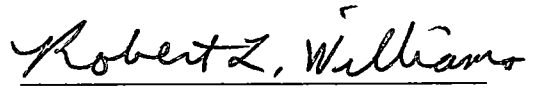
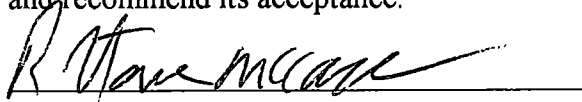
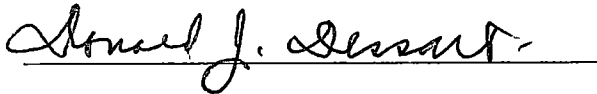


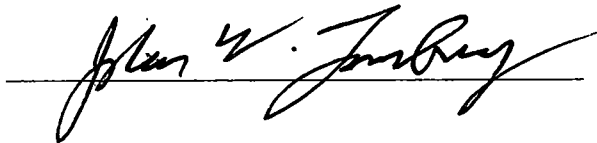
I am submitting herewith a dissertation written by Kary O. Jessup entitled "The Psychometric Efficacy of Positively Versus Negatively Worded Items on a Self-Report Measure of Middle Schoolers' Work Ethic." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

  
Robert L. Williams, Major Professor

We have read this dissertation  
and recommend its acceptance:







Accepted for the Council:

  
Associate Vice Chancellor and  
Dean of the Graduate School

THE PSYCHOMETRIC EFFICACY OF POSITIVELY VERSUS NEGATIVELY  
WORDED ITEMS ON A SELF-REPORT MEASURE OF MIDDLE SCHOOLERS'  
WORK ETHIC

A Dissertation  
Presented for the  
Doctor of Philosophy  
Degree  
The University of Tennessee, Knoxville

Kary O. Jessup  
August 2000

## DEDICATION

This dissertation is dedicated to my family  
and friends: past, present, and future.

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## ABSTRACT

The primary purpose of this study was to evaluate the psychometric efficacy of positively versus negatively worded items on a self-report measure of middle schoolers' work ethic. A secondary purpose was to determine the extent to which the three conceptual factors presumed to reflect the objective benefits of work, artificial benefits of work, and one's comfort level with work represent empirical factors. Finally, demographic comparisons were made.

Four versions of a middle schoolers' work-ethic scale were developed to allow for both between- and within-subjects comparisons of the differential effectiveness of negatively and positively worded items. Each scale version consisted of 30 items, with each conceptual factor (Objective, Artificial, and Comfort) represented by an equal number of items. The P Scale consisted of 30 positively worded items, the N Scale of 30 negatively worded items matched in content with each of the positively worded items, the NP1 Scale of 15 matched item pairs, and the NP2 Scale of the remaining 15 matched item pairs.

A total of 225 male and 213 female middle schoolers (grades 6, 7, and 8) from 3 schools in rural Tennessee participated in the study. Each subject responded to 1 of 4 versions of a work-ethic scale. A school psychologist or classroom teacher presented each item on an overhead projector and read it twice before proceeding to the next item.

The within- and between-subjects analyses revealed that scale total and subscale scores based on negatively worded items were higher than companion scores

based on positively worded items ( $p < .05$ ). At the individual item level, the means of negative items were consistently higher than the means of their positive counterparts.

More than 1/3 of the 120 items across scale versions were answered in a prowork manner by 80% of students. The between-subjects analysis indicated that twice as many negative items as positive items produced prowork endorsement at the 80% level. In contrast, the within-subjects comparison of item facility produced no significant differences in the extent to which the item types resulted in prowork endorsement.

The internal consistencies for scale total scores were good, ranging from .84 to .91. Among the subscales, the Artificial subscale, regardless of item type, consistently achieved the lowest reliability coefficients, ranging from a low of .61 within the P Scale to a high of .78 within the NP1 Scale. Between-subjects comparison of internal consistency based on item wording indicated that scale and subscale scores based on negative items consistently achieved higher alpha levels than scores based on positive items. Consistent differences in alpha levels based on item type were not obtained in the within-subjects analysis.

The demographic comparison of alphas indicated that males consistently achieved higher alpha levels than females. The internal consistencies of scales and subscales did not vary as a consequence of grade level.

Evidence of criterion validity stemmed from the correlations between work-ethic scores and school-related measures. Specifically, the scale total and subscale scores for work ethic were positively correlated to grades and negatively correlated to

absenteeism and teacher notations of “needs improvement” in work habits. Between- and within-subjects comparisons of correlations based on item type revealed that scores on the negative items were as likely to be related to grades as scores on positive items. The Artificial subscale for either item type was more frequently and widely related to grades than either the Objective subscale or Comfort subscale, indicating that students who earn high grades may be motivated by extrinsic benefits rather than the inherent value of working hard or the affective satisfaction gained from working hard.

Maximum-likelihood factor analysis with the request of a 3-factor structure provided some empirical support for factors addressing the artificial benefits of work and one’s comfort level with work, but not for the objective benefits of work. A general work-ethic factor was also indicated. However, the 3-factor model accounted for a relatively low percentage of the variance within the work-ethic scales.

Results of this study support previous research that suggests item wording influences subjects’ responses. Unlike previous research on work-ethic scales, this study found that negative items tended to evoke stronger prowork responses than positive items. Additionally, results of this study suggest that subjects are not necessarily more confused by negative items than positive items, as internal consistencies for these items were as high or higher than their positive counterparts. Results of factor analysis suggest that factors addressing the artificial benefits of work and one’s comfort level with work are appropriate for inclusion in work-ethic scales.

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## CHAPTER I

### INTRODUCTION

Psychologists and social scientists rely on self-reports as a primary source of data (Schwarz, 1999). Whether self-reports are provided during an interview or in response to a questionnaire or rating scale, many factors can influence subjects' responses. Features of the research instrument (e.g., question wording, format, and context) are among the factors that strongly influence self-reported behaviors and attitudes (Schwarz). Schwarz indicated that researchers from various fields have contributed to our understanding of self-reports and to the quality of data collection.

#### Response Sets

The manner in which subjects respond to questions or statements is a widely addressed issue in the research on self-report measures. Much of the focus has been on what have been termed response sets and response styles. A review of the literature indicates that researchers variously define these terms and sometimes use them interchangeably. The most common distinction appears to be that a response set (or response bias) is a measurement artifact that emerges from the context of a particular situation, whereas a response style is a measurement artifact that is consistent across situations so that it qualifies as a personality variable (Nunnally & Bernstein, 1994).

Sets affect responses in relation to item content, while styles presumably affect responses in the absence of item content (Rorer, 1965). Rorer used the term presumably when referring to styles, because he did not believe research supported

the existence of response styles. Indeed, his highly influential study concluded that the notion of response styles is a “myth” of trivial importance. His distinction between set and style appears to be consistent with the more common contrast between state and trait.

Although a number of response sets have been identified in the literature, two of great importance are the acquiescent response set (ARS) and the social desirability response set (Pedersen, 1967). Broadly defined, acquiescence is the tendency to agree with items regardless of content (Kline, 1986). It is most common when questions are difficult to answer (Gage, Leavitt, & Stone, 1957) and after respondents have become fatigued as a result of answering many prior questions (Clancy & Wachslar, 1971). Also, acquiescence is more common among respondents of lower social status (Gove & Geerkin, 1977), with less formal education (Narayan & Krosnick, 1996), and of lower intelligence (Krosnick, Narayan, & Smith, 1996).

Edwards (1953, 1970, 1990) is credited as being the first to clearly document social desirability (Nunnally & Bernstein, 1994). Social desirability response set is generally referred to as the tendency for respondents to select response alternatives that represent societally approved behaviors (Nunnally & Bernstein). The more socially desirable the response is, the more likely it will be given by respondents (Kline, 1986). Edwards (1957) considered subjects to be largely unaware of their tendency to respond in a socially desirable manner. Likewise, Krosnick (1999) suggested that self-deception may contribute to the tendency to provide socially desirable descriptions of oneself. People not only want to be perceived in a positive

manner by others, but they also want to see themselves in a positive light. He states that self-deception can be so automatic that people may not be aware of it.

Although self-deception may contribute to subjects' tendencies to provide socially desirable responses, more research supports the notion that people present themselves in a socially desirable manner to deceive others (Krosnick, 1999). Crowne and Marlowe (1964) presented evidence that the strength of the social desirability response set is related to a subject's more general need for self-protection, avoidance of criticism, social conformity, and social approval.

Because response sets have been shown to reduce the validity and reliability of scales, a number of procedures have been suggested to address such problems. Nunnally and Bernstein (1994) reported that common strategies for reducing the influence of response sets include the following:

- (1) avoid suggesting that one response is preferable, either overtly or tacitly,
- (2) make all responses of equal effort, (3) pay close attention to the wording of items, (4) use tasks that minimize bias (e.g., comparative rather than absolute judgments and sentiments), (5) apply converging operations, (6) make instructions clear, and (7) independently assess bias. (p. 391)

Pedersen (1967) reported that the control and assessment of response sets has included partialling out response sets statistically, using balanced scoring keys, using the forced-choice item format, and differentially scoring for separate set and content components. Kline (1986) suggested that the response sets of acquiescence and

social desirability both be considered by researchers in the item-development phase and in the subsequent trial of items.

Acquiescence may be minimized by writing items that are clear, unambiguous, and refer to a specific behavior (Kline, 1986). Also, Messick (1962) suggested that using a balanced scale containing about an equal number of items keyed "Yes" or "No" will help minimize acquiescence.

To assess the degree to which acquiescence has occurred, several strategies have been formulated. According to Krosnick (1999), pairs of mutually exclusive items should result in a strong negative correlation. After being corrected for random measurement error, a correlation of less than -1.0 may be due to acquiescence. Acquiescence also may be suggested by the difference between the percentage of respondents who agree with an assertion and those that disagree with the opposite assertion (Krosnick).

Winkler, Kanouse, and Ware (1982) advocated a procedure of matched pairs where an ARS score is computed for each respondent by counting the frequency of agreements with balanced-worded, logically inconsistent items. Next, acquiescence is statistically controlled by partial correlation analysis.

Ray (1984) suggested that an acquiescence score can be tabulated by simply "adding up all the responses to a balanced scale regardless of meaning or direction of wording" (p. 353). He indicated that a strong negative correlation between the opposing items will confirm that the scale is indeed balanced. The acquiescence score

is then used to partial out the effect of acquiescence from any correlations with other variables when the scale is scored to assess the content for which it was developed.

Pedersen (1967) compared three formulas for computing acquiescent response set scores. Two formulas, adapted by Messick and Frederiksen (1958), were based on procedures developed by Helmstadter (1957) for obtaining separate content and set scores for ability tests. The ARS formulas, denoted SI, SII, and SIII, and the content formula, denoted C, are as follows:

$$C = (Fa/Nf) + (Ud/Nu) - 1$$

$$SI = [(Fa/Nf) - (Ud/Nu)]/(1-C)$$

where Fa is the number of positive items agreed with, Ud is the number of negative items disagreed with, and Nf and Nu are the number of items keyed in the positive and negative directions, respectively. Messick (1962) suggested a second formula (SII) to calculate acquiescent responding in which the algebraic value of C is replaced with the absolute value to eliminate some distortion over a portion of the distribution when applied to bipolar attitude scales. Triandis and Triandis (1962) suggested a third scoring formula for assessing acquiescent response set:

$$SIII = (Fa/Nf) + (Ua/Nu) - 1$$

As depicted in Table 1, scores from all the ARS formulas are highly intercorrelated. None of the ARS scores are related to the measure of social desirability, indicating that these measurement artifacts are indeed different response sets. Although correlations are not provided here, Pedersen (1967) reported that the patterns of relationships with other variables, including interest, aptitude, and

Table 1

Correlation Matrix for Acquiescent Response Set Formulas

| Variables           | SI   | SII  | SIII |
|---------------------|------|------|------|
| SII                 | .82* |      |      |
| SIII                | .90* | .97* |      |
| Social Desirability | .04  | -.03 | .00  |
| Content             | .00  | .32* | .20* |

\* $p < .01$  (2-tailed test)

Source: D. M. Pedersen, "Acquiescence and Social Desirability Response Sets and Some Personality Correlates." Educational and Psychological Measurement, 27, 691-697.

personality measures, were almost identical for the different formulas. He suggested that SI may be slightly preferred to SII and SIII because it is independent of C.

In a discussion of procedures utilized for reducing the influence of response sets, Kline (1986) stated that it is unlikely that the social desirability response set can be entirely eliminated from scales. Nonetheless, several procedures have been advocated for reducing the influence of social desirability response set. Kline suggested that researchers avoid the use of desirable and undesirable items. In cases where socially desirable and undesirable traits are to be measured, he suggested that they should be indirectly assessed.

Among the most common methods for evaluating the social desirability response set is to correlate proposed scales with scales developed to measure social desirability. The Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) has been the most widely used such scale (Nunnally & Bernstein, 1994). This brief scale contains items, some of which are reverse-scored, that are considered highly socially desirable. Data obtained from individuals who score high on the social desirability scale may be considered suspect and eliminated from the data set.

Although measures of social desirability are commonly employed, the efficacy of their use has been seriously questioned. In his discussion of response styles, Rorer (1965) argued that the manner in which subjects respond to one scale may not generalize to other scales. Consequently, the use of a measure of social desirability to estimate this tendency in another context would be considered inappropriate.

### Positive Versus Negative Items

One of the most salient issues in evaluating response sets on a self-report instrument is the directionality of item wording. Bush's 1999 study of the psychometric qualities of a 12-item (6 positively worded and 6 negatively worded) self-report middle school work-ethic scale found that negatively worded items resulted in a more even selection of "yes" and "no" options than did positively worded items, which tended to evoke responses favorable to work ethic. Negative work-ethic total scores were also negatively correlated ( $-.13$ ) with an embedded 4-item social-desirability scale, whereas positive work-ethic total scores were positively correlated ( $.10$ ) with this social-desirability measure. Compared to positive work-ethic total scores, negative work-ethic total scores were more strongly correlated with teacher ratings of achievement ( $.24$  versus  $.15$ ) and work habits ( $.40$  versus  $.27$ ). For these reasons, Bush suggested that negatively worded items might be psychometrically stronger than positively worded items on this measure of work ethic.

In a related study, Malone (1998) investigated middle schoolers' perception of the contribution of school activities to preparation for adult life. In this study, a bipolar (Yes/No) self-report measure of "school-valuing" consisting of 12 items (6 positively stated and 6 negatively stated) was developed and evaluated psychometrically. Factor analyses suggested a two-factor structure, with one consisting of negatively worded items and the other of positively worded items. This factor structure, clustering of positively worded and clustering of negatively worded

items, is typically associated with acquiescent response bias (Ray, 1984; Winkler et al., 1982).

As in Bush's (1999) study, negatively worded items in Malone's (1998) study reflected more balanced responding than did positively worded items. Additionally, negative school-valuing total scores were negatively correlated (-.21) with the embedded measure of social desirability, whereas the positive school-valuing total yielded a negligible positive correlation (.05). Also in line with Bush's study, negative school-valuing total scores were more strongly correlated with criterion measures of achievement (.19 versus .13) and teacher ratings of work habits (.31 versus .22).

A follow-up study conducted by Williams (1999), using a Likert-type response format to replace the bipolar format used in Bush's (1999) and Malone's (1998) studies, also indicated that the social desirability measure correlated more strongly with positive work-ethic total scores (.29) and positive school-valuing total scores (.23) than with negative work-ethic total scores (.03) and negative school-valuing total scores (.03). Although the pattern of negative correlations with negative item totals did not hold, the correlations were near zero for both the work-ethic and school-valuing scales (Williams). Once again, negative work-ethic total scores were more strongly correlated than positive totals with criterion measures of achievement (.24 versus .00) and teacher ratings of work habits (.41 versus .25). This pattern also held for the school-valuing scale, as negative item totals were more strongly related than were positive item totals to criterion measures of achievement (.22 versus .07) and teacher ratings of work habits (.48 versus .34).

Regarding the social desirability measure in the above mentioned studies (Bush, 1999; Malone, 1998), a word of caution is in order. Interpretation of high scores on this social desirability measure is problematic, as all items were scored in the positive direction. Because respondents who acquiesce tend to agree with items, it is difficult to determine if those who scored high on this social desirability measure did so as a result of acquiescent response set or social desirability response set. However, it appears that some conclusions concerning acquiescent response set and social desirability response set in these studies are possible.

The clustering of negative and positive items suggested that acquiescent response set was a factor in Malone's (1998) study. Although positive, the near-zero correlation (.04) between positive school-valuing total scores and social desirability scores, as well as the negative correlation (-.21) between negative school-valuing total scores and social desirability scores, suggests social desirability response set was not a factor.

In Bush's (1999) study, the modest positive correlation (.10) between positive work-ethic totals and social desirability scores might suggest a slight tendency to acquiesce or to respond in a socially desirable manner. However, the fact that items did not cluster into factors as a result of directionality of item wording suggests that acquiescent response set may not have been a factor. The modest negative correlation (-.13) between negative work-ethic totals and social desirability suggests social desirability response set may not have been a factor. It appears that Bush's

scale may have been less prone to both acquiescent and social desirability response sets than was Malone's (1998) scale.

Additional conclusions concerning the directionality of item wording may be made from Bush's (1999), Malone's (1998), and Williams' (1999) studies. It appears that negatively worded items may be more effective than positively worded items in the above mentioned school-valuing and work-ethic scales. Compared to positively worded items, negatively worded items consistently resulted in more balanced responding and stronger relationships with criterion measures. It appears that negatively worded items may be beneficial in the measurement of attitudes in that such items may cause respondents to think more carefully. This additional consideration may counteract the common tendency of respondents to simply agree, or acquiesce, with items on attitudinal scales.

Although there is some evidence that the inclusion of negatively worded items in scales may be beneficial, some research has identified problems associated with the use of negatively worded items. Schriesheim and Hill (1981) evaluated the ability of subjects to respond accurately to positive versus reversed (negative) items. One hundred fifty undergraduate business students were provided with a one-page script clearly describing behaviors of a fictitious supervisor. They were asked to carefully read the script and then to turn it over and respond to multiple-choice factual questions about the behaviors of the fictitious supervisor clearly described in the script. Subjects received one of three questionnaire forms: all positively worded items, all negatively worded items, or an equal number of positively and negatively

worded items. Subjects' accuracy scores were computed as the absolute value of the difference between the actual supervisor behaviors clearly outlined in the script and subjects' responses.

Significant differences in response accuracy were reported between item-wording conditions. Responses to the questionnaire consisting of all positively worded items resulted in greater accuracy than did either of the other questionnaires. Schriesheim and Hill (1981) concluded that the inclusion of negatively worded items in measurement instruments can result in less accurate responses and impair the validity of results. However, their conclusion pertains to questions of a factual rather than an attitudinal nature.

An additional problem has been noted in the literature pertaining to reverse-scored items. Discussing factor and cluster analysis of personality and attitude scale items, Schmitt and Stults (1985) reported that all or nearly all negatively keyed questionnaire items frequently define a single factor. To indicate that this phenomenon is relatively widespread, they cite studies of interview impressions, personality scales, and role ambiguity.

Schmitt and Stults (1985) demonstrated that a small portion of questionnaire respondents who do not adequately attend to the wording of the items (referred to as "careless respondents") can generate a clearly definable negative factor. When 10% of respondents answer as if they did not notice that some items were worded inconsistently with the majority of items, a "clearly identifiable negative factor appears." Clustering of negative items is present when only 5% of the respondents

answer “carelessly,” even though researchers will likely be unaware of this occurrence.

Although it is common for researchers to make substantive interpretations of such negative factors, Schmitt and Stults (1985) suggested that “researchers should be highly suspicious of factors loaded primarily with negatively keyed items” (p. 371). Ray (1984) and Winkler et al. (1982) have also concluded that the clustering of all “pro” items on one factor and all “anti” items on another factor is a typical sign of strong acquiescence response bias.

Additional studies have indicated problems associated with negatively and positively worded items. Idaszak and Drasgow (1987) evaluated the psychometric properties of the Job Diagnostic Survey (JDS; Hackman & Oldham, 1974, 1975) and a revised version of the scale. The original scale consisted of five factors that fit the expected pattern and a sixth factor (consisting of reverse-scored items) that was identified as a measurement artifact. Idaszak and Drasgow replaced the reverse-scored items with items that did not have to be reverse scored and an expected five-factor solution emerged. They argued that although Hackman and Oldham intentionally included reverse-scored items in the JDS to reduce response bias, their efforts appear to have “backfired” (Idaszak & Drasgow, p. 73).

#### Assessment of Middle Schoolers’ Work Ethic

To provide a conceptual framework for assessing selected psychometric properties (especially response acquiescence) of positively versus negatively worded items, the current study focused on the work-ethic construct. Weber (1958) has

defined work ethic as the extent to which work is perceived as satisfying and useful. Acknowledging the importance of developing work ethic in school children, Bush (1999) stated that a failure of students to see the value of work could lead to adverse consequences: students may not develop or apply skills, they may receive little satisfaction from completing tasks, or they may not appreciate the intrinsic and extrinsic benefits of hard work. Due to the unavailability of work-ethic measures appropriate for the middle school population, Bush developed a brief work-ethic scale for this population.

Previous research indicates that valuing of work is multidimensional. One of the most widely cited measures of work values is the Work Values Inventory (WVI) developed by Super (1968). The WVI is similar to the work-ethic scales developed for use in the current study in that it is a relatively brief inventory (45 items measuring 15 work values) that consists of work-related statements that respondents rate using a Likert-type scale. Reportedly, the WVI is also appropriate for use with middle school students. An analysis of the WVI completed by Gable and Pruzek (1971) demonstrated that the 15 scales represented discriminable dimensions. A factor analysis completed by Bolton (1980) indicated the WVI consisted of 5 second-order factors: stimulating work, interpersonal satisfaction, economic security, responsible autonomy, and comfortable existence.

Exploratory and confirmatory factor analyses suggested a two-factor structure for the work-ethic scale in Bush's (1999) study. The primary factor consisted of items interpreted to represent the objective benefits of work, while the secondary

factor represented the affective satisfaction, or comfort level, with work. The primary factor appears to be generally consistent with point C, Generalized Instrumental Value, on Cherrington's (1980) continuum, because work is seen as contributing to worthwhile goals. The secondary factor seems generally consistent with point D, Self Evaluation, because work leads to an increase in self-esteem as a result of competence gained from mastering work tasks. Both factors had a mixture of positively and negatively worded items.

#### Statement of the Problem

As indicated previously, features of the research instrument, including item wording, have significant influence on results obtained on self-report measures. Considerable evidence suggests that the use of negatively worded (or reverse-scored) items can have a detrimental effect on questionnaire results (Idaszak & Drasgow, 1987; Schmitt & Stults, 1985; Schriesheim & Hill, 1981). In contrast, other studies (Bush, 1999; Malone, 1998) indicated that negatively worded items may provide more balanced responding and have higher predictive validity than positively worded items in self-reported school-valuing and work-ethic scales for middle school students. Clearly, negatively worded items may counter a common tendency for respondents to agree with items on attitudinal scales. Krosnick (1999) reported that there is considerable evidence that it is easier for respondents to agree with an item than to disagree with an item. Thus, the array of research on the psychometric benefits of positively versus negatively worded items has not produced a consistent pattern.

### Statement of Purpose

The current study was conducted to investigate further the effect of item wording on middle schoolers' self-reported work ethic. More specifically, the psychometric properties, including reliability and validity, of negatively and positively worded items were compared. Of particular interest was the acquiescent response set associated with positively versus negatively worded items. Because time limitations did not permit the administration of a separate measure of social desirability in the data collection for the current study, this response set was not evaluated.

Additionally, the revised work-ethic scale developed to address the two conceptual factors identified in Bush's (1999) study (objective benefits of work and comfort level with work) and an additional conceptual factor, artificial benefits of work, were evaluated through exploratory factor analysis to determine the extent that the conceptual factors represent empirical factors.

## CHAPTER II

### METHOD

#### Subjects

A total of 438 (225 males and 213 females) sixth, seventh, and eighth grade students from three public schools located in the southeastern United States participated in the study. All three schools are located in rural areas. Schools 1 and 2 are in the same district and School 3 is in another district located within 100 miles of Schools 1 and 2. The percentages of students who received free or reduced-price lunches were 60% in School 1, 54% in School 2, and 93% in School 3. Table 2 presents demographic statistics for the composite sample and for participating schools. More than half of the 438 subjects attended School 1 ( $n = 253$ ), whereas School 2 ( $n = 91$ ) and School 3 ( $n = 94$ ) had similar representation in the composite sample. Each grade level was represented with a similar number of students. Males ( $n = 225$ ) and females ( $n = 213$ ) were similarly represented in the composite sample and at each grade level. The overwhelming majority of students were Caucasian ( $n = 378$ ); African American students made up the second largest ethnic group ( $n = 38$ ). The representation of Native Americans, Asian Americans, and Hispanics was 10 students or less per ethnic group.

#### Item Development

Schwab (1980) suggested that the development of psychometric measures progresses through three basic stages: (a) item development, (b) scale development and (c) scale evaluation. Initially, items are generated to assess the content area

Table 2

Demographics for Composite Sample and Individual Schools

| Demographic variable | All schools | School 1 | School 2 | School 3 |
|----------------------|-------------|----------|----------|----------|
| <u>N</u>             | 438         | 253      | 91       | 94       |
| Gender               |             |          |          |          |
| Males                | 225         | 133      | 46       | 46       |
| Females              | 213         | 120      | 45       | 48       |
| Grade level          |             |          |          |          |
| 6 <sup>th</sup>      | 128         | 0        | 91       | 37       |
| 7 <sup>th</sup>      | 159         | 130      | 0        | 29       |
| 8 <sup>th</sup>      | 151         | 123      | 0        | 28       |
| Ethnic group         |             |          |          |          |
| Native American      | 10          | 3        | 3        | 4        |
| African American     | 38          | 23       | 8        | 7        |
| Asian American       | 4           | 3        | 1        | 0        |
| Hispanic             | 5           | 4        | 1        | 0        |
| Caucasian            | 378         | 218      | 77       | 83       |
| Other                | 3           | 2        | 1        | 0        |

under investigation. Next, items are combined to form scales. Finally, the scale is evaluated to determine its psychometric properties. In an outline of “best practices” in scale development, Hinkin (1995) suggested that the generation of items may be the most important step in developing sound measures.

Items to be included in scales are usually developed around a conceptual theme. In the current study, a deductive approach, sometimes referred to as “logical partitioning” (Hinkin, 1995), was utilized to generate items to represent content consistent with the two factors identified in Bush’s (1999) study, objective benefits of work and comfort level with work. Additionally, items were written to measure a conceptually derived third factor representing the artificial benefits of work. This conceptual factor seems to be consistent with point E on Cherrington’s (1980) work-values continuum. Point E is labeled Specific Instrumental Value in that individuals at this level perceive work as positive primarily because it is a means of obtaining such rewards and satisfaction as money, recognition, and status (Cherrington). After several item revisions, a tenured professor in school psychology, a doctoral student in school psychology, and a licensed school psychologist with a Specialist in Education degree agreed that the final matched pairs of items to be included in the scale appropriately represented each of the conceptual factors (see Appendix A).

#### Instrument Conditions

Four versions of a self-report measure of work ethic were developed to allow for comparison of negatively and positively worded items within subjects and between subjects. Each version consisted of 30 statements based on three conceptual factors:

objective benefits of working hard, artificial benefits of working hard, and comfort level with working hard. Each respondent is asked to rate his or her degree of endorsement with each statement using the Likert responses of strongly disagree, disagree, agree, and strongly agree.

Ten positively worded items (e.g., "Working hard is good for you.") were written for each of the three conceptual factors. These 30 items compose the Positive, or P, Scale. An additional 30 items were written in a negative direction (e.g., "Working hard is bad for you.") to "mirror" each of the positively worded items. These items compose the Negative, or N, Scale and are reverse scored.

To allow for comparison of items within subjects, two additional versions of the rating scale, NP1 and NP2, were constructed. Each NP scale consists of 15 negatively worded and 15 positively worded companion items, representing the three conceptual factors with an equal number of items. Items were not duplicated between the NP1 and NP2 scales.

Each answer sheet for the work-ethic scales contains a section in which students indicate their two-digit school number, two-digit class number, two-digit student number, gender, grade level (6, 7, or 8) and ethnicity (Native American, African American, Asian American, Hispanic/Latino, Caucasian, or Other).

### Procedure

Each version of the work-ethic scale was proctored in the same manner by the classroom teacher or school psychologist. Each student was provided with an answer sheet and instructed to use only a pencil for marking answers. Pencils were provided

to students when necessary. Instructions were placed on an overhead projector and read aloud. Students were asked to copy their school and class numbers previously written on the board by the proctor. The proctor provided each student with a student number in accordance with the student's line number in the teacher's grade book. Students were asked to mark their gender, grade level, and ethnicity in the appropriate boxes on the answer sheet. Students were then asked to indicate how strongly they agreed or disagreed with each of the statements presented on the overhead. Each item was read aloud twice by the proctor before proceeding to the next item. After the administration of the last item, students were asked to check their answer sheets for completeness and to erase stray marks. They were then thanked for participating in the study.

### Criterion Measures

Attendance records and teacher ratings of student work habits were available only in School 3. Attendance records were obtained from the school's computer database, while teacher ratings were obtained from report cards. Teacher ratings included the following: listens attentively, uses time wisely, completes homework, work carefully done, shows effort, follows directions, obeys willingly, exhibits appropriate conduct, and promotion in danger.

Numeric classroom grades were obtained from the school's computer database for all students in School 1. Grades were not available in School 2. Grades in School 3 were obtained from report cards. Because students in School 3 received either letter grades or numeric grades, letter grades (A, B, C, D, and F) were

converted to numeric “equivalents” by entering the midrange score of possible scores for each letter grade. When letter grades included positive (+) or negative (-) modifiers, the highest or lowest numeric score in the letter grade range was entered.

The following scale was used for all letter grades:

| Letter Grade | Midrange | +   | -   |
|--------------|----------|-----|-----|
| A            | 97       | 100 | 94  |
| B            | 90       | 93  | 87  |
| C            | 82       | 86  | 78  |
| D            | 73       | 77  | 70  |
| F            | 35       | 69  | N/A |

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## CHAPTER III

### RESULTS

#### Descriptive Statistics for Scale Scores

Table 3 presents descriptive statistics by demographic group for work-ethic total scores for each version of the scale. Each of the work-ethic total and subscale scores were slightly negatively skewed. Nonetheless, there was sufficient room for scores to spread at least 2 standard deviations above and below the means.

#### Comparison of Scale Versions

A one-way analysis of variance (ANOVA) across the four scale versions was performed to determine any differences in total scale scores (see Table 3). Significant differences were found among scale means,  $F(3, 434) = 23.28, p < .00001$ . After Bonferroni correction for multiple tests, a comparison revealed that some means varied significantly at the .05 level. The mean of 91.32 for the N Scale ( $n = 85$ ) was significantly higher than the P Scale ( $n = 89$ ) mean of 80.04, an effect size of .93. The N Scale mean was also higher than the NP2 Scale ( $n = 142$ ) mean of 85.71, an effect size of .49. The NP1 Scale ( $n = 122$ ) mean of 92.20 was significantly higher than the both NP2 Scale mean (effect size = .58) and the P Scale mean (effect size = 1.03). The NP2 Scale mean was significantly higher than the P Scale mean, and this difference resulted in an effect size of .52. The magnitudes of the significant differences between means, as measured by effect sizes, are moderate to large.

Independent groups t-tests (two-tailed) revealed no gender differences in total scale score means for any of the four scale versions. Additionally, a one-way

Table 3

## Descriptive Data by Work-Ethic Scale Version for Composite Sample and Demographic Groups

| Demographic variable | N Scale<br>mean<br>SD   | P Scale<br>mean<br>SD   | NP1 Scale<br>mean<br>SD  | NP1<br>Scale SD | NP2 Scale<br>mean<br>SD  | NP2<br>Scale SD |
|----------------------|-------------------------|-------------------------|--------------------------|-----------------|--------------------------|-----------------|
| Composite sample     | $\bar{n} = 85$<br>91.32 | $\bar{n} = 89$<br>80.04 | $\bar{n} = 122$<br>92.20 | 12.17           | $\bar{n} = 142$<br>85.71 | 10.25           |
| Gender               |                         |                         |                          |                 |                          |                 |
| Males                | 89.52                   | 79.51                   | 92.37                    | 14.01           | 86.33                    | 11.64           |
| Females              | 93.24                   | 80.59                   | 92.03                    | 10.19           | 85.00                    | 8.41            |
| Grade level          |                         |                         |                          |                 |                          |                 |
| 6 <sup>th</sup>      | 93.00                   | 80.65                   | 91.04                    | 7.92            | 88.12                    | 10.09           |
| 7 <sup>th</sup>      | 90.28                   | 79.83                   | 91.51                    | 12.35           | 84.72                    | 11.25           |
| 8 <sup>th</sup>      | 89.43                   | 79.83                   | 93.45                    | 13.72           | 84.67                    | 8.42            |
| Ethnic group         |                         |                         |                          |                 |                          |                 |
| Native American      | 72.50<br>(2)            | 71.50<br>(2)            | 86.00<br>(4)             | 21.18           | 77.50<br>(2)             | 7.78            |
| African American     | 91.14<br>(7)            | 84.80<br>(2)            | 86.25<br>(16)            | 17.80           | 86.20<br>(10)            | 7.32            |
| Asian American       | 78.50<br>(2)            | n/a                     | n/a                      | n/a             | n/a                      | n/a             |
| Hispanic             | n/a                     | n/a                     | 85.33<br>(3)             | 11.50           | 84.00<br>(2)             | 8.49            |
| Caucasian            | 92.19                   | 80.14                   | 93.60                    | 10.40           | 85.90                    | 10.55           |
| Other                | n/a                     | n/a                     | n/a                      | n/a             | 85.00<br>(2)             | 14.14           |

Note. The number of subjects for each ethnic group is in parentheses. n/a indicates that no subjects were available to calculate means and standard deviations.

ANOVA on scale scores for each version of the scale produced no significant differences for grade levels. The sample did not include enough non-Caucasians to allow for ethnic-group comparisons for each version of the scale.

#### Scale Score Comparisons Based on Item Type

As mentioned above, the N Scale mean was significantly higher than the P Scale mean. This between-subjects comparison indicated that subjects who completed a scale consisting entirely of negatively worded items (reverse scored) endorsed prowork statements to a greater extent than did subjects responding to a companion scale consisting entirely of positively worded items.

The within-subjects comparison of scale scores based on negatively worded items and scale scores based on their positive counterparts was completed by evaluating items on the NP1, NP2, and the combined sample for the NP1 and NP2 Scales (see Table 4). Paired-samples t-tests (two-tailed) and Bonferroni correction for multiple tests were used to complete this analysis. In each of the three instances, the means based on the sum of the 15 items contributing to the negative item total (ntotl) were higher than the means based on the total of the 15 positive items (ptotl). Thus, the within-subjects comparison of scale means based on item wording indicated that totals based on negatively worded items were more likely to evoke prowork responses than means based on positive companion items. These comparisons, along with the between-subjects comparisons described earlier, indicated that mean total scores based on negative items were consistently higher than mean total scores based on positive items.

Table 4

Paired Samples t-tests for Total Scores Based on Item Type

|                    | Mean  | <u>SD</u> <sup>a</sup> | <u>t</u> value | <u>df</u> <sup>b</sup> | 2-tail sig | ES <sup>c</sup> |
|--------------------|-------|------------------------|----------------|------------------------|------------|-----------------|
| NP1 Scale          |       |                        |                |                        |            |                 |
| ntotl <sup>d</sup> | 46.85 | 6.39                   | 3.70           | 121                    | .0001      | .23             |
| ptotl <sup>e</sup> | 45.34 | 6.59                   |                |                        |            |                 |
| NP2 Scale          |       |                        |                |                        |            |                 |
| ntotl              | 43.75 | 5.44                   | 4.07           | 141                    | .0001      | .31             |
| ptotl              | 41.96 | 6.04                   |                |                        |            |                 |
| Both NP Scales     |       |                        |                |                        |            |                 |
| ntotl              | 45.18 | 6.09                   | 5.49           | 263                    | .0001      | .26             |
| ptotl              | 43.53 | 6.51                   |                |                        |            |                 |

<sup>a</sup>SD = standard deviation. <sup>b</sup>df = degrees of freedom. <sup>c</sup>ES= Effect Size. <sup>d</sup>ntotl = negative item total. <sup>e</sup>ptotl = positive item total.

### Analysis of Item Pairs

Matched pairs of negative and companion positive items were evaluated to determine the strength of relationship within item pairs and to examine any differences in means between item types. One-tailed Pearson correlation coefficients were computed for matched item pairs on both the NP1 Scale and the NP2 Scale (see Appendix B). Between-subjects analysis of item means was completed by comparing negative items from the N Scale with companion positive items from the P Scale (see Appendix C). Within-subjects comparison was completed by evaluating the means of matched pairs of negative and positive items within both the NP1 and NP2 Scales (see Appendix D).

### Correlations for Matched Item Pairs

One-tailed correlation coefficients indicated that 13 of the 15 item pairs within the NP1 Scale were significantly related. Correlations ranged from a low of .02 to a high of .53. Only 2 items did not correlate significantly. The items “working hard hurts others” and “working hard helps others” had a near zero correlation of .02. The items “working hard to solve problems is frustrating” and “working hard to solve problems is fulfilling” achieved a correlation that approached significance ( $r = .15$ ); but the relationship was relatively weak, given that they were matched in verbal content.

Correlation coefficients indicated that all matched item pairs within the NP2 Scale were significantly related. Correlations ranged from a low of .14 between the items “working hard is criticized by others” and “working hard is praised by others.”

The strongest relationship of .63 was between the items “working hard is bad” and working hard is good.”

#### Between-Subjects Comparison of Item Pair Means

The between-subjects comparison indicated that the absolute value of negative item means (after being reverse scored) were higher than positive item means in 26 of the 30 matched pairs (see Appendix C). Multivariate analysis of variance (MANOVA) was used to determine which matched pairs of items differed to a statistically significant degree within each subscale. Additionally, the alpha levels were adjusted using the Bonferroni correction for multiple tests; and the reported significance levels reflect this adjustment.

Objective subscale. The absolute value for the means of negative items contributing to the Objective subscale were higher than their positive counterparts in 9 of the 10 matched pairs. MANOVA results indicated that item means did indeed differ on the Objective subscale,  $F(10, 156) = 8.219, p < .001$ . After Bonferroni correction, 7 of the 10 means differed significantly ( $p < .05$ ) with negative items resulting in higher means than positive items in each of the 7 instances.

Artificial subscale. Means of positive and negative item pairs differed significantly on the Artificial subscale,  $F(10, 162) = 8.666, p < .001$ . The sole mean difference after Bonferroni correction indicated that a negative item had a higher mean than its positive counterpart ( $p < .05$ ). Although not at statistically significant levels, negative item means were higher than their positive counterparts in 7 of the remaining 9 item pairs.

Comfort subscale. MANOVA results indicated that the means between matched items of opposed wording contributing to the Comfort subscale differed significantly,  $F(10, 160) = 16.324, p < .001$ . After Bonferroni correction, 8 of the 10 mean comparisons based on item wording were statistically significant ( $p < .05$ ). In each instance, a higher mean was obtained for negatively worded items than for positively worded items.

The results of the between-subjects comparison of matched-item pairs indicated a clear pattern in which negatively worded items evoked stronger prowork responses than their positively worded counterparts. In other words, students were more likely to strongly disagree with a negatively worded item than to strongly agree with its positively worded counterpart. This pattern was easily identified within the Objective and Comfort subscales, but it was much less prominent within the Artificial subscale.

#### Within-Subjects Comparison of Item Pair Means

The within-subjects comparison of item means was completed by computing paired-samples t-tests (two-tailed) for matched pairs of items contributing to each of the subscale scores (see Appendix D). As with the between-subjects comparison, the Bonferroni correction procedure for multiple tests was performed; and significance levels reflect this adjustment.

Objective subscale. Within the NP1 Scale, the absolute value of negative item means contributing to the Objective subscale were higher than their positive

counterparts in four of the five pairs. After Bonferroni correction, one of these was significant at the .05 level.

The NP2 Scale also indicated that four of the five negative item means contributing to the Objective subscale were higher than their positive counterparts. Two of these mean differences were statistically significant ( $p < .05$ ). The one item pair in which the positive item mean was higher than its negative counterpart was significant ( $p < .05$ ).

Artificial subscale. The Artificial subscale of the NP1 Scale indicated that two of the five negative item means were higher than their positive counterparts. In terms of significant differences, one positive item mean was higher than its negative counterpart; and one negative item mean was higher than its positive counterpart.

The Artificial subscale contained within the NP2 Scale indicated that the absolute value of positive item means were higher than their negative counterparts in four of five pairs. The only significant mean difference based on item pairs indicated that the negative item mean was higher than its positively worded counterpart ( $p < .05$ ).

Comfort subscale. Within the Comfort subscale of the NP1 Scale, four of the five negatively worded item means were significantly higher than their positively worded counterparts ( $p < .05$ ). In the remaining item pair, the positively worded item mean was significantly higher than its negatively worded counterpart ( $p < .05$ ).

The Comfort subscale of the NP2 Scale indicated that the negative item means were significantly higher than their positive counterparts in three of the five pairs ( $p < .05$ ). Positive means were not significantly higher than their negative counterparts.

#### Item Facility

Item facility was defined as the ease with which subjects endorsed prowork statements (agree with positively worded items or disagree with negatively worded items). Endorsement of an item was defined as an item score of 3 or 4 (after reverse scoring negatively worded items). Item facility was the computed ratio of the number of subjects who endorsed a prowork statement to the total number of subjects for each item. Two levels of item facility were evaluated: items endorsed in a prowork manner by 95 % and 80 % of subjects. Items determined to be easily endorsed in a prowork manner were then compared in terms of directionality of item wording (see Appendices E, F, and G).

Only 4 of the 120 items across all four scale versions were endorsed in a prowork manner by 95 % of respondents. This finding did not favor either positive or negative items, as 2 of these items were positive and 2 were negative.

Across all scales, 47 of the 120 items (more than 1/3) reflected prowork responses at the 80 % level. Negative and positive items were compared both between and within subjects. The between-subjects comparison indicated that within the N Scale (all negatively worded items) 13 of the 30 items reached the 80 % level of endorsement (see Appendix E). Less than half this number of items (6 items) reached the 80 % endorsement level within the P Scale (all positively worded items),

indicating that negative items were more likely than positive items to result in a large majority of subjects endorsing prowork statements.

The within-subjects comparison was completed by identifying the frequency of 80 % endorsement of items within the NP1 Scale and NP2 Scale separately. Within the NP1 Scale, 16 of the 30 items received 80 % or greater endorsement of prowork responses (see Appendix F). Analysis revealed that 6 of the 15 negative items and 10 of 15 positive items reflected endorsement of 80 % or greater. Unlike the between-subjects comparison, this within-subjects comparison based on the NP1 Scale revealed that items agreed with by a large majority of subjects were more likely to be positively than negatively worded.

Within-subjects comparison based on the NP2 Scale indicated that negatively and positively worded items were only slightly different in their likelihood to achieve 80 % agreement with prowork statements (see Appendix G). Seven negatively worded items reached the 80 % agreement level, whereas five of the positively worded items reached this level.

### Reliability

The internal consistency of the work-ethic scales for the composite sample was evaluated by calculating Cronbach's alpha coefficients. Alpha coefficients were computed for items contributing to total scores and subscale scores for each version of the work-ethic scales. To allow for comparison of reliability coefficients based on item type, alphas were also computed separately for the negative and positive items contributing to total scores and subscale scores.

### Scale and Subscale Alphas

Alpha coefficients for each version of the scale and for subscale scores are presented in Tables 5, 6, and 7. Coefficients based on total scale scores obtained for each version of the scale ranged from .84 to .91, exceeding the desired .80 level. The Objective and Comfort subscales within each version of the scale achieved the .70 level, the minimum recommended by Nunnally (1978) for research instruments. The lowest reliability coefficients were obtained on the Artificial subscale (.61 to .78), which exceeded the minimum level of acceptability within the NP1 Scale only.

The internal consistency of total scale scores and subscale scores based on item type indicated that the scale consisting entirely of negative items (N Scale) and the scale consisting entirely of positive items (P Scale) achieved similar alpha levels (.88 versus .87), each exceeding the desired alpha level of .80. The NP1 Scale and NP2 Scale achieved similar total score alphas (.91 versus .84), but they differed considerably in level of internal consistency among subscale scores. Although Fisher's Z did not indicate statistically significant differences, the absolute values of the alphas for the NP1 Scale were higher than the alphas for the NP2 Scale on the total scale score and each of the subscale scores, regardless of item type (see Tables 5 and 6).

The sum total of negative items (ntotl) and positive items (ptotl) each exceeded the minimum level of internal consistency within the NP1 Scale (.82 versus .86) and NP2 Scale (.73 versus .77). Although not statistically significant, the

Table 5

Cronbach's Alphas for N and P Scales by Schools and Demographic Groups

|                 | N Scale | P Scale | nobj  | pobj  | nart  | part  | ncom  | pcom  |
|-----------------|---------|---------|-------|-------|-------|-------|-------|-------|
| Composite       | .8845   | .8654   | .8301 | .8039 | .6604 | .6143 | .8174 | .7786 |
| Gender          |         |         |       |       |       |       |       |       |
| Male            | .9070   | .8755   | .8438 | .7848 | .6645 | .6624 | .8692 | .7736 |
| Female          | .8479   | .8579   | .8018 | .8235 | .6808 | .5801 | .6758 | .7811 |
| Grade           |         |         |       |       |       |       |       |       |
| level           |         |         |       |       |       |       |       |       |
| 6 <sup>th</sup> | .8508   | .8243   | .8142 | .7193 | .6099 | .5886 | .7615 | .7143 |
| 7 <sup>th</sup> | .8635   | .9050   | .7654 | .8825 | .6806 | .6670 | .7828 | .7942 |
| 8 <sup>th</sup> | .9329   | .8726   | .8903 | .7823 | .7524 | .6204 | .9086 | .8134 |
| School          |         |         |       |       |       |       |       |       |
| 1               | .9048   | .8704   | .8414 | .8386 | .7134 | .6192 | .8564 | .8013 |
| 2               | .8924   | .8243   | .8646 | .7193 | .6982 | .5886 | .8372 | .7143 |
| 3               | .6915   | .9090   | .6811 | .7905 | .1288 | .6364 | .3984 | .8266 |

Note. The Objective, Artificial, and Comfort subscales based on either negative or positive items are denoted with the appropriate letter (n or p) before each subscale abbreviation (obj, art, or com).

Table 6

Cronbach's Alphas for NP1 Work-Ethic Scale by Schools and Demographic Groups

|                 | NPI   | ntotl | ptotl | nobj  | pobj  | nart  | part  | ncom  | pcom  | obj   | art   | com   |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Composite       | .9084 | .8167 | .8585 | .7583 | .7069 | .6597 | .6546 | .7460 | .7281 | .8389 | .7820 | .8448 |
| Gender          |       |       |       |       |       |       |       |       |       |       |       |       |
| Male            | .9264 | .8537 | .8727 | .8427 | .7468 | .7546 | .7081 | .7501 | .6593 | .8865 | .8308 | .8314 |
| Female          | .8770 | .7494 | .8424 | .4805 | .6527 | .5017 | .5952 | .7339 | .8011 | .7108 | .7091 | .8610 |
| Grade level     |       |       |       |       |       |       |       |       |       |       |       |       |
| 6 <sup>th</sup> | .7421 | .5326 | .7074 | .5341 | .3488 | .5381 | .6373 | .4732 | .6635 | .6512 | .6947 | .7637 |
| 7 <sup>th</sup> | .9117 | .8340 | .8679 | .5658 | .6940 | .6301 | .5118 | .7919 | .8175 | .7748 | .7095 | .8802 |
| 8 <sup>th</sup> | .9343 | .8569 | .8883 | .8874 | .7666 | .7286 | .7587 | .7841 | .6351 | .9007 | .8536 | .8367 |
| School          |       |       |       |       |       |       |       |       |       |       |       |       |
| 1               | .9232 | .8459 | .8747 | .8347 | .7472 | .7286 | .7061 | .7494 | .6632 | .8753 | .8238 | .8243 |
| 2               | .7421 | .5326 | .7074 | .5341 | .3488 | .5381 | .6373 | .4732 | .6635 | .6512 | .6947 | .7637 |
| 3               | .9286 | .8532 | .8884 | .6192 | .6910 | .5983 | .5391 | .8585 | .8743 | .7950 | .7211 | .9196 |

Note. The three subscales identified as obj, art, and com are based on both positive and negative items contributing to each of these subscales. Subscales based entirely on negative or positive items begin with the appropriate letter (n or p).

Table 7

## Cronbach's Alphas for NP2 Work-Ethic Scale by Schools and Demographic Groups

|                 | NP2   | ntotl | ptotl | nobj  | pobj  | nart  | part  | ncom  | pcom  | obj   | art   | com   |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Composite       | .8413 | .7299 | .7712 | .6554 | .5866 | .2858 | .5808 | .5387 | .6639 | .7803 | .6391 | .6985 |
| Gender          |       |       |       |       |       |       |       |       |       |       |       |       |
| Male            | .8806 | .7928 | .8242 | .7379 | .6575 | .3304 | .6521 | .6071 | .7266 | .8259 | .6789 | .7747 |
| Female          | .7606 | .6182 | .6605 | .5054 | .4635 | .2171 | .4637 | .4339 | .5553 | .6981 | .5707 | .5517 |
| Grade Level     |       |       |       |       |       |       |       |       |       |       |       |       |
| 6 <sup>th</sup> | .8396 | .7651 | .8066 | .7276 | .7405 | .2917 | .6189 | .3945 | .6153 | .8381 | .6362 | .3709 |
| 7 <sup>th</sup> | .8667 | .7527 | .7962 | .6763 | .5058 | .2627 | .6203 | .6371 | .7424 | .7783 | .6456 | .8047 |
| 8 <sup>th</sup> | .7658 | .6286 | .6241 | .4121 | .4319 | .3204 | .4933 | .4944 | .3814 | .6332 | .6505 | .5898 |
| School          |       |       |       |       |       |       |       |       |       |       |       |       |
| 1               | .8503 | .7217 | .7669 | .6017 | .4730 | .2299 | .5345 | .6416 | .6770 | .7375 | .6104 | .7784 |
| 2               | .8506 | .7350 | .8705 | .6470 | .7378 | .4987 | .7457 | .4022 | .6038 | .8243 | .7298 | .4218 |
| 3               | .8284 | .7746 | .6702 | .7542 | .6865 | .2482 | .5621 | .3613 | .5600 | .8384 | .6371 | .4874 |

Note. The three subscales identified as obj, art, and com are based on both positive and negative items contributing to each of these subscales. Subscales based entirely on negative or positive items begin with the appropriate letter (n or p).

absolute value of the alphas based on positive items exceeded alphas based on negative items on both the NP1 Scale and the NP2 Scale.

The Objective subscale consisting solely of negative items (nobj) and the Objective subscale consisting solely of positive items (pobj) achieved acceptable internal consistency on the NP1 Scale, but neither did on the NP2 Scale. The Artificial subscale based on either negative items (nart) or positive items (part) did not achieve the desired level of internal consistency on the NP1 Scale or NP2 Scale. The Comfort subscale based on negative items (ncom) or positive items (pcom) achieved acceptable internal consistency within the NP1 Scale but not within the NP2 Scale.

The effect of deleting individual items on the internal consistency of subscales was evaluated (see Appendix H). The internal consistencies for subscales across all four versions increased in only 12 instances in which Cronbach's alpha was computed when an item was deleted from the subscale. In each of these instances, the increase in alpha was nonsignificant. Items resulting in lower alpha coefficients when included are listed in Table 8, along with their item-total correlations.

The items with item-total correlations of at least .20 have some potential for contributing to their scales if item-total correlations could be boosted by rewording. Items with less than a .20 correlation would likely require significant changes in wording to be included in their subscales. The item "working hard is criticized by others" contributes nothing to its subscale within the N Scale and NP2 Scale and should be eliminated.

Table 8

Items Lowering Alphas When Included and Item-Subscale Total Correlations

| Number | Item                                            | Scale | Subscale | corr <sup>a</sup> |
|--------|-------------------------------------------------|-------|----------|-------------------|
| 20.    | Working hard helps others.                      | NP1   | Obj      | .36               |
| 12.    | Most problems can be solved by working hard.    | P     | Obj      | .30               |
| 22.    | Most problems cannot be solved by working hard. | NP2   | Obj      | .28               |
| 8.     | Working hard reduces stress.                    | P     | Com      | .28               |
| 22.    | Most problems cannot be solved by working hard. | N     | Obj      | .26               |
| 6.     | Working hard to solve problems is fulfilling.   | NP1   | Com      | .25               |
| 7.     | Working hard helps others.                      | P     | Obj      | .18               |
| 16.    | The more one works, the better.                 | P     | Com      | .16               |
| 17.    | Working hard is a bad way to become popular.    | NP2   | Art      | .15               |
| 15.    | Riches come from working hard.                  | P     | Art      | .13               |
| 12.    | Working hard is criticized by others.           | N     | Art      | .07               |
| 3.     | Working hard is criticized by others.           | NP2   | Art      | .03               |

<sup>a</sup>correlation coefficient.

Additional analyses of item-total correlations were completed by identifying items that were strongly and weakly related to their subscales (see Table 9). An item was defined as having a strong relationship with its subscale if its correlation exceeded .65, whereas an item was considered to have a weak relationship if its correlation with its subscale total was less than .20. Half of the eight strongest item-total correlations came from the N Scale, whereas only one of the weakest such correlations was observed in this scale version. The majority of the strongest item-total correlations (75%) were obtained with the Objective subscale across scales. Two thirds of the weakest item-total correlations came from the Artificial subscale across scale versions.

#### Comparison of Alphas Based on Item Type

The between-subjects comparison of alpha coefficients based on item type indicated that, in terms of absolute value, the alpha coefficients based on negative items were higher than those based on positive items. Although not significantly different, the alphas for the N Scale and subscales based on negative items were consistently higher than those based on their positive counterparts within the P Scale (see Table 5).

The within-subjects comparison of alphas based on item type varied as a consequence of the scale version (NP1 Scale or NP2 Scale). Although statistical significance was not obtained, subscale alphas based on negative items within the NP1 scale were higher than subscale alphas based on positive items (see Table 6). However, the alpha for the ptotl was higher than for the ntotl. Within the NP2 scale,

Table 9

Strong and Weak Item-Subscale Total Correlations

| Item                                         | Scale | Subscale | Correlation |
|----------------------------------------------|-------|----------|-------------|
| <u>Strongest Correlations</u>                |       |          |             |
| Working hard is the wrong thing to do.       | N     | Obj      | .72         |
| Working hard is bad.                         | N     | Obj      | .72         |
| Working hard is interesting.                 | NP1   | Com      | .71         |
| Working hard is dumb.                        | N     | Obj      | .68         |
| Working hard is the right thing to do.       | P     | Obj      | .68         |
| Working hard makes one unhappy.              | N     | Com      | .67         |
| Working hard is good for a person.           | P     | Obj      | .66         |
| Working hard makes a difference.             | NP1   | Obj      | .66         |
| <u>Weakest Correlations</u>                  |       |          |             |
| Working hard is criticized by others.        | NP2   | Art      | .03         |
| Working hard is criticized by others.        | N     | Art      | .07         |
| Riches come from working hard.               | P     | Art      | .13         |
| Working hard is a bad way to become popular. | NP2   | Art      | .15         |
| The more one works, the better.              | P     | Com      | .16         |
| Working hard helps others.                   | P     | Obj      | .18         |

the ptotl as well as the part and pcom subscale alphas were higher than their negative counterparts (see Table 7). The nobj alpha was higher than the pobj.

The absolute values of alphas based on negative items in the between-subjects comparison were consistently higher than their positive counterparts. The within-subjects comparison did not reveal a discernible pattern related to the differences in the alpha levels of subscale scores based on item type (negative versus positive). The absolute value of one alpha, the nart (.29) contained within the NP2 Scale, was much lower than all other coefficients. However, Fisher's Z did not indicate a statistically significant difference.

#### Alphas Based on Gender

Alpha coefficients achieved by males and females for each of the scale and subscale scores were not statistically different as measured by Fisher's Z. However, visual inspection of the alpha coefficients indicated that males consistently achieved higher alpha levels than did females (see Tables 5, 6, and 7). For each version of the scale, the absolute value of the alpha coefficients obtained for all items contributing to the total score (30 items) was higher for males than for females. Females did not achieve the desired .80 level on the NP2 Scale (.76) but did exceed the .70 level recommended by Nunnally (1978) as a minimum for research purposes. Twenty-seven of the 32 alpha coefficients computed were higher for males than for females, a ratio of more than 5:1.

### Alphas Based on Grade Level

Fisher's Z indicated that the alpha coefficients obtained for each version of the scale did not differ significantly by grade level. Additionally, inspection of the alphas did not reveal a discernible pattern. This suggests that students in grades 6, 7, and 8 are equally likely to respond in a consistent manner to each version of the scale (see Tables 5, 6, and 7).

### Criterion-Related Validity

Criterion-related validity of the work-ethic scales was assessed by correlating scale total scores and subscale scores from each version of the scale with criterion measures of grades, absenteeism, and teacher notations of work habits. Due to the small sample of students for which records of absenteeism and teacher notations of work habits were available (School 3 only), correlations with these variables are based on total scale scores and subscale scores, regardless of scale version. Correlations with grades are based on data from School 1 and School 3, as data relating to criterion measures were not available in School 2.

### Descriptive Statistics for Criterion Variables

Grades. Descriptive statistics for grades are presented in Table 10. Grade averages for the composite sample ranged from a low of 71.84 in reading (available in School 3 only) to a high of 92.15 in physical education. Most grade averages for the composite sample placed in the C range, but all distributions were strongly negatively skewed. This skewness limited the spread of scores above the mean to just beyond one standard deviation for reading, math, social studies, and spelling. The

Table 10

Descriptive Data for Grades for the Composite Sample and Demographic Groups

| Academic Area           | Composite | Males | Females | 6 <sup>th</sup> grade | 7 <sup>th</sup> grade | 8 <sup>th</sup> grade |
|-------------------------|-----------|-------|---------|-----------------------|-----------------------|-----------------------|
| Language mean           | 82.32     | 80.94 | 83.79   | 76.44                 | 78.03                 | 88.23                 |
| Standard deviation      | 18.42     | 20.10 | 16.40   | 22.40                 | 19.44                 | 14.24                 |
| <u>n</u>                | 330       | 170   | 160     | 34                    | 152                   | 144                   |
| Reading mean*           | 71.84     | 64.83 | 78.52   | 69.88                 | 65.21                 | 81.25                 |
| Standard deviation      | 23.35     | 24.94 | 19.78   | 25.61                 | 18.44                 | 22.25                 |
| <u>n</u>                | 82        | 40    | 42      | 34                    | 24                    | 24                    |
| Math mean               | 79.13     | 79.17 | 79.09   | 70.64                 | 82.91                 | 77.12                 |
| Standard deviation      | 18.55     | 19.85 | 17.11   | 25.65                 | 17.66                 | 16.63                 |
| <u>n</u>                | 328       | 169   | 159     | 33                    | 151                   | 144                   |
| Science mean            | 80.31     | 78.62 | 82.12   | 68.55                 | 79.32                 | 84.07                 |
| Standard deviation      | 20.90     | 21.98 | 19.58   | 23.31                 | 20.54                 | 19.68                 |
| <u>n</u>                | 327       | 169   | 158     | 33                    | 151                   | 143                   |
| Social studies mean     | 80.46     | 80.18 | 80.76   | 68.64                 | 82.28                 | 81.26                 |
| Standard deviation      | 17.48     | 17.95 | 17.02   | 23.77                 | 13.99                 | 18.18                 |
| <u>n</u>                | 328       | 169   | 159     | 33                    | 151                   | 144                   |
| Spelling mean*          | 77.30     | 77.26 | 77.33   | 76.68                 | 79.96                 | 75.62                 |
| Standard deviation      | 22.31     | 20.34 | 24.24   | 25.69                 | 12.12                 | 25.15                 |
| <u>n</u>                | 81        | 39    | 42      | 34                    | 23                    | 24                    |
| Physical education mean | 92.15     | 92.40 | 91.88   | 93.26                 | 93.78                 | 90.46                 |
| Standard deviation      | 13.56     | 14.30 | 12.76   | 11.10                 | 11.22                 | 15.69                 |
| <u>n</u>                | 296       | 154   | 142     | 34                    | 122                   | 140                   |

Note. \* indicates that reading and spelling grades are based on students in School 3 only.

spread of scores for language, science, and physical education was shy of one standard deviation above the mean. Clearly, grade score distributions are more strongly negatively skewed than work-ethic total and subscale scores.

Independent samples t-tests (2-tailed) with Bonferroni correction for multiple tests indicated that females achieved significantly higher reading grades than did males (78.52 versus 64.83), but gender differences were not noted for other grade means.

Absenteeism. The mean number of absences for the 77 students for whom data were available (School 3) was 20.62. Absences for the sample ranged from a minimum of 2 to a maximum of 54, with a standard deviation of 12.58. The range and distribution of absences for this sample seems adequate. Although females were more frequently absent than males (22.3 days versus 18.72 days), an independent samples t-test (2-tailed) indicated that this difference was not statistically significant.

Work habits. Descriptive statistics for each of the four work-habits ratings are presented in Table 11. The distributions of work-habits ratings appear adequate, but the relatively small number of students who were rated is a limitation. Work-habits ratings are further limited by the fact that a single teacher made most of the ratings.

#### Relationship of Scale and Subscale Scores to Grades

It was hypothesized that work-ethic scores would be positively related to grades. Consequently, one-tailed Pearson correlation coefficients were computed to determine the relationship of scale and subscale scores to grades (see Tables 12, 13, and 14). Bonferroni correction for multiple tests was used to evaluate the significance of correlations.

Table 11

Descriptive Data for Notations of Work Habits

| Needs improvement in      | <u>n</u> | Mean | <u>SD</u> <sup>a</sup> | Minimum <sup>b</sup> | Maximum <sup>b</sup> |
|---------------------------|----------|------|------------------------|----------------------|----------------------|
| Completing work carefully | 25       | 2.52 | 1.50                   | 1                    | 5                    |
| Completing homework       | 36       | 2.64 | 1.40                   | 1                    | 5                    |
| Listening attentively     | 20       | 2.30 | 1.34                   | 1                    | 5                    |
| Using time wisely         | 33       | 2.82 | 1.47                   | 1                    | 5                    |

<sup>a</sup>SD = standard deviation. <sup>b</sup>Minimum and Maximum refer to the number of marks rated students received during the first five grading periods of the school year.

Table 12

N Scale, P Scale, and Subscale Correlations With Grades and Absenteeism

|                | <u>n</u> | <u>WE Total</u> | <u>Objective</u> | <u>Artificial</u> | <u>Comfort</u> |
|----------------|----------|-----------------|------------------|-------------------|----------------|
| <u>N Scale</u> |          |                 |                  |                   |                |
| Language       | 60       | .09             | -.03             | .08               | .17            |
| Reading        | 16       | .40             | .63*             | .04               | .22            |
| Math           | 59       | .05             | -.03             | -.05              | .19            |
| Science        | 59       | .07             | -.01             | .04               | .14            |
| Social studies | 59       | .06             | .01              | .14               | .01            |
| Spelling       | 16       | .28             | .43              | .20               | .05            |
| P.E.           | 56       | .13             | .04              | .13               | .16            |
| Absent         | 17       | -.45            | -.34             | -.22              | -.38           |
| <u>P Scale</u> |          |                 |                  |                   |                |
| Language       | 64       | .26             | .16              | .26               | .25            |
| Reading        | 15       | .05             | -.01             | .19               | -.02           |
| Math           | 64       | .13             | .27              | .02               | .04            |
| Science        | 63       | .31*            | .30              | .30               | .19            |
| Social studies | 64       | .33*            | .35*             | .24               | .24            |
| Spelling       | 15       | .11             | .03              | .10               | .16            |
| P.E.           | 54       | .17             | .16              | .12               | .15            |
| Absent         | 13       | -.63*           | -.55             | -.70*             | -.55           |

\*  $p < .05$  after Bonferroni correction.

Table 13

NP1 Scale and Subscale Correlations With Grades and Absenteeism

|                | n  | Total | Obj  | Art  | Com  | ntotl | ptotl | nobj | pobj | nart | part | ncom | pcom |
|----------------|----|-------|------|------|------|-------|-------|------|------|------|------|------|------|
| Language       | 94 | .09   | .10  | .13  | .00  | .07   | .09   | .09  | .08  | .14  | .10  | -.05 | .06  |
| Reading        | 19 | .16   | .09  | .21  | .13  | .07   | .23   | -.06 | .22  | .12  | .30  | .11  | .14  |
| Math           | 93 | .11   | .10  | .06  | .13  | .06   | .15   | .05  | .14  | -.01 | .14  | .10  | .13  |
| Science        | 93 | .06   | .05  | .08  | .03  | .01   | .10   | .00  | .10  | .06  | .09  | -.02 | .07  |
| Social Studies | 93 | .06   | .13  | -.01 | .04  | .07   | .05   | .14  | .10  | -.01 | -.01 | .04  | .04  |
| Spelling       | 18 | -.06  | -.01 | -.05 | -.09 | -.08  | -.03  | -.13 | .11  | -.05 | -.05 | -.04 | -.11 |
| P.E.           | 86 | -.03  | -.07 | -.05 | -.04 | -.04  | -.01  | -.09 | -.04 | -.11 | .02  | .09  | -.01 |
| Absent         | 19 | -.19  | .01  | -.43 | -.10 | -.22  | -.15  | -.04 | .05  | -.41 | -.36 | -.09 | -.10 |

\*  $p < .05$  after Bonferroni correction.

Table 14

NP2 Scale and Subscale Correlations With Grades and Absenteeism

|                | n   | Total | Obj  | Art  | Com   | ntotl | ptotl | nobj | pobj | nart | part | ncom  | pcom |
|----------------|-----|-------|------|------|-------|-------|-------|------|------|------|------|-------|------|
| Language       | 112 | .13   | .12  | .23  | -.03  | .08   | .16*  | .07  | .14  | .15  | .24* | -.03  | -.02 |
| Reading        | 32  | .23   | .16  | .27  | .10   | .14   | .28   | .07  | .23  | .17  | .30  | .11   | .04  |
| Math           | 112 | -.01  | -.08 | .21  | -.14  | .03   | -.04  | -.12 | -.04 | .23* | .15  | -.04  | -.19 |
| Science        | 112 | .12   | .08  | .25* | -.04  | .19   | .03   | .09  | .05  | .28* | .16  | .08   | -.15 |
| Social Studies | 112 | .17   | .18  | .30* | -.08  | .22   | .09   | .15  | .18  | .30* | .23  | .08   | -.20 |
| Spelling       | 32  | .49*  | .47* | .32  | .34   | .35   | .52*  | .29  | .57* | .27  | .30  | .32   | .18  |
| P.E.           | 100 | .10   | .05  | .17  | .02   | .15   | .04   | -.03 | .11  | .29* | .04  | .11   | -.07 |
| Absent         | 28  | -.51* | -.40 | -.26 | -.59* | -.48* | -.44* | -.41 | -.36 | -.33 | -.16 | -.48* | -.41 |

\*  $p < .05$  after Bonferroni correction.

The N Scale total score was not significantly related to any grades (see Table 12). Within the N Scale, the Objective subscale was significantly related to reading grades ( $r = .63$ ). This correlation was moderate but was based on only 16 students for whom these grades were available. The Artificial and Comfort subscales were not significantly related to grades.

As shown in Table 12, the P Scale total score was significantly related to science ( $r = .31$ ) and social studies ( $r = .33$ ) grades. Additionally, within the P Scale, the Objective subscale was significantly related to social studies grades ( $r = .35$ ). Although statistically significant, these correlations were weak. The Artificial and Comfort subscales were not significantly related to grades but were in the expected direction (positive).

The NP1 Scale total score and subscale scores were not significantly related to grades (see Table 13). The NP2 Scale total score was significantly related to spelling grades (see Table 14). Within the NP2 Scale, the Objective subscale was significantly related to spelling grades; and the Artificial subscale was significantly related to language, science, and social studies grades. The Comfort subscale was not significantly related to any grades. Although statistically significant, all correlations with grades based on the NP2 Scale and its components were weak.

#### Correlations With Grades Based on Item Type

The between-subjects comparison of negative and positive items in predicting grades was completed by summing the number of correlations significant at the .05 level based on the N Scale and the P Scale. As indicated earlier, 1 of the 28

correlations based on N Scale items was significant, whereas 3 of the 28 correlations within the P Scale were significant. This between-subjects comparison indicated that both negative and positive items were infrequently related to grades. No convincing differences in the effectiveness of negative and positive items in predicting grades were noted. However, the strongest relationship was between the Objective subscale based on negative items and reading grades ( $r = .63$ ).

The within-subjects comparison of correlations based on item type was completed with the NP1 Scale and NP2 Scale by computing an *ntotl* (sum of the 15 negative items), a *ptotl* (sum of the 15 positive items), and subscale scores based entirely on negative items and subscale scores based entirely on positive items. For example, the Objective, Artificial, and Comfort subscales each consisted of 10 items, 5 of which were negative (*nobj*, *nart*, and *ncom*) and 5 of which were positive (*pobj*, *part*, and *pcom*). Correlations with grades were computed for each item type separately.

Within the NP1 Scale, none of the subscale scores based on either negative or positive items were significantly related to grades. Within the NP2 Scale, the sum of negative items (*ntotl*) was significantly related to social studies grades. The sum of positive items (*ptotl*) was significantly related to spelling grades. The *nart* was significantly related to math, science, and physical education grades; neither the *nobj* nor the *ncom* were significantly related to grades. The *pobj* was significantly related to spelling grades; the *part* was significantly related to language and social studies grades; and the *pcom* was not significantly related to any grades.

This within-subjects comparison of correlations based on item type did not reveal an identifiable pattern of differences in correlations based on item type. In other words, differential effectiveness in predicting grades based on item type was not observed in this within-subjects comparison. However, a pattern emerged in which both negative and positive items contributing to the Artificial subscale were more consistently and widely related to grades than either the Objective or Comfort subscales. This apparent better grade prediction raises the possibility that students who earned high grades might have done so for perceived tangible rewards.

#### Correlations with Absenteeism and Notations of Work Habits

As indicated earlier, correlations with absenteeism and teacher notations of work habits were completed only in School 3. Bonferroni correction for multiple tests was used to adjust the level needed for significance at the .05 level. The between- and within-subjects comparisons based on item type should be viewed with caution as they are based on a small sample of subjects. More confidence might be attributed to the relationship between absenteeism and components of the work-ethic scale, regardless of scale version or item type.

Work ethic and absenteeism. Across scales, the total work-ethic score and each of the subscale scores were significantly related to absenteeism ( $p < .05$ ). The relationship was in the expected direction, negative, indicating that students who earned higher work-ethic scores were absent less frequently than students who earned lower work-ethic scores. The total work-ethic score was the most strongly related to absenteeism ( $r = -.43$ ). The relationships between absenteeism and each of the

subscales were similar: Objective subscale ( $r = -.34$ ), Artificial subscale ( $r = -.36$ ), and Comfort subscale ( $r = -.39$ ).

The between-subjects comparison of correlations between absenteeism and different components of work ethic were based on the N Scale and P Scale (see Table 12). Within the N Scale, the scale total, Objective, Artificial, and Comfort subscales were all negatively related to absenteeism. Although none of these correlations were statistically significant, all were in the expected direction. The lack of statistical significance may, in part, have been due to the small number of subjects ( $n = 17$ ) for whom data were available.

Within the P Scale, both the total work-ethic and Artificial subscale scores were significantly and negatively related to absenteeism (see Table 12). Each of these correlations was moderate and in the expected direction but were based on only 13 subjects. The between-subjects comparison indicated that work-ethic scores based on positive items were more likely to be related to absenteeism than work-ethic scores based on negative items.

The within-subjects comparison of correlations between absenteeism and components of the work-ethic scale was based on the NP1 Scale and NP2 Scale. Within the NP1 Scale, none of the correlations between absenteeism and components of the work-ethic scale were statistically significant (see Table 13). Within the NP2 Scale, the total score and Comfort subscale based on the combination of negative and positive items were significantly and negatively related to absenteeism (see Table 14). Each of these correlations was moderate and in the expected direction.

The ntotl and Comfort subscale based on negatively worded items were both significantly and negatively related to absenteeism. The ptotl was also significantly and negatively related to absenteeism. This within-subjects comparison of correlations based on item type indicated that scores based on negatively worded items were slightly more likely to be related to absenteeism. However, a clear trend was not indicated.

As expected, correlational analyses indicated statistically significant negative relationships between middle schoolers' work ethic (as measured by the work-ethic scales) and absenteeism. Across scales, the Work-Ethic total, Objective subscale, Artificial subscale, and Comfort subscale were all negatively related to absenteeism to a statistically significant degree. These negative relationships indicated that students who scored high on the work-ethic scales and each of the subscales (indicating a strong work ethic) had fewer absences than students who scored low on these scales.

Work ethic and notations of work habits. Relating scores on the work-ethic scales to teacher notations of student work habits was complicated by several factors. Some teachers consistently made notations of "needs improvement" in specific work-habits areas for many students, whereas other teachers made such notations for only a few students. Some teachers did not make any notations on report cards. Analyses of teacher notations were limited to those areas for which at least 20 students were rated. However, this analysis should be interpreted with caution as it is likely that a significant proportion of the ratings were made by a single teacher and are more reflective of his or her class than the entire school.

The number of students for whom work-habits ratings were available was limited. Thus, the reported correlations are limited to the total work-ethic score and each of the three subscale scores across scale versions. Bonferroni correction was used to adjust the alpha needed for significance at the .05 level.

The Pearson correlation coefficients indicated that the work-ethic scale and subscales were all negatively related to teacher comments of “needs improvement” in completing work carefully, completing homework, listening attentively, and using time wisely (see Table 15). In each instance, the relationship was in the expected direction (negative). Thus, students who rated themselves highly on the work-ethic scale were less likely to receive teacher comments of “needs improvement” regarding their work habits. Conversely, students who scored low on the work-ethic scales were more likely to receive notations of “needs improvement” on their report cards.

The correlation between the work-ethic total score and “needs improvement” in completing homework was statistically significant ( $r = -.44$ ). The work-ethic total correlations with “completing work carefully” and “listening attentively” approached statistical significance.

The Objective subscale was significantly and negatively related to notations of “needs improvement” in completing homework ( $r = -.43$ ). Although in the expected direction (negative), the correlations with “needs improvement” in listening attentively, completing work carefully, and using time wisely were not statistically significant.

Table 15

Work-Ethic Total and Subscale Correlations With Work Habits Across Scales

| Needs improvement in      | <u>n</u> | Total Score | Objective | Artificial | Comfort |
|---------------------------|----------|-------------|-----------|------------|---------|
| Completing work carefully | 25       | -.32        | -.35      | -.36       | -.15    |
| Completing homework       | 36       | -.44*       | -.43*     | -.46*      | -.29    |
| Listening attentively     | 20       | -.32        | -.30      | -.41       | -.14    |
| Using time wisely         | 33       | -.13        | -.12      | -.12       | -.10    |

\*  $p < .05$  after Bonferroni correction.

The Artificial subscale was negatively related to all notations of “needs improvement” in work habits. Although all of these correlations approached significance, only the correlation with “needs improvement” in completing homework ( $r = -.46$ ) achieved statistical significance after Bonferroni correction. As with academic achievement, the Artificial subscale was more strongly related to student work habits than other subscales.

The Comfort subscale was negatively related to all work-habits ratings but did not achieve statistical significance. This subscale was most strongly related to “needs improvement” in completing homework ( $r = -.29$ ). This finding, along with other work-habits correlations, suggests that the work-ethic scale and its subscales might be better predictors of homework completion than other work habits. As with academic achievement, the absolute value of the Comfort subscale correlations were lower than the Work-Ethic total, Objective subscale, and Artificial subscale. This difference in subscale correlations suggests that the Comfort subscale may have the least utility in predicting student work habits. Thus, the benefits students attach to work appear to be a better predictor of performance than the perceived liking of work.

#### Individual Item Correlations With Criterion Variables

The comparison of the effectiveness of negative and positive items in predicting important school variables also included evaluating individual item correlations with criterion variables. At the individual item level, the between subjects analysis indicated that 15 positive, as opposed to 5 negative, items were significantly related to criterion variables (see Appendix I). Twenty-five correlations based on

these positive items were significant, whereas only nine correlations based on negative items were significant, a ratio of more than 2:1.

The within subjects analysis of correlations at the individual item level based on the NP1 Scale indicated that four positive and six negative items were significantly related to criterion variables. The number of significant correlations based on these items was nearly equivalent between positive and negative items (five versus seven).

The within subjects evaluation based on the NP2 Scale showed that nine positive items and six negative items were significantly related to criterion variables. More than twice as many correlations based on positive items as opposed to negative items were significant. However, seven of the correlations based on positive items indicated negative relationships between the items and grades, relationships that are counter to expectations.

### Construct Validity

To evaluate the extent to which the three proposed subscales represented empirical factors, factor analysis was applied to each version of the work-ethic scale (see Appendix J). To maximize independence of factors, maximum likelihood factor analysis with varimax rotation was applied to each version of the scale. A scree test indicated the feasibility of a three-factor solution for each scale version.

Consequently, a three-factor solution was requested in each instance. Items with factor loadings of .30 or higher were retained. Specific results of factor analysis are discussed by scale version.

### N Scale Factor Structure

The 13 items contributing to the primary factor within the N Scale accounted for 25.5% of the variance. This factor appeared to be a broad measure of work ethic, including about an equal representation of items from each of the three conceptualized subscales. The second factor accounted for 7.3% of the variance and consisted of items that appeared to reflect one's comfort level with working hard. Although some items were from the proposed Objective subscale, these items appeared to be conceptually consistent with the majority of items that represented the proposed Comfort subscale. Factor three accounted for 5.4% of the variance and consisted almost entirely of items from the proposed Artificial subscale. Although the three factors from the N Scale accounted for only 38.3% of the variance, they provided some support for a general factor, a Comfort factor, and an Artificial factor.

### P Scale Factor Structure

The primary factor within the P Scale consisted of 12 items, accounting for 21.4% of the variance. As with the N Scale, primary factor items appeared to be a broad measure of work ethic. The secondary factor accounted for 6.4% of the variance and appeared consistent with the proposed Comfort subscale, including primarily items related to one's comfort level with work. The third factor accounted for 4.5% of the variance and consisted of items related to the Artificial subscale, or the extrinsic rewards associated with work. The P Scale accounted for only 32.2% of the variance, but provided support for a general factor and the proposed Comfort and Artificial subscales.

### NP1 Scale Factor Structure

The 13 items contributing to the primary factor within the NP1 Scale accounted for 26.3% of the variance. This factor appeared to be a general measure of work ethic. The secondary factor accounted for 8.0% of the variance and clearly represented one's comfort level with working hard, as each of the 8 items were from the proposed Comfort subscale. The third factor accounted for 4.6% of the variance and appeared to be a general measure of work ethic. Factors from the NP1 Scale accounted for 38.9% of the variance and provided support for a general factor and the proposed Comfort subscale.

### NP2 Scale Factor Structure

The primary factor within the NP2 Scale accounted for 18.1% of the variance and appeared to be a general measure of work ethic. The secondary factor accounted for 5.6% of the variance and consisted primarily of items reflecting one's comfort level with work, providing additional support for the proposed Comfort subscale. The third factor accounted for 4.4% of the variance and clearly reflected the tangible benefits of work. This factor was consistent with the proposed Artificial subscale. Factors within the NP2 Scale accounted for only 28.2% of the variance but provided support for the proposed Comfort and Artificial subscales.

### Summary Across Scales

Factor analysis indicated that the three-factor model accounted for a relatively low percentage of the variance within each of the work-ethic scales. However, factor loadings provided empirical support for a general factor and the proposed Artificial

and Comfort factors. Factor analytic findings did not provide empirical support for the proposed Objective factor.

### Acquiescent Response Set

Responses to the NP1 Scale and NP2 Scale were evaluated to determine if acquiescent response set (ARS) affected subjects' responses to these scales.

Acquiescent response set occurs when a subject simply agrees with items, regardless of item content. An acquiescent subject would provide a large number of agreement responses to both positively worded items and their negatively worded, logically opposed companion items:

The results of item mean comparisons (discussed earlier) indicated that subjects were more likely to disagree with negative items than to agree with positive items. This finding alone provided some evidence that ARS was not a significant factor affecting respondents' scores. However, two additional procedures for quantifying the extent to which ARS occurred were applied.

In order to calculate ARS scores, it was necessary to convert subjects' Likert responses to a bipolar format. Likert scores of 3 or 4 on positively worded items and scores of 1 or 2 on the negatively worded items were classified as agreement responses. The matched-pair procedure for evaluating ARS advocated by Winkler et al. (1982) was then applied and did not indicate the occurrence of ARS, nor did the formula adapted by Messick and Fredericksen (1958). These results indicated that acquiescent response set was not a factor influencing respondents' scores in this data set.

### Summary of Results

The within- and between-subjects analysis revealed that scale total and subscale scores based on negatively worded items were higher than companion scores based on positively worded items. The means of individual items based on negative wording were consistently higher than their companion positive items in the between-subjects analysis, and this trend of negative item means being greater than positive items also appeared in the within-subjects analysis. Although this trend was not evident among Artificial subscale items in both the between- and within-subjects analyses, it was prominent across all other scale and subscale items.

Analysis of item facility revealed that only 4 of the 120 items across scales were endorsed in a prowork manner by 95% of students. However, more than 1/3 of the 120 items were answered in a prowork manner by 80% of students. The between-subjects analysis indicated that twice as many negative items as positive items produced prowork endorsement at the 80% level. The within-subjects comparison of item facility did not reveal which item type was more likely to result in prowork endorsement.

The internal consistencies for scale total scores were good, each exceeding the .80 level. Among the subscales, the Artificial subscale, regardless of item type, consistently achieved the lowest reliability coefficients, ranging from a low of .61 within the P Scale to a high of .78 within the NP1 Scale. Between-subjects comparison of internal consistency based on item wording indicated that scale and subscale scores based on negative items consistently achieved higher alpha levels than

scores based on positive items. Consistent differences in alpha levels based on item type were not observed in the within-subjects analysis.

The demographic comparison of alphas indicated that males consistently achieved higher alpha levels than females. The internal consistencies of scales and subscales did not vary as a consequence of grade level. The low representation of students from ethnic groups other than Caucasian precluded comparison of alphas based on ethnicity.

Support for criterion-related validity of the scales and subscales was evident in their correlations with grades, absenteeism, and work habits. Scale and subscale scores were consistently positively related to grades and consistently negatively related to absenteeism and teacher notations of “needs improvement” in work habits. Although most correlations with grades were in the expected direction (positive), few were statistically significant. Within- and between-subjects comparison of correlations based on item type revealed that scores based on negative items were as likely to be related to grades as scores based on positive items. The Artificial subscale based on either item type was more frequently and widely related to grades than either the Objective subscale or Comfort subscale, suggesting that students who earn high grades may be motivated by extrinsic benefits rather than the inherent value of working hard or the affective satisfaction gained from working hard.

As expected, the total score and the three subscale scores across scales were negatively related to absenteeism. The between-subjects comparison revealed that positive items were slightly more likely to be significantly related to absenteeism than

negative items. No clear trend based on item type was noted in the within-subjects analysis.

The scale and subscale scores were all negatively related to teacher notations of “needs improvement” in work habits. Scale and subscale scores were more consistently and strongly related to homework completion than to other work habits. As with academic achievement, the Artificial subscale was more strongly related to notations of work habits than the Objective or Comfort subscales, suggesting that students who display stronger work habits might do so for perceived extrinsic rewards.

Factor analysis provided support for the Artificial and Comfort subscales but not for the proposed Objective subscale. A general work-ethic factor was also indicated. However, the three-factor model accounted for a relatively low percentage of the variance within the work-ethic scales.

The evaluation of acquiescent response set (ARS) revealed that subjects did not simply agree with items regardless of item content. In fact, the higher negative item means indicated that subjects more strongly disagreed with negatively worded items than they agreed with positively worded items. ARS did not negatively affect the data in this sample.

## **CHAPTER IV**

### **DISCUSSION**

The primary purpose of this study was to evaluate the psychometric efficacy of negatively and positively worded items in a measure of middle schoolers' work ethic. Previous research has indicated that item wording can have a substantial impact on subjects' responses.

A secondary purpose was to build on previous research relating to the measurement of middle schoolers' work ethic by examining the extent to which the three constructs commonly embedded in work-ethic scales represent empirical factors. Identifying meaningful components of middle schoolers' work ethic would be useful in further development of instruments to effectively measure work ethic. Instruments that successfully measure these salient elements could be useful in identifying students who could benefit from programs to promote a healthy work ethic. Such instruments could also be used in evaluating programs purported to promote work ethic.

In addition to the above-mentioned purposes, the study also examined whether any of the previously identified psychometric issues are affected by gender or grade-level differences. Prior research suggested some inconsistencies related to gender and grade-level differences in work ethic and conceptually linked constructs. For example, Williams (1996) found declines in work ethic from 6<sup>th</sup> through 8<sup>th</sup> grades, whereas Bush (1999) reported that 8<sup>th</sup> graders rated themselves as having a stronger work ethic than both 6<sup>th</sup> and 7<sup>th</sup> graders. Some studies have reported that

children value academic tasks less as they get older (Anderman & Midgley, 1996; Wigfield & Eccles, 1992), but Malone (1998) found no grade-level differences in school valuing.

In middle school, a number of gender differences have been noted on variables related to the work-ethic construct. Girls have been reported to earn higher scores than boys in academic motivation (Huang & Waxman, 1994) and school valuing (Malone, 1998). However, Lamm, Schmidt, and Trommsdorff (1976) reported that middle school boys value career goals more than girls.

#### Item Wording

Results of this study are consistent with previous research indicating that item wording can significantly influence subjects' responses (Krosnick, 1999; Schwarz, 1999). Specifically, students more strongly disagreed with negatively worded items than they agreed with their positively worded counterparts in both within- and between-subjects analyses. In other words, the means for negatively worded items (after reverse scoring) were significantly higher than means for their positively worded counterparts. This clear and consistent pattern of stronger disagreement with negative items than agreement with positive companion items is contrary to findings by other researchers, who have suggested that respondents are more inclined to agree than to disagree with an item (Krosnick, 1999). Malone (1998) and Bush (1999) found that means for negatively worded items (after reverse scoring) were lower than means for positively worded items on measures of middle schoolers' school valuing and work ethic, respectively. The current study suggests that the effect of item

wording on responses might not be highly predictable across scales or scale types (e.g., attitudinal, personality, factual).

The inconsistency between the findings of the current study and those of Malone (1998) and Bush (1999) may be due, in part, to the nature of the studies. The present study was designed specifically to evaluate the effect of positive and negative item wording on subjects' responses. Consequently, matched pairs of items were written to be identical in content but to differ in directionality of wording (positive versus negative). In contrast, Bush and Malone simply included an equal number of negatively and positively worded items not matched in content.

Malone's lower negative item means might have been partly due to acquiescent response set (i.e., subject tendency to agree with items). Additionally, items in the current study were more strongly worded than those in Malone's and Bush's studies, making it especially difficult to agree with negatively worded items. For example, the current scale included such items as "working hard is bad" and "working hard is criticized by others." In contrast, a typical item from Bush's work-ethic scale stated, "many problems can't be solved no matter how hard I try," while a representative item from Malone's school-valuing scale stated, "fighting in school will have no effect on whether I have a good life as an adult."

Another possible explanation of the differences in means based on item wording might be related to the distinction between verbal meaning and psychological meaning. For example, while items may indeed be worded to be logically opposed in verbal meaning, the psychological meaning attached to the verbal opposites may

reflect an imbalance between the positive and negative alternatives. There is some indication that such may have occurred in the current study, leading to greater disagreement with negative items than agreement with positive items. This might suggest that the strength of item wording is the most likely factor contributing to item mean differences. More neutral wording of negative items might increase variability of responses and lessen mean differences between negative and positive items.

Both negative and positive items were evaluated to determine any differences in the psychometric characteristics of reliability and validity. The between-subjects analysis indicated that the alpha levels were higher for scores based on negative items than scores based on positive items, whereas the within-subjects analysis revealed no pattern of differences. These findings suggest that negative items do not reduce the internal consistency of these work-ethic scales and contribute at least as much to internal consistency as positive items. This finding concerning internal consistency indicates that students were not confused by negatively worded items within these attitudinal scales, as some researchers have suggested might be the case with questionnaires of a factual nature (Schriesham & Hill, 1981).

Differences in the effectiveness of negative and positive items in predicting important school variables were not compelling. At the individual item level, positive items were more frequently related to criterion variables but some of the relationships were counter to expectations. At the scale and subscale level, scores based on negative items were as likely to be related to grades as scores based on positive items. Scale and subscale scores based on positive items were slightly more likely to be

related to absenteeism in the between-subjects analysis, but no differences were obtained in the within-subjects analysis.

Comparison of the relative effectiveness of negative and positive items in predicting criterion variables was complicated by the fact that work-ethic scores, based on either item type, were infrequently, and only weakly to moderately, related to criterion variables. Both negatively and positively worded items tended to evoke prowork responses. However, the distributions of scores were only slightly negatively skewed. The floors and ceilings for scores from each version of the work-ethic scales based on either item type were sufficient to allow for a range of responses of at least two standard deviations above and below the means.

The distributions of grade scores (criterion variable with the most data available) were strongly negatively skewed. Many grade means were near the ceiling of the highest possible grade and did not allow for interpretation of at least one standard deviation above the mean. This extreme negative skewness was considerably different from the slight skewness on the work-ethic scales. Such differences in distributions restrict correlations. Grade scores that more closely approximate a normal distribution might lead to stronger correlations between work-ethic scores and grades.

Adequate evaluation of the predictive validity of negative and positive items requires more extensive data on criterion measures than were available in this study. For example, the relatively small number of subjects with records of absenteeism necessitates that differences be interpreted with caution. Because so few students

received work-habits ratings, evaluation of differences in correlations based on item type was not feasible. A larger sample of subjects with work-habits data is needed. Also, increasing the number of teachers making ratings would be beneficial, as only three teachers provided ratings in the current study.

The measure of students' work habits could be improved in several ways. Current methods already in place for rating work habits (report cards) will likely be the most readily available, as in School 3. To improve these ratings, teachers could be encouraged to rate each student on all work habits listed on report cards during each grading period. These ratings would provide students and parents with valuable feedback regarding work habits, for it is helpful to know both strong and weak work habits. It might be necessary to provide teachers with brief guidelines specifically outlining what constitutes a rating of poor, average, or good. Using an existing standardized measure of students' work habits would also be helpful, if time permits. Or, a work-habits scale could be developed by researchers in accordance with psychometric principles. The scale might consist of both negatively and positively worded items, such as "student rarely completes assignments," "student focuses well on tasks," and "student turns assignments in on time."

Another possible explanation of the relatively poor correlations between work-ethic scores and criterion variables might be that attitudes concerning work are indeed only weakly related to actual work habits. Work-ethic scores suggest that students readily perceive the benefits of working hard. However, this appreciation of the benefits of working hard may not translate well into effective work behaviors. In

other words, simply knowing and valuing something does not necessarily result in action. It is possible that motivational issues are of primary concern when attitudes and behaviors differ. This is often demonstrated by adults who appreciate the physical and psychological benefits of regular exercise but do not adhere to an exercise regimen. In fact, it is not uncommon for an adult to express disappointment in themselves for not exercising but fail to establish a regular exercise program.

In summary, both negatively and positively worded items tended to evoke prowork responses; but the floor and ceiling for scores based on these items were adequate to allow for interpretation of at least two standard deviations above and below the mean. Negative items appear to be as or more reliable than their positive counterparts. Differences in the shapes of distributions for work-ethic scores and grade scores restricted correlations. Effectiveness in predicting grades and other criterion variables was not sufficiently differentiated to suggest that one item type was more effective than the other.

The relatively high means on negative items could potentially lead to range restriction and result in lower correlations with criterion variables. It might be necessary to reword some negative items to reflect more neutral statements that could permit greater variability in responses. For example, "working hard is bad" might be restated "working hard is sometimes bad." Or, it may be advisable to write negative items so that they reflect the absence of the quality highlighted in the positive item. For example, a negative companion item for "working hard is good" would be "working hard is not good." Clearly, this use of the absence of a quality instead of

the polar opposite of the quality (“working hard is bad”) lessens the strength of the wording for negative items.

### Factor Analysis

The factor structure of each version of the work-ethic scales was evaluated using maximum-likelihood factor analysis with the request of three factors. For each version of the scale the three-factor model accounted for relatively little variance within each scale, ranging from a low of 28.2 % for the NP2 Scale to a high of 38.9 % for the NP1 Scale. This suggests additional work is needed to include items that more effectively account for scale variance.

Items with factor loadings of .30 or higher were retained and evaluated in terms of content in an effort to name the factor. This process resulted in the same factor structure for each of the four scale versions. The primary factor was a general measure of work ethic. The secondary factor appeared to be a measure of one’s affective satisfaction with work and was consistent with the proposed Comfort subscale. This factor also emerged in Bush’s (1999) study and seems consistent with the “comfortable existence” factor identified by Bolton (1980) within the Work Values Inventory. This comfort factor appears to be an important and durable component of middle schoolers’ work ethic. The third factor appeared to measure the extrinsic benefits of work and was consistent with the proposed Artificial subscale. The proposed Objective subscale, conceptually derived to be a measure of the inherent benefits of work, was not supported by factor analysis.

Although each version of the work-ethic scales suggested a similar factor structure, factor analytic findings should be interpreted cautiously. The recommended subject-item ratio of 5:1 (Gorusch, 1983) was not obtained for any version of the work-ethic scale. The subject-item ratio ranged from a low of 2.83:1 for the N Scale to a high of 4.73: for the NP2 Scale. A larger subject-item ratio would allow for more confidence in the factor structure of the work-ethic scales.

#### Demographic Comparisons

Although significant differences were not noted, males consistently achieved higher alpha levels than females. This finding suggests males and females may view items related to work ethic differently. Males may perceive slightly greater compatibility among items related to work ethic than do females. Further evaluation of gender differences in work ethic should be explored with a focus on how males and females interpret items differently.

Some studies have reported that middle schoolers' self-reported work ethic declines slightly as students progress from 6<sup>th</sup> to 8<sup>th</sup> grades (Williams, 1996), whereas other studies have shown an increase in work ethic from the 6<sup>th</sup> and 7<sup>th</sup> grade to the 8<sup>th</sup> grade (Bush, 1999). The current study did not produce any significant grade-level differences in self-reported work ethic. Further evaluation of middle schoolers' work ethic is needed to determine if consistent differences exist between grade levels.

#### Scale Development

An additional purpose of this study was to further the research on the development of a scale to measure middle schoolers' work ethic. As noted earlier,

each version of the work-ethic scale has good internal consistency and some evidence of criterion and construct validity. The scale and subscale scores were consistently positively correlated to grades, whereas they were consistently negatively related to absenteeism and teacher notations of "needs improvement" in work habits. Although many of the correlations were weak and nonsignificant, they were in the expected direction and provide some support for criterion-related validity (especially for the Artificial subscale).

Each of the three conceptually derived subscales achieved some support for criterion validity. A comparison of the relative effectiveness of each of the conceptually derived subscales in predicting criterion variables revealed only one trend: the Artificial subscale was more consistently and widely related to grades and work habits than were either the Objective or Comfort subscales. This finding suggests that students might be more highly motivated by extrinsic rewards associated with working hard than intrinsic benefits or affective satisfaction. Gender and grade level differences on the artificial factor were not obtained.

Refinement of the scales might include focusing on developing more items to address the Artificial and Comfort factors supported by factor analysis. It appears that the scales should include both negative and positive items, as this allows for a check for consistency and response sets. While both negative and positive items tend to evoke prowork responses, the current scales have adequate ceilings with possible scores ranging at least two standard deviations above the mean. Although correlations with criterion variables are low, the scales may be effective in measuring

middle schoolers' attitudes regarding work but not reflect actual work habits. Or, it may be that the limitations associated with criterion variables in the current study (e.g., restriction of grade range, inconsistent work-habits ratings, small number of students with records of absenteeism) resulted in few significant correlations. Further research is needed to examine these possibilities.

#### Future Research

Researchers interested in predicting important school variables, such as those chosen in this study, might develop scales that more precisely measure work habits and compare the relative effectiveness of these scales with scales measuring work attitudes. Work-ethic scores need to be related to additional criterion variables, including measures of work habits as rated by teachers, parents, and peers.

The current study was limited in that the sample consisted almost entirely of Caucasian students. Attempts were made to obtain participation from schools that have diverse student populations, but school policies rendered the research approval process cumbersome and lengthy with the possibility of rejection in the end. Researchers interested in middle schoolers' work ethic should attempt to obtain samples that are more reflective of the increasing diversity among students enrolled in United States' schools. Future studies should include samples that are proportionate in gender, ethnicity, and socioeconomic status (SES). At the very least, samples are needed that include substantial numbers of African American, Hispanic, Asian American, and Native American students. Researchers should also attempt to include students with disabilities, students from various regions of the United States, and

students residing in both urban and rural areas. It would be especially important to include students with high rates of absenteeism.

Obtaining diverse samples of students can be difficult, as many schools are reluctant to participate in research due to school policies, time constraints, or fear of liability in the event confidential student information is exposed. Schools might be more willing to participate in research if researchers could outline a meaningful benefit to schools. For example, researchers could offer to provide interventions for improving the work ethic of students. Or, researchers could assist the schools in completing other studies that are of special interest to the schools.

### Summary

The consistent finding that negative-item means were higher than their positive counterparts is most likely due to the stronger wording of negative items. Reducing the strength of wording in negative items might best be accomplished by rewording negative items to reflect the absence of the quality highlighted in their positive companion items rather than focusing on creating two statements that are polar opposites.

The fact that the internal consistencies of negative items were as high or higher than those based on positive items suggests that negative items did not confuse respondents. It appears that scales should include both positive and negative items as this would allow for evaluation of consistency and response sets.

The most salient characteristic of an item is its relationship with important criterion variables. Unfortunately, the restricted range of criterion measures used in

this study did not allow for adequate evaluation of the differential effectiveness of negative and positive items in predicting criterion variables. The use of criterion variables that more closely approximate a normal distribution would likely allow for a more fruitful evaluation of the predictive validity of negative and positive items.

The finding that the artificial subscale was more frequently and widely related to grades suggests that students in this study might be motivated more by the extrinsic rewards associated with working hard than the inherent benefits or affective satisfaction achieved from working hard. Although no gender or grade-level differences were noted in the present study, it would be interesting to further investigate these areas. Of particular interest might be an evaluation of the developmental differences in intrinsic versus extrinsic motivation. Are young children naturally more intrinsically motivated than older children or vice versa?

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## APPENDICES

## Appendix A

### Matched Pairs of Logically Opposed Items By Conceptual Factor

| <u>Positive</u>                                 | <u>Negative</u>                                        |
|-------------------------------------------------|--------------------------------------------------------|
| <b>Objective Benefits of Work</b>               |                                                        |
| Working hard is good for a person.              | Working hard is bad for a person.                      |
| Working hard is good.                           | Working hard is bad.                                   |
| Working hard is smart.                          | Working hard is dumb.                                  |
| Working hard is the best use of time.           | Working hard is the worst use of time.                 |
| Working hard makes a difference.                | Working hard doesn't make a difference.                |
| Working hard makes the world better.            | Working hard makes the world worse.                    |
| Working hard improves the mind.                 | Working hard dulls the mind.                           |
| Working hard helps others.                      | Working hard hurts others.                             |
| Most problems can be solved by working hard.    | Most problems cannot be solved by working hard.        |
| Working hard is the right thing to do.          | Working hard is the wrong thing to do.                 |
| <b>Artificial Benefits of Work</b>              |                                                        |
| Working hard is a good way to become popular.   | Working hard is a bad way to become popular.           |
| Fame is achieved by working hard.               | Fame is not achieved by working hard.                  |
| Making it big in a job comes from working hard. | Making it big in a job doesn't come from working hard. |
| Becoming a leader takes hard work.              | Becoming a leader doesn't take hard work.              |
| Riches come from working hard.                  | Riches don't come from working hard.                   |

### Positive

The finest things in life come from working hard.

Only people who work hard deserve the best things in life.

Working hard is praised by others.

Working hard is the best way to get money.

It is better to earn wealth than to inherit it.

### **Comfort Level with Work**

Working hard to solve problems is fulfilling.

Working hard makes one happy.

The more one works, the better.

Working hard reduces stress.

Working hard is enjoyable.

Working hard is pleasant.

Working hard is interesting.

Working hard is encouraging.

Working hard makes a day more fun.

Working hard makes one feel good.

### Negative

The finest things in life don't come from working hard.

Even people who don't work hard deserve the best things in life.

Working hard is criticized by others.

Working hard is the worst way to get money.

It is better to inherit wealth than to earn it.

Working hard to solve problems is frustrating.

Working hard makes one unhappy.

The less one works, the better.

Working hard is stressful.

Working hard is not enjoyable.

Working hard is unpleasant.

Working hard is boring.

Working hard is discouraging.

Working hard takes the fun out of a day.

Working hard makes one feel bad.

## Appendix B

### NP1 Scale Correlations Between Matched Pairs

For each pair of items, negative items are above their positive counterparts.

| <u>Item</u>                | <u>Item Pairs</u>                                       | <u>Correlation</u> | <u>n</u> | <u>Significance</u> |
|----------------------------|---------------------------------------------------------|--------------------|----------|---------------------|
| <u>Objective Subscale</u>  |                                                         |                    |          |                     |
| 7                          | Working hard hurts others.                              | .02                | 122      | .420                |
| 20                         | Working hard helps others.                              |                    |          |                     |
| 9                          | Working hard is the wrong thing to do.                  | .25                | 121      | .003                |
| 1                          | Working hard is the right thing to do.                  |                    |          |                     |
| 30                         | Working hard is dumb.                                   | .44                | 122      | .001                |
| 10                         | Working hard is smart.                                  |                    |          |                     |
| 3                          | Working hard dulls the mind.                            | .37                | 122      | .001                |
| 19                         | Working hard improves the mind.                         |                    |          |                     |
| 8                          | Working hard doesn't make a difference.                 | .40                | 121      | .001                |
| 29                         | Working hard makes a difference.                        |                    |          |                     |
| <u>Artificial Subscale</u> |                                                         |                    |          |                     |
| 24                         | The finest things in life don't come from working hard. | .40                | 122      | .001                |
| 12                         | The finest things in life come from working hard.       |                    |          |                     |
| 2                          | Making it big in a job doesn't come from working hard.  | .31                | 122      | .001                |
| 15                         | Making is big in a job comes from working hard.         |                    |          |                     |
| 18                         | Fame is not achieved by working hard.                   | .43                | 122      | .001                |
| 26                         | Fame is achieved by working hard.                       |                    |          |                     |
| 17                         | It is better to inherit wealth than to earn it.         | .42                | 122      | .001                |
| 5                          | It is better to earn wealth than to inherit it.         |                    |          |                     |
| 22                         | Working hard is the worst way to get money.             | .34                | 122      | .001                |

| <u>Item</u>             | <u>Item Pairs</u>                              | <u>Correlation</u> | <u>n</u> | <u>Significance</u> |
|-------------------------|------------------------------------------------|--------------------|----------|---------------------|
| 16                      | Working hard is the best way to get money.     |                    |          |                     |
| <u>Comfort Subscale</u> |                                                |                    |          |                     |
| 21                      | Working hard takes the fun out of a day.       | .53                | 121      | .001                |
| 27                      | Working hard makes a day more fun.             |                    |          |                     |
| 25                      | Working hard to solve problems is frustrating. | .15                | 121      | .052                |
| 6                       | Working hard to solve problems is fulfilling.  |                    |          |                     |
| 11                      | Working hard is boring.                        | .46                | 121      | .001                |
| 28                      | Working hard is interesting.                   |                    |          |                     |
| 13                      | Working hard is not enjoyable.                 | .52                | 122      | .001                |
| 23                      | Working hard is enjoyable.                     |                    |          |                     |
| 14                      | Working hard makes one feel bad.               | .43                | 121      | .001                |
| 4                       | Working hard makes one feel good.              |                    |          |                     |

## NP2 Scale Correlations Between Matched Pairs

For each pair of items, negative items are above their positive counterparts.

| Item                       | Item Pairs                                                       | Correlation | <u>n</u> | Significance |
|----------------------------|------------------------------------------------------------------|-------------|----------|--------------|
| <u>Objective Subscale</u>  |                                                                  |             |          |              |
| 27                         | Working hard is the worst use of time.                           | .51         | 142      | .001         |
| 20                         | Working hard is the best use of time.                            |             |          |              |
| 23                         | Working hard makes the world worse.                              | .27         | 141      | .001         |
| 7                          | Working hard makes the world better.                             |             |          |              |
| 22                         | Most problems cannot be solved by working hard.                  | .53         | 141      | .001         |
| 30                         | Most problems can be solved by working hard.                     |             |          |              |
| 25                         | Working hard is bad.                                             | .63         | 141      | .001         |
| 26                         | Working hard is good.                                            |             |          |              |
| 19                         | Working hard is bad for a person.                                | .35         | 141      | .001         |
| 8                          | Working hard is good for a person.                               |             |          |              |
| <u>Artificial Subscale</u> |                                                                  |             |          |              |
| 14                         | Becoming a leader doesn't take hard work.                        | .32         | 142      | .001         |
| 11                         | Becoming a leader takes hard work                                |             |          |              |
| 2                          | Riches don't come from working hard.                             | .35         | 141      | .001         |
| 21                         | Riches come from working hard.                                   |             |          |              |
| 3                          | Working hard is criticized by others.                            | .14         | 141      | .049         |
| 5                          | Working hard is praised by others.                               |             |          |              |
| 16                         | Even people who don't work hard deserve the best things in life. | .49         | 142      | .001         |
| 1                          | Only people who work hard deserve the best things in life.       |             |          |              |
| 17                         | Working hard is a bad way to become popular.                     | .23         | 142      | .004         |
| 6                          | Working hard is a good way to become popular.                    |             |          |              |

| Item                    | Item Pairs                      | Correlation | n   | Significance |
|-------------------------|---------------------------------|-------------|-----|--------------|
| <u>Comfort Subscale</u> |                                 |             |     |              |
| 29                      | The less one works, the better. | .16         | 142 | .027         |
| 10                      | The more one works, the better. |             |     |              |
| 9                       | Working hard is stressful.      | .25         | 140 | .002         |
| 12                      | Working hard reduces stress.    |             |     |              |
| 4                       | Working hard is unpleasant.     | .20         | 141 | .010         |
| 24                      | Working hard is pleasant.       |             |     |              |
| 15                      | Working hard is discouraging.   | .33         | 139 | .001         |
| 13                      | Working hard is encouraging.    |             |     |              |
| 28                      | Working hard makes one unhappy. | .29         | 141 | .001         |
| 18                      | Working hard makes one happy.   |             |     |              |

## Appendix C

### Between-Subjects Mean Comparison Based on Item Type

For each pair of items, the N Scale item is presented above the P Scale item.

| <u>Item Pairs</u>                                                                               | <u>N vs. P</u> | <u>SD</u>  | <u>Alpha</u> | <u>Significant<br/>Alpha After<br/>Bonferroni<br/>Correction</u> |
|-------------------------------------------------------------------------------------------------|----------------|------------|--------------|------------------------------------------------------------------|
| <u>Objective Subscale</u>                                                                       |                |            |              |                                                                  |
| Working hard hurts others.<br>Working hard helps others                                         | 3.57<br>2.89   | .63<br>.73 | .0001        | Yes                                                              |
| Working hard is the worst use of time.<br>Working hard is the best use of time.                 | 3.18<br>2.78   | .85<br>.84 | .001         | Yes                                                              |
| Working hard is bad for a person.<br>Working hard is good for a person.                         | 3.41<br>2.84   | .66<br>.92 | .0001        | Yes                                                              |
| Working hard is the wrong thing to do.<br>Working hard is the right thing to do.                | 3.56<br>3.03   | .75<br>.81 | .0001        | Yes                                                              |
| Working hard makes the world worse.<br>Working hard makes the world better.                     | 3.56<br>3.08   | .71<br>.74 | .0001        | Yes                                                              |
| Most problems cannot be solved by working hard.<br>Most problems can be solved by working hard. | 2.87<br>2.70   | .91<br>.88 | .133         | No                                                               |
| Working hard is dumb.<br>Working hard is smart.                                                 | 3.39<br>2.92   | .74<br>.76 | .0001        | Yes                                                              |
| Working hard dulls the mind.<br>Working hard improves the mind.                                 | 3.13<br>3.39   | .92<br>.60 | .051         | No                                                               |
| Working hard doesn't make a difference.<br>Working hard makes a difference.                     | 3.48<br>3.24   | .70<br>.75 | .005         | Yes                                                              |
| Working hard is bad.<br>Working hard is good.                                                   | 3.27<br>2.94   | .86<br>.83 | .016         | No                                                               |

| <u>Item Pairs</u>                                                | <u>N vs. P</u> | <u>SD</u> | <u>Alpha</u> | <u>Significant Alpha After Bonferroni Correction</u> |
|------------------------------------------------------------------|----------------|-----------|--------------|------------------------------------------------------|
| <u>Artificial Subscale</u>                                       |                |           |              |                                                      |
| Becoming a leader doesn't take hard work.                        | 3.11           | .9        | .008         | No                                                   |
| Becoming a leader takes hard work                                | 3.40           | .56       |              |                                                      |
| The finest things in life don't come from working hard.          | 3.0            | 1.0       | .630         | No                                                   |
| The finest things in life come from working hard.                | 2.92           | .86       |              |                                                      |
| Riches don't come from working hard.                             | 2.93           | .97       | .316         | No                                                   |
| Riches come from working hard.                                   | 2.79           | .92       |              |                                                      |
| Working hard is criticized by others.                            | 2.93           | .80       | .314         | No                                                   |
| Working hard is praised by others.                               | 2.80           | .94       |              |                                                      |
| Working hard is the worst way to get money.                      | 3.51           | .78       | .031         | No                                                   |
| Working hard is the best way to get money.                       | 3.25           | .76       |              |                                                      |
| Even people who don't work hard deserve the best things in life. | 2.47           | 1.09      | .968         | No                                                   |
| Only people who work hard deserve the best things in life.       | 2.46           | 1.13      |              |                                                      |
| Working hard is a bad way to become popular.                     | 3.28           | .80       | .0001        | Yes                                                  |
| Working hard is a good way to become popular.                    | 2.18           | .94       |              |                                                      |
| Making it big in a job doesn't come from working hard.           | 3.33           | .81       | .841         | No                                                   |
| Making it big in a job comes from working hard.                  | 3.30           | .66       |              |                                                      |
| Fame is not achieved by working hard.                            | 2.99           | .91       | .932         | No                                                   |
| Fame is achieved by working hard.                                | 3.0            | .90       |              |                                                      |

| <u>Item Pairs</u>                               | <u>N vs. P</u> | <u>SD</u> | <u>Alpha</u> | <u>Significant<br/>Alpha After<br/>Bonferroni<br/>Correction</u> |
|-------------------------------------------------|----------------|-----------|--------------|------------------------------------------------------------------|
| <u>Artificial Subscale Cont'd</u>               |                |           |              |                                                                  |
| It is better to inherit wealth than to earn it. | 2.99           | .92       | .120         | No                                                               |
| It is better to earn wealth than to inherit it. | 2.74           | 1.07      |              |                                                                  |
| <u>Comfort Subscale</u>                         |                |           |              |                                                                  |
| Working hard takes the fun out of a day.        | 2.61           | .93       | .0001        | Yes                                                              |
| Working hard makes a day more fun.              | 1.78           | .69       |              |                                                                  |
| The less one works, the better.                 | 3.27           | .79       | .0001        | Yes                                                              |
| The more one works, the better.                 | 2.57           | .88       |              |                                                                  |
| Working hard is stressful.                      | 2.08           | .74       | .159         | No                                                               |
| Working hard reduces stress.                    | 1.91           | .98       |              |                                                                  |
| Working hard is unpleasant.                     | 2.69           | .79       | .0001        | Yes                                                              |
| Working hard is pleasant.                       | 1.82           | .81       |              |                                                                  |
| Working hard to solve problems is frustrating.  | 2.33           | .89       | .021         | No                                                               |
| Working hard to solve problems is fulfilling.   | 2.64           | .85       |              |                                                                  |
| Working hard is boring.                         | 2.78           | .88       | .0001        | Yes                                                              |
| Working hard is interesting.                    | 1.87           | .77       |              |                                                                  |
| Working hard is discouraging.                   | 3.02           | .76       | .0001        | Yes                                                              |
| Working hard is encouraging.                    | 2.49           | .93       |              |                                                                  |
| Working hard makes one unhappy.                 | 2.92           | .79       | .0001        | Yes                                                              |
| Working hard makes one happy.                   | 2.06           | .89       |              |                                                                  |
| Working hard is not enjoyable.                  | 2.69           | .79       | .0001        | Yes                                                              |
| Working hard is enjoyable.                      | 1.97           | .85       |              |                                                                  |
| Working hard makes one feel bad.                | 3.07           | .88       | .0001        | Yes                                                              |
| Working hard makes one feel good.               | 2.56           | .84       |              |                                                                  |

## Appendix D

### Within-Subjects Item Mean Comparison Based on Item Type

For each item pair, the negative is presented above its positive counterpart.

| NP1 Scale                                               |             |      |       | Significant at<br>.05 Level<br>After<br>Bonferroni<br>Correction |
|---------------------------------------------------------|-------------|------|-------|------------------------------------------------------------------|
| Item Pairs                                              | NP1<br>Mean | SD   | Alpha |                                                                  |
| <u>Objective Subscale</u>                               |             |      |       |                                                                  |
| Working hard hurts others.                              | 3.42        | .770 | .0001 | Yes                                                              |
| Working hard helps others.                              | 2.89        | .811 |       |                                                                  |
| Working hard is the wrong thing to do.                  | 3.62        | .636 | .030  | No                                                               |
| Working hard is the right thing to do.                  | 3.46        | .646 |       |                                                                  |
| Working hard is dumb.                                   | 3.43        | .760 | .355  | No                                                               |
| Working hard is smart.                                  | 3.36        | .705 |       |                                                                  |
| Working hard dulls the mind.                            | 3.23        | .907 | .923  | No                                                               |
| Working hard improves the mind.                         | 3.24        | .066 |       |                                                                  |
| Working hard doesn't make a difference.                 | 3.50        | .765 | .077  | No                                                               |
| Working hard makes a difference.                        | 3.36        | .719 |       |                                                                  |
| <u>Artificial Subscale</u>                              |             |      |       |                                                                  |
| The finest things in life don't come from working hard. | 3.12        | .870 | .547  | No                                                               |
| The finest things in life come from working hard.       | 3.16        | .761 |       |                                                                  |
| Making it big in a job doesn't come from working hard.  | 3.16        | .817 | .271  | No                                                               |
| Making is big in a job comes from working hard.         | 3.25        | .711 |       |                                                                  |
| Fame is not achieved by working hard.                   | 3.04        | .827 | .006  | Yes                                                              |
| Fame is achieved by working hard.                       | 3.25        | .722 |       |                                                                  |

| NP1 Scale                                       |                     |           |              | Significant at<br>.05 Level<br>After<br>Bonferroni<br>Correction |
|-------------------------------------------------|---------------------|-----------|--------------|------------------------------------------------------------------|
| <u>Item Pairs</u>                               | <u>NP1<br/>Mean</u> | <u>SD</u> | <u>Alpha</u> |                                                                  |
| <u>Artificial Subscale Cont'd</u>               |                     |           |              |                                                                  |
| It is better to inherit wealth than to earn it. | 3.14                | .796      | .828         | No                                                               |
| It is better to earn wealth than to inherit it. | 3.16                | .750      |              |                                                                  |
| Working hard is the worst way to get money.     | 3.37                | .784      | .001         | Yes                                                              |
| Working hard is the best way to get money.      | 3.10                | .754      |              |                                                                  |
| <u>Comfort Subscale</u>                         |                     |           |              |                                                                  |
| Working hard takes the fun out of a day.        | 2.70                | .853      | .0001        | Yes                                                              |
| Working hard makes a day more fun.              | 2.26                | .929      |              |                                                                  |
| Working hard to solve problems is frustrating.  | 2.37                | .838      | .000         | Yes                                                              |
| Working hard to solve problems is fulfilling.   | 2.93                | .668      |              |                                                                  |
| Working hard is boring.                         | 2.79                | .858      | .007         | Yes                                                              |
| Working hard is interesting.                    | 2.57                | .783      |              |                                                                  |
| Working hard is not enjoyable.                  | 2.71                | .838      | .004         | Yes                                                              |
| Working hard is enjoyable.                      | 2.49                | .845      |              |                                                                  |
| Working hard makes one feel bad.                | 3.29                | .664      | .000         | Yes                                                              |
| Working hard makes one feel good.               | 2.96                | .889      |              |                                                                  |

| NP2 Scale                                                                                                                            |              |              |       | Significant at<br>.05 Level After<br>Bonferroni<br>Correction |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-------|---------------------------------------------------------------|
| Item Pairs                                                                                                                           | NP1<br>Mean  | SD           | Alpha |                                                               |
| <u>Objective Subscale</u>                                                                                                            |              |              |       |                                                               |
| Working hard is the worst use of time.<br>Working hard is the best use of time.                                                      | 3.20<br>2.63 | .777<br>.911 | .000  | Yes                                                           |
| Working hard makes the world worse.<br>Working hard makes the world better.                                                          | 3.53<br>3.12 | .580<br>.815 | .000  | Yes                                                           |
| Most problems cannot be solved by<br>working hard.<br>Most problems can be solved by working<br>hard.                                | 2.49<br>2.82 | .798<br>.966 | .000  | Yes                                                           |
| Working hard is bad.<br>Working hard is good.                                                                                        | 3.21<br>3.09 | .674<br>.792 | .026  | No                                                            |
| Working hard is bad for a person.<br>Working hard is good for a person.                                                              | 3.21<br>3.06 | .764<br>.813 | .052  | No                                                            |
| <u>Artificial Subscale</u>                                                                                                           |              |              |       |                                                               |
| Becoming a leader doesn't take hard work.<br>Becoming a leader takes hard work                                                       | 3.34<br>3.39 | .841<br>.661 | .508  | No                                                            |
| Riches don't come from working hard.<br>Riches come from working hard.                                                               | 2.72<br>2.87 | .905<br>.844 | .067  | No                                                            |
| Working hard is criticized by others.<br>Working hard is praised by others.                                                          | 2.70<br>2.86 | .808<br>.761 | .074  | No                                                            |
| Even people who don't work hard deserve<br>the best things in life.<br>Only people who work hard deserve the<br>best things in life. | 2.64<br>2.68 | 1.03<br>.956 | .619  | No                                                            |

| <b>NP2 Scale</b>                              |             |           |              | Significant at    |
|-----------------------------------------------|-------------|-----------|--------------|-------------------|
|                                               | NP1         |           |              | .05 Level After   |
| <u>Item Pairs</u>                             | <u>Mean</u> | <u>SD</u> | <u>Alpha</u> | <u>Bonferroni</u> |
| <u>Artificial Subscale Cont'd</u>             |             |           |              |                   |
| Working hard is a bad way to become popular.  | 3.05        | .845      | .000         | Yes               |
| Working hard is a good way to become popular. | 2.47        | .958      |              |                   |
| <u>Comfort Subscale</u>                       |             |           |              |                   |
| The less one works, the better.               | 3.31        | .716      | .000         | Yes               |
| The more one works, the better.               | 3.0         | .799      |              |                   |
| Working hard is stressful.                    | 1.96        | .795      | .549         | No                |
| Working hard reduces stress.                  | 2.01        | .809      |              |                   |
| Working hard is unpleasant.                   | 2.78        | .854      | .000         | Yes               |
| Working hard is pleasant.                     | 2.43        | .777      |              |                   |
| Working hard is discouraging.                 | 2.87        | .760      | .158         | No                |
| Working hard is encouraging.                  | 2.97        | .680      |              |                   |
| Working hard makes one unhappy.               | 2.94        | .748      | .000         | Yes               |
| Working hard makes one happy.                 | 2.60        | .810      |              |                   |

## Appendix E

### Item Facility for N Scale and P Scale

For each pair of items, negative items are presented first.

| Item Pairs                                      | % Prowork<br>Endorsement | 80% | 95% |
|-------------------------------------------------|--------------------------|-----|-----|
| <u>Objective Subscale</u>                       |                          |     |     |
| Working hard hurts others.                      | 92.9                     | Yes |     |
| Working hard helps others                       | 73.9                     |     |     |
| Working hard is the worst use of time.          | 85.9                     | Yes |     |
| Working hard is the best use of time.           | 71.9                     |     |     |
| Working hard is bad for a person.               | 92.9                     | Yes |     |
| Working hard is good for a person.              | 69.6                     |     |     |
| Working hard is the wrong thing to do.          | 94.2                     | Yes |     |
| Working hard is the right thing to do.          | 78.4                     |     |     |
| Working hard makes the world worse.             | 94.1                     | Yes |     |
| Working hard makes the world better.            | 83.2                     |     |     |
| Most problems cannot be solved by working hard. | 72.9                     |     |     |
| Most problems can be solved by working hard.    | 63.2                     |     |     |
| Working hard is dumb.                           | 91.7                     | Yes |     |
| Working hard is smart.                          | 74.1                     |     |     |
| Working hard dulls the mind.                    | 81.0                     | Yes |     |
| Working hard improves the mind.                 | 94.3                     |     |     |
| Working hard doesn't make a difference.         | 90.6                     | Yes |     |
| Working hard makes a difference.                | 89.9                     |     |     |
| Working hard is bad.                            | 89.4                     | Yes |     |
| Working hard is good.                           | 74.1                     |     |     |
| <u>Artificial Subscale</u>                      |                          |     |     |
| Becoming a leader doesn't take hard work.       | 81.1                     | Yes |     |
| Becoming a leader takes hard work               | 96.6                     |     |     |

| Item Pairs                                                       | % Prowork<br>Endorsement | 80% | 95% |
|------------------------------------------------------------------|--------------------------|-----|-----|
| <u>Artificial Subscale Cont'd</u>                                |                          |     |     |
| The finest things in life don't come from working hard.          | 69.4                     |     |     |
| The finest things in life come from working hard.                | 70.8                     |     |     |
| Riches don't come from working hard.                             | 73.0                     |     |     |
| Riches come from working hard.                                   | 67.4                     |     |     |
| Working hard is criticized by others.                            | 71.8                     |     |     |
| Working hard is praised by others.                               | 64.8                     |     |     |
| Working hard is the worst way to get money.                      | 89.4                     | Yes |     |
| Working hard is the best way to get money.                       | 63.1                     |     |     |
| Even people who don't work hard deserve the best things in life. | 50.6                     |     |     |
| Only people who work hard deserve the best things in life.       | 47.2                     |     |     |
| Working hard is a bad way to become popular.                     | 85.9                     | Yes |     |
| Working hard is a good way to become popular.                    | 38.2                     |     |     |
| Making it big in a job doesn't come from working hard.           | 85.9                     | Yes |     |
| Making it big in a job comes from working hard.                  | 88.8                     | Yes |     |
| Fame is not achieved by working hard.                            | 75.3                     |     |     |
| Fame is achieved by working hard.                                | 75.3                     |     |     |
| It is better to inherit wealth than to earn it.                  | 71.7                     |     |     |
| It is better to earn wealth than to inherit it.                  | 62.9                     |     |     |
| <u>Comfort Subscale</u>                                          |                          |     |     |
| Working hard takes the fun out of a day.                         | 58.9                     |     |     |
| Working hard makes a day more fun.                               | 14.6                     |     |     |
| The less one works, the better.                                  | 88.2                     | Yes |     |
| The more one works, the better.                                  | 58.0                     |     |     |

| Item Pairs                                     | % Prowork<br>Endorsement | 80% | 95% |
|------------------------------------------------|--------------------------|-----|-----|
| <u>Comfort Subscale Cont'd</u>                 |                          |     |     |
| Working hard is stressful.                     | 24.7                     |     |     |
| Working hard reduces stress.                   | 23.6                     |     |     |
| Working hard is unpleasant.                    | 68.2                     |     |     |
| Working hard is pleasant.                      | 20.5                     |     |     |
| Working hard to solve problems is frustrating. | 35.3                     |     |     |
| Working hard to solve problems is fulfilling.  | 62.5                     |     |     |
| Working hard is boring.                        | 64.7                     |     |     |
| Working hard is interesting.                   | 19.1                     |     |     |
| Working hard is discouraging.                  | 77.7                     |     |     |
| Working hard is encouraging.                   | 55.1                     |     |     |
| Working hard makes one unhappy.                | 78.8                     |     |     |
| Working hard makes one happy.                  | 30.7                     |     |     |
| Working hard is not enjoyable.                 | 65.9                     |     |     |
| Working hard is enjoyable.                     | 29.2                     |     |     |
| Working hard makes one feel bad.               | 81.2                     | Yes |     |
| Working hard makes one feel good.              | 54.0                     |     |     |

## Appendix F

### Item Facility for NP1 Scale

For each pair of items, negative items are above their positive counterparts.

| Item Pairs                                              | % Prowork<br>Endorsement | 80% | 95% |
|---------------------------------------------------------|--------------------------|-----|-----|
| <u>Objective Subscale</u>                               |                          |     |     |
| Working hard hurts others.                              | 91.0                     | Yes |     |
| Working hard helps others.                              | 72.9                     |     |     |
| Working hard is the wrong thing to do.                  | 95.0                     | Yes | Yes |
| Working hard is the right thing to do.                  | 85.1                     | Yes |     |
| Working hard is dumb.                                   | 93.4                     | Yes |     |
| Working hard is smart.                                  | 93.4                     | Yes |     |
| Working hard dulls the mind.                            | 82.7                     | Yes |     |
| Working hard improves the mind.                         | 89.3                     | Yes |     |
| Working hard doesn't make a difference.                 | 90.2                     | Yes |     |
| Working hard makes a difference.                        | 92.6                     | Yes |     |
| <u>Artificial Subscale</u>                              |                          |     |     |
| The finest things in life don't come from working hard. | 78.7                     |     |     |
| The finest things in life come from working hard.       | 84.4                     | Yes |     |
| Making it big in a job doesn't come from working hard.  | 80.3                     | Yes |     |
| Making is big in a job comes from working hard.         | 89.3                     | Yes |     |
| Fame is not achieved by working hard.                   | 77.8                     |     |     |
| Fame is achieved by working hard.                       | 86.9                     | Yes |     |
| It is better to inherit wealth than to earn it.         | 91.2                     | Yes |     |
| It is better to earn wealth than to inherit it.         | 85.2                     | Yes |     |

| Item Pairs                                     | % Prowork<br>Endorsement | 80% | 95% |
|------------------------------------------------|--------------------------|-----|-----|
| <u>Artificial Subscale Cont'd</u>              |                          |     |     |
| Working hard is the worst way to get money.    | 89.3                     | Yes |     |
| Working hard is the best way to get money.     | 81.1                     | Yes |     |
| <u>Comfort Subscale</u>                        |                          |     |     |
| Working hard takes the fun out of a day.       | 63.1                     |     |     |
| Working hard makes a day more fun.             | 41.3                     |     |     |
| Working hard to solve problems is frustrating. | 40.9                     |     |     |
| Working hard to solve problems is fulfilling.  | 81.0                     | Yes |     |
| Working hard is boring.                        | 68.9                     |     |     |
| Working hard is interesting.                   | 53.7                     |     |     |
| Working hard is not enjoyable.                 | 63.1                     |     |     |
| Working hard is enjoyable.                     | 49.2                     |     |     |
| Working hard makes one feel bad.               | 90.2                     | Yes |     |
| Working hard makes one feel good.              | 71.9                     |     |     |

## Appendix G

### Item Facility for NP2 Scale

For each pair of items, negative items are above their positive counterparts.

| Item Pairs                                                       | % Prowork<br>Endorsement | 80% | 95% |
|------------------------------------------------------------------|--------------------------|-----|-----|
| <u>Objective Subscale</u>                                        |                          |     |     |
| Working hard is the worst use of time.                           | 88.0                     | Yes |     |
| Working hard is the best use of time.                            | 54.9                     |     |     |
| Working hard makes the world worse.                              | 97.1                     | Yes | Yes |
| Working hard makes the world better.                             | 81.0                     | Yes |     |
| Most problems cannot be solved by working hard.                  | 48.2                     |     |     |
| Most problems can be solved by working hard.                     | 61.3                     |     |     |
| Working hard is bad.                                             | 91.5                     | Yes |     |
| Working hard is good.                                            | 83.1                     | Yes |     |
| Working hard is bad for a person.                                | 86.5                     | Yes |     |
| Working hard is good for a person.                               | 80.3                     | Yes |     |
| <u>Artificial Subscale</u>                                       |                          |     |     |
| Becoming a leader doesn't take hard work.                        | 85.9                     | Yes |     |
| Becoming a leader takes hard work                                | 94.4                     | Yes |     |
| Riches don't come from working hard.                             | 63.8                     |     |     |
| Riches come from working hard.                                   | 69.7                     |     |     |
| Working hard is criticized by others.                            | 57.7                     |     |     |
| Working hard is praised by others.                               | 74.4                     |     |     |
| Even people who don't work hard deserve the best things in life. | 57.7                     |     |     |
| Only people who work hard deserve the best things in life.       | 60.5                     |     |     |
| Working hard is a bad way to become popular.                     | 81.0                     | Yes |     |
| Working hard is a good way to become popular.                    | 47.9                     |     |     |

| Item Pairs                      | % Prowork<br>Endorsement | 80% | 95% |
|---------------------------------|--------------------------|-----|-----|
| <u>Comfort Subscale</u>         |                          |     |     |
| The less one works, the better. | 89.5                     | Yes |     |
| The more one works, the better. | 74.0                     |     |     |
| Working hard is stressful.      | 20.6                     |     |     |
| Working hard reduces stress.    | 22.0                     |     |     |
| Working hard is unpleasant.     | 66.0                     |     |     |
| Working hard is pleasant.       | 46.4                     |     |     |
| Working hard is discouraging.   | 71.2                     | Yes |     |
| Working hard is encouraging.    | 84.4                     |     |     |
| Working hard makes one unhappy. | 77.4                     |     |     |
| Working hard makes one happy.   | 62.4                     |     |     |

## Appendix H

### Cronbach's Alphas and Item-Total Correlations by Subscale for Each Scale

#### N Scale

##### Objective Subscale

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I7         | 30.1951                             | 19.7392                                 | .4268                                      | .8230                       |
| I29        | 30.3293                             | 16.9643                                 | .7190                                      | .7921                       |
| I6         | 30.4146                             | 18.3198                                 | .5129                                      | .8155                       |
| I26        | 30.1951                             | 17.8380                                 | .6804                                      | .7986                       |
| I28        | 30.0854                             | 19.3383                                 | .4785                                      | .8185                       |
| I20        | 30.0244                             | 19.3821                                 | .4752                                      | .8188                       |
| I27        | 30.4634                             | 17.7826                                 | .5373                                      | .8134                       |
| I5         | 30.0488                             | 19.6766                                 | .4536                                      | .8208                       |
| <b>I22</b> | <b>30.7073</b>                      | <b>19.7157</b>                          | <b>.2623</b>                               | <b>.8447</b>                |
| I13        | 30.0244                             | 17.8512                                 | .7195                                      | .7957                       |

N of cases = 82.0  
Alpha = .8301

N of items = 10

##### Artificial Subscale

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I18        | 27.2471                             | 17.2359                                 | .3317                                      | .6352                       |
| I21        | 27.5412                             | 16.2036                                 | .4162                                      | .6170                       |
| I19        | 27.2000                             | 15.9476                                 | .5368                                      | .5969                       |
| I1         | 27.4235                             | 16.6518                                 | .3539                                      | .6299                       |
| I4         | 27.6000                             | 16.5524                                 | .3235                                      | .6363                       |
| I2         | 27.5294                             | 16.0378                                 | .3775                                      | .6243                       |
| I17        | 28.0588                             | 16.2465                                 | .3008                                      | .6432                       |
| <b>I12</b> | <b>27.6000</b>                      | <b>18.9095</b>                          | <b>.0740</b>                               | <b>.6788</b>                |
| I15        | 27.0235                             | 17.4518                                 | .3064                                      | .6397                       |
| I25        | 27.5412                             | 17.3941                                 | .2377                                      | .6533                       |

N of Cases = 85.0  
Alpha = .6604

N of Items = 10

##### Comfort

|     | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|-----|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I11 | 25.1412                             | 21.5513                                 | .4172                                      | .8104                       |
| I23 | 24.5529                             | 20.3930                                 | .6703                                      | .7831                       |
| I8  | 24.2000                             | 22.2095                                 | .3965                                      | .8113                       |
| I9  | 25.3882                             | 22.4070                                 | .4035                                      | .8103                       |
| I24 | 24.7765                             | 22.2709                                 | .3916                                      | .8117                       |
| I10 | 24.7765                             | 21.1280                                 | .5600                                      | .7948                       |
| I14 | 24.6941                             | 20.8577                                 | .5201                                      | .7987                       |
| I16 | 24.4471                             | 21.4882                                 | .5340                                      | .7978                       |
| I3  | 24.8588                             | 20.6941                                 | .5034                                      | .8009                       |
| I30 | 24.4000                             | 20.2190                                 | .6041                                      | .7889                       |

N of Cases = 85.0  
Alpha = .8174

N of Items = 10

Note. Bold type = items lowering alpha when included.

## P Scale

### Objective

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I26        | 26.9765                             | 17.0471                                 | .6639                                      | .7623                       |
| I4         | 26.8588                             | 17.7417                                 | .6365                                      | .7674                       |
| I21        | 26.8941                             | 18.8577                                 | .5223                                      | .7819                       |
| I1         | 27.0471                             | 18.7597                                 | .4683                                      | .7881                       |
| I28        | 26.6118                             | 18.6927                                 | .5598                                      | .7779                       |
| I5         | 26.7294                             | 19.8188                                 | .3821                                      | .7970                       |
| I6         | 26.4471                             | 20.2978                                 | .4234                                      | .7933                       |
| <b>I7</b>  | <b>26.9294</b>                      | <b>21.1616</b>                          | <b>.1795</b>                               | <b>.8171</b>                |
| <b>I12</b> | <b>27.1294</b>                      | <b>19.7569</b>                          | <b>.3031</b>                               | <b>.8087</b>                |
| I9         | 26.7882                             | 17.6689                                 | .6784                                      | .7629                       |

N of Cases = 85.0  
Alpha = .8039

N of Items = 10

### Artificial

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I10        | 26.7045                             | 15.3830                                 | .2011                                      | .6091                       |
| I11        | 25.8977                             | 14.1388                                 | .4032                                      | .5603                       |
| I13        | 25.5909                             | 15.9916                                 | .2415                                      | .5988                       |
| I14        | 25.4886                             | 15.5861                                 | .4129                                      | .5756                       |
| <b>I15</b> | <b>26.1136</b>                      | <b>15.8950</b>                          | <b>.1310</b>                               | <b>.6250</b>                |
| I17        | 25.9659                             | 14.2862                                 | .4190                                      | .5585                       |
| I20        | 26.4205                             | 13.7867                                 | .3204                                      | .5815                       |
| I23        | 26.1023                             | 14.2998                                 | .3597                                      | .5705                       |
| I27        | 25.6477                             | 15.6331                                 | .2509                                      | .5965                       |
| I29        | 26.1477                             | 14.7251                                 | .2237                                      | .6078                       |

N of Cases = 88.0  
Alpha = .6143

N of Items = 10

### Comfort

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I24        | 18.9186                             | 18.7815                                 | .6222                                      | .7364                       |
| I22        | 19.5233                             | 19.6642                                 | .4750                                      | .7559                       |
| <b>I16</b> | <b>19.0116</b>                      | <b>21.9881</b>                          | <b>.1644</b>                               | <b>.7951</b>                |
| <b>I8</b>  | <b>19.6628</b>                      | <b>20.6732</b>                          | <b>.2825</b>                               | <b>.7836</b>                |
| I25        | 19.6047                             | 19.9360                                 | .4742                                      | .7562                       |
| I30        | 19.7442                             | 18.8985                                 | .6374                                      | .7354                       |
| I18        | 19.6977                             | 20.0722                                 | .4995                                      | .7538                       |
| I19        | 19.0698                             | 18.3245                                 | .6180                                      | .7351                       |
| I2         | 19.7907                             | 21.4851                                 | .3305                                      | .7727                       |
| I3         | 19.0000                             | 20.2588                                 | .4097                                      | .7643                       |

### Reliability Coefficients

N of Cases = 86.0  
Alpha = .7786

N of Items = 10

Note. Bold type = items lowering alpha when included.

## NP1 Scale

### Objective

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I30        | 30.0750                             | 18.4229                                 | .6152                                      | .8160                       |
| I8         | 30.0083                             | 19.2688                                 | .4730                                      | .8298                       |
| I3         | 30.2833                             | 17.8686                                 | .5633                                      | .8220                       |
| I7         | 30.0917                             | 19.0419                                 | .5041                                      | .8269                       |
| I9         | 29.8917                             | 19.0218                                 | .6498                                      | .8152                       |
| I10        | 30.1583                             | 19.3949                                 | .5064                                      | .8265                       |
| I29        | 30.1417                             | 18.4419                                 | .6588                                      | .8124                       |
| I19        | 30.2667                             | 18.5838                                 | .6201                                      | .8159                       |
| <b>I20</b> | <b>30.6083</b>                      | <b>19.7865</b>                          | <b>.3582</b>                               | <b>.8417</b>                |
| I1         | 30.0500                             | 20.1487                                 | .4262                                      | .8332                       |

N of Cases = 120.0  
Alpha = .8389

N of Items = 10

### Artificial

|     | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|-----|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I18 | 28.6967                             | 16.6263                                 | .4840                                      | .7590                       |
| I2  | 28.5738                             | 17.2383                                 | .3936                                      | .7709                       |
| I24 | 28.6311                             | 15.7058                                 | .5963                                      | .7428                       |
| I22 | 28.3689                             | 17.2760                                 | .4118                                      | .7682                       |
| I17 | 28.5984                             | 17.4489                                 | .3750                                      | .7730                       |
| I26 | 28.4836                             | 17.2270                                 | .4714                                      | .7611                       |
| I15 | 28.4836                             | 17.0121                                 | .5216                                      | .7554                       |
| I12 | 28.5820                             | 17.1213                                 | .4566                                      | .7626                       |
| I16 | 28.6393                             | 17.2903                                 | .4331                                      | .7655                       |
| I5  | 28.5820                             | 17.7494                                 | .3582                                      | .7744                       |

N of Cases = 122.0  
Alpha = .7820

N of Items = 10

### Comfort

|           | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|-----------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I25       | 24.6639                             | 23.6657                                 | .4517                                      | .8387                       |
| I13       | 24.3277                             | 22.3069                                 | .6303                                      | .8220                       |
| I11       | 24.2437                             | 22.9316                                 | .5304                                      | .8316                       |
| I21       | 24.3277                             | 22.2052                                 | .6349                                      | .8215                       |
| I14       | 23.7395                             | 24.3638                                 | .4871                                      | .8355                       |
| <b>I6</b> | <b>24.0924</b>                      | <b>25.8134</b>                          | <b>.2546</b>                               | <b>.8522</b>                |
| I23       | 24.5546                             | 22.3339                                 | .6337                                      | .8217                       |
| I28       | 24.4538                             | 22.1144                                 | .7122                                      | .8151                       |
| I27       | 24.7479                             | 21.8512                                 | .6095                                      | .8238                       |
| I4        | 24.0756                             | 23.1891                                 | .4690                                      | .8379                       |

N of Cases = 119.0  
Alpha = .8448

N of Items = 10

Note. Bold type = items lowering alpha when included.

## NP2 Scale

### Objective

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I19        | 27.1449                             | 17.4679                                 | .4950                                      | .7559                       |
| I25        | 27.1522                             | 17.5314                                 | .5757                                      | .7485                       |
| I27        | 27.1594                             | 16.9379                                 | .5733                                      | .7457                       |
| I23        | 26.8261                             | 18.4221                                 | .4960                                      | .7596                       |
| <b>I22</b> | <b>27.8696</b>                      | <b>18.7128</b>                          | <b>.2756</b>                               | <b>.7829</b>                |
| I8         | 27.2971                             | 17.9184                                 | .3895                                      | .7691                       |
| I26        | 27.2609                             | 16.5008                                 | .6395                                      | .7366                       |
| I20        | 27.7319                             | 17.3655                                 | .3988                                      | .7695                       |
| I7         | 27.2391                             | 18.4023                                 | .3129                                      | .7787                       |
| I30        | 27.5145                             | 16.9669                                 | .4229                                      | .7670                       |

N of Cases = 138.0  
Alpha = .7803

N of Items = 10

### Artificial

|            | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|------------|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| <b>I17</b> | <b>25.6714</b>                      | <b>15.8337</b>                          | <b>.1540</b>                               | <b>.6446</b>                |
| I14        | 25.4071                             | 14.6460                                 | .3394                                      | .6070                       |
| I2         | 26.0214                             | 14.9132                                 | .2583                                      | .6248                       |
| I16        | 26.0929                             | 13.5237                                 | .3943                                      | .5923                       |
| <b>I3</b>  | <b>26.0357</b>                      | <b>16.6678</b>                          | <b>.0337</b>                               | <b>.6662</b>                |
| I6         | 26.2714                             | 13.7531                                 | .4069                                      | .5899                       |
| I11        | 25.3500                             | 15.3083                                 | .3467                                      | .6095                       |
| I21        | 25.8500                             | 13.7831                                 | .4976                                      | .5730                       |
| I1         | 26.0500                             | 14.1917                                 | .3459                                      | .6049                       |
| I5         | 25.8714                             | 15.2208                                 | .2947                                      | .6168                       |

N of Cases = 140.0  
Alpha = .6391

N of Items = 10

### Comfort

|     | Scale<br>Mean<br>if Item<br>Deleted | Scale<br>Variance<br>if Item<br>Deleted | Corrected<br>Item-<br>Total<br>Correlation | Alpha<br>if Item<br>Deleted |
|-----|-------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------|
| I28 | 23.8467                             | 13.3660                                 | .4256                                      | .6640                       |
| I29 | 23.4818                             | 14.1927                                 | .2848                                      | .6876                       |
| I9  | 24.8102                             | 14.0961                                 | .2569                                      | .6935                       |
| I4  | 24.0146                             | 13.9263                                 | .2486                                      | .6969                       |
| I15 | 23.9197                             | 13.4862                                 | .3943                                      | .6693                       |
| I18 | 24.2044                             | 13.1344                                 | .4272                                      | .6629                       |
| I10 | 23.7956                             | 14.0167                                 | .2652                                      | .6923                       |
| I12 | 24.7664                             | 13.3715                                 | .3745                                      | .6726                       |
| I24 | 24.3723                             | 13.3383                                 | .4123                                      | .6660                       |
| I13 | 23.8175                             | 13.1944                                 | .5275                                      | .6495                       |

### Reliability Coefficients

N of Cases = 137.0

N of Items = 10

Alpha = .6985

Note. Bold type = items lowering alpha when included.

## Appendix I

### Significant N Scale Item Correlations With Criterion Variables

| Item                                                       | Area    | Correlation | <u>n</u> | Significance |
|------------------------------------------------------------|---------|-------------|----------|--------------|
| 9. Working hard is stressful.                              | PE      | .27         | 56       | .04          |
| 10. Working hard is unpleasant.                            | Lang    | .26         | 60       | .04          |
|                                                            | Math    | .37         | 59       | .01          |
|                                                            | PE      | .29         | 56       | .03          |
| 11. Working hard to solve problems is frustrating.         | Math    | .44         | 59       | .01          |
|                                                            | Social  | .29         | 59       | .02          |
| 12. Working hard is criticized by others.                  | Lang    | .29         | 60       | .03          |
|                                                            | Science | .32         | 59       | .01          |
| 19. Making it big in a job doesn't come from working hard. | PE      | .27         | 56       | .05          |

### Significant P Scale Item Correlations With Criterion Variables

| Item                                                  | Area    | Correlation | n  | Significance |
|-------------------------------------------------------|---------|-------------|----|--------------|
| 1. Working hard is the best use of time.              | Social  | .30         | 64 | .01          |
|                                                       | PE      | .34         | 54 | .01          |
| 4. Working hard is good.                              | Social  | .27         | 64 | .03          |
| 5. Working hard makes the world better.               | Lang    | .26         | 64 | .04          |
| 7. Working hard helps others.                         | Science | .26         | 63 | .04          |
| 11. Fame is achieved by working hard.                 | Lang    | .39         | 64 | .01          |
| 13. Making it big in a job comes from working hard.   | Lang    | .31         | 64 | .01          |
|                                                       | Science | .30         | 63 | .02          |
|                                                       | Social  | .37         | 64 | .01          |
| 14. Becoming a leader takes hard work.                | Science | .26         | 63 | .04          |
| 15. Riches come from working hard.                    | Math    | -.31        | 64 | .01          |
| 17. The finest things in life come from working hard. | Lang    | .32         | 64 | .01          |
|                                                       | Science | .29         | 63 | .02          |
| 19. Working hard is encouraging.                      | PE      | .29         | 54 | .03          |
| 21. Working hard is smart.                            | Science | .27         | 63 | .03          |
|                                                       | Social  | .35         | 64 | .01          |
| 23. Working hard is praised by others.                | Science | .26         | 62 | .04          |
|                                                       | Social  | .27         | 63 | .03          |
| 24. Working hard to solve problems is fulfilling.     | Lang    | .27         | 63 | .03          |
|                                                       | Social  | .25         | 63 | .05          |
| 26. Working hard is good for a person.                | Science | .28         | 63 | .03          |
|                                                       | Social  | .30         | 64 | .02          |

| Item                          | Area    | Correlation | <u>n</u> | Significance |
|-------------------------------|---------|-------------|----------|--------------|
| 30. Working hard is pleasant. | Lang    | .26         | 64       | .04          |
|                               | Science | .25         | 63       | .05          |
|                               | Social  | .28         | 64       | .03          |

### Significant NP1 Scale Item Correlations With Criterion Variables

| Item                                                      | Area   | Correlation | <u>n</u> | Significance |
|-----------------------------------------------------------|--------|-------------|----------|--------------|
| 1. Working hard is the right thing to do.                 | Math   | .22         | 93       | .04          |
| 2. Making it big in a job doesn't come from working hard. | PE     | -.22        | 86       | .04          |
| 4. Working hard makes one feel good.                      | Math   | .29         | 92       | .01          |
| 5. It is better to earn wealth than to inherit it.        | Math   | .29         | 93       | .01          |
| 7. Working hard hurts others.                             | Social | .25         | 93       | .02          |
| 8. Working hard doesn't make a difference.                | Lang   | .29         | 94       | .01          |
|                                                           | Math   | .23         | 93       | .03          |
| 11. Working hard is boring.                               | PE     | .22         | 86       | .04          |
| 13. Working hard is not enjoyable.                        | Lang   | -.20        | 94       | .05          |
| 20. Working hard helps others.                            | Lang   | .27         | 94       | .01          |
|                                                           | Math   | .33         | 93       | .01          |
| 25. Working hard to solve problems is frustrating.        | PE     | .21         | 86       | .05          |

### Significant NP2 Scale Item Correlations With Criterion Variables

| Item                                                                 | Area     | Correlation | n   | Significance |
|----------------------------------------------------------------------|----------|-------------|-----|--------------|
| 1. Only people who work hard deserve the best things in life.        | Math     | .25         | 112 | .01          |
|                                                                      | Science  | .25         | 112 | .01          |
| 2. Riches don't come from working hard.                              | Math     | .23         | 111 | .02          |
| 3. Working hard is criticized by others.                             | PE       | .20         | 100 | .04          |
| 5. Working hard is praised by others.                                | Science  | .21         | 112 | .03          |
|                                                                      | Social   | .31         | 112 | .01          |
| 8. Working hard is good for a person.                                | Spelling | .37         | 32  | .04          |
| 9. Working hard is stressful.                                        | Absent   | -.56        | 28  | .01          |
| 10. The more one works, the better.                                  | Math     | -.20        | 112 | .03          |
|                                                                      | Science  | -.26        | 112 | .01          |
|                                                                      | Social   | -.30        | 112 | .01          |
|                                                                      | PE       | -.23        | 100 | .02          |
| 12. Working hard reduces stress.                                     | Math     | -.24        | 111 | .01          |
|                                                                      | Social   | -.27        | 111 | .01          |
| 13. Working hard is encouraging.                                     | Absent   | -.38        | 28  | .05          |
| 15. Working hard is discouraging.                                    | PE       | .27         | 97  | .01          |
| 16. Even people who don't work hard deserve the best things in life. | Science  | .21         | 112 | .03          |
|                                                                      | Social   | .23         | 112 | .02          |
| 20. Working hard is the best use of time.                            | Spelling | .61         | 32  | .01          |
| 24. Working hard is pleasant.                                        | Math     | -.19        | 112 | .04          |
| 28. Working hard makes one unhappy.                                  | Read     | .35         | 32  | .05          |
| 30. Most problems can be solved by working hard.                     | Absent   | -.41        | 28  | .03          |

## Appendix J

### Maximum Likelihood Factor Analysis (Varimax Rotation) and Factor Loadings

| <b>Factor 1 (between-subjects)</b>                  |     |                                                   |     |
|-----------------------------------------------------|-----|---------------------------------------------------|-----|
| N Scale                                             |     | P Scale                                           |     |
| 29. Working hard is bad.                            | .84 | 26. Working hard is good for a person.            | .69 |
| 27. Working hard dulls the mind.                    | .76 | 9. Working hard is the right thing to do.         | .69 |
| 23. Working hard makes one unhappy.                 | .76 | 4. Working hard is good.                          | .63 |
| 14. Working hard is boring.                         | .71 | 1. Working hard is the best use of time.          | .62 |
| 26. Working hard is dumb.                           | .62 | 2. Working hard makes a day more fun.             | .60 |
| 25. It is better to inherit wealth than to earn it. | .60 | 3. Working hard makes one feel good.              | .51 |
| 3. Working hard takes the fun out of a day.         | .53 | 28. Working hard makes a difference.              | .50 |
| 30. Working hard makes one feel bad.                | .51 | 24. Working hard to solve problems is fulfilling. | .50 |
| 18. Working hard is a bad way to become popular.    | .49 | 21. Working hard is smart.                        | .42 |
| 20. Working hard makes the world worse.             | .48 | 6. Working hard improves the mind.                | .39 |
| 15. Working hard is the worst way to get money.     | .41 | 12. Most problems can be solved by working hard.  | .37 |
| 21. Fame is not achieved by working hard.           | .40 | 5. Working hard makes the world better.           | .32 |
| 24. Working hard is not enjoyable.                  | .39 |                                                   |     |

**Factor 2 (between-subjects)**

| N Scale                                            |     | P Scale                                           |     |
|----------------------------------------------------|-----|---------------------------------------------------|-----|
| 7. Working hard is bad for a person.               | .61 | 18. Working hard is interesting.                  | .81 |
| 16. Working hard is discouraging.                  | .59 | 30. Working hard is pleasant.                     | .57 |
| 6. Working hard is the worst use of time.          | .59 | 25. Working hard is enjoyable.                    | .56 |
| 13. Working hard is the wrong thing to do.         | .56 | 19. Working hard is encouraging.                  | .55 |
| 10. Working hard is unpleasant.                    | .50 | 22. Working hard makes one happy.                 | .50 |
| 8. The less one works, the better.                 | .50 | 10. Working hard is a good way to become popular. | .35 |
| 11. Working hard to solve problems is frustrating. | .49 | 15. Riches come from working hard.                | .31 |
| 9. Working hard is stressful.                      | .47 |                                                   |     |
| 5. Working hard hurts others.                      | .44 |                                                   |     |

### Factor 3 (between-subjects)

| N Scale                                                              |     | P Scale                                               |     |
|----------------------------------------------------------------------|-----|-------------------------------------------------------|-----|
| 2. The finest things in life don't come from working hard.           | .59 | 17. The finest things in life come from working hard. | .65 |
| 17. Even people who don't work hard deserve the best things in life. | .59 | 16. The more one works, the better.                   | .56 |
| 4. Riches don't come from working hard.                              | .50 | 14. Becoming a leader takes hard work.                | .52 |
| 19. Making it big in a job doesn't come from working hard.           | .49 | 23. Working hard is praised by others.                | .46 |
| 22. Most problems cannot be solved by working hard.                  | .47 | 13. Making it big in a job comes from working hard.   | .43 |
| 1. Becoming a leader doesn't take hard work.                         | .43 | 27. Working hard is the best way to get money.        | .41 |
| 28. Working hard doesn't make a difference.                          | .38 | 11. Fame is achieved by working hard.                 | .37 |

**Factor 1 (within-subjects)**

| NP1 Scale                                                   |     | NP2 Scale                                  |     |
|-------------------------------------------------------------|-----|--------------------------------------------|-----|
| 9. Working hard is the wrong thing to do.                   | .70 | 26. Working hard is good.                  | .83 |
| 29. Working hard makes a difference.                        | .68 | 25. Working hard is bad.                   | .75 |
| 7. Working hard hurts others.                               | .63 | 27. Working hard is the worst use of time. | .74 |
| 30. Working hard is dumb.                                   | .60 | 19. Working hard is bad for a person.      | .54 |
| 19. Working hard improves the mind.                         | .60 | 20. Working hard is the best use of time.  | .53 |
| 24. The finest things in life don't come from working hard. | .59 | 29. The less one works, the better.        | .48 |
| 3. Working hard dulls the mind.                             | .56 | 28. Working hard makes one unhappy.        | .47 |
| 22. Working hard is the worst way to get money.             | .52 | 13. Working hard is encouraging.           | .47 |
| 2. Making it big in a job doesn't come from working hard.   | .49 | 23. Working hard makes the world worse.    | .42 |
| 8. Working hard doesn't make a difference.                  | .47 | 8. Working hard is good for a person.      | .37 |
| 15. Making it big in a job comes from working hard.         | .45 | 15. Working hard is discouraging.          | .32 |
| 12. The finest things in life come from working hard.       | .34 |                                            |     |
| 16. Working hard is the best way to get money.              | .33 |                                            |     |

**Factor 2 (within-subjects)**

| NP1 Scale                                          |     | NP2 Scale                                        |     |
|----------------------------------------------------|-----|--------------------------------------------------|-----|
| 27. Working hard makes a day more fun.             | .75 | 18. Working hard makes one happy.                | .63 |
| 23. Working hard is enjoyable.                     | .74 | 30. Most problems can be solved by working hard. | .57 |
| 28. Working hard is interesting.                   | .72 | 24. Working hard is pleasant.                    | .48 |
| 21. Working hard takes the fun out of a day.       | .66 | 12. Working hard reduces stress.                 | .40 |
| 13. Working hard is not enjoyable.                 | .66 | 11. Becoming a leader takes hard work.           | .33 |
| 11. Working hard is boring.                        | .51 | 7. Working hard makes the world better.          | .31 |
| 25. Working hard to solve problems is frustrating. | .47 | 9. Working hard is stressful.                    | .30 |
| 14. Working hard makes one feel bad.               | .37 |                                                  |     |

### Factor 3 (within-subjects)

| NP1 Scale                                          |     | NP2 Scale                                                            |     |
|----------------------------------------------------|-----|----------------------------------------------------------------------|-----|
| 10. Working hard is smart.                         | .65 | 22. Most problems cannot be solved by working hard.                  | .52 |
| 6. Working hard to solve problems is fulfilling.   | .57 | 16. Even people who don't work hard deserve the best things in life. | .47 |
| 1. Working hard is the right thing to do.          | .54 | 21. Riches come from working hard.                                   | .47 |
| 5. It is better to earn wealth than to inherit it. | .46 | 5. Working hard is praised by others.                                | .42 |
| 4. Working hard makes one feel good.               | .45 | 14. Becoming a leader doesn't take hard work.                        | .32 |
| 26. Fame is achieved by working hard.              | .43 | 1. Only people who work hard deserve the best things in life.        | .31 |
| 18. Fame is not achieved by working hard.          | .43 |                                                                      |     |

## VITA

Kary O. Jessup was born at Travis Air Force Base, California, on September 9, 1966. His father's career in the United States Air Force took his family to Anchorage, Alaska, and then to Altus, Oklahoma, where Kary attended school until eighth grade. Military orders took the Jessup family to Minot, North Dakota, for one year until Kary's father retired. The family returned to Altus and Kary graduated from Altus High School in May 1985 with no plans for attending college. To his detriment, Kary failed to recognize the value of education until 1987. Kary enjoyed working at the local McDonalds after high school but began to realize that he needed to move away from his small town to find work that would allow for a better standard of living. In July of 1987, he moved to Calhoun, Georgia, where he began working at a mini-storage facility. Being away from his family for the first time, he soon realized that success is ultimately up to the individual. He enjoyed his work but became increasingly interested in obtaining a college education. He took an evening course at Dalton College, Georgia, which sparked a passion for learning. He passed the Georgia Realtor Exam in 1988 while awaiting an admissions decision from Berry College, Georgia, a small private college. He began study at Berry in the Fall of 1988 and obtained his Bachelor of Science in Psychology in 1991. With an even greater passion for learning, he began studying School Psychology at Georgia State University and earned his Master's of Education and Education Specialist degrees in 1994 and 1995, respectively. In the Fall of 1995, he entered The University of Tennessee, Knoxville, to pursue the Doctor of Philosophy in Education.