Exploring Evidence of Validity for the Construct of Work Values

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Dedication

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Abstract

Only three vocational theories explicitly address the role of work values in career choice and development (e.g. Super's Life-Span, Life-Space Theory (Super, 1953); The Theory of Work Adjustment (Dawis & Lofquist, 1984); and Duane Brown's Values-Based, Holistic theory (Brown, 1996). However, many researchers have developed measures of work values for specific studies, causing confusion about what domains represent the construct of work values. This confusion makes it difficult to fully understand the range of relevant work values. Furthermore, limited effort has been made to explore the nomological net for the construct of work values or the relation between work values and other constructs such as vocational interests, personality, and personal values. The present study sought to examine the domain of work values, the nomological net for the construct of work values, and evidence of validity for different measures of work values by comparing multiple measures of work values. Using a sample of (N = 374) undergraduate students, results suggested that evidence of convergent and discriminant validity existed for scores on four of the five work values measures examined. Principal Components Analysis identified six components that captured the domains represented within the construct of work values. Further analyses found that work values were related to, but distinct from, interests and personality, but were most similar to personal values. Information from open-ended responses suggested that additional values may be relevant to a work situation for younger workers.

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Chapter 1: Introduction and Review of the Literature

Research on work values suggests that values are an important predictor of job satisfaction and tenure (Dawis, 2002), but little research on work values has focused on understanding the domain of work values (Rounds & Armstrong, 2005; Zytowski, 1994). Moreover, the research to further understand the construct of work values has been stagnant in the past few decades. The purpose of the current study is to understand the construct of work values across different work value measures and to assess if current measures adequately assess the domain of work values. Of additional interest is exploring the relationship of work values to other vocational constructs, such as interests, personality, and personal values, to provide evidence of construct validity for work values.

Definitions of values

An early conceptualization of values was proposed by Spranger (1928) who articulated six basic values—theoretical, economic, aesthetic, social, political, and religious. Allport and Vernon (1931) conducted the first empirical study of work values, attempting to measure Spranger's six values. Allport defined values as beliefs that cause individuals to act on their preferences (Allport, 1961). Later, Rokeach (1973) expanded the definition of values to include cognitive, affective, and behavioral components and noted that values are central to understanding behavior.

Conceptualizations of values also emphasize behavior. Donald Super (1980) defined work values as "an objective, either a psychological state, a relationship, or material condition, that one seeks to attain" (p.130). Schwartz (1992) offers a more

specific definition of values indicating that values are "desirable states, objects, goals, or behaviors, transcending specific situations and applied as normative standards to judge and to chose among alternative modes of behavior" (p.2). This definition highlights the common agreement that values are generalizable across situations (Brown, 1996) despite research that suggests individuals' values do change slightly over time (Schulenberg, Vondracek, & Nesselroade, 1988).

Understanding the concept of values also requires an understanding of physical and psychological needs which are related to values. As Rounds and Armstrong (2005) note, current conceptualizations of needs can be traced back to Murray's (1938) need-press theory. Murray postulated that individuals' behavior, feelings, and reactions are a result of their needs. Further, press refers to the stimuli in the environment that either facilitates or hinders the achievement of these needs. The interaction of needs and press then explains individuals' behavior, such as job tenure (Dawis, 2002) and performance (Singh & Kumari, 1988). While needs, like values, do direct behavior, Rokeach (1973) clarified that needs tend to be biologically based, while values are cognitive representations of those needs. Additionally, Brown (1996) clarifies that needs generally are activated in specific situations whereas values are more enduring across situations. Despite definitional differences in needs and values, most theorists regard them as overlapping constructs and interchangeable to some extent.

In the vocational literature, work values and needs are defined similarly to overall personal values in that both describe objectives or conditions that one finds important. Work needs are considered biological (e.g. healthy working conditions) or

psychological (e.g. feelings of accomplishment) (Dawis, 1996). In some definitions of work values, values are higher-order factors comprised of lower-order needs (see for example Lofquist & Dawis, 1971). Furthermore, Zytowski (1994) noted that in the vocational psychology literature, work values often refer to positive reinforcers of job satisfaction. For example, if a work environment fulfills one's work needs, the expected outcome is job satisfaction.

Work Value Theories

Few vocational theories incorporate work values as a construct of central importance. Three vocational theories that do address work values are Super's Life-Span, Life-Space theory (Super, 1953), the Theory of Work Adjustment (Dawis & Lofquist, 1984), and Duane Brown's Values-Based, Holistic theory (Brown, 1996).

Super's Life-Span, Life-Space Theory. Donald Super was one of the first individuals to provide a convincing reason to include assessment of work values in appraisals of individual's vocational traits (Super, 1953), suggesting that work values influence one's career choice. Super later incorporated discussion of values into his Life-Span, Life-Space theory of career development. Super's theory is a developmental theory that emphasizes a longitudinal view of career development (Super, Savikas, & Super, 1996). Life-span refers to the lifetime of an individual and Super outlines five stages of development that occur during one's lifetime (Super et al., 1996). The first of these is *Growth* where the main goal is development of autonomy and self-esteem, followed by the second stage, *Exploration,* where developmental goals include solidifying one's vocational identity and choosing a career. Once a career is chosen, one acquires new

abilities to meet the demands of her or his work position and establishes the set of skills needed for the position during the stage of *Establishment*. The following stage of *Maintenance* occurs as the individual sustains the skills and knowledge for the position. Eventually, individuals reduce their responsibilities at work, begin planning for retirement, and then exit the workforce, marking the final stage of *Disengagement*. Super's theory suggests that individuals progress through these stages as their career develops. When individuals change careers, recycling through stages may occur. Furthermore, career maturity is measured by assessing the degree to which an individual progresses through each stage.

According to Super, Life-space refers to the roles that one occupies in life. He defines eight major life roles for individuals—child, student, leisurite, citizen, worker, homemaker, spouse, and parent. These roles are expected to interact and these interactions can be both positive and negative and may influence one's career development and choice.

Beyond the concepts of life-span and life-space, the central tenant of Super's theory posits that people differ in their skills, interests, personality, self-concepts, and values and are suited for a number of occupations that also require specific constellations of skills and traits. Furthermore, Super asserts that individuals make career choices based on their self-concepts—the personal understanding of one's abilities, interests, values, and choices— which develop throughout their lives as they progress through the five development stages. Within this theory, values are assumed to influence one's self-

concept and thus influence career choice. Super also notes that work values can be used to asses one's motivation to work (Super, 1970).

Research generally supports Super's Life-Span, Life-Space theory. Most research has explored the concept of life-span, particularly the Exploration and Establishment stages (Swanson & Gore, 2000). Empirical evidence supports that interactions occur between life roles (Swanson, 1992). Overall, reviews have concluded that Super's model is difficult to test, but is generally supported (Hackett & Lent, 1992; Osipow & Fitzgerald, 1996)

The Theory of Work Adjustment. One of the most popular vocational theories incorporating work values is the Theory of Work Adjustment (TWA; Dawis & Lofquist, 1984). TWA is a person-environment fit theory that explains how a person's traits fit with the requirements of an environment and the interaction between the two. The Theory of Work Adjustment asserts that individuals have specific requirements to survive in life and that these requirements, referred to as *needs* in TWA, are satisfied by or through the environment (Dawis, 1996). Moreover, TWA assumes that individuals make choices to try to satisfy these needs while individuals also have different abilities to use to satisfy their needs. For example, individuals can possess verbal abilities that can help satisfy the need to have authority over others. The environment, on the other hand, requires specific abilities to fulfill requirements of a job. So while individuals have abilities to fulfill requirements of a specific job environment, the environment is able to provide reinforcement of individuals' needs. When both the individual and the environment are satisfied, *correspondence* is said to occur. Therefore the basic premise of TWA is that

persons and environments are constantly trying to achieve correspondence, which is when both an individual and her or his environment are satisfied (Dawis, 1996). Dawis and Lofquist (1984) elaborate that the pursuit of correspondence is a dynamic process.

Much empirical support has been found for the TWA model. Generally research has found that the congruence between values and the work environment is predictive of job satisfaction (Dawis, 2002) and values account for a significant portion of variance in job satisfaction and tenure (Dawis & Lofquist, 1984). Hesketh, McLachlan, and Gardner (1992) found support for correspondence predicting job satisfaction in addition to finding support for the relationship between correspondence and intentions to stay on the job and tenure. A longitudinal study conducted by Bizot and Goldman (1993) found that correspondence predicted employee satisfaction and organizational satisfaction up to eight years later.

Brown's Values-Based, Holistic Theory. Brown (1996; Brown & Crace, 1996) offers a more recently conceived theory of career choice and development that centers on values. In this theory, similar to others, values are conceptualized as having behavioral, affective, and cognitive components that guide behavior. Both personal and work values are considered in the application of Brown's theory. The main premise of Brown's Values-Based, Holistic theory is that individuals make career choices based on their values with the expectation that they will achieve satisfaction. Moreover, Brown's theory assumes that individuals are motivated by expected outcomes, such as job satisfaction. Like Super's theory, Brown suggests that life roles influence career choice and development. Specifically, life satisfaction is dependent upon fulfilling values related to

multiple life roles. Therefore, the fulfillment of work values that are central to one's role as a worker is related to that individual's overall life satisfaction. Similar to later research by Donald Super in the context of the Work Importance Study (Super & Sverko, 1995), Brown's theory includes discussion of the importance of the role of worker compared to other life roles. As Brown notes, the more importance placed on a role, the more influence values related to that role can have on the individual's satisfaction.

Little empirical research directly investigates the tenants of Brown's theory. He refers to broader research on work values as offering support for his premises (Brown, 2002). As such, there is support for the influence of work values on career decision-making processes (Ben-Shem & Avi-Itzhak, 1991; Judge & Bretz, 1992; Knoop, 1991; Ravlin & Meglino, 1987), the relation between work values and job satisfaction (Dawis & Lofquist, 1984), and the relation between participating in important life roles and life satisfaction (Watson & Ager, 1991).

Current Assessment of Work Values

Numerous authors have developed work values instruments that incorporate their conceptualization of the domains represented in the construct of work values. Among the theories which incorporate work values mentioned previously, both Super and Dawis and Lofquist created measures of work values to operationalize the concept of work values. Brown's theory does not explicitly incorporate a specific measure of values.

In the context of conducting the Career Pattern Study (Super, 1985)—a momentous study that followed the career development of a hundred ninth-grade boys for over 20 years and led to the development of his Life-Span, Life-Space theory—Super

developed a measure of work values. The current version of this measure, an updated version of the Work Values Inventory (Super, 1970), is Super's Work Values Inventory-Revised (SWVI-R; Zytowski, 2006). The SWVI-R includes 12 work values scales—Achievement, Co-Workers, Creativity, Income, Independence, Lifestyle, Challenge, Prestige, Security, Supervision, Variety, and Workplace. Super (1970) mentions that items for the Work Values Scale were selected from Spranger's theory (1928), the Allport-Vernon-Lindzey Study of Values (1960), and research on job satisfaction and morale by Hoppock (1935) and Centers (1948). Additional items were selected based on other theories, leading to the inclusion of additional work values proposed by Darley and Hagenah (1955), Fryer (1931), Ginzberg and colleagues (Ginzberg, Ginsburg, Axelrad, & Herma, 1951) and Super (1957).

Another measure of work values, the Minnesota Importance Questionnaire (MIQ; Rounds, Henley, Dawis, Lofquist, & Weiss, 1981), was created as a result of decades of research on TWA by Dawis and Lofquist. The MIQ is hierarchically structured and is comprised of 20 separate work needs which are grouped into six work values: Achievement (the importance of accomplishment), Comfort (freedom from stress), Status (the importance of recognition and prestige), Altruism (the importance of helping others), Safety (the importance of stability and structure), and Autonomy (the importance of control over one's work). The six values scales were developed empirically by factor analysis of the 20 work needs represented on the MIQ (Lofquist & Dawis, 1971).

Along with the work values included in the Minnesota Importance Questionnaire and Super's Work Values Inventory mentioned earlier, additional work values have been

suggested. Manhardt (1972) developed a measure of job characteristics that often is used as a measure of work values, and has been called the Work Values Inventory (Lawton & Chernyshenko, 2008). Information about the process that Manhardt used to select items for his measure is limited. Consisting of 21 items, Manhardt found that three factors emerged from items on his measure. Principal components analyses by Meyer, Irving, and Allen (1998) confirmed three components fit the data and yielded interpretable components. The three components explained from 35.8% to 44.4% of the variance for scores of a sample of newly hired recent university graduates whose values were measured before starting full-time jobs and at one and six months after starting full-time jobs. Meyer and colleagues labeled the three extracted factors Comfort and Security, Competence and Growth, and Status and Independence. The first factor (Comfort and Security) describes characteristics of a comfortable working environment including having a routine schedule, leisure time, and good relationships with coworkers. The second factor (Competence and Growth) included items that were characteristics of successful workers such as the importance of responsibility, advancement, and supervision of others. The final factor (Status and Independence) included items that were intrinsic characteristics that relate to the nature of work such as independence, continued development of skills, and intellectual stimulation. At the item level, Manhardt's measure includes questions that are not included in other measures such as "satisfies your cultural and aesthetic interests" (Competence and Growth factor) and "permits a regular routine in time and place of work" (Comfort and Security factor).

Evidence of internal consistency for the items in Manhardt's measure was found by Meyer and colleagues (1998). In their sample of newly hired college graduates, coefficient alphas ranged from .63 to .72 for Comfort and Security, .65 to .80 for Competence and Growth, and .62 to .68 for Status and Independence values. Lawton and Chernyshenko (2008) found comparable evidence of internal consistency in a sample of employees from a retail organization in New Zealand. This sample was found to have coefficient alphas of .59 for Comfort and Security, .76 for Competence and Growth, and .73 for Status and Independence values.

Ronen (1994) also offers another measure of work values called Ronen's Taxonomy of Needs. Ronen identifies 14 needs— advancement, area, autonomy, benefits, challenge, coworkers, earnings, manager, physical, recognition, security, skills, time, and training— assessed with 14 questions, that relate to work (Ronen, Kraut, Lingoes, & Aranya, 1979). Individuals are asked to rate how important these values are in their ideal job using a scale ranging from 1 – "Of utmost importance" to 5 – "Of very little or no importance". These needs are based on the need taxonomies of Maslow (1954), Alderfer (1969), and Herzberg et al. (1959) and research by Hofstede (1980). Items were developed from popular theories and research on job attitudes and selected to represent a variety of work-related expectations (Ronen et al., 1979). Unlike other measures, Ronen's Taxonomy of Needs asks about fringe benefits and the ability to live in an area that is desirable to the individual.

Research by Ronen et al. (1979) explored the structure of the measure by using Smallest Space Analysis on data from a sample of salesmen and repairmen. Results

confirmed underlying intrinsic and extrinsic dimensions by yielding a plot of two separate groups of items reflecting intrinsic and extrinsic needs. Using a large international sample (N = 8,707) of salesmen and repairmen of a electrical equipment firm with participants from Canada, France, Germany, Japan, and the United Kingdom, Kraut and Ronen (1975) explored the evidence for the concurrent validity of Ronen's Taxonomy of Needs. The 14 needs were shown to significantly predict overall job satisfaction (R = .61 for salesmen, R = .58 for repairmen), intent to stay (R = .32 for salesmen, R = .35 for repairmen), work tension (R = .40 for salesmen, R = .41 for repairmen), and performance ratings (R = .33 for salesmen, R = .26 for repairmen). Ronen (1994) asserts that similar results have been found with samples from Canada, China, France, Israel, the United Kingdom, Germany, and Japan suggesting that his classification is robust.

Limitations of Current Work Values Measures

As Berings and colleagues (2004) as well as Rounds and Armstrong (2005) note, many of the existing measures of work values are very similar despite varying conceptualizations of work values that drove the construction of the instruments. However, most comparisons of values measures are qualitative and do not include empirical studies to support the authors' comparisons.

Previous work by Macnab and Fitzsimmons (1987) does offer some empirical comparisons between four different measures of work values— the Minnesota Importance Questionnaire (Rounds et al, 1981), the Work Values Inventory (Super, 1970), the Values Scale (Super & Nevill, 1986), and the Work Aspect Preference Scale

(Pryor, 1981)— finding support for eight separate work values shared across instruments. These work values represented across instruments were authority, co-workers, creativity, independence, security, altruism, work conditions, and prestige. Further, using a multitrait-multimethod design, they found that more variance was explained by differences in traits than by methods (i.e. different instruments), suggesting that the measures of work values were all measuring the same traits, and providing evidence of convergent and discriminant validity for each of the work values. While the Minnesota Importance Questionnaire and the Work Values Inventory are still widely used, the use of the Values Scale and the Work Aspect Preference Scale has diminished making the usefulness of Macnab and Fitzsimmons research less relevant to the understanding of work values today. Moreover, no additional research examines the validity of work values across instruments.

Despite understanding the similarity of work values covered by various instruments, both Brown (1996) and Rounds and Armstrong (2005) question if current measures of work values capture the breadth of work values and hypothesize that there may be other work values that have yet to be identified. Likewise, Nord and colleagues contend that most conceptualizations of work values are deficient because they lack inclusion of other values that are likely important in a work context (Nord, Brief, Atieh, & Doherty, 1990). For example, they suggest that current measures of work values do not include items on spirituality at work or the relationship between customers and workers.

Furthermore, some authors have proposed that values previously not associated with work, may now be relevant to the workplace for younger workers. Armour (2005)

posits that younger individuals value opportunities to balance work and family demands. Research done by Catalyst (2001), a non-profit organization that focuses on expanding opportunities for women in business, found that younger workers were attracted to organizations that offered benefits and options to balance work and life commitments such as telecommuting and flexible work hours. Others posit that younger workers value a workplace that is laid-back, fun, and allows casual dress whereas older workers value more formal work environments (Catalyst, 2001, Lancaster & Stillman, 2002; Kelly Services, 2005). However items such as the importance on dress or casual versus formal work relationships are items not included in extant work values inventories. This raises questions for study of a) the adequacy of the item pools to cover the entire domain of work values and b) whether these items cluster by existing values or represent additional values.

The majority of currently used measures of work values were constructed decades ago. More contemporary research concludes that more recent generations of workers may have different values than older generations of workers (Jurkiewicz, 2000; Lyons, Duxbury, and Higgins, 2005; Smola & Sutton, 2002) which also may suggest that other values may no longer be related to work. In sum, current discussions of work values imply that work values instruments may not have changed whereas the domain of work values may have changed.

Comparisons Between Work Values and Vocational Interests

For some time, the relationship between vocational interests and work values has been debated. Darley and Hagenah (1955) asserted that interests reflect value orientations. Supporting this claim many have found that interests and work values do share some variance. For example, Super (1962) subjected scale scores on the Work Values Inventory (WVI), the Strong Vocational Interest Blank (SVIB), and other personality measures to factor analysis; 10 factors were extracted. Of the 10 factors, four were comprised of only work value variables (Social Contact versus Content, Tangibles versus Intangibles, Other versus Inner Directed, and Task versus Pleasure), one was strictly comprised of interests scales (People versus Thing Manipulation), and one was comprised of work value and interest scales (Nonmaterial Cultural). The remaining factors contained a mixture of personality, work values, and interest scales. The factor containing both interest and work value scales included interests in physical and biological sciences, and artistic and literary occupations, and higher importance on creativity and intellectual stimulation. By conducting factor analyses with scales versus items, Super's results can be interpreted as providing evidence that the work values assessed by the WVI and vocational interests assessed by the SVIB may be measuring overlapping constructs.

Kinnane and Suziedelis (1962) provide additional empirical support for the convergence of work values and interests based on comparisons of scores between six work values derived from WVI using factor analysis and seven occupational groups represented by scales on SVIB. Using a sample of 191 college men, binomial test results

showed that Security-Economic-Material work values were positively related to physical science (p = .01), technical (p = .001), and business detail (p = .01) occupational interest scores and negatively related to biological science (p = .05), social service (p = .001), and literary (p = .001) occupational interest scores. Social-Artistic work values were positively related to social service (p = .001), business contact (p = .001), and literary (p = .001) interests whereas physical science (p = .01), technical (p = .001), and business detail (p = .01) occupational interests were negatively related. Heuristic-Creative work values were found to be positively related to biological science (p = .05), physical science (p = .001), and technical (p = .001) occupational interests but negatively related to business contact (p = .01) interests. They also found that Achievement-Prestige values were negatively related to technical interests (p = .01) as were Independence-Variety work values (p = .05). Independence-Variety values were negatively related to business detail interests (p = .05) as well.

More recent research by Smith and Campbell (2009) provides further evidence of the strong relationship between work values and vocational interests. Using data on 900 occupations from the U.S. Department of Labor's (2004) O*NET 5.1 data set, they investigated the correspondence between work values and Holland's RIASEC occupational interest categories. Values data were developed from ratings provided by individuals in different occupational categories. Values statements were adapted from the Minnesota Job Description Questionnaire (MJDQ; Borgen, Weiss, Tinsley, Dawis, & Lofquist, 1968) and included six value categories (i.e., achievement, recognition, support, relationships, independence, and working conditions) rated on a 5-point scale. Interest

data were developed from trained occupational analysts' ratings of the appropriateness of the six RIASEC categories to each occupation using a 7-point response scale.

The set of six values was compared to the six RIASEC interest categories using canonical correlational methods. This analysis resulted in four significant canonical variates. The first variate (R_c=.88, p < .01) reflected a strong relationship between achievement, recognition, and independence values and investigative, artistic, social, and enterprising interests. The values of working conditions and relationships also had modest relationships with investigative, artistic, social, and enterprising interests. Additionally, the values of achievement, recognition, and independence had little relation to conventional interests, and a negative relation to realistic interests. The second variate (R_c=.69, p < .01) suggested there was a strong relationship between the value of relationships and social interests. The third canonical variate (R_c=.60, p < .01) found that the values of working conditions, and to a lesser extent, recognition were positively related to enterprising and conventional interests and negatively related with realistic and artistic interests. The final variate (R_c=.41, p < .01) emphasized the positive association between working conditions and investigative interests and a negative association between working conditions and enterprising interests. The results of this research suggest that there are strong relationships between specific values and interest pairings. Smith and Campbell underscore that the first variate suggests that five of the values (achievement, working conditions, recognition, relationships, and independence) are strongly related to four interest areas (investigative, artistic, social, and enterprising). On the other hand, the value of support, which consists of the needs of fair company policies,

adequate training, and good supervision, was weakly related to these four interest areas. These results provide support for the notion that many work values may be closely related to vocational interests.

Examination of the relation of work needs and interests has also concluded that these constructs greatly overlap. In a study by Thorndike, Weiss, and Dawis (1968) the relation between scales on the Strong Vocational Interest Blank (SVIB) and the Minnesota Importance Questionnaire (MIQ) was examined using data from a sample of undergraduate male students (N = 269) and male vocational rehabilitation clients (N=262). Canonical correlations conducted with the data resulted in five variants being identified that ranged from R_c = .78 to .59 for the student group and R_c = .74 to .58 for the vocational rehabilitation group. Coupled with low cross-correlations for the two set of scales, these results suggest that the there is significant overlap between needs, as measured by the MIQ and interests on the SVIB.

However, empirical support for the opposite viewpoint— that work values and interests are distinct constructs— also has been found. Breme and Cockriel (1975) explored this hypothesis by comparing scores on the WVI and the Vocational Preference Inventory (VPI) for male college students. Results showed the highest correlation coefficient between work values and interests was r = .38 between the Artistic scale of the VPI and the Esthetic scale of the WVI. Additionally, Breme and Cockriel used discriminant analysis to determine if scores on the WVI could differentiate between high point codes on the VPI, finding that WVI scores provided little ability to distinguish between individuals with different vocational interests. In all, they concluded that their

results provided evidence that little common variance is shared between work values and interests. Furthermore, other research has not found many correlations between work values and interests that exceed |.30| (Knapp & Knapp, 1979; Pryor, 1981).

Finally, more recent work by Rottinghaus and Zytowski (2006) concluded that work values and interests are distinct constructs but also have areas of convergence. In a study examining the relationship between scores on Super's Work Values Inventory-Revised and the Kuder Career Search, they found that work values scores explained only 2.9% (Business Operations interests) to 6.1% (Social/Personal Services interests) of the variance in interests scores for females, and 1.6% to 5.6% (Arts/ Communication interests) for males. While this does provide evidence of discriminant construct validity for work values, Rottinghaus and Zytowski note that consistent relationships between some work values and interests suggest that a link between the two constructs exists.

Overall, the body of research on work values and vocational interests seems to provide evidence of construct validity for some work values. Most of the research that has examined work values and interests, though, has used the WVI. While the WVI does appear to have some work values in common with other measures (see for example Berings, De Fruyt, & Bouwen, 2004), work values not assessed by the WVI (e.g. Competence and Growth from Manhardt's measure) have not be examined. Other research that has used values measured by the MIQ, or MJDQ which is based on the MIQ have found strong relationships between work values and interests. Further, as Thorndike and colleagues (1968) note, research that finds lower correlations between work values

and interests may not be utilizing sound measures of values or statistical techniques utilized do not adequately describe a relationship that may exist.

Comparisons Between Work Values and Personality

While there is a fair amount of research on the relationship between personal values and personality (e.g. Bilsky & Schwartz, 1994; Dollinger, Leong, & Ulicni, 1996; Luk & Bond, 1993; Olver & Mooradian, 2003; Thompson, Brossart, Carlozzi, & Mibille, 2002; Wolfradt & Dalbert, 2003; and Yik & Tang, 1996), less research has addressed the relationship between work values and personality. Theorists generally have assumed that personality variables predict work values because of the influence that personality has on how individuals view the world (Staw, Bell, & Clausen, 1986). Research by Furnham and his colleagues has examined the association between personality and work values using data from 92 job applicants to investigate these relations (Furnham, Forde, & Ferrari, 1999). Measures completed included the Eysenck Personality Profiles (Eysenck, Barrett, Wilson, & Jackson, 1992)— which includes Extroversion, Neuroticism, and Psychoticism factors— and the Work Values Questionnaire (MANTECH, 1980)— which was reduced to a hygiene/extrinsic factor and a motivator/intrinsic factor to describe work values based on the two-factor theory proposed by Herzberg et al. (1959). The hygiene factor includes needs from the work environment (e.g. supervision, interpersonal relations, physical conditions, salary, job security, etc.) while the motivator factor is comprised of needs related to the nature of work (e.g. achievement, recognitions, advancement, autonomy, etc.). Their results suggested that Extroversion was predictive of motivator/intrinsic values and Neuroticism was predictive of hygiene/extrinsic work

values. Psychoticism was found to be marginally related to the hygiene/extrinsic factor. A limitation of this study was that the two work values factors were developed theoretically instead of empirically and the validity of these two factors was not tested.

Furnham, Petrides, Jackson, and Cotter (2002) replicated the research of Furnham et al. (1999). Results of their replication were consistent with the results of Furnham and colleagues (1999) with one exception. Furnham et al. (2002) found that Stability was found to be negatively related to the motivator/intrinsic factor instead of finding that Neuroticism (the opposite of Stability) was positively related to the hygiene/extrinsic factor. Additionally, Furnham et al. (2002) conducted a second study to determine the relationship between work values and the Big Five, higher-order personality factors (e.g. Extraversion, Neuroticism, Openness, Agreeableness, and Conscientiousness). The Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) was used to measure personality. The results of this study showed that Conscientiousness and Openness were significant predictors both of hygiene and motivator work values. None of the remaining three personality factors were significantly related to work values.

The most recent research by Furnham and associates sought to further investigate the relationship between personality and work values (Furnham, Petrides, Tsaousis, Pappas, & Garrod, 2005). For this study Furnham et al. factor analyzed the Work Values Questionnaire which resulted in four work value factors being extracted— Work Relationships, Influence and Advancement, Financial and Working Conditions, and Autonomy and Use of Skills. While the first factor (Work Relationships) was difficult to categorize as either a motivator or hygiene factor, the Financial and Working Conditions

factor was comprised of hygiene/extrinsic items, and the Influence and Advancement and the Autonomy and Use of Skills factors were comprised of motivator/intrinsic items. To measure personality they used the NEO-FFI (Costa & McCrae, 1989) as a measure of the Big Five personality factors. Using data from 314 British workers, their results showed that Extroversion and Agreeableness were positive predictors of Work Relationships. Extroversion, Conscientiousness, and Openness were found to be positive predictors of Influence and Advancement whereas Agreeableness was a negative predictor. They also found that Neuroticism and Conscientiousness were positive predictors of the Financial and Working Conditions value factor and Openness negatively predicted Financial and Working Conditions. Openness was also a positive predictor of the Autonomy and Use of Skills factor. They replicated this study with a sample of Greek workers finding similar results. However, the most important aspect of their results was that personality did not explain much of the variance in work values. On average, the five personality factors together accounted for 9% of the variance in each of the four work value factors.

Furnham's series of studies on work values and personality suggest, at minimum, that work values assessed with the Work Values Questionnaire appear to be a separate construct from personality. However, Furnham's research used only one measure of work values therefore the results provide evidence of construct validity for Work Values Questionnaire and not for the construct of work values. Additionally, Furnham used samples from Britain and Greece and the results may not generalize to samples from other countries.

Research by Berings, De Fruyt, and Bouwen (2004) does provide additional evidence for a relationship between the construct of work values and personality by using a measure besides the Work Values Questionnaire. Using a Dutch sample of undergraduate students, Berings and colleagues examined the relationship between the Big Five personality factors and 12 work values scales developed by Berings (2002). The 12 work values scales included were: structure, rationality, autonomy, influence, creativity, community, team, competition, earnings, stability, innovation, and stress avoidance. A Flemish adaptation of the NEO-PI-R was used to assess personality. Using multiple regression, they found that the five personality factors accounted for 16% (community) to 27% (structure) of the variance in work values, with the exception of autonomy and stability values where only 6% and 8%, respectively, of the variance was explained by personality factors. Neuroticism was found as a positive predictor of structure, community, competition, earnings, stability, and stress avoidance values and a negative predictor of the importance in rationality (e.g. control over emotions). Extroversion was a positive predictor for the values of influence, creativity, community, team, earnings, and innovation. Openness negatively predicted structure and stability values in this sample. Agreeableness was found to be a positive predictor for community, team, and stress avoidance values and a negative predictor for influence, creativity, competition, and earnings values. Last, Conscientiousness was a positive predictor of structure, rationality, autonomy, influence, competition, earnings, and innovation values.

Unlike Furnham, Berings and colleagues (2004) did find that personality accounted for a substantial amount of variance in most work values studied, suggesting

that the relations between personality and values might be a function of the work values under examination. However, Berings' results do not make it clear whether their results were due to using a different measure of work values or measuring different work values. In all, the research on the relationship between work values and personality suggests that consistency in measurement may influence results. Research using a wider array of work values, as well as using measures of work values that have more established evidence of reliability and validity, would likely be beneficial in increasing understanding of the relationship between work values and personality.

Comparisons Between Work Values and Personal Values

Additional research has focused on the relation of work values to other constructs. In particular, one area of research has sought to determine the relation between personal values and work values (Roe & Ester, 1999).First, Elizur and Sagie (1999) posit that work values have a similar structure to personal values. They hypothesized that work values would be central to personal values because work values are more specific and work values would contain affective, cognitive, and material components like personal values. They also expected that work values would form a conical structure with more diffuse values (i.e. values that are more difficult to relate to a specific behavior or situation such as meaning in life) on the periphery and more focused values (i.e. values that can be clearly linked to specific behaviors or situations such as importance of money or friends) located centrally like personal values. Using a sample of Israeli employees, Elizur and Sagie were able to test these hypotheses. Their results confirmed their hypotheses and showed that the structure of work values was similar to personal values

and contained affective, cognitive, and material components with more focused values occupying central space and diffuse values located in the periphery. Additionally, using Smallest Space Analysis (SSA), Elizur and Sagie found that work values occupied space within personal values.

Another view on the relationship between personal and work values is that work values are developed from personal values or vice versa. Kinnane and Gaubinger (1963) investigated the relation between personal and work values. Using the Allport-Vernon-Lindzey Study of Values and the Work Values Inventory, they found moderate correlations between personal and work values for a sample of men. The highest correlations between personal and work value scores ranged from $r = .54$ between Theoretical personal values and Heuristic-Creative work values to $r = .25$ between Economic personal values and Security-Economic work values. These results suggest that some work and personal values may occur together.

Ros, Schwartz, and Surkiss (1999) also compared personal values with work values. Their results concluded that extrinsic work values were related to conservation values ($r = .24$), intrinsic work values were related to openness to change ($r = .23$), social work values had the most significant relationship with self-transcendence values ($r = .25$), and prestige work values with self-enhancement ($r = .29$). In a second study, Ros and colleagues (1999) found that when work was included as a personal value (e.g. when the item *Work: an opportunity to earn a living with dignity* was added as an item in a measure of personal values), it was rated as the most important personal value and shared significant relationships with the four other personal values (self-transcendence, self-

enhancement, openness to change, and conservation). Their conclusion was that the value of work provides opportunities to satisfy other values and therefore work values are central to personal values. While the correlations between work and personal values do suggest some independence between the constructs, Ros and colleagues (1999) concluded that work values can be considered personal values because of the high importance placed on work when work is considered a personal value as well as the possibility of satisfying personal values in work situations.

The research aimed at determining the relationship between personal and work values can be used to increase our understanding of how personal values are related to work values. Substantial work has been completed to understand the domain of personal values (e.g. Elizur, 1984; Elizur, Borg, Hunt, & Beck, 1991; Hofstede, 1980, 1984; Rokeach, 1973; Sagie & Elizur, 1996; Schwartz, 1994; Schwartz & Bilsky, 1987; 1990) and their structure (e.g., Elizur & Sagie, 1999; Johnston, 1995; Schwartz, 1992, 1994; Schwartz & Bilsky, 1990). Roe and Ester (1999) note that less research has been conducted on understanding the construct of work values and this research has resulted in a multitude of basic dimensions of work values being described making systematic comparisons on the interrelationships between personal and work values difficult to complete. Therefore more research to understand the construct of work values is needed before making comparisons between personal and work values. Furthermore, the applicability of what little work that has been devoted to understanding the relationship between work values and personal values is limited due to little inclusion of the Rokeach Values Survey (Rokeach, 1973), the most widely used personal values assessment.

The Relationship Between Work Values and Other Constructs

Besides research conducted to support the vocational theories mentioned earlier (i.e. Super's theory and TWA), few conceptualizations of the relationship between work values and other constructs exist. Super (1973) hypothesized that the relationship between work values, personality, and vocational interests is hierarchical and explains motivation. Specifically, Super speculated that needs are most central to motivation, followed by values and personality, and then interests. As Super and Nevill (1986) noted, interests are the most easily satisfied by participating in a given work environment whereas needs are the most difficult to satisfy in a specific work environment. Super has referred to this as the *Onion Model* of vocational motivation.

Little research has investigated Super's model. Rounds (1990) and Lofquist and Dawis (1971), on the other hand, have found support for values as second-order factors of work needs measured by the MIQ. Similarly, second-order factors have been found for the WVI (Bolton, 1980). While no research has explored the prediction of work values by vocational interests, modest support for the prediction of interests by values is available (Berings et al., 2004; Rottinghaus & Zytowski, 2006). Additionally, personality has been found to be related to work values (Furnham et al., 1999; Furnham et al., 2002; Furnham et al., 2005). While Zytowski (1994) suggests more research is needed to support Super's Onion Model of work values, additional research clarifying the relationship between the constructs of work values, interests, and personality also needs to be done.

Limitations of Current Research on Work Values

To summarize, a major issue in the literature on work values is the large number of work values measures. Many authors have pointed out that the plethora of work values, measured by different instruments, makes comparisons among different studies of work values difficult and limits further understanding of the construct of work values (Furnham et al., 2005; Roe & Ester, 1999). Furthermore, the work values literature lacks consensus on the domains represented in construct of work values. To further the confusion, many researchers develop their own measures of work values to use in their research. As mentioned previously, only one study has attempted to compare work values across measures to provide evidence of validity for measures of work values (Macnab & Fitzsimmons, 1987). Additionally, some have contended that other values that may be relevant to work have yet to be articulated in current measures of work values. Authors have speculated that younger workers may have different values that relate to their work environments that may have not been relevant in the past (see for example, Armour, 2005; Catalyst, 2001, Lancaster & Stillman, 2002; Kelly Services, 2005). Finally, the current research on the relationship of work values to other constructs is lacking. Research generally has suggested that work values are related to vocational interests, personality, and personal values. Despite this, the lack of research with a variety of work values measures makes the results of these studies tentative. Due to these limitations, further research is needed to add to the nomological net of the construct of work values.

Establishing Validity

The process of developing evidence of validity for a construct is complex and is similar to the process for establishing evidence of validity for a measure. A key element in establishing evidence of validity for a construct is articulating a nomological network for the construct. Introduced by Cronbach and Meehl (1955), a nomological network refers to "an interlocking system of laws which constitute a theory" (p. 290). A net therefore provides information about the relationship of a construct to other constructs. Further, a nomological network relates observable properties to the theoretical construct. Empirical research can help to provide support for the relationships in a nomological network and establish evidence of validity for a construct.

Cronbach and Meehl (1955), in their seminal article *Construct Validity in Psychological Tests*, discuss the elements of construct validity (these elements apply to evidence of validity both for constructs and measures). Construct validity is considered a superordinate form of validity and is established indirectly by examining the evidence for other types of validity such as content, convergent, discriminant, and criterion validity.

Cronbach and Meehl (1955) illustrate the steps in establishing evidence of validity for a construct. One step is to establish the content of the construct and understand the different domains that comprise the construct. Both theoretical and empirical methods can be used to determine the domains of the construct. A theoretical method of construct definition is employed when expert judges determine what domains are represented in a construct (AERA, APA, & NCME, 1999). However, empirical methods also can be used to determine what domains relate to a construct using statistical

procedures. Factor analyses and correlation matrices often are employed for this purpose and help to develop the nomological net for a construct. Using intercorrelations between multiple measures, factor analyses can determine the common traits being measured. During the process of factor analysis, the factors extracted from the original measures might explain the essential traits of a construct across measures.

The process of developing evidence of validity for a measure often can be examined in the larger context of establishing evidence of validity for a construct. A measure of a given construct can be compared to other measures that are theoretically assumed to measure the same construct to establish evidence of convergent validity for a measure's scores. Additionally, comparisons with measures that are not expected to relate to the construct can be used to establish evidence of discriminant validity for a measure's scores. Matrices of correlations of scores from different measures often are used to examine convergent and discriminant validity for the scores in a particular measure. These correlations also can help articulate the nomological network for the construct that the instrument measures. Campbell and Fiske (1959) articulated a specific method for conducting this analysis by completing a multi-trait-multimethod matrix. A multitrait-multimethod matrix is constructed by finding the intercorrelations between numerous traits measured in a variety of formats (e.g. self-report, observation, peer ratings, etc.).

The Present Study

Empirical comparisons are needed to explore what domains are represented in the construct of work values to provide a framework to organize further research in this area. The main goal of the current study was to examine the evidence of validity for the

construct of work values. Secondary to determining the array of work values that are measured with existing instruments, an additional goal was to determine if other work values exist that are not captured in current work values measures. The present study also provided an opportunity to examine evidence of validity for the measures of work values used in the study. Furthermore, the current study sought to examine the nomological net for the construct of work values by exploring the relationship between work values, vocational interests, personality, and personal values. Finally, the study created an opportunity to conduct research on the construct of work values with one sample, which has not been done previously, and can serve as a model for later studies with samples from various cultures.

Hypotheses

Hypothesis 1: Central to the purpose of the present study was to explore the construct of work values. One approach to more fully understand the nomological net of the construct of work values is to compare multiple measures of work values to establish what domains are represented by the measures and by inference in the construct. Principal Component Analysis (PCA) of the items of a variety of work values measures is expected to identify numerous work values that are shared among measures, and some that may be captured in only one or two measures. Measures for the study were selected based on their acceptance in the scientific literature and their psychometric properties, resulting in the selection of the Minnesota Importance Questionnaire, Super's Work Values Inventory-Revised, and Manhardt's (1972) work values measure. While Ronen's Taxonomy of Needs and the Survey of Work Values have less evidence of validity and

reliability available, they were selected because they include unique items or scales that may have not be captured in other instruments. Although other measures of work values exist, such as Pryor's (1982) Work Aspects Preference Scale or Berings (2002) 12 work values, they were not selected because of their low frequency of use and/or lack of use with samples from the United States.

Hypothesis 2: While some research has been conducted to determine if work values are a separate construct from interests, the results of various studies have been contradictory. Adding to this, conclusions have primarily been based on research using Super's Work Values Inventory, which raises a measure versus construct question: are outcomes of this research unique to this measure or truly indicative of the relationship between work values and interests? To provide richer information on the relationship between work values and interests, the domains of work values determined from PCA of multiple measures of work values were correlated with vocational interests. Based on the most recent research by Rottinghaus and Zytowski (2006), values emphasizing income and prestige were expected to be most related to Enterprising interests whereas values emphasizing relationships with coworkers will be related to Social interests. Work values that include importance placed on creativity and independence are expected to relate to Investigative and Artistic interests. Furthermore, most correlations are not expected to exceed .30, which is consistent with previous research (Breme & Cockriel, 1975; Knapp & Knapp, 1979; Pryor, 1981)

Hypothesis 3: To further articulate the nomological network for work values and investigate the evidence of construct validity for work values the relationship between

work values and personality were explored. As suggested earlier, the research on work values and personality lacks information on samples from the United States and few work values have been examined. Previous research suggests that Conscientiousness is related to many work values, whereas Extroversion has been found to relate to work values that emphasize creativity, independence, social relationships at work, and income (Berings et al., 2004). Additionally, Neuroticism has been found to be related to the importance of relationships at work, income, competition, and structure in the work environment. Furnham et al. (2005) found that work values of influence and advancement were related to Extroversion, Conscientiousness, and Openness. Agreeableness was found to be positively related to social relationships at work and negatively to influence and advancement values. Similar relationships between personality factors and work values, identified in Hypothesis 1, are predicted to emerge.

Hypothesis 4: Little consensus exists on the relation between work values and personal values. Significant relationships among some work and personal values are expected. Specifically, job security is expected to relate to security personal values, work values of accomplishment and achievement are expected to relate to accomplishment personal values, social recognition work and personal values are expected to be related, importance placed on autonomy is expected to relate to independence personal values, relationships with coworkers is expected to relate to friendship personal values, importance on comfortable working conditions is expected to relate to the personal value of a comfortable life, and value on variety in the workplace is expected to relate to importance on an exciting life.

Hypothesis 5: Super's Life-Span, Life-Space model includes discussion of work values as central to one's self-concept which relates to one's career choice. Brown's model also assumes that, to achieve job satisfaction, individuals make career choices based on their work values. The Theory of Work Adjustment contends that the congruence between a person's work values and the reinforcements provided by the work environment are predictive of job satisfaction and tenure (Dawis, 1996). Research has supported the main tenants of each of these models (see Ben-Shem & Avi-Itzhak, 1991; Bizot & Goldman, 1993; Dawis, 2002; Dawis & Lofquist, 1984; Hackett & Lent, 1992; Hesketh et al., 1992; Judge & Bretz, 1992; Knoop, 1991; Osipow & Fitzgerald,1996; Ravlin & Meglino, 1987)

However, little work has been done to model the relationships between variables related to career choice and development. The only such model is the Onion Model, articulated by Super (1973), which suggests that work values predict personality, which predicts vocational interests. Some research, although limited, provides evidence of validity for Super's Onion Model (see Berings et al., 2004; Furnham et al., 2005; Rottinghaus & Zytowski, 2006). The present study provided an opportunity to test these relationships suggested by Super with one sample. Evidence to support the relationships suggested by Super's Onion Model is hypothesized (see Figure 1).

Hypothesis 6: To investigate if other values are relevant to work situations, another goal of the proposed study was to gather information from younger workers about what values they wish to have satisfied by their work environments. This information was used to provide additional evidence of validity for work values by

examining what domains are represented in younger workers' work values. This goal was accomplished by asking individuals to generate their own list of values in a work environment. Individuals also were asked to rate the importance of each value they generate to allow discrimination between higher and lower importance items. The purpose of obtaining additional information was not to develop a new measure of work values, but to provide information on possible values that may not be represented by existing measures. However, the information obtained could be used in the future as the first step in the development of a new measure of work values. The information obtained was expected to yield values consistent with those identified in comparisons of different work values measures. In addition, other values, not captured in current measures of work values, were expected to be identified.

Chapter 2: Method

Using a sample of undergraduate students, the relations among scores on five work values instruments were compared to examine the construct of work values. Data on vocational interests, personality, and personal values were collected to further articulate the nomlogical net for the construct of work values. Additional information was collected from participants to gauge if further domains are missing from current conceptualizations of work values.

Participants

A total of 464 undergraduate students from a Midwestern university were recruited for participation. Of these, 428 completed all measures. Thirty-six participants did not complete all of one or more measures and were eliminated from analyses. Students were offered either extra credit (68.1% of the sample) or money ($20; 31.9% of the sample) for their participation. The sample was 64.5% female and 35.5 % male. The ethnicity of the sample was reported as: 74.5% European, 16.1 % Asian, 4.0 %, Black, .9 % Hispanic/Latino, .5 % Pacific-Islander, 2.8% multiracial, and 1.2 % unreported. The ethnic composition of the sample was similar to the university as a whole which consists of roughly 74% European, 9% Asian, and 5% Black, 2% Hispanic, 1% Pacific Islander, 1% Multiracial, and 2% unreported students (Institutional Research, 2010). The sample had a slightly higher percentage of participants of Asian descent than are enrolled at the university which may be due to not differentiating between Asian-Americans and Asian International students in the current sample. The average age of participants was 20.21

years (*SD* = 3.59). The percentage of individuals who reported currently working was 56.3%, 93.5 % reported holding a job in their lifetime. Among participants, 60.0% reported having declared a college major, 39.0% had not declared a major, and data were not reported for .9% of participants.

The number of participants was reduced to exclude those who scored low in the Minnesota Importance Questionnaire's (MIQ) Logically Consistent Triad Index (LCT). The LCT provides information that suggests whether or not the test-taker is approaching the test in a logical and consistent manner. This information is summarized as the percentage of instances in which an individual rates value A preferable to value B, and rates value B preferable to value C and then consistently rates value A as preferable to value C suggesting the individual is responding consistently to items (Rounds et al., 1991). Scores on the LCT range from 0 to 100, with scores less than 33 suggesting the individual is either not attending to items by responding haphazardly or has difficulty understanding items. For the current study, a total of 54 participants had LCT scores that fell below 33, with low LCT scores ranging from 9 to 32. Comparison between the group of 54 individuals with LCT scores less than 33 and the 374 individuals with LCT scores at or above 33 suggested that these individuals did not significantly differ by age, $t\,(423) = .434$, $p > .05$, or history of ever having a job, $\chi^2\,(1, N = 417) = 2.12$, $p > .05$. However, individuals who responded to the MIQ inconsistently were more likely to not have declared a college major, $\chi^2\,(1, N = 424) = 4.03$ $p < .05$, less likely to be currently employed, $\chi^2\,(1, N = 413) = 4.82$, $p < .05$, and be male, $\chi^2\,(1, N = 428) = 17.68$, $p < .001$.

Removal of the 54 individuals with unacceptable LCT scores yielded a final sample size of 374.

Measures

To study the convergent validity of the domains within the construct of work values, Manhardt's Work Values Inventory, the Minnesota Importance Questionnaire, Ronen's Taxonomy of Needs, Super's Work Values Inventory, and the Survey of Work Values were administered. Examination of the relationships between work values and other constructs was done by gathering data using the Strong Interest Inventory, the International Personality Item Pool, and the Rokeach Value Survey. Open-ended responses about additional values were also collected to assess if values not included on existing measures were relevant to participants.

Demographic Questionnaire. The demographic questionnaire asked participants to indicate their sex, age, race, ethnicity, year in school, college major, and information on past work experiences.

Work Values Measures

Manhardt's Work Values Inventory. A measure consisting of 25 job characteristics developed by Manhardt (1972) was used as one measure of work values. Items are rated on a five-point scale (1 = not important, 5 = very important). Manhardt's measure has been used in previous studies involving college students' work values (Bartol & Manhardt, 1979; Brenner & Tomkiewicz, 1979, 1982; Beutell & Brenner, 1986). Manhardt (1972) found that 21 of the items form three overarching factors that describe job characteristics of successful workers (e.g. responsibility, advancement, and

supervision of others), characteristics of a comfortable working environment (e.g. routine, leisure time, and work conditions), and intrinsic characteristics (e.g. independence, continued development, and intellectually stimulating).

Meyer, Irving, and Allen (1998) used a sample of 257 university graduate and undergraduate students that had recently graduated and started full-time employment to examine the structure of Manhardt's instrument. Participants completed the measure at three time points— pre-entry to the job, one month, and six months. Principal components analyses revealed that three components best fit the data and accounted for 35.8% of the variance in scores at pre-entry, 41.4% of the variance of scores at one month, and 44.4% of the variance of scores at six months. These components were similar to those found by Manhardt (1972) and were labeled Comfort and Security, Competence and Growth, and Status and Independence. Internal consistency reliability (coefficient alpha) over the three time periods ranged from .63 to .72 for Comfort and Security; .65 to .80 for Competence and Growth; and .62 to .68 for Status and Independence.

In the current sample, PCA analysis yielded results similar to Manhardt (1979) and Meyer and colleagues (1998), finding the data could be accounted for by three factors that explained 40.41 % of the variance of items. The internal consistency for the scales was .78 for Competence and Growth, .71 for Comfort and Security, and .75 for Status and Independence. Scores for the three scales were created by summing items (Table 1).

Minnesota Importance Questionnaire. The Minnesota Importance Questionnaire (MIQ, Paired Comparison Version; Rounds, Henley, Dawis, Lofquist, & Weiss, 1981) was used to provide information about participants' work values which included 20 psychological needs and six underlying work values. Of the work values measures available, Rounds (1990) noted that the MIQ appears to be the most comprehensive. Test-retest reliabilities of MIQ scales at an immediate interval ranged from .72 to .93 while reliabilities for a 10 month interval between testing sessions ranged from .46 to .79 (Hendel & Weiss, 1970). Additionally, Hendel and Weiss (1970) found profile stability correlations, over a 10 month interval that ranged from .58 to .97 with a median of .87, suggesting evidence of reliability of individual profiles. Principal axis factor analyses conducted using MIQ scores from a sample of 5,358 individuals, including college students, vocational rehabilitation clients, and employed workers, suggested that a seven factor solution best fit the data, with the seventh factor being a residual (Gay, Weiss, Hendel, Dawis, & Lofquist, 1971). These factors accounted for 54% of the total variance, and 46% of the variance accounted for by individual scales. Weiss, Dawis, England, and Lofquist (1966) found that correlations between MIQ scores and abilities tests from the General Aptitude Test Battery rarely exceeded $r = .30$ suggesting evidence of discriminant validity for MIQ scores. They also found that MIQ scores differentiated between occupational groups.

Ronen's Taxonomy of Needs. Ronen's taxonomy of needs (Ronen et al., 1979) provided an additional measure of work values which contains 14 items that each measure different work facets (advancement, area, autonomy, benefits, challenge,

coworkers, earnings, manager, physical, recognition, security, skills, time, and training) that are rated on their importance in an ideal job using a 5-point scale ranging from *of 1 = utmost importance* to 5 = *very little or no importance*. For analyses items were reverse coded so that larger numbers reflected a higher level of importance to be consistent with other values measures. Smallest Space Analyses found that the 14 needs were arranged consistent to Maslow's (1954) hierarchy of needs, with needs reflecting self-actualization being located farthest (or least similar) to needs related to security in a sample of 2,600 sales and repairmen of a German affiliate of a European electronics company (Ronen et al., 1979).

Super's Work Values Inventory-Revised. Super's Work Values Inventory-Revised (SWVI-R; Super, 1970; Zytowski, 2006) is a measure of work values based on Super's (1970) original measure. During the revision for the current version, three scales (Altruism, Esthetics, and Management) that were highly correlated with the content of other career measures were deleted, resulting in 12 scales remaining— Achievement, Co-Workers, Creativity, Income, Independence, Lifestyle, Challenge, Prestige, Security, Supervision, Variety, and Workplace. Responses are rated on a 5-point scale (1 = *not important at all/not a factor in my job selection* to 5 = *crucial/I would not consider a job without it*). Recent work by Robinson and Betz (2008) found that four underlying factors— Environment, Esteem, Excitement, and Safety— best explained the commonality amongst scales. Furthermore, correlations among scales offered supportive evidence of convergent and discriminant validity. The manual reports that median internal consistency reliability coefficients (Cronbach's alpha) for the 12 scales ranges

from .72 to .88. For the present sample internal consistency reliability coefficients ranged from .77 (Lifestyle) to .92 (Income).

Survey of Work Values. The Survey of Work Values (SWV; Bowling Green State University, 1976) is a measure consisting of 54 items. An example item is "A job which requires the employee to be busy during the day is better than a job which allows a lot of loafing". Participants are asked to indicate how much they agree with each statement using the scale *Strongly Agree* to *Strongly Disagree*. Unlike other work values instruments, the SWV was developed to measure the Protestant Ethic which is the degree to which an individual finds value in participating in work rather than the value of characteristics specific to one job. The SWV includes scales that address both intrinsic— Pride in Work, Job Involvement, an Activity Preference— and extrinsic aspects of work— Attitude toward Earnings and Social Status of the Job. One additional SWV scale, Upward Striving, is related to both intrinsic and extrinsic aspects of work. Internal consistency reliabilities for the scale scores ranged from .53 to .66 in samples of industrial and governmental workers (Wollack, Goodale, Wijting, & Smith, 1971). One month test-retest correlations for scales ranged from .65 to .76 (Wollack et al., 1971). Research by Cherrington and colleagues (1979) provides some information on the convergent validity for scores on the SWV. Using factor analysis with scores on the SWV, and items taken from other measures of Protestant Ethic from Goodwin (1972) and Blood (1969), they found that items from the SWV were related to similarly themed items from other measures and resulted in separate factors that included items from both

the SWV and other measures, suggestive of some evidence of convergent validity for scores on SWV items.

Additional Measures

Rokeach Values Survey. One of the most popular measures of personal values is the Rokeach Value Survey (RVS; Rokeach, 1973). The RVS is organized into two dimensions—terminal and instrumental values. Terminal values refer to a desirable end state, such as having a comfortable life, while instrumental values are desirable modes of behavior, such as being honest (Rokeach, 1973). On the RVS, 18 terminals values and 18 instrumental values are measured. Rokeach (1973) reports that the test-retest reliabilities for terminal values range from .78 at 3 weeks to .69 at 14 to 16 months. Test-retest reliabilities for the Instrumental values range from .71 to .61 across the same time periods.

Research on the RVS with a variety of different populations is extensive and provides evidence of construct and predictive validity (see for example, Braithwaite & Law, 1985; Feather, 1988; Rokeach, 1973). In a sample of Australian high school and college students, Feather (1991) used principal component analyses of RVS scores to classify values into eight domains: positive affiliation, universal, prosocial, mature accomplishment, comfort/stimulation, security/salvation, self-directed competence, restrictive conformity, and prosocial concern. Additionally, Feather found that global self-esteem was positively related to the components of positive affiliation, universal prosocial (females only), mature accomplishment, and self-directed competence. Just-world beliefs were related to the components of restrictive conformity.

The RVS is available in multiple response formats including ranking and rating values. The ranking version requires an individual to order the values from most important to least important resulting in hierarchical data. The rating version requests that an individual assign a numerical value to the each value which allows for multiple values to be considered equally important. Research by Thompson, Levitov, and Miederhoff (1982) suggests stronger evidence is available for the construct validity of the RVS scores when the rating version is used. They concluded that the rating version should be used when comparisons are being made across individuals while the ranking version is more preferable when trying to understand an individual's value preferences. Maio, Roese, Seligman, and Katz (1996) also found more evidence of predictive validity for the scores on the rating form of the Rokeach Value Survey versus the scores on the ranked form. Furthermore, Dunlap and Cornwell (1994), raise the point that interpretation of factors based on ranking data is difficult because the ipsative data produced by ranking data creates bipolar factors that describe the independence of the data versus approximating the underlying relationships of the data. Based on these suggestions, the rating version was used.

Strong Interest Inventory. The Strong Interest Inventory (SII; Harmon, Hansen, Borgen, & Hammer, 1994) is one of the most widely used measures of vocational interests. For the present study, the General Occupational Themes (GOTs) were used. Median test-retest correlations for the General Occupational Themes range from .84 (for Enterprising) to .92 (for Realistic) in a sample of employed adults over a span of three to six months (Harmon et al., 1994). Furthermore, a convergent validity study comparing

the General Occupational Themes of the SII to the Vocational Preference Inventory (VPI; Holland, 1965) found the median correlation between same-named scales was .76. The median alpha coefficient for the Basic Interest Scales is .90, and median test-retest reliability over a three year period is .82.

The evidence of predictive and concurrent validity for scores on the SII is abundant. Many authors have found that SII Occupational Scale scores are predictive of college major and career choice (e.g. Borgen, 1972; Donnay & Borgen, 1996; Gasser, Larson, & Borgen, 2007; Hansen & Sackett, 1993; Hansen & Swanson, 1983). Additionally, interests measured by the SII have been found to predict career goals and intentions (Tracey & Hopkins, 2001) and the congruence between interests and interests reinforced in the work environment has been shown to predict job satisfaction (Tranberg, Slane, & Ekeberg, 1993).

International Personality Item Pool. The International Personality Item Pool (IPIP; Goldberg et al., 2006) was used to assess personality. The IPIP is a measure of the Big Five personality characteristics (Openness to Experience, Conscientiousness, Extroversion, Agreeableness, and Neuroticism) and the 30 underlying facets that are similar to those measured by the NEO-PI-R (Costa & McCrae, 1992) using 320 items. Items describe behaviors, such as *Adapt easily to new situations*. Participants are asked to use the scale *Very Inaccurate* to *Very Accurate* to determine how accurate each item describes them. Internal consistency for the five scales ranges from .85 to .91 and .71 to .88 for the facet scales (IPIP, 2008). Research comparing the IPIP to other established measures of personality (such as the NEO-PI-R by Costa and McCrae, 1992) has

suggested evidence of construct validity exists for scores on the IPIP. Goldberg (1999) found that correlations between the IPIP Big Five facets and the NEO ranged from .72 to .80 for Neuroticism, .67 to .81 for Extroversion, .79 to .80 for Openness to Experience, .61 to .79, and .60 to .77. An advantage of the IPIP is that only items pertaining to constructs of interest need be administered, making the instrument easy to use, and the IPIP was developed to be used without obtaining specific permission (Goldberg et al., 2006). Internal consistency for the five scales for the current sample were consistent with past samples and ranged from .85 for Agreeableness to .92 for the Extroversion scale.

Generated work values. To ascertain if additional work values exist that have not been included in current measures of work values, an open-ended instrument was developed. Participants were directed to reflect on what they need to be satisfied in a job and asked to list and describe these needs/values. After listing these needs, participants were instructed to rate values on a 5-point scale ranging from 1- *crucial/I would not consider a job without it* to 5- *not important at all/ not a factor in my job selection* which mirrors the rating scale used on SWVI-R. However, lower numbers, unlike SWVI-R, indicate higher importance.

Procedure

Flyers placed in classroom buildings and advertisements posted on course websites were used to recruit participants. Interested individuals were invited to attend data collection sessions. In an effort to standardize data collection procedures, the research protocol was administered in a computer lab on campus designed for research use. After consent was obtained, participants were asked to complete study measures.

Each participant used a personal computer in an individual study carrel. Some measures were completed online to reduce errors in data collection and entry while others were completed on paper due to copyright restrictions (the MIQ, SII, and SWVI-R). Computer-based measures were administered using an online survey created by university information technicians. Measures online were completed first and most participants completed all measures within two hours.

Data Analyses

Missing Data

Prior to analyses, missing data were examined. In survey research, data are likely to be missing for numerous reasons (Schlomer, Bauman, & Card, 2010). First, data may be missing at random, because participants did not provide responses to individual items or measures without reason. Secondly, data may be missing due to non-random factors. For example, measures at the end of a long survey may be incomplete due to participant fatigue. Items or full measures that are difficult to understand, ask particularly sensitive information, or are poorly worded also may lead individuals to fail to respond.

As mentioned previously, data for 36 participants were eliminated from the analyses due to substantial missing data. For example, 18 individuals did not complete the online portion of the study due either to choosing not to or not being able to do so because of computer problems. Data were eliminated for another six participants who did not complete all paper measures (e.g. MIQ, SWVI-R, and SII) and four were eliminated for not completing the MIQ or the SWVI-R. Finally, significant data (e.g. missing more

than 30% of items on a measure) were missing for eight participants and thus their data were eliminated from analyses. Visual inspection of these eight individuals suggests that computer error, such as not seeing all items on a page, and participant fatigue, such as not completing items at the end of the survey, affected participation. Fifty-four participants, who scored less than 33 on the LCT index on the MIQ, were eliminated from analyses, as mentioned previously. After eliminating individuals with substantial missing data and low scores on the LCT index on the MIQ, the final sample included 374 participants.

The average number of missing items across all measures (excluding demographic information) was 0.64%, with the highest percentage of missing data for a given item being 4.44% (RVS, "*Courageous- standing up for your beliefs*"). Given the small amount of missing data, the mean for the sample on the specific item was imputed for missing data points. Some contend that handling missing data using mean replacement of scores for that item leads to artificial reduction in variance and can inflate correlations (Baraldi & Enders, 2010; Schlomer et al., 2010), but others have shown that when less than 10% of data are missing, few differences in methods of imputation used to replace missing responses are found (Shrive, Stuart, Quan, & Ghali, 2006).

Data Analysis for Hypothesis 1

To examine the domains captured in existing measures of work values, analyses were conducted on the MIQ SWVI-R, SWV, Manhardt's Work Values Inventory, and Ronen's Taxonomy of Needs. Because of variations in the measures, it was not possible to use all scale scores. Therefore item scores on Ronen's Taxonomy of Needs (14 items) were used while scale scores were used for SWVI-R (12 scales), Manhardt's Work

Values Inventory (3 scales), and SWV (6 scales). Scale scores for the lower-order 20 work values on the MIQ were used for analyses instead of the 6 higher-order values. For simplification, these will all be referred to as scales from each measure. The first step in analyses was to examine intra-correlations of scales scores on each measure. Then correlations between scales scores on different measures were compared. Finally, scale scores from work values measures were subjected to Principal Components Analysis (PCA) to obtain components that best explained the shared variance between measures as well as any unique variance captured by an instrument. PCA was used over Exploratory Factor Analysis because PCA examines both shared and unique variance in each variable whereas EFA disregards the error variance and focuses solely on the shared variance among variables. In this case, PCA is preferable because the goal of this analysis was to summarize what shared work values are being measured across instruments as well as any unique measurement variance that may be capturing information not measured by other instruments. Additionally, orthogonal rotation (Varimax) was used to increase interpretability of the extracted components. Using parallel analysis, which identified the number of components with eigenvalues above chance, six components were extracted. Components scores were created by summing standardized scale scores of scales that had their highest loading on that component so that six components could be used for further analyses. As Comrey and Lee (1992) note, standardizing scores prior to summing reduces inflated weighting of scores with higher variance in the resulting component scores.

Data Analysis for Hypotheses 2, 3, and 4

To examine the nomological net of the construct of work values, the six work value components indentified were compared to measures of vocational interests, personality, and personal values. This was accomplished by comparing work values component scores to scores on the SII, IPIP, and Rokeach Values Survey, using canonical correlation. Canonical correlation analysis (CCA) identifies the relation between two sets of variables to determine if the two sets of variables are independent or if they share common variance. As Weiss (1972) noted, CCA can be a useful tool in counseling psychology research as it is allows one to examine the amount of variance in one set of variables that is predicted from another set of variables. In the context of the present study, CCA provided information on the relationship between work values and other career constructs and evidence of validity for the construct of work values as well as evidence of convergent and discriminant validity for specific work values.

Data Analysis for Hypothesis 5

The present study also tested Super's Onion Model which suggests that work values are predictive of personality and personality is predictive of vocational interests. To explore if empirical evidence supports this theory, structural equation modeling was used.

Data Analysis for Hypothesis 6

The main goal of Hypothesis 6 was to determine additional values, deemed by participants as important to their job satisfaction, are relevant to the construct of work values. The process of categorizing values listed by participants involved multiple steps

and followed procedures suggested by Lincoln and Guba (1985) who describe a process for unitizing and categorizing naturalistically obtained data. This method has been used successfully in counseling psychology research to analyze qualitative data (e.g. Betsworth & Hansen, 1996; Swanson & Tokar, 1991). During the first step, all of the responses obtained from participants were organized as separate responses in a spreadsheet with each response (e.g., work value) listed separately on a line along with source information, such as participant identification number, and rating of importance (1- *crucial/I would not consider a job without it* to 5- *not important at all/ not a factor in my job selection*).

Lincoln and Guba (1985) indicate that the second step can be done with one or more researchers. For the present study, this step involved organizing the separate responses into different categories based on similar content until all items were placed into homogeneous categories. Items that were difficult to place were set aside until all categories were created. Once items were placed into categories, a working title for each category was created as well as implicit guidelines for what content belonged in the category. After this had been done, the items that were difficult to place and were put aside were reexamined to determine if they reflected the content of any of the final categories. Items that clustered with an existing category then were placed in categories while items that did not fit into any of the developed categories were discarded.

For the current study, the process of categorizing data was done independently by the researcher and an undergraduate assistant. After both had completed their categorization of the data, time was spent comparing their results. This process involved discussing the

categories each individual identified in the data and specific responses that constituted the categories. Overall, the majority of items were placed in similarly themed categories across individual raters. In situations where disagreement occurred, the item was discussed within the context of existing categories to determine if the item best fit elsewhere. Additionally, in some cases, the interpretation of the item was discussed to help determine its best placement within a specific category. This procedure yielded 86 unique value items, found in Table 20. Three items ("Choosing between whether I want promotions or for management to implement policies", "House", and "Attractiveness of co-workers") were dropped because they could not be placed into existing categories. After 86 homogenous item categories were created, they were examined to determine if participant generated items were represented in existing measures of work values. Then, items were further categorized into the components found in Hypothesis 1 to determine if new items, not represented in existing measures, contributed to components.

Chapter 3: Results

Summary of the Major Findings

Research was conducted to examine evidence of validity for the construct of work values. The first step in explaining the results was to examine the intra-correlations for the scales on each measure. Results of this step suggested that scales on Ronen's Taxonomy of Needs were highly correlated compared to intra-correlations of scales on other measures. The next step involved examination of the correlations between scales on different measures. Correlations between scores on the MIQ, SWVI-R, SWV, Manhardt's Work Values Inventory, and Ronen's Taxonomy of Needs, found a substantial amount of overlap between similarly named scales on different measures. Correlations between the 14 scale scores on Ronen's Taxonomy of Needs were higher than correlations between scale scores on Ronen's measure and scale scores on similar scales on other measures. This suggested that Ronen's Taxonomy of Needs may be assessing only one domain of work values and is somewhat dissimilar to other work values measures. Thus, Ronen's Taxonomy of Needs was dropped from further analyses. Correlations between scores on other measures did provide support for convergent and discriminant validity for the various scales.

The third step in examining the construct of work values involved using Principal Components Analysis to make comparisons across scales on different work values measures. Principle Components Analysis found that six components best summarized the scales on the remaining work values measures. Further analyses, using Canonical Correlation Analysis, showed that scores on the six work values components were related

to scores on the Strong Interest Inventory, the International Personality Item Pool measure of five facets of personality, and the Rokeach Values Survey. Work values scores were most highly related to scores on the Rokeach Values Survey, a measure of personal values. Analyses that tested Super's Onion Model, suggested that this model is a poor fit for the data. Additional assessment of the connection between work values, personality, and interests generated little support for this model. Examination of work values generated by participants suggested that existing measures are likely covering the breadth of work values domains represented within the construct, but may not be providing enough depth, as many new work value items were generated by participants. In all, study results add evidence of validity for the construct of work values as a trait distinct from interests and personality.

Hypothesis 1: Assessing Domains Represented across Measures of Work Values

Correlations between scales within each measure were first examined (See Tables 2 through 6). As hypothesized, higher correlations were found between scales with similar themes (e.g., opportunities for advancement and having a prestigious job), while comparatively lower correlations were found between non-similar scales (e.g., earning high income and having friends at work). Intra-correlations for each measure provided preliminary evidence of convergent and discriminant validity for scale scores on the MIQ, Manhardt's Work Values Inventory, Ronen's Taxonomy of Needs, SWVI-R, and SWV. Average intra-correlations ranged from .15 (SWV) to .62 (Ronen's). Comparatively, intra-correlations for Ronen's Taxonomy of Needs appeared to be much

higher than intra-correlations of other measures. Where the average intra-correlation for Ronen's was .62, the next highest was for the SWVI-R at .43.

Secondly, correlations between scale scores on each measure were compared to scale scores on other measures (See Tables 7 through 10). Overall, correlations across measures suggested stronger relationships among similarly themed scales (e.g., MIQ Compensation and SWVI-R Income) than the between differently themed scales (e.g., MIQ Compensation and SWV Pride in Work). However, relations between Ronen's measure and other work values measures provided little support for convergent and discriminant validity for the scores on the 14 scales on Ronen's measure based on high intra-correlations between scales on Ronen's measure and lower correlations between scales on Ronen's measure and other measures. For example, items on Ronen's measure were all highly correlated, ranging from r = .45 ("Have an opportunity for high earnings" and "Fully use your skills and abilities on the job accomplishment") to .88 ("Work with people who cooperate well with one another" and "Have a good working relationship with your manager") (found in Table 2), while the highest correlations with other measures ranged from r = .19 ("Have a good working relationship with your manager" and SWV Activity Preference) to .37 ("Have an opportunity for high earnings" and SWVI-R Income) (found in Table 7).

Further examination of responses on Ronen's Taxonomy of Needs suggested that participants responded to all items similarly. For example, the mean across all items for participants was 2.00 (SD =.71) and the mean standard deviation across the 14 scales for participants was .62 (SD = .27). This suggested individuals approached scales on Ronen's

Taxonomy of Needs with a fixed response set, tending to endorse all values as being important. Due to this issue of skewed responding, Ronen's measure was dropped from further analyses.

PCA was then conducted using scale scores from the MIQ, SWVI-R, SWV, and Manhardt's measure. Extraction of components was determined by conducting Parallel Analysis, which has been shown to be one of the most accurate methods for determining factor and component extraction (Zwick & Velicer 1982, 1986; Hayton, Allen, and Scarpello, 2004). As Hayton and colleagues (2004) describe, Parallel Analysis aids in determining the number of components to extract by creating average eigenvalues from a specific number of random sets of data with parameters matching one's data (e.g., specifying the sample size and the number variables). Eigenvalues from the random data are then compared to the real data and components are kept whose eigenvalues exceed the eigenvalue of the random data at the matching component number. While statistical procedures vary for creating eigenvalues from random data, syntax from O'Connor (2000) was used in this instance. O'Conner's syntax allows that user to specify the number of cases and variables in the data and then creates a data set matching these specifications with random numbers. Then PCA is conducted a 1000 times and the average eigenvalues and 95th percentile of eigenvalues of the 1000 analyses are then used to compare to the eigenvalues of the real data to help determine the number of components to retain.

Parallel analysis identified six components, whose eigenvalues were larger than those generated by random data, to be retained from the PCA analysis on work values

measures. Orthogonal (Varimax) rotation was used to assist interpretation of the components. Together the six components accounted for 59.49% of the variance of items. Eigenvalues ranged from 5.24 to 2.45 (See Table 11). All items had score loadings greater than .40 on at least one component. Six scales were created by standardizing scales scores on each measure and adding together scales scores for the component that the scale was most highly loaded (Table 12). This allowed for consolidation of work values for further analyses.

The first component was comprised of scales from the MIQ, SWVI-R and Manhardt's Work Values Inventory. Items reflected a general importance in intellectual challenges and autonomy, creating a component labeled *Autonomy and Competence Values*. This component explained 12.77% of the variance in the measures. The next component, labeled *Money and Power Values*, explained 12.42% of the variance and included scales that illustrated an importance of income, status, and advancement opportunities that were drawn from all four measures. Scales that described the importance of elements of the work environment, such as the quality of the supervision and coworker relationships, the extent of the match between one's preferred lifestyle and the job, the pace of work, and job security, explained 12.37% of the variance and were organized into a component labeled *Comfortable Working Environment Values*. Another component reflected the importance of training, clear work policies, support from supervisors, and the morality of the work. This component, named *Organizational Culture*, accounted for 8.37% of the variance and was comprised solely of scales from the MIQ. The fifth component contained only scales from the SWV with a theme focused on

the importance of work, such as seeing work as a preferable activity, taking pride in one's work, and feeling engaged in one's job. This component, labeled *Work Involvement* accounted for 7.58% of the variance in scales. The final component identified accounted for 5.97% of the variance and included three scales from the MIQ. This component included scales that reflected an importance in relationships with coworkers and helping others and was called *Relationship Values*. As Table 13 illustrates, correlations between the six components had small to moderate effect sizes using guidelines by Cohen (1988), which specifies that correlations below .10 indicate a small effect, correlations around .30 demonstrate a moderate effect, and correlations over .50 indicate a large effect.

Hypothesis 2: Examining Relationships between Work Values and Vocational Interest

The six values components scores were compared to scores on the General Occupational Themes on the SII (e.g., Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) using CCA. Results yielded six canonical variates (See Table 17). The first four variates were significant at the .01 level and yielded moderate to small effect sizes ($R_c^2 < .50$). Examination of the canonical loadings provided further information on the nature of the scales by identifying the values components scores and SII scores that comprised these variates. The first variate pair was significant ($R_c = .53$, $p < .001$, $R_c^2 = .28$) and suggested that the importance of the work value of Money and Power was related to Enterprising and Conventional Interests, and negatively related to Artistic interests. The second variate was also significant ($R_c = .40$, $p < .001$, $R_c^2 = .16$) and showed Relationship and Work Involvement values were positively related to Social and Conventional interests, while Autonomy and Competence values were negatively

related to Social and Conventional Interests. Additionally, the second variate also suggested that Autonomy and Competence work values and Realistic interests were related. The third canonical variate found that the importance of Comfortable Working Environment was negatively related to Conventional and Realistic interests and was significant (R_c = .26, p < .001, R_c^2= .07). The fourth variate was significant (R_c = .19, p < .01, R_c^2= .04). This variate suggested that Autonomy and Competence and Relationship values were positively related to all interests, but most strongly related to Artistic, Investigative, and Enterprising interests, which is redundant with the results for the second variate. Redundancy analysis found that vocational interest scores explained 8.28% of the variance scores of the work values components, indicative of little overlap between work values and vocational interests. Work values explained 10.25% of the variance in interest scores, while interests explained 8.28% of the variance in values.

Hypothesis 3: Examining Relationships between Work Values and Personality

CCA was conducted with the values components and the Big Five personality scales (e.g., Neuroticism, Openness to Experience, Agreeableness, Extraversion, and Conscientiousness) as measured by the IPIP. Five variates were found from the data, of which, four were significant and all had moderate effect sizes (see Table 18). The CCA suggested that personality explained 11.41% of the variance in the work values components, while the work values components explained 13.90% of the variance in personality. The first variate was significant (R_c = .59, p < .001, R_c^2= .34) and suggested that the importance of Money and Power was negatively related to Agreeableness while importance of Work Involvement and Relationships were positively related to

Agreeableness. The second variate (R_c = .42, p < .001, R_c^2= .17) recommended that Job Commitment, Money and Power, and Comfortable Working Environment values were positively related to Extraversion and Conscientious personality traits. The third variate was significant (R_c = .36, p < .001, R_c^2= .13). This variate included information showing that Autonomy and Competence values were positively related to Openness to Experience and Conscientiousness. Examination of the fourth variate (R_c = .20, p < .05, R_c^2= .04) found that Comfortable Working Environment and Autonomy and Competence values were positively related to Extraversion and Openness to Experience. The final variate suggested that Organizational Culture, Relationships, and Comfortable Working Environment values were positively related to Neuroticism, however this variate was not significant (R_c = .03, p > .05, R_c^2= .00).

Hypothesis 4: Examining Relationships between Work Values and Personal Values

Finally, CCA was used to examine the relationships between scores on the six value components and scores on personal values measured by Rokeach. The analysis identified six variates, with five of these being significant (See Table 19). The first variate, (R_c = .73, p < .001, R_c^2= .53), suggested that the importance of Money and Power were positively related to Social Recognition and Comfortable Life personal values. This variate produced a large effect size (R_c^2= .53), which indicates that this variate accounts for substantial variance in work values. The remaining variates produced moderate effect sizes. Next, the second variate (R_c = .61, p < .001, R_c^2= .37) found that Autonomy and Competence values were positively related to the personal values of Broad-Minded, Sense of Accomplishment, Responsible, Capable, Ambitious, Inner Harmony, Helpful,

and Independence values. The third variate was significant (R_c = .57, p < .001, R_c^2= .33). This variate included a positive relationship between the work values of Work Involvement and Relationships and the personal values of Loving, True Friendship, Logical, Loyal, and Family Security. The fourth variate indicated a positive relationship existed between the work value components of Comfortable Working Environment and Organizational Culture and the personal values of Pleasure, World at Peace, and Equality, (R_c = .45, p < .001, R_c^2= .20). The final significant variate, (R_c = .44, p < .001, R_c^2= .19), suggested that there was a positive relationship between the Relationships work value component and Imaginative, Social Recognition, and Sense of Accomplishment personal values. Overall, the five variates explained 29.35% of the variance of the values components, while values explained 13.97% of the variance in personal values.

Hypothesis 5: Examining Super's Onion Model

The goal of Hypothesis 5 was to examine Super's Onion Model. Using structural equation modeling in Mplus (Muthén & Muthén 2006), the six work values components, the five personality scales, and the six interest GOT scales were entered as observed variables, and three latent variables, work values, personality, and interests, were diagramed to test Super's Onion Model which posited that work values were predictive of personality, which are predictive of interests (see Figure 1). Results of this analysis suggested that this model was a poor fit of the data due to the solution not being able to reach convergence. Because of this, CCA was then used to examine the amount of variance accounted for in Super's model. Redundancy analysis in CCA found that the amount of variance explained in personality scores by work values scores was 13.90%,

while personality scores accounted for 15.94% of the variance in interest scores as shown in Figure 2. Furthermore, work values scores accounted for 10.25% of the variance in interest scores. This information provides little support for Super's model.

Hypothesis 6: Exploring Evidence for Additional Work Values

To explore if additional values exist but are not included in current work values measures, participants were asked to list additional values that were important to their job satisfaction. Of the 374 participants, 185 (49.5%) provided at least one response. Of those who provided at least one response, the modal number of responses was two, but the number of responses given ranged from 1 (30.3%) to 14 responses (.5%). Within the 86 value categories that were generated, the modal number of responses given for a category was 2 and ranged from 1 to 17 (See Table 20). The most frequently given responses pertained to the importance of benefiting others, benefits, location of the job, pay, fairness, commuting time, having a fun work environment, and having flexibility to allow for time with family. The highest rated item related to the importance of one's work benefiting others or the community and was rated as being essential to one's satisfaction (*mean* = 1.59, *SD* = .94).

Further reduction of the work values generated by participants was done by grouping the generated items by the six values components that were developed from the PCA. Comparison between generated items and the five work values measures (MIQ, SWVI-R, SWV, Manhardt's Work Values Inventory, and Ronen's Taxonomy of Needs) was then done to assess if participant-generated values were included within these existing measures. Results of this analysis found that more than half of the items were

values mentioned in multiple existing measures, such as the importance of autonomy, creativity, pay, job security, recognition, advancement opportunities, and a comfortable working environment. As Table 21 shows, of the 86 value categories, 41 items were judged to be unique items not encompassed in existing measures. These included values such as the importance of work and family balance, opportunities for team work, a voice in decision-making, a sense of belonging with other workers, and the importance of different types of benefits (e.g., vacation, health, and retirement). Review of the generated items organized by the six components shows that existing measures cover each of the six work values components. Nevertheless, participants noted that there were additional value items that were considered important within each of these six components that are not assessed by the five measures examined in the present study. Values pertaining to the importance of the organizational culture, relationships, and work involvement were components that were substantially underrepresented in current work values measures according to participants.

Chapter 4: Discussion

The overarching goal of the current study was to examine the evidence of construct validity for work values. This was completed by assessing the convergence between different work values measures as well as examining the relations between work values and other traits. Overall, results provided support for the conclusion that similarity exists between work values measures in describing what domains represent the construct of work values. Additional analyses provided evidence that the trait of work values is separate construct from the traits of vocational interests, personality, and personal values. The construct of work values, as expected, appears to be most related to the construct of personal values, which accounted for 29% of the variance in work values scores.

Examining Evidence of Convergent and Discriminant Validity Across Work Values Measures

The first hypothesis suggested that evidence of convergent and discriminant validity would be found for five work values measures. Correlation analyses prior to completing the PCA suggested that there was little evidence of validity for Ronen's Taxonomy of Needs. In some cases scale scores with similar content were found to be related. For example, scores on Ronen's item "*Have an opportunity for high earnings*" did show to be related to items on SWVI-R Income, $r = .37$, $p < .01$, MIQ Compensation, $r = .20$, $p < .01$, Manhardt's Status and Independence, $r = .31$, $p < .01$, and SWV Upward Striving, $r = .33$, $p < .01$. However, this item had correlations ranging from .45 to .82 with other items on Ronen's measure. Moreover, further analyses found that participants

tended to responded to scales on Ronen's measure with a fixed response style, endorsing all scales as being highly important. Despite issues with fixed responding, Ronen's measure could possibly be assessing a different area of values than other measures.

One hypothesis why Ronen's measure may be assessing something slightly different than other work values assessments included in the present study is because of the differences in the conceptualization of Ronen's measure (Rounds & Armstrong, 2005). Ronen's measure, unlike others, was conceptualized to assess Maslow's (1954) hierarchy of needs, assuming that some needs are more essential than others. Previous analyses of Ronen's measure found that it contained two dimensions— collectivistic versus individualistic, and materialistic versus humanistic (Ronen, 1994). Other measures of work values have not been assessed for these dimensions. Moreover, research that concluded that evidence of validity exists for Ronen's measure used European and Asian international samples (e.g., see Kraut & Ronen, 1975; Ronen et al., 1979) and no research on U.S. samples has been completed. Results of the current study support the notion that Ronen's measure may be interpreted differently by U.S. college students.

Differences in the wording of the directions also may have affected how participants attended to items. The instructions for the items on Ronen's measure read "For following items indicate the importance of this item in your ideal job". Other measures, however, ask participants to rate how important it is to have a job that includes a certain value. Although this difference is slight, there may be differences in how participants conceptualize what they find important in an ideal job versus a job in general. Moreover, Ronen's measure was the first work values instrument presented to

participants which could have introduced response bias. It is possible that participants initially interpreted all values as being highly important but with repeated exposure to values questions (e.g. given more work values measures to complete), were able to begin to discriminate between the importance of different values. Further research may be able to examine these hypotheses about Ronen's measure.

Examination of correlations for the remaining work values measures (MIQ, Manhardt's, SWV, and SWVI-R) offered support for evidence of convergent and discriminant validity for scale scores on each measure. This support is based on higher correlations between similarly themed scale scores (e.g. MIQ Ability Utilization, SWVI-R Challenge, Manhardt's Competence and Growth, and SWV Job Involvement) versus differently themed scale scores, which Campbell and Fiske (1959) describe as a way for examining evidence of construct validity.

Further exploration of correlations between similarly named scales suggests that there is some error due to using different instruments to assess similar values (e.g., MIQ versus SWVI-R). For instance, the correlation between the MIQ scale of Creativity and the MIQ scale of Responsibility (r = .69) was higher than the correlation between MIQ Creativity and SWVI-R Creativity (r = .52). However, MIQ Creativity does appear to be most related to the scale of SWVI-R Creativity among SWVI-R scales. In sum, while similarly themed values scales across measures are more highly related than dissimilar scales, most scales have some higher correlations with dissimilar scales on the same instrument, suggesting that there is some measurement bias for scales to be more highly related when measured with the same instrument regardless of the content of the scale.

Results of the PCA provide further evidence of validity for the construct of work values. The six value components comprised of items from the MIQ, Manhardt's, SWV, and SWVI-R indicated some similar values were being measured across instruments, namely values of Autonomy & Competence, and Money & Power. Other values, such as Organizational Culture, Comfortable Working Environment, Work Involvement, and Relationships were contained on one measure, suggestive of unique information to these measures. Previous research by Elizur (1984) produced similar components within the construct of work values, providing support for five of the components that were found. Using a sample of Israeli adults taken in the late 1970's, Elizur found that 21 work values formed five components based on multidimensional scaling. The first of these related to instrumental values, such as working conditions. Instrumental values refer to desirable modes of behavior, such as being honest or polite. To some extent this reflects items in the Comfortable Working Environment component. Secondly, Elizur found another domain represented within work values that pertained to affective values. These values dealt with emotional experiences, such as relationships with others and self-esteem, and are similar to the values within the Relationships component which included the importance of friendly coworkers, helping others, and feeling a sense of accomplishment. The component of Money and Power is akin to Elizur's third component that captured the importance of rewards, like pay and advancement opportunities. The component, Organizational Culture, also resembles a component reflecting values related to resources (e.g. supervisors, security) found by Elizur. Finally, Elizur found a component related to cognitive values, such as opportunities for independence, using one's abilities, and

having autonomy, which is similar to the component of Autonomy and Competence. Elizur did not find, however, a component analogous to the Work Involvement component. As mentioned previously, this may be a less central aspect of work values, not assessed by most work values measures. Comparatively, results of current research confirm the components found by Elizur. Furthermore, research has confirmed Elizur's organization of work values domains (Borg, 1986; Elizur & Sagie, 1999) and provided evidence of this classification across cultures, including the United States (Elizur et al., 1991).

Prior research on work values and their connection to job satisfaction lends additional support for the importance of the six values components that were found. One of the more robust components, Money and Power, reflected the general importance of earning a high income as well as having power in one's job. This component was comprised from items from each instrument, which provided support that numerous theorists have conceptualized the importance of earnings and status as a clear domain within the construct of work values (e.g., Dawis & Lofquist, 1984; Manhardt, 1972; Super, 1970). Furthermore, this provided evidence of convergent validity for items comprising this component.

Early work by Maslow (1954) provides a hypothesis why the importance of income is a central component of work values. Maslow suggested that physical needs, such as shelter and food are basic needs for individuals. While engaging in work may satisfy many needs, the most apparent need satisfied by engaging in work is earning an income to afford shelter and food. The reality that work can serve to fulfill one's basic

needs of having money to afford basic necessities, may be the reason that importance of income is included in most work values assessments.

Other research provides a context of the importance of having job that is seen as prestigious and offers opportunities to have authority or power. Jones (2005) summarizes the trend between occupational prestige and job satisfaction, concluding that prestige is related to job satisfaction within occupations. Further evidence by Weaver (1977) found that occupational prestige partially explains differences in job satisfaction between different occupations. Thus, seeing one's job as prestigious seems to be an important element of one's job satisfaction. Moreover, having advancement opportunities is also related to job satisfaction (Kalleberg, 1977), and may explain why the importance of power is an essential work value.

The component of Autonomy and Competence included items from the MIQ, SWVI-R, and Manhardt's measure. It appeared there is consensus both theoretically as well as empirically that this domain is also included with the construct of work values. This component appeared to reflect values that related to mental processes, such as having challenging work, responsibilities, and autonomy.

The importance of autonomy and competence has been mostly described by Self-Determination Theory (Deci & Ryan, 2000) that posits that individuals have three basic needs— autonomy, competence, and belongingness— that motivate behavior. Self-Determination Theory has been applied to work contexts finding that meeting these needs is related to job satisfaction (Ilardi, Leone, Kasser, & Ryan, 1993). Moreover there is some evidence that these needs are related (Deci, Ryan, Gagne´, Leone, Usunov, &

Kornazheva, 2001; Vansteenkiste, Neyrinck, Niemic, Soenens, De Witte, & Van den Broeck, 2007) which may explain why autonomy and competence values were grouped together in the present study.

Of the remaining four components identified, each was comprised of items from one measure. These findings may suggest that these measures may be capturing something unique not assessed by other work values measures. On the other hand, it may suggest that to some extent, method error influenced results. The component, Organizational Culture, was formed from scales on the MIQ. While some of these scales appeared to be similar to scales on other measures (e.g., MIQ Supervision of Human Relations, MIQ Supervision of Technical skills and SWVI-R Supervision; MIQ Security and SWVI-R Security) their placement on a separate component leads to the conclusion that the MIQ conceptualization of the importance of supervision and security differs slightly from of the SWVI-R.

Research on the importance of organizational culture, lends support to the current findings. Numerous studies have found that organizational culture has been noted to be related to job satisfaction (Friedlander, & Margulies, 1969; Johnson & McIntye, 1998; Kalleberg, 1977; Ostroff, 1993; Pritchard & Karasick, 1973; Schneider & Snyder, 1975). It is important to note that in general the importance one places on these aspects (e.g., ethical work policies, adequate training, good supervision, organizational climate, etc.) has not been shown to predict job satisfaction, but individuals' perception of the quality of these aspects in the workplace have be found to be significant predictors of job satisfaction (see for example Kalleberg, 1977).One could speculate, however, that

assessing how important organizational culture is to individuals could provide key information on how much they may attend to and be affected by the culture of an organization, which could be related to work attitudes. Information on the importance of organizational culture also could be useful for matching individuals to a specific work environment based on their importance of organizational culture. Further research is needed to confirm these hypotheses and provide some insight into how the value of organizational culture directly affects work attitudes.

The component of Comfortable Working Environment was comprised of items from the SWVI-R, some of which are similar to scales on other measures, such as the Coworkers, Achievement, Security, Supervision, and Variety scales. Examination of cross-loadings for these scales suggested that these items are related to components that contain similarly named scales. For instance, while the scale SWVI-R Variety was most highly loaded on the Comfortable Environment component along with other SWVI-R scales, it also loaded heavily on the Autonomy and Competence component that included the scale of MIQ Variety. In this case, this component may be capturing some method error on the SWVI-R. Despite this, it appears that the importance of different aspects of the working environment, such as having good supervision, a secure job, and variety in daily tasks, is a component of the construct of work values. Findings suggest that the importance of the work environment is linked to organizational commitment. Meyer and colleagues (1998) found that the importance of comfortable working conditions were predictive of continuance organizational commitment. In other words, individuals who placed more importance on the work environment were likely to continue working in an

organization because of feeling that they need to remain in the organization to continue to receive rewards. Thus, it seems that assessing the importance one places on the working environment may provide information on how likely individuals are to remain in their jobs and likely helps explain how the fit between one's work values and the work environment is predictive of job tenure (Hesketh et al., 1992).

The Work Involvement component was developed from three scales on the SWV. Assessing the cross-loadings for the items on the Work Involvement component illustrate that these items have less overlap with other components, suggesting that the SWV maybe capturing a unique construct not assessed by other measures. Scores on this component were least correlated with scores on other components. One hypothesis is that this component may be more akin to the construct of work involvement than to the construct of work values. In discussing the construct of work involvement, Kunungo (1982) concluded that work involvement refers to the importance of work in one's life and general interest in participating in work activities. This definition seems similar to the scales comprising the Work Involvement component which include the importance of being involved in one's job, having pride in one's work, and seeing work activities as preferable to other activities. Meta-analysis has found that work involvement is related to organizational commitment, occupational commitment, and job involvement (Hackett & Lapierre, 2001). Morrow (1983) contended that work involvement overlaps conceptually with many organizational concepts, including work values, which may explain the small, yet significant, correlations between the Work Involvement component and the components of Comfortable Working Environment, Organizational Culture, and

Relationships. Despite these relationships, the magnitude of correlations between the Work Involvement component and other components leads to the conclusion that scales on the SWV may not be an essential component of the construct of work values. Given that this component was not similar to results by Elizur (1984) provides further evidence that this component is likely not central to the construct of work values.

The final component, Relationships, was comprised of items from the MIQ. This component was most heavily influenced by the item MIQ Coworkers. The items of MIQ Social Service and MIQ Achievement did load most highly on this component, but also loaded substantially on other components. It may be that MIQ Achievement worded as "The job could give a feeling of accomplishment" is related to the notion of helping others or making connections with co-workers for this sample. Relationships at work have been found to be one of the most important reasons for continuing to work (Choo, 1999; Shacklock, Brunetto, & Nelson, 2009). The importance of relationships at work has been shown to be positively related to job satisfaction, job involvement, and organizational commitment (see for example; Ducharme and Martin, 2000; Hodson, 1997; Morrison, 2004; Riordan and Griffeth, 1995), suggesting that assessing this value can be important in understanding other work behaviors and attitudes.

Collectively, evidence of convergent and discriminant validity was found for scores on Manhardt's Work Values Inventory, the Minnesota Importance Questionnaire, Super's Work Values Inventory-Revised, and the Survey of Work Values given the relationships between similarly themed scales. Moreover, correlations between components suggest the six work values components were related. While the component

of Work Involvement was found to be related somewhat to other components, this may be a less essential aspect of work values.

In sum, this study provided the first empirical investigation of the content validity for the construct of work values by comparing a variety of work values measures. Results support current conceptualization of work values across most measures. The exception is the little evidence of consistency between Ronen's Taxonomy of Needs and other measures. Based on the measures included in the present study, the construct of work values includes six domains including the importance of— autonomy and opportunities to develop competence, a comfortable working environment, organizational culture and policies, work relationships, earnings and opportunities for power, and believing involvement in work is important in one's life. Lastly, these components are similar to domains identified by others (Borg, 1986; Elizur, 1984; Elizur et al., 1991; Elizur & Sagie, 1999).

The Relationship Between Work Values and Vocational Interests

Further analyses (e.g., Hypotheses 2, 3, 4) provided more data to examine evidence of validity for the construct of work values by examining the nomological net of the construct of work values. First, canonical correlations between scores on the six values components and scores on the General Occupational Themes on the SII, found that the some linear combinations values were highly related to linear combinations of vocational interests. For example, the canonical variate defined by value of Money and Power, was positively related to a variate defined primarily by Enterprising and Conventional interests and negatively related to Artistic interests. The relationship

between values focused on income and power and Enterprising interests has been documented in other studies. Breme and Cockriel (1975) found that the relationship between Enterprising interests and the work value of Economic Returns from the Work Values Inventory. Rottinghaus and Zytowski (2006) also found that the importance of Income was related to Enterprising interests, although this effect was only found among women.

Moreover, there is consensus across the literature that social interests are related to the importance of relationships at work (Smith & Campbell, 2009; Hirschi, 2008). Using CCA to examine the relationships between interests and values, Smith and Campbell (2009) found modest relationship between social interests and the importance of relationships. In a sample of adolescents from Switzerland, Hirschi found that the most substantial relationship between work values and interests was between social values, analogous to the importance in relationships and Social interests (r = .415). Opposing the positive relationship between Social interests and relationship values, is the negative relationship between a variate defined primarily by Social interests and Autonomy and a variate defined by Competence values, which were related more so to Realistic and Investigative interests. The relationship between Autonomy and Competence values and Realistic and Investigative interest seems likely given that interests in realistic and investigative areas generally involve solitary pursuits as well as placing emphasis on skill acquisition (Spokane, 1996).

The third canonical variate found that the importance of Comfortable Working Environment and Autonomy and Competence values were negatively related to a variate

comprised primarily of Conventional and Realistic interests. Correlations between work values and interests in a study by Hirschi (2008) found similar results. Hirschi (2008) used the Revised General Interest Structure Test (Bergmann & Eder, 2005), a widely used German interest assessment, and work values developed by Ros et al. (1999), finding that intrinsic work values, such as the importance of autonomy and competence, were negatively related to Conventional and Realistic Interests although these relationships were not significant. Hirschi (2008) found that Realistic interests were negatively related to extrinsic values, much like those captured in the Comfortable Working Environment component. Smith and Campbell (2009) also found that individuals with Realistic interests rated the importance of working conditions lower than individuals with other areas of interests. Findings by Hirschi (2008) and Smith and Campbell (2009) makes sense given the less than ideal working conditions realistic jobs are often located, such as during difficult weather or confined spaces. However, Hirschi and Smith and Campbell both found an insignificant, but positive, relation between Conventional interests and extrinsic work values which is contradictory to present results.

Finally, the fourth variate suggested that the values variate defined by Autonomy and Competence and Relationship values were positively related to a variate that was comprised of all areas of interests, but most notably comprised of Artistic, Investigative, and Enterprising interests. Research has found that interest in occupations falling within the Investigative area have be related to values of intellectual stimulation and creativity similar to the current results relating the Autonomy and Competence component to Investigative interests (Super, 1962). Other research (see Hirschi, 2008; Thorndike et al.,

1968) has not supported the present findings of a relationship between a variate composed of primarily Investigative and Enterprising interests and a variate defined by Relationship values. In the present study, however, the relationship component also contained MIQ items of Achievement and Social Service which may have affected the relationship between this value component and Investigative and Enterprising interests.

Despite numerous relationships between work values and interests, the Organizational Culture values were not highly related to vocational interests. This is similar to findings by Smith and Campbell (2009) that suggested values such as fair company policies, adequate training, and good supervision were weakly related to interests.

Findings from this study are similar to results from other comparisons between work values and vocational interests. Thorndike and colleagues (1968) found similar results when comparing MIQ scores to vocational interests measured by the SVIB, identifying five canonical variates from their data, four of which were significant. Furthermore, a more recent CCA using work values and vocational interests by Smith and Campbell (2009) also produced four significant variates. The nature of these relations are primarily comprised of the relationships between the importance of income and power and Enterprising interests, the importance of relationships and Social interests, the negative relationship between the importance of comfortable working conditions and Realistic interests, and the importance of autonomy and competence and Investigative interests, which have been found across studies (e.g., Hirschi, 2008; Smith & Campbell, 2009).

Based on these comparisons, and the present results, it seems likely that work values and interests are related but unique constructs. Thorndike and colleagues (1968) concluded from early research on work values that values and interest are likely from the same class of variables given canonical correlations between values and interests around .75. As Katz (1969) argues, Thorndike's conclusions may be based on inflated relationships produced from correlations of similarly worded items found on both the Strong Vocational Blank and the MIQ. Katz concludes that further research is needed to support Thorndike's claim of significant overlap between interests and values. The present study provides support to Katz's notion that work values and interests do appear to be distinct constructs, albeit related, given moderate canonical correlations in the ranging from .53 to .05. Moreover, redundancy results found that interests explained around 8% of the variance in the work values components. This confirms that while values and interests are related, interests only account for a small portion of variance in work values.

The Relationship Between Work Values and Personality

The nature of the relationships between work values and personality found presently have been supported by past research findings. Results found that the importance of Relationships was related to Agreeableness which has been established by others (Berings et al., 2004; Furnham et al., 2005). Furthermore, support has also been found for results finding a negative relation between values focused on income and power or influence and Agreeableness in both U.S. (Duffy, Borges, & Hartung, 2009) and Dutch samples (Berings et al., 2004).

Results found that a variate comprised mainly of the importance of Money and Power was related to a variate primarily defined by Extraversion and Conscientiousness. These results were also found in other research in samples from Switzerland (Hirschi, 2008), Netherlands (Berings et al., 2004), and Britain and Greece (Furnham et al., 2005) suggesting that this finding is robust across cultures.

The importance of a comfortable working environment for individuals higher on the traits of Extraversion and Conscientiousness also has been established by other authors (Berings et al., 2004; Furnham et al., 2005). Given that this value component included items about job security, having a comfortable workplace, and having opportunities to balance work and life demands, it is logical that individuals who are focused on being planful (e.g., Conscientious) and likely engaged in activities outside of work (e.g. Extraverted) would rate this value component as more important. While current results found that a variate defined by the importance of working conditions was related to a variate primarily defined by Openness to Experience, authors have made different conclusions about this relationship. Both work by Berings and colleagues (2004) and Furnham et al. (2005) have found that work values that include an emphasis on stability and working conditions are negatively related to Openness to Experience. Because research has not examined the relationship between working conditions and Openness to Experiences in a sample from the U.S., it is unclear if results from the present study are spurious.

Remaining relationships between work values and personality also have been documented in the literature. Support for the relationship between the importance of

Autonomy and the personality traits of Extraversion, Openness to Experience, and Conscientiousness has been documented in previous research (Berings et al., 2004; Duffy et al., 2009; and Furnham et al., 2005). In the vocational literature, the relationship between work involvement and personality has not been examined. Hackett and Lapierre (2001) speculated that work involvement was related to Conscientiousness, which was supported in the current results.

In the present study, work values were found to have more overlap with personality than with vocational interests. Current results suggest that personality scores account for approximately 11% of the variance in work values scores whereas interests accounted for approximately 8% of the variance in work values. While few studies have examined the relations between work values and personality, research by Berings, De Fruyt, and Bouwen (2004) found that on average personality predicted 20% of the variance in scale scores on 12 work values developed by Berings (2002). Despite this, work values appear to be related to personality variables but, as with interests, work values seem to be separate from personality.

The Relationship Between Work Values and Personal Values

Very little research has examined the relationship between work values and personal values. Most conclude that work values are likely one aspect of personal values (Elizur & Sagie, 1999; Ros et al., 1999). For example, in a study by Ros and colleagues when an item referring to the importance of work was added to a measure of personal values, it was rated as one of the most important values in comparison to other personal values as well as being highly related to other personal values. They concluded that the

importance of work was likely a central personal value and a may serve as an outlet for satisfying some personal values, such as self-enhancement values which focus on the importance of bettering one's self. However, Elizur and Sagie (1999) found that when the structure of work values and personal values were assessed together, work values did overlap with personal values, but were distinguishable as a separate construct as well. Current results found that personal values accounted for almost 30% of the variance in work values. This, by comparison to vocational interests and personality, suggests that the construct of work values is more akin to the construct of personal values than to the other constructs assessed. It is important to note, however, that scores on 36 personal values were used for these analyses, whereas vocational interests and personality were assessed with six and five scales, respectively. Thus, the higher amount of variance explained by personal values may be due to more opportunities (i.e. a larger number of scales) to capture shared variance between constructs.

Associations between work values and personal values found in this study have little context for comparison due to the modest amount of research in this area (see Elizur & Sagie, 1999; Kinnane & Gaubinger, 1963; Ros et al., 1999). The only prior research that directly examines the relations between work values and personal values was conducted by Ros, Schwartz, and Surkiss (1999). However, this research examined correlations between four personal values scales and four work values scales and thus provides less detailed information on the relations between work and personal values. Their results suggested that conservation personal values, or the importance of maintaining security and a similar lifestyle, were positively related to extrinsic and social

work values and negatively related to intrinsic and prestige work values. On the other hand, openness to change personal values, which describe the importance of opportunities for growth and autonomy, were positively related to intrinsic and prestige work values and negatively related to extrinsic and social work values. Personal values that describe the importance of benefitting society, labeled self-transcendence values, were positively related to social work values. Self-enhancement personal values that capture the importance of having power and prestige were positively related to prestige work values and negatively related to social work values.

While there little empirical evidence exists to support the relationships found in the data, theoretically, most of the relationships found seem plausible. For instance, Money and Power were positively related to the personal value of Social Recognition, which would seem logical given that the personal value of social recognition is similar to the scales included in the Money and Power component. Additionally, the Money and Power Component was related to the personal value of a Comfortable Life. Individuals who value having their needs and desires met, likely also value earning enough income to provide for their needs. This finding is consistent with results by Ros et al. (1999) that found that extrinsic work values were highly related to personal values that emphasized maintaining a certain lifestyle.

Another example of the relationships found between work and personal values making intuitive sense is the finding suggestive of a positive relationship between the Organizational Culture work value component and Pleasure, Health, World at Peace, and Equality personal values. The work values included in the Organizational Culture

component emphasize having company policies that support workers, having adequate training, and good relationships with supervisors. It is reasonable to assume that individuals valuing a supportive organizational culture would also prefer to have a pleasurable life, peace, and equality in their lives overall.

Due to the lack of research that addresses the relationship between work values and personal values, further research is needed to provide consensus on the relationships between work values and personal values. Despite this, prior research supports the notion that work values are highly related to personal values which was supported by results of the present study that found that nearly 30% of the variance in work values were explained by personal values. However, because most of the variance in work values is not explained by personal values, it is likely that work values are a separate construct from personal values.

Testing Super's Onion Model

Initial analyses of Super's model suggests that it is a poor fit to the data. To conduct SEM analyses, values, personality, and interests were constrained to form individual latent variables. It is possible, that this model is a poor fit with the data given that each construct is best explained by multiple facets that to do not form one unifying variable. For example, results of the PCA suggested that work values comprised six distinct components. Therefore, modeling that these six components form one latent variable likely resulted in a poor fit to the data. Further examination using CCA found that work values account for a minimal amount of variance in personality or vocational

interests alone. This provides further evidence that work values comprise a distinct construct from personality and interests.

Super's (1973) contention that work values were predictive of interests was not a new idea. Strong (1955) also speculated that first individuals develop goals or values which later influence the development of interests. Furthermore, as values change, interests are also influenced. Since Super (1973) developed his Onion Model, others also have speculated that interests were preceded by values. Dawis and Lofquist (1984) suggested that interests develop from an individual's abilities and values. A unique aspect that Super suggested, however, was the intermediate role of personality in mediating the development of interests from values.

Examination of the relations between values, personality, and interests suggest that they are positively related. As reviewed earlier, evidence does link work values and personality (see Furnham et al., 2005; Hirschi, 2008) and work values and interests (see Breme & Cockriel, 1975; Rottinghaus & Zytowski, 2006; Smith & Campbell, 2009). While few studies take into account values, personality, and interests, together, in a study by Bering and associates (2004), the ability to predict social and enterprising interests from work values and personality was examined. Initial analyses found that personality accounted for between 6% and 27% of variance in work values scores. Hierarchical regression analyses found that work values predicted 11% of the variance in both enterprising and social interests and personality predicted 13% and 12% of the variance in enterprising interests and social interests, respectively. Together work values and personality predicted 24% of the variance in enterprising interests and 23% in social

interests. However, this research suggests that the development of personality precedes the development of work values, which makes sense given that personality tends to be conceptualized as enduring traits (Wiggins, 1996) whereas values are considered malleable (Schulenberg et al., 1988).

Further analyses, beyond the scope of the current research, may help to better understand the connection between values, personality, and interests. While the ordering of variables in this study suggested that Super's model was a poor to fit to the data, given previous research that does support a relationship between values, personality, and interests, it is likely that other models may produce significant results and better explain the sequence of development for these variables.

Elaborating on the Construct of Work Values

Examination of values identified by participants revealed that existing measures are capturing the bulk of work values. For instance, values pertaining to variety, independence, using one's skills, recognition, job security, advancement opportunities, autonomy, income, and comfortable working conditions were all included in current work values measures. This finding provides further support that existing measures are capturing actual domains represented in the construct of work values. Further analyses of this data found support the notion that additional values items may be contribute to these components given items generated that were not captured in existing measures. This provides some indication that additional value items are relevant to younger workers as hypothesized. Primarily, younger workers expressed the importance of work-family

balance, benefits, opportunities for team-work, having a voice in decision-making, and the importance of having good relationships and fun at work.

Many of these unique values, generated by participants, have been speculated to be important to younger workers. Numerous authors have noted that younger workers are seeking work environments that facilitate a balance between work and family demands (Armour, 2005; Catalyst, 2001). Younger workers also value social interactions at work as evidenced by seeking opportunities for teamwork and hoping to develop friendships at work (Martin & Tulgen, 2001). Additionally, others have suggested that younger workers value a workplace that is fun and allows casual dress (Catalyst, 2001, Lancaster & Stillman, 2002; Kelly Services, 2005) which was confirmed given responses from the current sample. Overall, this aspect of the present study lends support to the notion of revising current measures of work values so that they capture value items which may be more relevant to younger workers.

Some discussions have noted that workers' job satisfaction is related to their perceptions of fairness at work (Colquitt, Conlon, Wesson, Porter, & Ng, 2001), thus value items pertaining to fairness at work are not surprising. European research by Claes and Van De Ven (2008) found that younger workers' perception of organizational fairness was predictive of job satisfaction and organizational commitment. Furthermore, they found that fairness was predictive of job satisfaction for older workers as well, which suggests that fairness may be a work value item that is important to assess for all workers. Thus, it may be worth including the importance of organizational fairness in work values assessments.

Other values deemed important by the current sample have had little representation in the extant literature. Specifically, little discussion in the vocational or organizational literature has focused on the importance of how far one must commute to get to work. Some preliminary research in this area suggests that long commute times have a negative impact on job satisfaction (Koslowsky & Krausz, 1993). As individuals' commute time has increased over time, as evidenced by a 14.1 percent increase from 1990 to 2000 in time spent commuting daily (Gordon, Lee, & Richardson, 2004) , the importance attached to one's commute to work also may have changed. As participants rated the length of commuting as somewhat important, further examination of the importance of the ability to get to one's job should be investigated. Overall, this portion of the analyses posits that additional values items may be needed to fully capture some of the domains (i.e. components) represented within the construct of work values.

Implications

A theme running through discussions on work values for the past 40 years has been the disappointment that research on the relationship between work values and other vocational constructs has been hindered by the inability of the field to define the construct of work values (Kinnane & Suziedelis, 1962; Rounds & Armstrong, 2005). While the current research is not definitive, it provides a comprehensive assessment and evaluation of the construct of work values. Furthermore, few empirical endeavors have been made to examine how various conceptualizations, or measures, of work values compare. The present study is one of the only investigations to examine the relationships between multiple work values measures.Primarily, assessment of the construct of work

values can provide some continuity to research in the field. The first set of results establishes that two components are being captured across work values assessments, providing evidence of validity for these domains. Four additional components were formed from separate measures. Based on this finding, further revision and development of work values assessment should incorporate these components. Later analyses provide more evidence that work values are a separate construct, but are related to interests, personality, and personal values. These findings can help to further develop theories of work values, such as Super's Onion Model. For instance, additional research can provide understanding if work values more likely develop in response to one's personality traits or interests.

For individuals, clarifying the construct of work values can allow for more systematic research on the influence of work values on career decision-making. For instance, while interests have been shown to be predictive of career choice (Borgen, 1972; Hansen & Dik, 2005), work values also have been associated with career choice (Kalleberg & Stark, 1993; Young, 1984; Zytowski, 1994). Thus, it may be that work values provide additional information, beyond interests, to assist individuals on further narrowing down career options with the goal of selecting more satisfying occupations as noted by Super (1970) and Dawis and Lofquist (1984).

Current results may be particularly helpful for career decision-making of young adults. As noted by Loughlin and Barling (2001), little research examines work values of younger workers. Younger workers today have had different life experiences compared to previous generations. They have witnessed their parents' struggle with work-family

balance and fluctuations in job security during the 1980's (Zemke, Raines, & Filipczak, 2000). These experiences likely have shaped younger workers expectations from work and the importance they place on different aspects of their job. As found, existing work values assessments may not be capturing all domains relevant to younger workers. This finding may be the impetus for movement towards revising work values measures to include value items that are more relevant to younger workers so that values assessment can better assist younger workers in the career decision-making process.

Results pointing to work values being separate, but related to, other vocational constructs illustrate the need for work values to be part of the career counseling process. A review of career counseling interventions by Brown and Ryan Krane (2002) found that occupational knowledge is a key ingredient in career interventions. Information on work values can provide a deeper understanding of different occupational choices. Examination of values match or mis-match can also provide insight on one's adjustment in different work experiences (Dawis, 1996).

A more comprehensive understanding of the construct of work values is also important to organizations. Prior research suggests that work values are related to work performance (Judge, Thoresen, Bono, & Patton, 2001; Swenson & Herche, 1994; Vora, 1993), likely because work values are related to job satisfaction (Dawis, 2002), which, in turn is related to work performance. Therefore, organizations may find some benefit by understanding employee values in the service of creating more efficacious interventions to boost employee satisfaction.

Moreover, both voluntary and involuntary job turnover cost organizations an estimated $11 billion a year (Ivancevich, 1998). Abbasi and Hollman (2000) note that a common cause for turnover is a poor fit between the employee's needs and the work environment. Therefore, organizations can use information on employee work values to develop effective programs to assist in retaining workers. Additionally, given increases in the rates of unemployment, organizations have more applicants to choose from, making filling positions a daunting task. Examining work values of job applicants and the values reinforced in the work environment can provide data to assist selecting the best fit for the organization. Furthermore, current data on work values of younger workers provides organizations some insight into the possibly different needs of this cohort of workers. Again, due to the connection between values, job satisfaction, and tenure, organizations may benefit from trying to understand the values of younger workers.

Strengths and Limitations

This research provides a comprehensive evaluation and examination of evidence of validly for the construct of work values. Only one other study, by Macnab and Fitzsimmons (1987), took the initiative to make comparisons across work values measures. Their research, using multitrait-multimethod analyses, found evidence of convergent and discriminant validity for eight separate work values shared across the Minnesota Importance Questionnaire (Rounds et al, 1981), the Work Values Inventory (Super, 1970), the Values Scale (Super & Nevill, 1986), and the Work Aspect Preference Scale (Pryor, 1981). Work values represented across instruments were authority, co-workers, creativity, independence, security, altruism, work conditions, and prestige.

Results of Macnab and Fitzsimmons (1987) added valuable information to the literature by illustrating consensus exists on the domains represented within the construct of work values given the overlap in conceptualizations of work values across measures. This information can be used to help establish what domains are likely represented in the construct of work values. However, Macnab and Fitzsimmons' work did not provide any additional information on whether these measures were actually capturing all domains represented within the construct of work values or how work values may be unique or similar to other constructs. The current research extended the ideas of Macnab and Fitzsimmons by collecting information on the domains captured in existing measures as well as gathering exploratory information about domains under-represented in the construct of work values by having participants generate additional values.

Another strength of the present study is the examination of the relationships between work values, interests, personality, and personal values with one data set. Mentioned previously, the relations between work values and other constructs have been studied; however, little research examined these constructs simultaneously. Most investigations fall short of relating work values to more than one other construct. Despite this, a few authors have managed to conduct a comprehensive examination of work values. Super (1962) inspected the relationship between work values, intelligence, achievement, adjustment, and interests. His research provided the first examination of how work values may be related to other constructs. Super found that some values tended to be similar to vocational interests, adjustment, and intelligence, such as creativity, intellectual stimulation, management, economic returns, achievement, and way of life values, while

other values— associates, supervisory relationships, security, environmental surroundings, and esthetics— were more clearly differentiated from other constructs . However, Super's study was conducted on a small sample of (N = 88) of ninth grade boys, which makes it difficult to generalize results to other groups.

More recent research by Hirschi (2008) provides the most comprehensive examination of the relationships between work values and other constructs by evaluating if work values, interests, personality, and self-efficacy form larger trait-complexes using factor analysis. From his results, he concluded that social work values were highly related to social and artistic interests and openness to experience while the values of extrinsic, prestige, and intrinsic work appeared to more highly inter-related than related to other constructs. Similar to Super's study, the drawback to this research is that Hirschi used samples of Swiss high school students, requiring replication with additional samples.

Regardless of the strengths of the current research, as with any research, there are limitations to the veracity of the results. One limitation to the present study is the sample size. Given that the PCA was conducted with 41 separate scores across the four work values measures, the current sample size likely provided less reliable results than data from a larger sample. Some suggest that a high ratio between cases and variables when conducting principal components analysis or exploratory factor analysis is desirable to reduce Type 1 error rates (Osborne & Costello, 2004). Future research, with larger sample sizes, will be needed to determine if the present results are robust. Confirmatory factor analyses also can be conducted to examine how well different strategies for creating values components fit the data. Moreover, additional replication is needed to

confirm the relationships between the construct of work values and other constructs as Weiss (1972) noted that CCA results can be influenced by sample-specific error.

A second caveat, or limitation, is that this study was focused on young adults. While the focus on young adults was intentional (i.e., to examine additional values of younger workers), this limits the generalizabilty of the results. Prior research has suggested that work values may not be static and continue to change as individuals have more life experiences such as further education and work experiences (Cherrington et al., 1979; Johnson and Elder, 2002; Pinfield, 1984). Therefore, similar to the limitations of Super (1962) and Hirschi's (2008) work, results may not extend to other age groups.

Future Directions

Research on work values, as mentioned, has always been lacking due to poor articulation of the construct of work values. With evidence that work values may be best explained by six components, future research can continue to articulate theories that illustrate how these domains are involved in the career decision-making process. Information that explores which of these six components are more highly related to career choice, job satisfaction, and turnover can aid in career counseling and organizational decisions similar to work done in using the framework of TWA. Research on TWA, which identifies six work values has suggested that examining the fit between an individual's values and those values satisfied by the work environment is predictive of job satisfaction (Dawis, 2002), intentions to stay with a job, and job tenure (Hesketh et al., 1992). Replications of this work using the six components identified in the present study would help further research in this area.

Moreover, research that tests the efficacy of assessment and integration of work values in career counseling could be helpful. Based on the findings of the current study that suggest that specific work values are related to personality, interests, and personal values, it would be advantageous to explore avenues for helping distill these connections into concise information for individuals seeking career guidance. Development of different career counseling interventions that can incorporate connections between values and other constructs can also be tested to determine the benefits of these interventions in the career decision-making and work adjustment processes.

Analyses found that 41 items may provide the basis for identifying work values important to younger workers, although not captured in current work values measures. The next step in examining if additional domains may still be relevant to the construct of work values will involve having another sample of younger workers rate the additional work value items. This information can then be used to conduct additional analyses to assist in furthering the process of measure development as described by Dawis (1987). Assessing new value items with broader age groups may prove to be fruitful, as it is likely that new value items generated by younger workers also may be relevant to middle and older adult workers and provide support for including additional value items into existing conceptualizations of work values. As Lyons and associates (2009) have noted, many work values measures have not been updated for decades and thus may not reflect importance aspects of the work environment today. Furthermore, additional research can confirm the organization of these potentially new work values items into the six work values components discovered in the present study. Continued examination of the work

values of current workers and development of updated work values measures may provide individuals and organizations more accurate information about workers.

Chapter 5: Summary

Work values are generally conceptualized as relationships, materials, or psychological experiences one hopes to attain in a work environment. Discussion and theory addressing work values has been stagnant over the past few decades as more energy in the vocational psychology literature has focused on vocational interests and personality. Few comprehensive theories involve discussion of work values. Work values are included in Super's Life-Span, Life-Space theory (Super, 1953), Dawis and Lofquist's (1984) Theory of Work Adjustment, and Duane Brown's Values-Based, Holistic theory (Brown, 1996).

Super's Life-Span, Life-Space theory (Super, 1953) was one of the first theories to include discussion of work values. He concluded that work values are one of many areas that individuals differ in their self-concepts. Additional areas of one's self-concept include skills, interests, and personality. Furthermore, Super posited that individuals make career decisions based on their self-concept. Work values, in particular, provide motivation for individuals to engage in work activities (Super, 1970). While Super's model is difficult to assess empirically, support has been found for the interaction between life roles in career decision-making (Swanson, 1992).

The Theory of Work Adjustment, by Dawis and Lofquist (1984), is the most comprehensive and well-known theory that incorporates work values. Their theory largely asserts that individuals have certain characteristics, namely skills and values, that they seek to match in the work environment. Work environments, on the other hand, have their own characteristics, such as specific skills needed to complete a job and

opportunities to reinforce different needs and values of workers. The process of maximizing the fit between an individual's characteristics and that of a work environment describes work adjustment. Moreover, Dawis and Lofquist posit that work values predict both tenure and job satisfaction. A vast amount of research has supported the tenets of the Theory of Work Adjustment (see Dawis, 2002; Dawis & Lofquist, 1984).

Finally, Duane Brown's Values-Based, Holistic theory (Brown, 1996) is another theory that addresses the role of work values in the career decision-making process. The crux of Brown's theory is that individuals base their career choices largely on their values in the hopes of being satisfied. Larger in scope than the other two models, Brown's theory also hypothesizes that personal values are used to make choices to increase one's life satisfaction. No empirical research has assessed Brown's theory but other research supporting the role of work values in the career decision-making process (Ben-Shem & Avi-Itzhak, 1991; Judge & Bretz, 1992; Knoop, 1991; Ravlin & Meglino, 1987), can be used to support his ideas.

Because few theories have solidified our understanding of the construct of work values, numerous assessments of work values have been created. The most popular work values measures were created to operationalize the concept of work values in Super's theory (Super’s Work Values Inventory-Revised; Zytowski, 2006) and the Theory of Work Adjustment (Minnesota Importance Questionnaire; Rounds et al., 1991). Despite the popularity and evidence of validity for scores on Super’s Work Values Inventory-Revised and the Minnesota Importance Questionnaire, the field has been flooded by various assessments of work values. This variety in conceptualizing work values has

made it difficult to fully understand the construct of work values and develop more sophisticated models and theories to identify the role of work values in the career decision-making process (Berings et al., 2004).

Minimal research has examined what domains (e.g., specific areas of values) form the construct of work values. Only one study by Macnab and Fitzsimmons (1987) attempted to assess the validity for scores on different measures of work values. Using a multitrait-multimethod design, they found evidence of validity for scores on eight values— authority, co-workers, creativity, independence, security, altruism, work conditions, and prestige— included on the Minnesota Importance Questionnaire (Rounds et al, 1981), the Work Values Inventory (Super, 1970), the Values Scale (Super & Nevill, 1986), and the Work Aspect Preference Scale (Pryor, 1981). This research, however, does not provide information on the breadth of domains represented in the construct of work values. Moreover, since the measures included in this research are all dated, most having been developed 30 to 40 years ago, some have questioned if additional values may be relevant to work (Brown, 1996; Rounds and Armstrong, 2005), particularly for younger workers.

Despite poor clarification of the construct of work values, research has attempted to examine the relationships between work values and other vocational constructs to provide evidence that work values are a separate construct and to further understanding of the nomological network of work values. There is evidence that some work values are related to interests. Prior research has found that creativity and intellectual simulation values relate to biological, physical science, artistic, and literary interests (Kinnane &

Suiedelis, 1962; Rottinghaus & Zytowski, 2006; Super, 1962). The value of economic rewards, or income, has been found to be related to enterprising interests (Breme & Cockriel, 1975), while prestige values are related to enterprising (Breme & Cockriel, 1975) and science interests (Rottinghaus & Zytowski, 2006).

A body of research, primarily conducted by Furnham and associates, also has suggested that work values are related to personality factors (Furnham et al., 1999, 2002, 2005). For example, neuroticism has been shown to be negatively related to extrinsic (e.g. status, work conditions, pay) work values (Furnham et al, 1999). Extraversion was found to be negatively related to intrinsic (e.g. achievement, authority, meaningfulness, advancement) work values (Furnham et al, 1999) and positively related to influence and advancement values (Berings, De Fruyt, & Bowen, 2004; Furnham et al., 2005). Openness to Experience has been associated with financial and working conditions work values (Furnham et al., 2002; Furnham et al, 2005) and structure and stability values (Berings et al., 2005). Agreeableness has been shown to be positively related to importance of relationships at work (Berings et al., 2005, Furnham et al, 2005) and negatively related to values stressing earnings (Berings et al., 2005). Finally, conscientiousness has been related to influence and advancement values (Berings et al., 2005; Furnham et al., 2005).

Furthermore, investigations of the relationships between work values and personal values have been conducted. Research by Elizur and Sagie (1999) suggests that work values are a subset of personal values given their spatial relationships using Smallest Space Analysis, where work values were found to occupy space within personal

values. Direct comparisons between work values and personal values suggests that work values are highly related to personal values with correlations ranging between .25 and .54 in one study (Kinnane & Gaubinger, 1963). Other comparisons, however, have found more modest relationships. Ros, Schwartz, and Surkiss (1999) concluded that extrinsic work values were related to conservation (the opposite of openness to change) values (r = .24), intrinsic work values were related to openness to change (r = .23), social work values had the most significant relationship with self-transcendence values (r = .25), and prestige work values with self-enhancement (r = .29).

As mentioned previously, little theory or research has addressed how work values may fit within a larger context. One theory, by Super (1973), suggests that work values predict personality, which predicts vocational interests. No research has directly investigated his hypotheses. However, some research, that examines elements of this model, suggest modest support for the prediction of interests by values (Berings et al., 2004; Rottinghaus & Zytowski, 2006) and the relationship between personality and work values (Furnham et al., 1999; Furnham et al., 2002; Furnham et al., 2005).

In all, research on work values has several limitations. The most significant of these is the lack of consensus and cohesion in the field about the domains represented within the construct of work values. This has created a plethora of work values measures to be created and used for research, making cross-study comparisons challenging. Moreover, others suggest that more values are likely relevant to today's workers that were not included in previous measures of work values. Given these limitations, research that examines evidence of validity for the construct of work values has been sparse. To

address the limitations of the current literature, the main goals of the present study were to examine evidence for the validity of different domains within the construct of work values, articulate the nomological network for work values to provide understanding on the connection between work values and other vocational constructs, and examine if additional values may be relevant to younger workers.

A sample of 458 undergraduate students of a large Midwestern university was recruited for participation, of which 428 individuals completed all measures. The sample was 64.5% female and 35.5 % male. The ethnicity of the sample was reported as: 74.5% European, 16.1 % Asian, 4.0 %, Black, .9 % Hispanic/Latino, .5 % Pacific-Islander, 2.8% multiracial, and 1.2 % unreported. The mean age was 20.21 years (*SD* = 3.59). The percentage of individuals who reported currently working was 56.3% and 93.5 % reported holding a job in their lifetime. Participants were compensated with extra credit for a course or $20. A total of 54 individuals were eliminated from analyses because of evidence that they did not respond consistently to items on the Minnesota Importance Questionnaire, yielding a final sample of 374 individuals.

Primary analyses found that items from on Ronen's Taxonomy of Needs had high intra-correlations and lower correlations between values scales on other measures. Examination of the responses to this measure suggested a pattern of endorsing all items as important. This suggested Ronen's measure was susceptible to response bias and thus was dropped from further analyses. Principal Components Analysis of items from MIQ, SWVI-R, SWV, and Manhardt's Work Values Inventory found that six components best fit the data. These components were labeled; Autonomy and Competence, Money and

Power, Comfortable Working Environment, Organizational Culture, Job Commitment, and Relationships.

The next set of analyses explored the relationships between the six work values components and other vocational constructs. Canonical Correlational Analyses found that vocational interests explained around 8% of the variance in work values. Personality was found to explain 11% of the variance in work values whereas personal values explained 29% of the variance in work values scores. Taken together, these result suggested work values were a distinct construct. As expect work values appeared to be most related to personal values than interests or personality.

The present study also provided an opportunity to test Super's Onion Model. Little support was found for Super's model. Initial SEM analyses found that this model was a poor fit to the data given that it failed to converge on a solution. Therefore, CCA was used to estimate the pathways in the model. Results showed that work values predicted around 13% of the variance in personality, while personality predicted 15% of the variance in interest scores.

The final set of analyses examined additional work values items that may be important for the construct of work values, particularly for younger workers. New items pertaining to work-family balance, opportunities for team work, a voice in decision-making, a sense of belonging with other workers, and the importance of different types of benefits (e.g., vacation, health, and retirement) were found. Further analysis of items generated by participants found that participants generated items similar to those found in existing work values measures. Despite this, participant responses indicated that other

value items, not captured in existing measures, were important. Values pertaining to the importance of the organizational culture, tangible rewards, relationships with coworkers, work-family balance, and benefit to others, in particular, were value components that were substantially underrepresented in current work values measures given participant responses.

Aggregated results of the study support the notion that work values comprise a unique construct based on evidence across analyses. Analysis of items generated by participants suggests that current assessment of work values cover the main components within work values, but that there may be additional work values items that are important to younger workers.

Study findings provide a comprehensive appraisal of the construct of work values and illustrate a framework to further develop understanding on work values. Moreover, clarification of the construct of work values aids the development of assessments of this construct and subsequent studies to examine the role of work values in the career development and decision-making processes. Individuals can benefit from further understanding the use and benefit of incorporating work values into career counseling contexts, while organizations will likely benefit from understanding the connection between work values and employee performance and turnover.

Tables

Table 1

Principal Components Analysis for Manhardt's Measure of Work Values

Items	Component Loadings			α
N = 374	1	2	3	
Competence & Growth				.78
Requires originality creativeness	.71			
Encourages continued development of knowledge and skills	.67			
Satisfies your cultural and aesthetic interests	.66			
Is intellectually stimulating	.66			
Permits you to develop your own methods of doing the work	.55			
Provides change and variety in duties and activities	.52			
Provides a feeling of accomplishment	.47			
Permits working independently	.46			
Involves working with congenial associates	.42			
Makes use of your specific educational background	.35			
Comfort & Security				.71
Has clear cut rules and procedures to follow		.68		
Provides comfortable working conditions		.59		
Permits you to work for superiors you admire and respect		.59		
Provides job security		.58		
Permits a regular routine in time and place of work		.57		
Rewards good performance with recognition		.51		
Provides ample leisure time off the job		.45		
Status & Independence				.75
Requires working on problems of central importance to the organization			.64	
Gives you the responsibility for taking risks			.62	
Permits advancement to high administrative responsibility			.59	
Provides the opportunity to earn a high income			.53	
Requires supervising others			.50	
Is respected by other people			.48	
Requires meeting and speaking with many other people			.48	
Makes a social contribution by the work you do which			.39	

Table 2

Correlations Between Items on Ronen's Taxonomy of Needs

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Live in an area desirable to you and your family.	—													
2	Have a job which leaves you sufficient time for your personal or family life.	.81	—												
3	Have the security that you will be able to work for your company as long as you want to.	.69	.72	—											
4	Have good fringe benefits.	.62	.65	.80	—										
5	Have good physical working conditions.	.68	.71	.67	.66	—									
6	Work with people who cooperate well with one another.	.73	.79	.71	.67	.73	—								
7	Have a good working relationship with your manager.	.72	.75	.72	.67	.76	.88	—							
8	Get the recognition you deserve when you do a good job.	.63	.65	.65	.64	.64	.69	.73	—						
9	Have the opportunity for advancement to higher level jobs.	.60	.62	.66	.65	.59	.66	.69	.79	—					
10	Have an opportunity for high earnings.	.58	.59	.66	.67	.62	.63	.65	.73	.82	—				
11	Have challenging work to do—work from which you get a personal sense of accomplishment.	.49	.52	.48	.47	.49	.56	.54	.58	.57	.48	—			
12	Have considerable freedom to adopt your own approach to the job.	.57	.57	.46	.49	.56	.59	.60	.63	.54	.48	.63	—		
13	Fully use your skills and abilities on the job accomplishment.	.55	.55	.49	.47	.52	.59	.58	.55	.50	.45	.65	.69	—	
14	Have training opportunities	.59	.59	.58	.51	.57	.65	.68	.60	.59	.49	.60	.62	.69	—

Table 3

Correlations Between MIQ Scales

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Ability Utilization	—																			
2	Achievement	.53	—																		
3	Activity	.41	.34	—																	
4	Advancement	.19	.28	.19	—																
5	Authority	.25	.28	.25	.59	—															
6	Company Policies	.20	.22	.23	.10	.00	—														
7	Compensation	.15	.22	.18	.44	.33	.12	—													
8	Co—workers	.18	.32	.27	.22	.26	.15	.31	—												
9	Creativity	.56	.34	.32	.24	.35	.15	.13	.15	—											
10	Independence	.32	.25	.32	.13	.23	.15	.26	.09	.40	—										
11	Morals	.15	.28	.09	-.08	-.11	.42	.03	.08	.14	.03	—									
12	Recognition	.27	.45	.26	.54	.50	.07	.44	.31	.34	.32	.00	—								
13	Responsibility	.52	.37	.39	.34	.49	.12	.22	.14	.69	.50	.03	.39	—							
14	Security	.11	.23	.21	.35	.22	.22	.42	.22	.00	.19	.06	.27	.13	—						
15	Social Service	.41	.38	.32	.00	.10	.19	-.04	.31	.21	.06	.24	.09	.23	.11	—					
16	Social Status	.23	.38	.16	.40	.47	.06	.26	.27	.24	.16	.03	.56	.26	.12	.17	—				
17	Supervision- Human Relations	.19	.26	.24	.34	.22	.42	.23	.25	.24	.19	.19	.24	.21	.15	.21	.27	—			
18	Supervision-Technical Skills	.32	.31	.32	.28	.26	.47	.18	.34	.28	.23	.23	.23	.22	.27	.25	.24	.53	—		
19	Variety	.39	.35	.44	.28	.31	.18	.12	.34	.50	.28	.18	.23	.41	.04	.27	.30	.17	.30	—	
20	Working Conditions	.24	.27	.26	.25	.18	.45	.28	.35	.23	.27	.27	.25	.25	.39	.22	.18	.37	.45	.22	—

Table 4

Correlations Between SWVI-R Scales

		1	2	3	4	5	6	7	8	9	10	11	12
1	Achievement	—											
2	Challenge	.64	—										
3	Coworkers	.46	.30	—									
4	Creativity	.52	.74	.35	—								
5	Income	.30	.26	.27	.24	—							
6	Independence	.53	.67	.33	.68	.56	—						
7	Lifestyle	.38	.24	.37	.21	.32	.31	—					
8	Prestige	.62	.52	.46	.40	.53	.55	.26	—				
9	Security	.37	.22	.36	.16	.51	.38	.28	.51	—			
10	Supervision	.47	.32	.60	.32	.38	.41	.42	.46	.60	—		
11	Variety	.51	.64	.38	.66	.26	.55	.36	.40	.20	.35	—	
12	Workplace	.41	.26	.53	.29	.48	.41	.47	.49	.57	.75	.33	—

Table 5

Correlations Between Manhardt's Work Values Inventory Scales

		1	2	3
1	Competence & Growth	—		
2	Comfort & Security	.31	—	
3	Status & Independence	.44	.47	—

Table 6

Correlations Between SWV Scales

		1	2	3	4	5	6
1	Social Status	—					
2	Activity Preference	-.16	—				
3	Upward Striving	.45	.07	—			
4	Attitude Towards Earnings	.56	-.22	.55	—		
5	Pride in Work	-.16	.69	.07	-.21	—	
6	Job Involvement	-.18	.55	.01	-.34	.56	—

Table 7

Correlations Between Ronen's Taxonomy of Needs Items and the SWVI-R, Manhardt's WVI, SWV, and MIQ Scales

	Ronen's Taxonomy of Needs													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
SWVI-R														
Achievement	-.03	-.11	.02	.07	.00	.02	.02	.05	.08	.01	.27	.15	.18	.10
Challenge	-.08	-.16	-.08	-.05	-.07	-.06	-.05	-.01	.05	-.03	.22	.15	.15	.11
Coworkers	-.01	-.06	.01	.08	.04	.16	.10	.07	.08	.07	.03	.02	-.01	.08
Creativity	-.14	-.19	-.10	-.03	-.07	-.07	-.07	-.01	.00	-.08	.13	.21	.11	.10
Income	-.01	-.10	.06	.20	.05	-.07	-.04	.15	.21	.37	-.03	.00	-.10	-.09
Independence	-.08	-.17	-.01	.07	-.03	-.06	-.06	.07	.13	.11	.12	.20	.06	.03
Lifestyle	.09	.14	.01	.11	.14	.06	.05	.03	.09	.08	.03	.08	.04	.03
Prestige	-.07	-.15	-.02	.04	-.03	-.06	-.05	.08	.07	.08	.09	.01	-.02	-.04
Security	.06	-.03	.23	.18	.13	-.01	.04	.03	.11	.18	-.07	-.05	-.02	.01
Supervision	.04	-.07	.07	.16	.14	.06	.12	.11	.13	.12	.02	.10	.04	.08
Variety	-.07	-.12	-.05	.01	-.01	-.02	-.02	-.01	.03	.00	.14	.13	.12	.11
Workplace	.11	.00	.12	.22	.26	.09	.11	.12	.11	.19	-.01	.10	.04	.08

Table 7

Correlations Between Ronen's Taxonomy of Needs Items and the SWVI-R, Manhardt's WVI, SWV, and MIQ Scales (Continued)

	Ronen's Taxonomy of Needs													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Manhardt's WVI														
Competence & Growth	.05	.05	.04	.06	.13	.13	.13	.15	.09	.03	.30	.31	.29	.21
Comfort & Security	.06	-.02	.12	.16	.17	.01	.08	.18	.15	.20	.02	.00	.00	.04
Status & Independence	.04	-.06	.11	.16	.05	.05	.06	.21	.29	.31	.25	.12	.12	.11
SWV														
Social Status	-.10	-.18	.00	.03	-.06	-.12	-.10	.05	.06	.14	-.05	-.13	-.11	-.10
Activity Preference	.21	.17	.14	.07	.17	.20	.19	.08	.12	.07	.26	.09	.21	.20
Upward Striving	.01	-.07	.07	.07	.02	-.05	.00	.17	.24	.33	.03	.06	-.01	.00
Attitude Towards Earnings	-.01	-.08	.05	.08	.01	-.10	-.06	.08	.12	.27	-.12	-.06	-.13	-.11
Pride in Work	.17	.14	.16	.13	.17	.19	.18	.09	.12	.08	.25	.10	.17	.15
Job Involvement	.11	.07	.06	.02	.10	.16	.14	.08	.09	.01	.19	.12	.13	.16

Table 7

Correlations Between Ronen's Taxonomy of Needs Items and the SWVI-R, Manhardt's WVI, SWV, and MIQ Scales (Continued)

	Ronen's Taxonomy of Needs													
MIQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ability Utilization	.04	.01	.03	.03	.00	.06	.03	.02	.06	.01	.25	.21	.24	.15
Achievement	.06	.03	.13	.11	.06	.10	.10	.12	.12	.10	.36	.19	.17	.12
Activity	.06	.00	.06	.06	-.02	.03	.03	-.05	.01	-.03	.07	.04	.04	.01
Advancement	.04	-.07	.07	.06	.02	-.02	.02	.15	.28	.30	.10	.13	.04	.05
Authority	.04	-.06	.05	.08	-.02	-.05	-.01	.09	.14	.14	.08	.10	.05	.05
Company Policies	.12	.04	.06	.00	.16	.07	.13	.03	.03	-.03	.12	.13	.12	.13
Compensation	-.00	-.03	.07	.14	.03	-.03	-.02	.10	.11	.20	-.01	.02	-.07	-.07
Co-workers	.01	-.01	.01	.02	-.03	.12	.04	-.01	-.01	.02	.00	-.03	-.06	-.03
Creativity	-.01	-.02	.01	.01	.04	.04	.01	.06	.05	-.01	.20	.32	.21	.14
Independence	.00	-.05	.07	.06	-.02	-.05	-.03	.02	-.01	.01	-.06	.09	.02	-.03
Morals	.11	.12	.03	.01	.12	.10	.11	.03	.04	-.04	.14	.13	.14	.11
Recognition	-.07	-.11	.05	.05	-.03	-.06	-.03	.19	.11	.16	.08	.07	-.01	-.08
Responsibility	-.03	-.07	.03	.03	-.02	-.02	-.03	.03	.07	.03	.13	.21	.11	.03
Security	.09	-.01	.18	.09	.04	-.04	-.04	.02	.07	.11	-.06	-.06	-.05	-.07
Social Service	.05	.03	.04	-.02	-.02	.07	.07	-.05	.00	-.10	.13	.07	.14	.11
Social Status	.01	-.05	.07	.08	-.02	-.02	.00	.12	.12	.15	.10	.07	.02	-.02
Supervision- Human Rel.	.09	-.02	.07	.07	.08	.07	.09	.04	.11	.04	.08	.09	.05	.06
Supervision- Tech. Skills	.07	-.04	.04	.05	.02	.07	.07	.03	.05	-.01	.13	.08	.09	.16
Variety	-.03	-.02	.01	-.03	.02	.04	.01	-.05	.03	.01	.13	.14	.12	.11
Working Conditions	.12	.05	.11	.11	.25	.12	.13	.06	.08	.14	.01	.09	.04	.09

Table 8

Correlations Between SWVI-R Scale Scores and Manhardt's WVI, SWV, and MIQ Scales

	SWVI-R											
	1	2	3	4	5	6	7	8	9	10	11	12
Manhardt's WVI												
Competence & Growth	.43	.48	.01	.47	.04	.35	.21	.19	.04	.20	.42	.19
Comfort & Security	.26	.13	.26	.06	.39	.22	.22	.26	.44	.47	.09	.50
Status & Independence	.46	.44	.26	.36	.52	.51	.21	.48	.36	.34	.33	.36
SWV												
Social Status	.12	.06	.12	.08	.48	.23	-.04	.37	.21	.14	.05	.24
Activity Preference	.20	.16	-.01	-.07	-.14	-.06	.06	.04	.06	.05	.00	.06
Upward Striving	.15	.12	.04	.08	.55	.34	.04	.26	.26	.14	.06	.22
Att.Towards Earnings	-.05	-.01	-.01	-.02	.54	.25	-.04	.18	.26	.06	-.02	.19
Pride in Work	.28	.17	.14	-.01	-.04	.02	.12	.11	.17	.18	.08	.15
Job Involvement	.24	.18	.21	.08	-.13	.00	.09	.09	.06	.22	.09	.13

Table 8

Correlations Between SWVI-R Scale Scores and Manhardt's WVI, SWV, and MIQ Scales (Continued)

	SWVI-R											
MIQ	1	2	3	4	5	6	7	8	9	10	11	12
Ability Utilization	.30	.46	.12	.35	.00	.30	.10	.18	-.02	.06	.30	.07
Achievement	.36	.20	.13	.11	.03	.18	.09	.22	.03	.08	.15	.06
Activity	.18	.28	.13	.22	.00	.16	.03	.11	.05	.07	.30	.07
Advancement	.20	.21	.17	.19	.52	.35	.11	.29	.24	.23	.20	.23
Authority	.21	.26	.17	.26	.43	.40	.08	.33	.18	.14	.21	.19
Company Policies	.14	.15	.12	.07	-.12	.02	.08	.05	.11	.23	.13	.18
Compensation	.03	-.04	.13	-.01	.38	.16	.14	.19	.21	.19	.03	.23
Co-workers	.07	-.01	.51	.06	.00	-.02	.16	.12	.04	.16	.13	.15
Creativity	.23	.39	.07	.52	.04	.41	.12	.11	-.04	.09	.29	.08
Independence	-.00	.11	-.06	.18	.14	.29	-.03	.07	.09	-.01	.12	.08
Morals	.19	.10	.04	.05	-.20	-.03	.16	.02	-.02	.10	.07	.05
Recognition	.21	.13	.18	.13	.35	.32	.05	.36	.18	.20	.12	.22
Responsibility	.15	.34	-.02	.37	.13	.47	.03	.13	.01	.01	.27	.06
Security	-.02	-.06	.07	-.10	.16	.01	.06	.09	.42	.21	-.06	.25
Social Service	.25	.27	.20	.17	-.21	.07	.09	.15	.05	.10	.22	.05
Social Status	.28	.18	.18	.20	.30	.30	.06	.42	.18	.18	.21	.20
Supervision-Human Relations	.17	.18	.18	.18	.09	.13	.10	.16	.14	.30	.15	.25
Supervision-Technical Skills	.18	.21	.23	.19	-.03	.10	.06	.15	.10	.26	.17	.18
Variety	.20	.29	.17	.34	.02	.26	.16	.11	.01	.08	.54	.05
Working Conditions	.12	.11	.24	.09	.15	.13	.25	.12	.25	.36	.15	.48

Table 9

Correlations Between Manhardt's WVI Scales and SWV and MIQ Scales

	Manhardt's WVI		
	1	2	3
SWV			
Social Status	-.12	.25	.31
Activity Preference	.21	.10	.18
Upward Striving	.06	.34	.50
Attitude Towards Earnings	-.19	.24	.26
Pride in Work	.29	.24	.26
Job Involvement	.27	.13	.20
MIQ			
Ability Utilization	.38	.07	.27
Achievement	.27	.17	.29
Activity	10	.07	.11
Advancement	.07	.26	.49
Authority	.02	.14	.41
Company Policies	.15	.15	.05
Compensation	-.09	.21	.17
Co-workers	-.02	.06	.07
Creativity	.39	.00	.22
Independence	.12	.07	-.01
Morals	.21	.09	.03
Recognition	.08	.31	.34
Responsibility	.26	.04	.27
Security	-.13	.33	.12
Social Service	.13	-.01	.11
Social Status	.10	.16	.38
Supervision-Human Relations	.09	.20	.18
Supervision-Technical Skills	.14	.22	.16
Variety	.30	-.02	.17
Working Conditions	.10	.29	.13

Table 10

Correlations Between SWV Scales and MIQ Scales

	SWV					
MIQ	1	2	3	4	5	6
Ability Utilization	-.08	.13	-.01	-.09	.16	.17
Achievement	.04	.17	.04	-.04	.20	.18
Activity	.06	.10	.02	.06	.08	.03
Advancement	.32	-.03	.54	.36	.01	.06
Authority	.34	-.11	.30	.34	-.08	-.07
Company Policies	-.04	.18	-.05	-.05	.15	.18
Compensation	.23	-.10	.24	.32	-.02	-.06
Co-workers	.00	-.06	-.11	-.04	.06	.12
Creativity	-.04	-.10	.03	-.01	-.05	.01
Independence	.08	-.18	.02	.18	-.12	-.19
Morals	-.20	.23	-.13	-.26	.19	.25
Recognition	.30	-.10	.33	.25	-.03	-.03
Responsibility	.04	-.04	.13	.11	-.03	-.07
Security	.15	00	.17	.25	.07	-.01
Social Service	-.17	.17	-.19	-.28	.17	.23
Social Status	.28	-.07	.27	.22	.01	.05
Supervision-Human Relations	.11	.05	.10	.03	.04	.13
Supervision-Technical Skills	.12	.04	.01	.01	.10	.17
Variety	-.04	-.08	.00	-.08	.01	.05
Working Conditions	.09	.07	.09	.10	.05	.06

Table 11

PCA with Work Values Measures, Rotated Component Loadings

	Component					
	1	2	3	4	5	6
Rotated Eigenvalues	5.24	5.09	5.07	3.43	3.11	2.45
Variance Explained	12.77	12.42	12.37	8.37	7.58	5.97
Manhardt's Work Values Inventory						
Competence & Growth	**.56**	-.07	.25	.02	.40	-.21
Comfort & Security	-.07	**.40**	.36	.37	.26	-.18
Status & Independence	.30	**.57**	.34	-.04	.39	-.02
MIQ						
Ability Utilization	**.68**	.03	-.03	.20	.21	.21
Achievement	.40	.19	-.08	.27	.32	**.43**
Activity	**.44**	.06	-.03	.32	.02	.28
Advancement	.20	**.69**	.08	.17	.05	.22
Authority	.35	**.59**	.06	.03	-.11	.34
Company Policies	.14	-.14	.09	**.68**	.17	-.02
Compensation	-.01	**.49**	.03	.36	-.14	.24
Co-workers	.01	.01	.15	.27	-.05	**.77**
Creativity	**.78**	.06	-.01	.18	-.09	.09
Independence	**.47**	.16	-.12	.39	-.30	-.07
Morals	.15	-.29	.04	**.40**	.33	.01
Recognition	.25	**.60**	.02	.19	-.02	.38
Responsibility	**.74**	.25	-.13	.20	-.09	.08
Security	-.14	.34	.02	**.60**	-.01	.11
Social Service	.30	-.23	.09	.17	.25	**.47**
Social Status	.24	**.48**	.10	.01	.05	.46
Supervision- Human Relations	.17	.12	.14	**.54**	.05	.18
Supervision- Technical Skills	.25	.04	.10	**.59**	.07	.26
Variety	**.59**	-.03	.07	.15	-.07	.36
Working Conditions	.11	.08	.23	**.73**	-.02	.11

Note: Highest loading for each item is in bold

Table 11

PCA with Work Values Measures, Rotated Component Loadings (Continued)

	Component					
	1	2	3	4	5	6
SWVI-R						
Achievement	.37	.11	**.62**	-.08	.34	.11
Challenge	**.66**	.05	.49	-.11	.20	-.06
Coworkers	-.02	.01	**.73**	.06	.02	.43
Creativity	**.69**	.00	**.51**	-.13	-.05	-.04
Income	.04	**.71**	.47	-.05	-.13	-.12
Independence	**.58**	.37	.53	-.09	-.05	-.13
Lifestyle	.07	-.04	**.59**	.13	.03	.04
Prestige	.19	.39	**.62**	-.10	.11	.17
Security	-.12	.35	**.61**	.24	.06	-.09
Supervision	-.04	.12	**.79**	.31	.09	.03
Variety	.56	-.03	**.56**	-.07	-.01	.09
Workplace	-.04	.23	**.75**	.34	.03	-.05
SWV						
Social Status	-.07	**.64**	.15	-.01	-.18	-.02
Activity Preference	-.03	-.05	-.02	.07	**.82**	-.07
Upward Striving	.02	**.76**	.07	-.02	.15	-.21
Attitude Towards Earnings	-.07	**.71**	.02	.08	-.31	-.20
Pride in Work	-.02	-.01	.11	.08	**.80**	.01
Job Involvement	.00	-.12	.14	.06	**.74**	.16

Note: Highest loading for each item is in bold

Table 12

Principal Component Loadings for Work Values Components

	Autonomy & Competence	Money & Power	Comfortable Working Environment	Organizational Culture	Work Involvement	Relationships
MIQ Creativity	.78					
MIQ Responsibility	.74					
SWVI-R Creativity	.69					
MIQ Ability Utilization	.68					
SWVI-R Challenge	.66					
MIQ Variety	.59					
SWVI-R Independence	.58					
Manhardt Comp. & Growth	.56					
MIQ Independence	.47					
MIQ Activity	.44					
SWV Upward Striving		.76				
SWVI-R Income		.71				
SWV Att.Towards Earnings		.71				
MIQ Advancement		.69				
SWV Social Status		.65				
MIQ Recognition		.60				
MIQ Authority		.59				
Manhardt Status & Indep		.57				
MIQ Compensation		.49				
MIQ Social Status		.48				
Manhardt Comfort & Security		.40				

Table 12

Principal Component Loadings for Work Values Components

	Autonomy & Competence	Money & Power	Comfortable Working Environment	Organizational Culture	Work Involvement	Relationships
SWVI-R Supervision			.79			
SWVI-R Workplace			.75			
SWVI-R Coworkers			.73			
SWVI-R Prestige			.62			
SWVI-R Achievement			.62			
SWVI-R Security			.61			
SWVI-R Lifestyle			.59			
SWVI-R Variety			.56			
MIQ Working Conditions				.73		
MIQ Company Policies				.68		
MIQ Security				.60		
MIQ Supervision-Human Relations				.59		
MIQ Supervision-Technical Skills				.54		
MIQ Morals				.40		
SWV Activity Preference					.82	
SWV Pride in Work					.80	
SWV Job Involvement					.74	
MIQ Coworker						.77
MIQ Social Service						.47
MIQ Achievement						.43

Table 13: Correlations Between the Six Work Values Components

	Work Values Components					
	Autonomy & Competence	Money & Power	Comfortable Working Environment	Organizational Culture	Work Involvement	Relationships
Autonomy & Competence	—					
Money & Power	.36**	—				
Comfortable Working Environment	.46**	.46**	—			
Organizational Culture	.31**	.21**	.31**	—		
Work Involvement	.07	-.05	.19**	.21**	—	
Relationships	.40**	.14*	.28**	.46**	.22**	—

Note: * = $p < .01$, ** = $p < .001$

Table 14

Correlations Between Six Work Values Component Scores and SII General Occupational Theme Scores

	Work Values Components					
	Autonomy & Competence	Money & Power	Comfortable Working Environment	Organizational Culture	Work Involvement	Relationships
Realistic	.03	-.05	-.19**	-.05	-.02	-.11
Investigative	.07	-.13*	-.13	.01	.05	.02
Artistic	.15*	-.16*	-.01	.15	.01	.13*
Social	-.05	-.09	-.01	.16*	.16*	.27**
Enterprising	.00	.34**	.02	-.01	.05	-.01
Conventional	-.13	.18**	-.10	.04	.08	-.03

Note: * = $p < .01$, ** = $p < .001$

Table 15

Correlations Between Six Work Values Component Scores and IPIP Scores

	Work Values Components					
	Autonomy & Competence	Money & Power	Comfortable Working Environment	Organizational Culture	Work Involvement	Relationships
Neuroticism	-.01	.07	-.04	.00	-.09	-.07
Extraversion	.06	.10	.24**	-.01	.18**	.16*
Openness to Experience	.22**	-.16*	.06	.08	.08	.07
Agreeableness	-.04	-.33**	.05	.13*	.31**	.31**
Conscientiousness	.09	.09	.12	.10	.34**	.07

Note: * = $p < .01$, ** = $p < .001$

Table 16

Correlations Between Six Work Values Component Scores and RVS Scores

	Work Values Components					
	Autonomy & Competence	Money & Power	Comfortable Working Environment	Organizational Culture	Work Involvement	Relationships
A Comfortable Life	.09	.44**	.30**	.03	.09	.07
Equality	.18**	-.02	.21**	.25**	.12	.18**
An Exciting Life	.16*	.05	.22**	.00	.12	.06
Family Security	-.01	.19**	.31**	.12	.31**	.08
Freedom	.24**	.11	.22**	.12	.10	-.04
Health	.07	.15*	.22**	.19**	.21**	.04
Inner Harmony	.19**	-.01	.19**	.28**	.21**	.12
Mature Love	.10	.16*	.22**	.14*	.17*	.14*
National Security	.10	.25**	.24**	.21**	.22**	.12
Pleasure	.07	.21**	.30**	.07	.00	.08
Salvation	.01	.16*	.17*	.11	.15*	.15*
Self-Respect	.22**	.17*	.27**	.13	.19**	.17**
A Sense of Accomp.	.30**	.23**	.24**	.09	.27**	.17**
Social Recognition	.15*	.53**	.35**	.08	.04	.08
True Friendship	.07	.10	.23**	.03	.22**	.18**
Wisdom	.22**	.05	.14*	.16*	.21**	.12
A World at Peace	.22**	-.01	.25**	.25**	.08	.16*
A World of Beauty	.25**	.01	.16*	.14*	.10	.19**

Note: * = $p < .01$, ** = $p < .001$

Table 16

Correlations Between Six Work Values Component Scores and RVS Scores (Continued)

	Work Values Components					
	Autonomy & Competence	Money & Power	Comfortable Working Environment	Organizational Culture	Work Involvement	Relationships
Ambitious	.28**	.20**	.21**	.09	.32**	.13*
Broad-minded	.30**	-.01	.24**	.19**	.11	.11
Capable	.31**	.24**	.26**	.20**	.20**	.14*
Clean	.21**	.30**	.21**	.11	.12	.06
Courageous	.19**	.10	.17**	.09	.20**	.04
Forgiving	.15*	-.03	.15*	.16*	.18**	.26**
Helpful	.19**	-.09	.17**	.15*	.25**	.29**
Honest	.09	.03	.21**	.22**	.26**	.14*
Imaginative	.33**	.01	.14*	.10	-.03	.09
Independent	.35**	.16*	.23**	.13*	.14*	.10
Intellectual	.31**	.21**	.20**	.18**	.17**	.11
Logical	.23**	.28**	.18**	.16*	.11	.01
Loving	.07	.07	.29**	.15*	.26**	.25**
Loyal	.10	.14*	.28**	.15*	.35**	.16*
Obedient	.09	.22**	.22**	.22**	.25**	.15*
Polite	.18**	.24**	.30**	.17**	.21**	.14*
Responsible	.19**	.19**	.27**	.20**	.37**	.08
Self-controlled	.21**	.27**	.24**	.18**	.20**	.02

Note: * = $p < .01$, ** = $p < .001$

Table 17

Canonical Correlation Results for Work Values Component Scores and SII Scores

	Canonical Variate					
	1	2	3	4	5	6
Eigenvalue	.40	.19	.07	.04	.02	.00
Variance Explained	54.82	26.66	10.16	5.17	2.93	.28
Canonical Correlation	.53	.40	.26	.19	.14	.05
Wilk's Lamba	.53**	.74**	.88**	.94*	.98	1.00
Work Values	Canonical Loadings					
Autonomy & Competence	-.02	-.41	.42	.74	.30	-.11
Money & Power	.80	.22	.22	.35	.37	.05
Comfortable Working Environment	.11	.19	.78	.05	.45	-.39
Organizational Culture	-.28	.31	-.19	.35	.80	-.14
Work Involvement	-.13	.40	-.10	.26	-.26	-.79
Relationships	-.39	.52	.33	.63	.08	.26
SII						
Realistic	.06	-.42	-.66	.37	-.37	.34
Investigative	-.23	-.26	-.38	.60	-.43	-.44
Artistic	-.49	-.22	-.05	.61	.58	.08
Social	-.40	.63	-.12	.55	-.19	.32
Enterprising	.66	.35	-.20	.60	.00	.21
Conventional	.40	.43	-.77	.24	-.04	-.08

Note: * $p < .01$, ** $p < .001$

Table 18

Canonical Correlation Results for Work Values Component Scores and IPIP Scores

	Canonical Variate				
	1	2	3	4	5
Eigenvalue	.52	.21	.15	.04	.00
Variance Explained	56.47	22.79	16.05	4.57	.12
Canonical Correlation	.59	.42	.40	.20	.03
Wilk's Lamba	.45**	.69**	.84**	0.96*	1.00
Work Values	Canonical Loadings				
Autonomy & Competence	-.05	.01	.67	-.55	-.25
Money & Power	.66	.54	.14	-.12	-.38
Comfortable Working Environment	-.06	.55	.13	-.61	-.49
Organizational Culture	-.28	.02	.21	.25	-.89
Work Involvement	-.52	.65	.42	.34	.13
Relationships	-.52	.28	-.18	-.20	-.32
IPIP					
Neuroticism	.22	-.12	.01	.14	-.96
Extraversion	-.18	.69	-.11	-.66	.19
Openness to Experience	-.38	-.28	.57	-.65	-.21
Agreeableness	-.93	.19	-.24	.10	.18
Conscientiousness	-.19	.64	.56	.46	.20

Note: * $p < .05$, ** $p < .001$

Table 19

Canonical Correlation Results for Work Values Component Scores and RVS Scores

	Canonical Variate					
	1	2	3	4	5	6
Eigenvalue	1.14	.60	.48	.25	.24	.13
Variance Explained	40.38	21.10	16.98	8.78	8.30	4.49
Canonical Correlation	.73	.61	.57	.45	.44	.34
Wilk's Lamba	.11*	.24*	.39*	.58*	.72*	.89
Work Values	Canonical Loadings					
Autonomy & Competence	.08	.68	.51	-.16	.50	-.07
Money & Power	.91	-.02	.30	-.08	.24	-.16
Comfortable Working Environment	.51	.46	-.14	-.58	.23	.35
Organizational Culture	.15	.44	-.02	-.54	-.24	-.65
Work Involvement	.22	.71	-.43	.41	-.31	.00
Relationships	.04	.38	-.44	-.13	.60	-.53
RVS						
A Comfortable Life	.65	.03	-.04	-.03	.23	.13
Equality	-.04	.42	-.12	-.45	.03	-.14
An Exciting Life	.09	.31	-.04	-.10	.18	.44
Family Security	.44	.30	-.38	-.10	-.22	.26
Freedom	.13	.41	.29	-.22	-.12	.31
Health	.29	.31	-.09	-.18	-.27	.01
Inner Harmony	-.01	.53	-.04	-.32	-.22	-.15
Mature Love	.27	.27	-.16	-.14	.04	-.04
National Security	.42	.29	-.12	-.12	-.11	-.19
Pleasure	.31	.06	-.12	-.41	.19	.26
Salvation	.30	.12	-.27	-.05	.06	-.16
Self-Respect	.25	.41	-.07	-.10	.22	.07
A Sense of Accomplishment	.31	.23	.05	.21	.26	.04
Social Recognition	.73	.12	.10	-.16	.29	.05
True Friendship	.23	.28	-.36	.02	.21	.19
Wisdom	.07	.48	.05	.01	-.01	-.11
A World at Peace	-.04	.43	-.04	-.54	.07	-.04
A World of Beauty	-.05	.42	.01	-.18	.27	-.08

Note: * $p < .001$

Table 19

Canonical Correlation Results for Work Values Component Scores and RVS Scores

(Continued)

	Canonical Loadings					
	1	2	3	4	5	6
Ambitious	.29	.58	.07	.29	.13	.06
Broad-Minded	-.06	.54	.14	-.37	.09	.12
Capable	.30	.52	.17	-.08	.10	-.10
Clean	.39	.27	.20	-.01	.10	-.03
Courageous	.17	.42	.08	.04	-.05	.15
Forgiving	-.02	.40	-.27	-.12	.24	-.20
Helpful	-.10	.55	-.32	-.07	.25	-.10
Honest	.13	.44	.24	-.20	-.20	-.09
Imaginative	-.13	.37	.33	-.27	.31	.07
Independent	.16	.52	.28	-.08	.19	.08
Intellectual	.23	.49	.24	-.01	.10	-.15
Logical	.34	.30	.32	-.05	-.06	-.15
Loving	.22	.37	-.49	-.19	.14	.07
Loyal	.33	.46	-.33	.01	-.08	.08
Obedient	.38	.33	-.17	-.07	-.12	-.25
Polite	.38	.38	-.08	-.15	.05	.03
Responsible	.35	.58	-.05	.06	-.25	.05
Self-controlled	.39	.40	.19	-.06	-.16	.01

Table 20

Descriptive Statistics for Generated Work Value Items

Generated Items *N* = 374	Number of Responses	Mean	*SD*
Benefits Community or Others	17	1.59	.94
Fairness	16	2.13	1.41
High Income/Fair Pay	15	2.13	1.46
Vacation Benefits	14	2.50	1.22
Benefits	13	1.77	1.09
Flexibility of hours	13	2.38	1.04
Geographic Location	12	1.83	.83
Fun Work Environment	12	2.42	1.24
Commute Time	11	2.36	1.21
Travel Opportunities	11	1.73	1.01
Enjoy the work	10	1.00	.00
Relationships with Coworkers	10	2.10	1.20
Respect	9	1.44	.53
Flexible time for Family	9	1.44	1.33
Lifestyle	8	2.25	1.58
Work hours	7	2.14	1.35
Kind/Friendly/Likable Coworkers	7	2.29	1.50
Sense of Belonging	7	2.43	1.51
Friendly Environment	7	2.14	1.46
Advancement/ Career Development	6	1.83	1.33
Team Work Opportunities	6	1.75	.88
Like the Work	6	1.00	.00
Professionalism	6	1.58	.49
Comfortable Environment	6	1.50	.55
Meaningful	6	1.33	.52
Sense of Fulfillment/Accomplishment	6	1.50	.84
Necessary Tools Provided	5	3.00	1.58
Gives a Sense of Identity	5	2.20	1.79
Clear Expectations	5	3.20	1.30
Creativity	5	1.60	.89
Pace/Work Load	5	3.07	1.92
Flexibility	5	2.00	.71
Happiness	5	1.60	1.34

Items in bold are *not* matched to items on work values measures

Table 20

Descriptive Statistics for Generated Work Value Items (Continued)

Generated Items	Number of Responses	Mean	*SD*
Challenging Environment	5	1.60	.55
Company Social Events	5	2.80	.84
Communication	5	1.80	1.30
Health Promotion	5	2.70	1.57
Safe Work Environment	5	1.80	1.10
Health Benefits	4	1.75	.50
Pride	4	2.25	1.89
Job Security	4	1.75	.96
Provided Food at Work	4	2.00	.82
Adequate Breaks	4	3.25	.96
Amount of Social Interaction	4	1.50	.58
Getting Along with Coworkers	4	1.75	.50
Voice in Decision-Making	4	2.25	.96
Shared Values with the Company	4	2.00	1.15
Company Ethics	4	2.25	1.89
Understanding Coworkers	4	1.50	.58
Clean Work Environment	4	1.25	.50
Incentives	4	3.75	.50
Independence	3	2.00	1.73
Uses Skills	3	2.67	2.08
Tolerance at Work	3	1.67	.58
Educational Benefits	3	2.67	1.53
Good Coworkers	3	2.00	1.73
Morality of Management	3	1.00	.00
Likeable/Friendly Management	3	1.67	.58

Items in bold are *not* matched to items on work values measures

Table 20

Descriptive Statistics for Generated Work Value Items (Continued)

Generated Items	Number of Responses	Mean	*SD*
Responsible Management	3	2.67	2.08
Transformational Leadership	3	2.33	1.53
Loyalty	3	3.00	1.73
Understanding Management	3	1.67	.58
Appreciation on Family Roles at Work	3	2.33	1.53
Good Physical Environment	3	2.33	.58
Recognition	2	2.50	2.12
No Overtime	2	3.50	.71
Retirement Benefits	2	1.50	.71
Volunteer Opportunities	2	2.50	.71
Variety	2	1.50	.71
Learning Opportunities	2	1.75	.35
Environmentally Friendly Work	2	1.00	.00
Casual Dress at Work	2	3.00	1.41
Enjoyable Coworkers	2	1.50	.71
Fun Coworkers	2	2.00	1.41
Good Relationships with Boss	2	2.00	.00
Morals of the Company	2	3.00	2.83
Good Inter-Department Relationships	2	3.00	.00
Characteristics of the Company	2	2.25	.35
Social Status	1	1.00	
Access	1	1.00	
Perks	1	1.00	
Diversity	1	4.00	
Opportunities to Work with Spouse	1	1.00	
Networking Opportunities	1	2.00	
Work-Family Balance Benefits	1	4.00	
Engaging Environment	1	2.00	

Items in bold are *not* matched to items on work values measures

Table 21

Generated Work Value Items Organized by the Six Work Value Components

Autonomy & Competence	Money & Power	Comfortable Working Environment		
Uses Skills	High Income/	Pace/Work Load	Clean Work Environment	**Work-Family Balance Benefits**
Creativity	Fair Pay	Amount of Social Interaction	Lifestyle	**Opportunities to Work with Spouse**
Flexibility	Advancement/ Career Development Opportunities	Work hours	Flexible time for Family	**Fun Work Environment**
Challenging Environment	Incentives	Variety	Access	**Health Promotion**
Independence	Recognition	Job Security	**Flexibility of hours**	
Learning Opportunities	Social Status	Good Physical Environment	**Travel Opportunities**	
Team Work Opportunities	**Vacation Benefits**	Necessary Tools Provided	**Provided Food at Work**	
	Benefits	Comfortable Environment	**Adequate Breaks**	
	Health Benefits	Safe Work Environment	**Casual Dress at Work**	
	Retirement Benefits	Geographic Location	**Commute Time**	
	Educational Benefits			
	Perks			

Note: Items in bold are *not* matched to items on work values measures

Table 21

Generated Work Value Items Organized by the Six Work Value Components

(Continued)

Organizational Culture		Work Involvement	Relationships	
Fairness	**Tolerance at Work**	Meaningful	Getting Along with Coworkers	**Company Social Events**
Shared Values with the Company	**Happiness**	Gives a Sense of Identity	Friendly Environment	**Sense of Belonging**
Company Ethics	**Morality of Management**	Pride	Relationships with Coworkers	**Enjoyable Coworkers**
Morals of the Company	**Volunteer Opportunities**	Sense of Fulfillment/ Accomplishment	Kind/Friendly/-Likable Coworkers	**Fun Coworkers**
Clear Expectations	**Environmen-tally Friendly Work**	**Engaging Environment**	Good Coworkers	**Networking Opportunities**
Diversity	**Good Inter-Department Relationships**	**Enjoy the work**	Likeable/Friendly Management	**Transform-ational Leadership**
Loyalty	**Appreciation on Family Roles at Work**	**Like the Work**	Responsible Management	
Communi-cation		**No Overtime**	Good Relationships with Boss	
Voice in Decision-Making			Understanding Management	
Professionalism			Benefits Community or Others	
Characteristics of the Company			**Understanding Coworkers**	
Respect				

Note: Items in bold are *not* matched to items on work values measures

Figures

Figure 1

Super's Onion Model

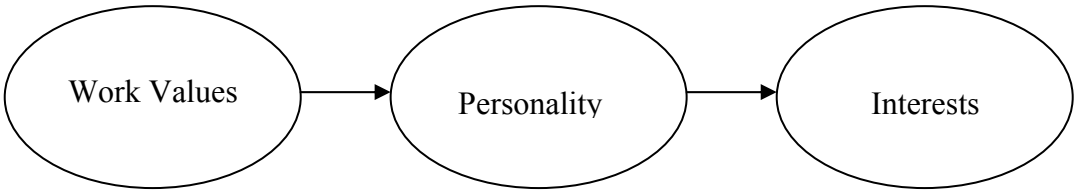
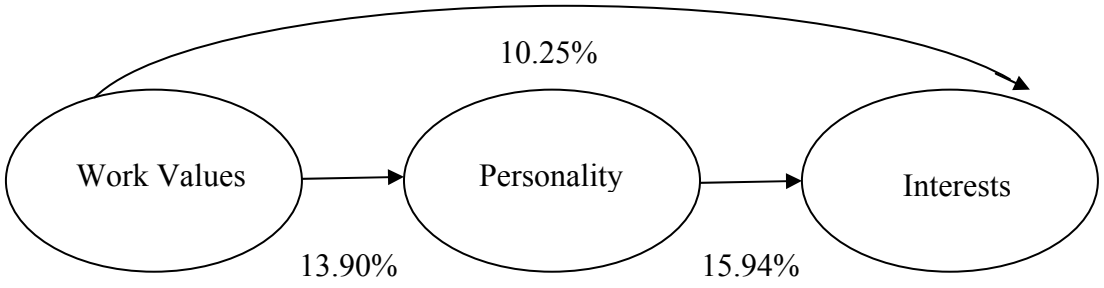


Figure 2

Variance Accounted for in Super's Onion Model



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