hard enough, one is likely to make a good life for oneself.
- 20. If you work hard you will succeed.
- 22. Anyone who is able and willing to work hard has a good chance of succeeding.

### Morality/Ethics

- 3. One should always take responsibility for one's actions.
- 13. One should not pass judgment until one has heard all of the facts.
- 23. It is important to treat others as you would like to be treated.
- 27. People should be fair in their dealings with others.

### Leisure – *(Note: These statements are reverse coded for scoring the composite)*

- 4. *I would prefer a job that allowed me to have more leisure time.*
- 16. *More leisure time is good for people.*
- 18. *The world would be a better place if people spent more time relaxing.*
- 25. *People should have more leisure time to spend in relaxation.*

### Centrality of Work

- 2. I feel content when I have spent the day working.
- 7. A hard day's work is very fulfilling.
- 24. I experience a sense of fulfillment from working.
- 28. A hard day's work provides a sense of accomplishment.

### Wasted Time

- 1. It is important to stay busy at work and not waste time.
- 5. Time should not be wasted, it should be used efficiently.
- 12. I constantly look for ways to productively use my time.
- 17. I try to plan out my workday so as not to waste time.

### Self-reliance

- 10. Self-reliance is the key to being successful.
- 14. People would be better off if they depended on themselves.
- 19. I strive to be self-reliant.
- 26. It is important to control one's destiny by not being dependent on others.

### Delay of Gratification

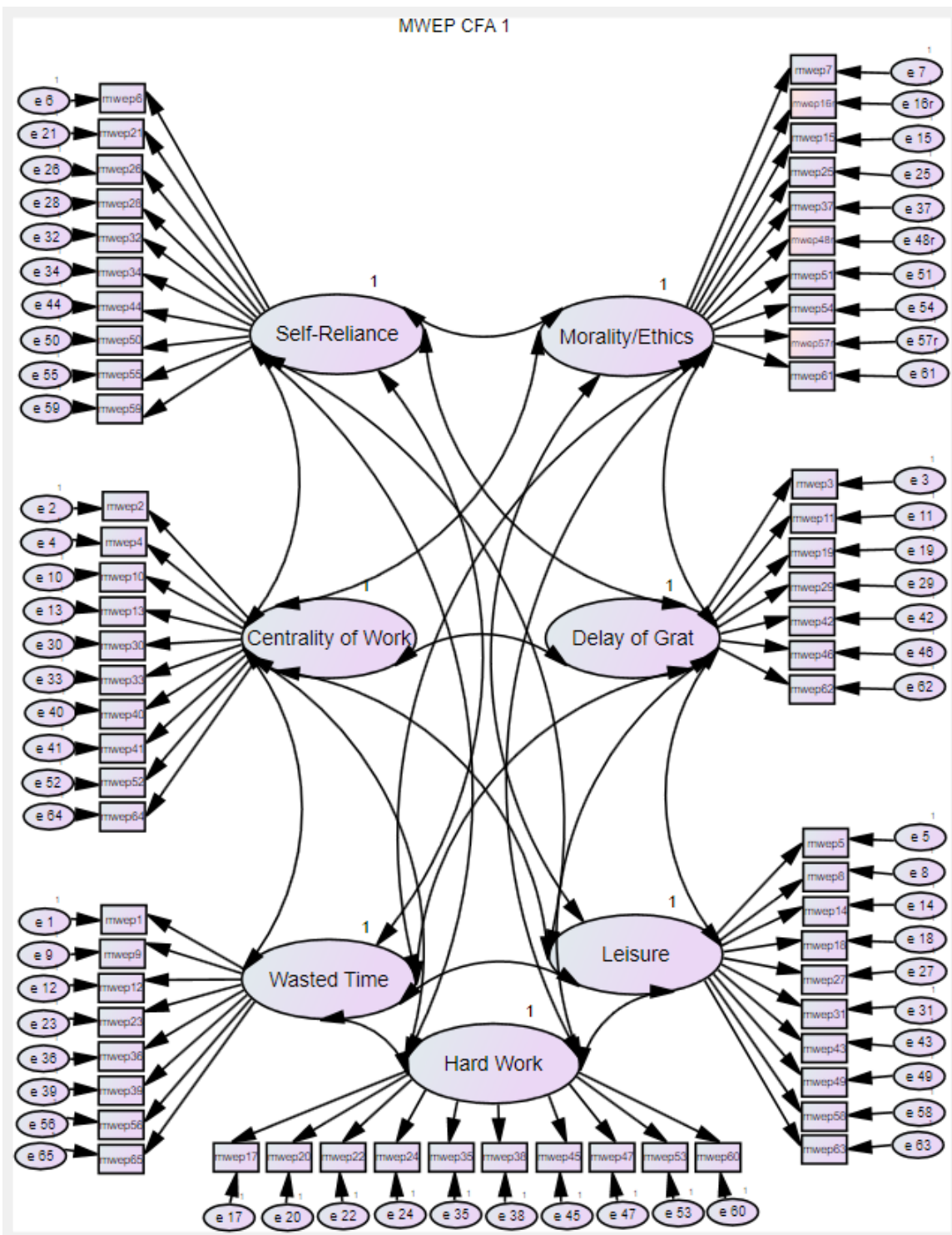
- 6. I get more fulfillment from items I had to wait for.
- 8. Things that you have to wait for are the most worthwhile.
- 15. A distant reward is usually more satisfying than an immediate one.
- 21. The best things in life are those you have to wait for.

## **APPENDICES D & E**

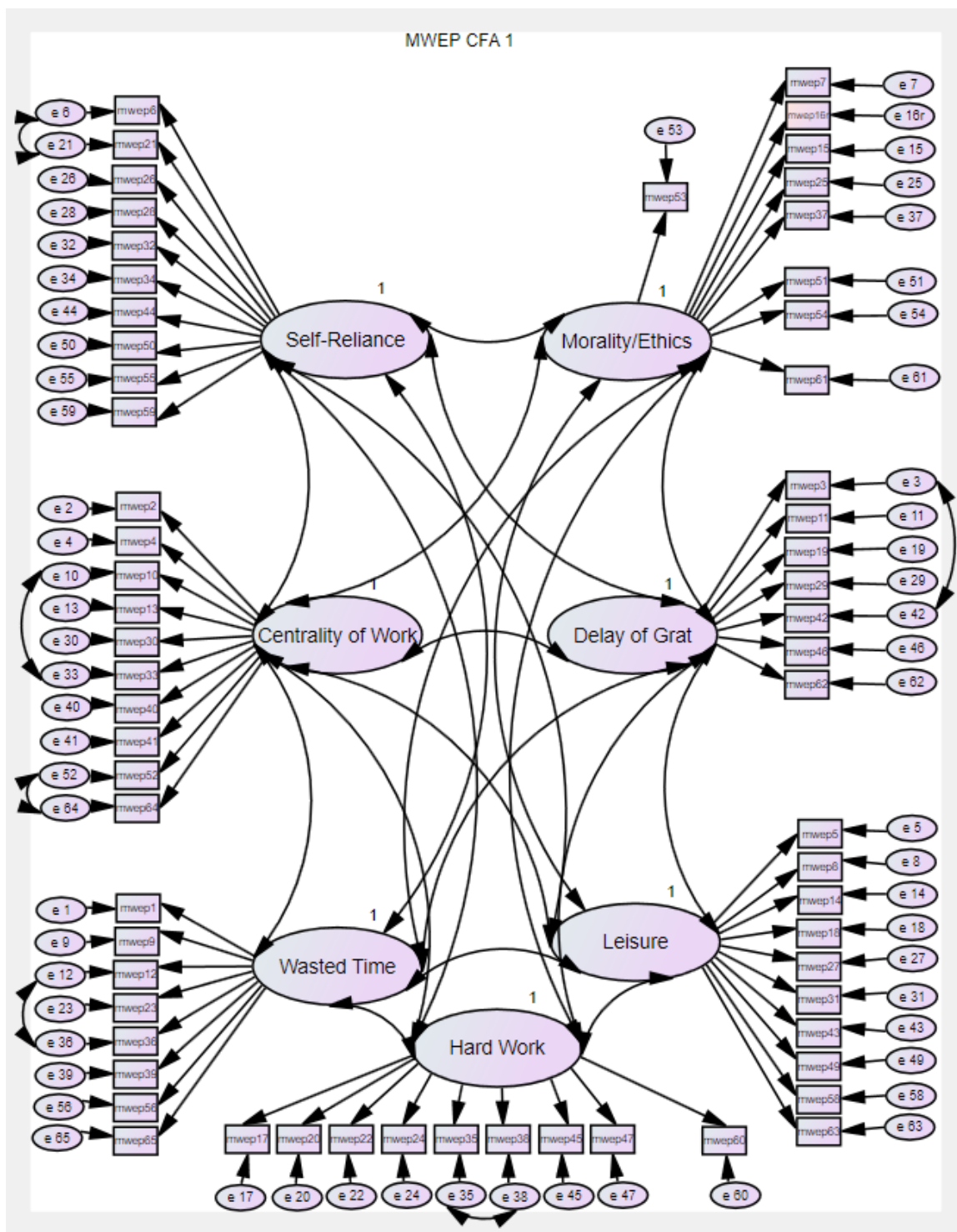
The following two appendices depict the MWEP model before (Appendix D) and after (Appendix E) modifications.

*Depictions made using IBM SPSS statistical package AMOS*

APPENDIX D: MWEP CFA Model Pre-Modifications

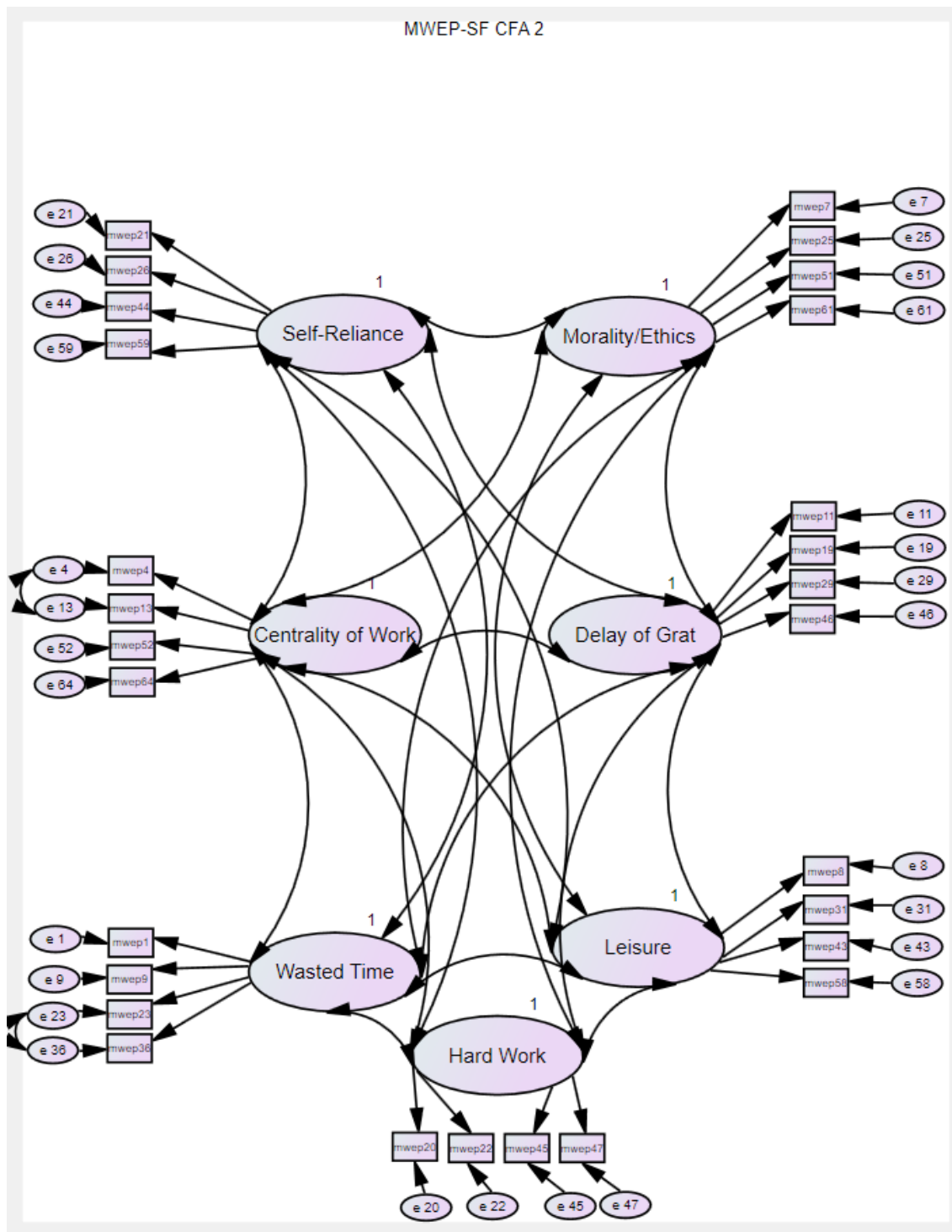


## APPENDIX E: MWEP CFA Model Post-Modifications



Note: Modifications to the MWEP CFA model are represented by the new arrows—those not in Appendix D. See page 32 of results for a detailed description of all modifications.

## APPENDIX F: MWEP Short Form Including Minor Modifications



Note: The arrows on the left side connecting error terms (e4 to e13, and e23 to e36) are the only two modifications for the short form CFA model



## **APPENDIX G: IRB Approval**

**IRB**  
**INSTITUTIONAL REVIEW BOARD**  
 Office of Research Compliance, 010A Sam Ingram Bui  
 Blvd Murfreesboro, TN 37129



**EXEMPT APPROVAL NOTICE**

8/3/2015

Investigator(s): David A. Wright  
 Department: Industrial/Organizational Psychology Investigator(s) Email:  
[daw5n@mtmail.mtsu.edu](mailto:daw5n@mtmail.mtsu.edu)

Protocol Title: "A Confirmatory Factor Analysis of two Work Ethic Scales and Examining Relationships with Big Five Personality Traits"

Protocol ID: 15-353 Dear Investigator(s),

The MTSU Institutional Review Board, or a representative of the IRB, has reviewed the research proposal identified above and this study has been designated to be EXEMPT.

The exemption is pursuant to 45 CFR 46.101(b) (4) **Collection or Study of Existing Data**

The following changes to this protocol must be reported prior to implementation:

- Addition of new subject population or exclusion of currently approved demographics
- Addition/removal of investigators
- Addition of new procedures
- Other changes that may make this study to be no longer be considered exempt

The following changes do not have to be reported:

- Editorial/administrative revisions to the consent of other study documents
- Changes to the number of subjects from the original proposal

All research materials must be retained by the PI or the faculty advisor (if the PI is a student) for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board  
 Middle Tennessee State University

NOTE: All necessary forms can be obtained from [www.mtsu.edu/irb](http://www.mtsu.edu/irb).