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Experimental manipulation of vocational interests: Influence on self-efficacy and choice goals

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Experimental manipulation of vocational interests: Influence on self-efficacy and choice goals

by

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ABSTRACT

This study was the first to use a true experimental design to test the hypothesis that vocational interests can be a precursor to the development of domain-specific self-efficacy beliefs in three occupational domains, namely information technology, sales, and teaching. Two levels of interest were created based on work values that differed in their level of appeal. Participants (206 college students from a large Midwestern university) rated sets of job descriptions that contained activity-based information in addition to a reference to work values associated with the position. Participants rated each of the job descriptions in terms of interest, confidence, and choice intention. The manipulation check was successful; participants expressed significantly more interest in job descriptions associated with the desirable work values relative to the descriptions associated with less desirable values. Moreover, the results showed that level of expressed interest had both a direct effect on self-efficacy ratings and an indirect effect via choice goals. Theoretical implications of the research as it relates to social cognitive career theory are discussed.

CHAPTER 1: INTRODUCTION

Social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) is a comprehensive framework that addresses career-related issues such as the formation and development of academic and career-related interests, the selection of choice options, and the performance and persistence in these pursuits. Social cognitive career theory, rooted in Bandura's (1986) social cognitive theory, describes the relations between the constructs of self-efficacy (confidence), outcome expectations, interests, and choice goals.

Much of the empirical research effort to validate the SCCT model has been devoted to the construct of self-efficacy. In particular, the link between self-efficacy and interests has been the focus of numerous studies. Based on a meta-analysis of 60 independent samples, Rottinghaus, Larson, & Borgen (2003) concluded that self-efficacy and interests are distinct, albeit correlated constructs. Although there is ample evidence that the two constructs are related, correlational research cannot answer the question of causality, i.e., whether changes in self-efficacy effect changes in interests, whether the reverse is true, or whether the relation is bidirectional. Social cognitive career theory (Lent et al., 1994) postulates a direct link between self-efficacy and interests, where changes in confidence lead to changes in interests. This causal path has been supported by experimental studies in which the manipulation of confidence resulted in changes in interests (Barak, Shiloh, & Haushner, 1992; Betz & Schifano, 2000; Luzzo, Hasper, Albert, Bibby, & Martinelli, 1999).

Social cognitive career theory, however, does not explicitly specify a scenario in which changes in interests directly cause changes in confidence. Nevertheless, the model allows for an indirect causal path between the two constructs: Interests in a particular domain leads to approach behavior and the intention to engage in an activity. Repeated engagement

can lead to success experiences and goal attainment; mastery, in turn, is an important factor in the development of self-efficacy. This hypothesized path is also congruent with theories that view interest as an emotion with the function of an "approach urge" that promotes the continuous development of knowledge and skills necessary for survival (Silvia, 2001, 2006).

Two recent longitudinal studies presented preliminary empirical evidence that interest can lead to the development of confidence. In a study by Tracey (2002), school children in fifth and eighth grade were assessed in terms of their interests and confidence in different RIASEC domains during a one-year period. The results indicated that a reciprocal model with equally strong effects provided the best fit for the data: changes in self-efficacy effected changes in interests, but interests also led to confidence. A similar result was found in a study with college students (Nauta, Kahn, Angell, & Cantarelli, 2002). At three points throughout an academic year, students completed RIASEC measures of confidence and interest. In the first half of the time period, initial interests were predictive of self-efficacy, but initial self-efficacy did not predict subsequent interest. During the second half, the effects of interest and confidence were reciprocal and equally strong.

The longitudinal studies reviewed above provide tentative evidence that interest might cause the development of self-efficacy, but only a true experimental design could corroborate these findings. However, no such study could be found in the literature. Therefore, the goal of the present study was to demonstrate the hypothesized causal link between interests and self-efficacy experimentally by manipulating interests, and measuring any resulting changes in self-efficacy (direct interest-confidence path) and choice goals or intentions (indirect interest-confidence path).

The manipulation of vocational interests is challenging for several reasons. Only a few studies have been published in which interest has been explicitly manipulated. Moreover, these studies did not focus on vocational interests, but on areas such as written texts or abstract art (see Silvia, 2006, for a comprehensive overview). In addition, these studies primarily focused on the manipulation of variables such as complexity or inconsistency in order to arouse interest (Silvia, 2006). However, if the manipulation of vocational interests were based on complexity or other variables that are possibly confounded with ability and self-efficacy, the interpretation of the results in the context of the proposed study would be unclear. Therefore, it is imperative that the manipulation of vocational interests be based on variables that do not confound with self-efficacy.

One possibility to manipulate vocational interests that does not suffer from the problems mentioned above is the creation of different levels of interest based on work values. Work values, although not a primary focus of SCCT, are included under the construct of outcome expectations (Diegelman & Subich, 2001; Fouad & Guillen, 2006; Lent et al., 1994). Diegelman and Subich (2001) provided experimental evidence that vocational interests indeed were found to be a function of outcome expectations. In their study, a sample of 85 college students (who were not psychology majors) showed significantly increased interest and intent in majoring in psychology after participating in a discussion session in which positive outcome expectations with regard to a psychology degree (e.g., the availability of a wide variety of employment opportunities, or the positive perception of psychologists in the general public) were presented. The study not only showed that outcome expectations can be used to manipulate interests, but it also presented evidence that outcome

expectations are independent from self-efficacy, an important consideration for the present research.

In the present study, the manipulation of interests based on work values was implemented in the following way (see the Methods section for details): For each of three specific vocational domains (sales, information technology, and teaching), a set of job activity descriptions was created. Each description included work values relevant to the specific job described (e.g., achievement, job security, or use of abilities), and the values were either congruent or incongruent with values that have been shown to be important to individuals. For each activity, participants rated their interest in the job (this allowed for a manipulation check), their confidence to perform the job, and their likelihood of engaging in the particular activity in the future (choice goals).

A second major point the present study sought to address was the relative importance of work values in comparison to interests. It is possible that the size of the effect of the work value manipulation on interest in a given job might be a function of preexisting level of domain-specific interest. It is thinkable, that, for individuals who have very little preexisting interest in a domain (e.g., sales), they would not consider these jobs at all even if they provided a good fit with the individual's work values (floor effect). Conversely, individuals who already have very high preexisting interest in a domain might be highly inclined to pursue these jobs even though the fit with their value system might not be optimal (ceiling effect). The largest effect might be expected for individuals whose attitude towards a given domain is relatively neutral, meaning, for example, that they might consider a related job under specific circumstances. Here, factors secondary to interests (such as work values) might be most salient with regard to whether an option might be worth pursuing. By

introducing a between-subjects factor (three independent subject groups representing low, medium, and high preexisting activity-based interest) into the experimental design, this interaction between the relative importance of preexisting interests and work values was studied.

The significance of the present study is manifold: First, the manipulation of vocational interests in a laboratory setting can be considered to be the first of its kind. Second, the demonstration that changes in interests lead to changes in self-efficacy and/or choice goals has implications for the revision and expansion of the SCCT framework. Third, the design enabled the systematic study of the relative importance of preexisting activity-based interests and work values, and their interaction in relation to career choice behavior. Lastly, the findings might have ramifications for the career counseling process. For example, many current efforts focus on recruiting more women into science, engineering, and other occupations in which women have been traditionally under-represented (Betz, 2006). These interventions mainly focus on the enhancement of self-efficacy beliefs in these areas (Betz & Hackett, 1997; Betz & Schifano, 2000). If the results of the present study indicated that interests affect choice goals and confidence, counseling interventions that focus on the development of interests via a variety of paths could complement the approaches already in place.

CHAPTER 2: LITERATURE REVIEW

The literature review related to the present research will cover the following topics: The first part comprises the theoretical foundations on which the present research is built. This includes a review of Bandura's (1986) social cognitive theory, and Lent et al.'s (1994) expansion of this framework into social cognitive career theory (SCCT). In addition, the concept of work values in vocational decision-making will be included. The second part of the review will cover the empirical evidence demonstrating the interrelation of various SCCT constructs. Specifically, the focus will be on the relations between the constructs of self-efficacy and interests, outcome expectancies and interests, and interests and choice goals. The third main part of the review will be dedicated to the critical evaluation of the research findings, including suggestions for future research. Finally, hypotheses and predictions concerning the present research will be laid out.

Theoretical Foundation

Bandura's Social Cognitive Theory (SCT)

Bandura developed his social cognitive theory (SCT; Bandura, 1977, 1982, 1986, 1989, 2001) out of dissatisfaction with the simple input-output behavioral model that was dominant at the time. Bandura posited that human behavior is not the result of automatic mechanical reactions to environmental stimuli, but the result of "purposive accessing and deliberative processing of information for selecting, constructing, regulating, and evaluating courses of action" (Bandura, 2001, p. 3). Bandura underscores the concept of human agency, i.e. the notion that humans cognitively reflect on their past experiences, and that they are able to exercise forethought in planning their actions, to set goals for themselves, and to anticipate likely consequences of their behavior.

Bandura recognized that individuals do not exist in a vacuum, but that their behaviors dynamically interact with the environment. Bandura coined this reciprocal interaction between personal agency, overt behaviors, and the environment the triadic reciprocal model of causality. Bandura identified three main cognitive mechanisms that are part of the personal agency construct; these are self-efficacy beliefs, outcome expectations, and goals.

According to Bandura, the central mechanism of personal agency is self-efficacy. Self-efficacy is defined as "people's judgment of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391), and is linked to the perception of having the power to produce effects based on one's actions. Self-efficacy beliefs are thought to be dynamic, interacting in a complex manner with other person variables, environmental contexts, and behavioral factors. Four main sources of self-efficacy have been identified (Bandura, 1982; 1997): Personal performance accomplishments (mastery experiences) have shown to be the most potent sources of self-efficacy. Successfully completing an activity can raise one's self-efficacy beliefs pertaining to this specific activity, while repeated failures eventually lower one's confidence. A second source of self-efficacy is vicarious learning. People tend to raise their own self-efficacy beliefs when observing another person (who is similar to them) successfully completing a task. The third mechanism is social persuasion. Encouragement and praise from others have a positive effect on an individual's self-efficacy. The fourth factor involved in influencing self-efficacy relates to physiological and affective states. For example, high anxiety has shown to be detrimental to the development of self-efficacy in a performance area.

Outcome expectations are a person's beliefs about the probability of response outcomes, or the imagined consequences of a particular behavior. Whereas self-efficacy

addresses the perception of one's ability (Am I able to do this activity?), outcome expectations focus on what will happen as a result of engaging in the activity. Outcome expectations can be tangible (e.g., monetary rewards), but they can also be intrinsic or self-evaluative (e.g., work-related needs and values).

The third key person variable encompasses the goals that people set for themselves. A goal has been defined as "the determination to engage in a particular activity or to effect a particular future outcome" (Lent et al., 1994, p. 85). Goals can differ in their specificity and in terms of their remoteness in time. Goals help people to organize and guide behavior, and to sustain it over extended time periods without the need for external reinforcement. This self-motivating characteristic of goals arises from people's ability to link the fulfillment of the goal to self-satisfaction. This requires people to symbolically represent the desired outcome, and to evaluate their own behavior in comparison to an internally set standard of performance.

The three mechanisms described above aide in the creation of cognitive representations of past and future events, which in turn are seen as the main motivators of behavior. In addition, in order to create courses of action that are likely to produce a desired outcome, humans are required to engage in self-monitoring, self-guidance of performance via personal standards, as well as corrective self-reactions. Self-efficacy has an effect on both goals and outcome expectations, and together they determine the selection of challenges, how much effort is expended on a task, how long people persevere when facing obstacles, and whether failures are seen as motivating or demoralizing.

Bandura's framework has gained significant recognition, and the theory has been extended by others and tailored to more specific domains such as career development in

general (social cognitive career theory; Lent et al., 1994) and more specifically to the career

development of women pursuing non-traditional career paths (Betz & Hackett, 1981).

Social Cognitive Career Theory (SCCT)

Social cognitive career theory, SCCT (Lent, 2005; Lent, Brown, & Hackett, 2002;

Lent et al., 1994), is an expansion of Bandura's SCT that offers a conceptual framework for

the process of career decision making. More specifically, the theory addresses the questions

of how career and academic interests develop, how career related choices are made, and how

performance outcomes are achieved. The theory hereby attempts to bridge across different

existing career theories by describing the interactions between key constructs (e.g., self-

efficacy, interests, or abilities) common to many theories, and predicting common career

related outcomes (such as job satisfaction and stability). Analogue to Bandura's SCT, social

cognitive career theory addresses the interaction between self-referent thoughts and social-

environmental processes in the guidance of vocational behavior. This includes the description

of the cognitive mediators that contribute to the direction of future vocational behavior based

on past learning experiences. Social cognitive career theory further specifies a series of

interlocking models that describe how specific person variables (interest, abilities, self-

efficacy, etc.) interrelate with contextual factors to influence career outcomes.

Assumptions underlying SCCT. There are several assumptions that underlie SCCT,

which can be summarized as follows: The SCCT framework emphasizes a cognitive

constructivist approach, meaning that individuals are actively engaged in shaping their

environment, and constructing their own career outcomes. The theory further assumes that

there is a reciprocal interaction between person variables (internal cognitive, motivational,

and affective states), the environmental context, and the individual's overt behavior, a

concept that Bandura has termed the triadic reciprocal model of causality. In the context of this model the individual is seen as both the "producer and product" of his or her environment. Importantly, the interaction between the different variables is thought to be dynamic as well as domain and situation-specific.

Although SCCT acknowledges the influence of genetic factors and special abilities on vocational behavior, the theory focuses mainly on the impact that past learning experiences (including operant, associative, and vicarious learning) can have on the vocational decision making process. Moreover, SCCT assumes that the individual cognitively mediates past learning experiences, and that future behaviors are dependent on the outcomes determined by social cognitive mechanisms such as self-efficacy beliefs.

SCCT's main constructs and their interaction. The SCCT framework includes the main social cognitive mechanisms already specified by Bandura (self-efficacy beliefs, outcome expectations, and goal representations), but also additional constructs pertinent to the process of career development (e.g., vocational interests). These constructs fall under the category of person variables in the triadic reciprocal causality model. In the following, these key constructs will be described in detail.

The social cognitive mechanism that has been emphasized the most in the career literature is the construct of self-efficacy. Self-efficacy is defined as "people's judgment of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). In other words, self-efficacy is the cognitive appraisal of one's abilities pertaining to a specific domain (Lent et al., 1994). Self-efficacy beliefs are thought to be dynamic, interacting in a complex manner with other person variables, environmental contexts, and behavioral factors. Four main sources of self-efficacy

have been identified (Bandura, 1997): Personal performance accomplishments (mastery experiences) have shown to be the most potent sources of self-efficacy. Successfully completing an activity can raise one's self-efficacy beliefs pertaining to this specific activity, while repeated failures eventually lower one's confidence. A second source of self-efficacy is vicarious learning: People tend to raise their own self-efficacy beliefs when observing another person who is similar to them successfully completing a task. The third mechanism is social persuasion. Encouragement and praise from others have a positive effect on an individual's self-efficacy. The fourth factor involved in influencing self-efficacy relates to physiological and affective states. For example, high anxiety has shown to be detrimental to the development of self-efficacy in a performance area.

A second major SCCT construct is outcome expectations. Outcome expectations are a person's beliefs about the probability of response outcomes, or the imagined consequences of a particular behavior (Lent et al., 1994). Whereas self-efficacy addresses the perception of one's ability (Am I able to do this activity?), outcome expectations focus on what will happen as a result of engaging in the activity. Outcome expectations can be tangible (e.g., monetary rewards), but they can also be intrinsic or self-evaluative, or social anticipated recognition from others (e.g., work-related needs and values). Outcome expectations can serve as motivating factors to engage in an activity. When people anticipate positive outcomes from a task (e.g., praise by others, self-approval, etc), they are more likely to engage in it than when the outcomes are being judged as disadvantageous by the individual. Similar to self-efficacy, outcome expectations are formed based on learning experiences. Previous attainment of rewards, observation of the outcomes achieved by other people, and the consideration of physical states (e.g., emotional arousal) all contribute to how a person's

outcome expectations are shaped. In addition, when outcomes are tied to one's own performance, self-efficacy can be seen as a possible influence on outcome expectations.

The third major SCCT construct that has been adapted from Bandura's theory is the concept of goals. A goal has been defined as "the determination to engage in a particular activity or to effect a particular future outcome" (Lent et al., 1994, p. 85). Examples of goals are career plans, decisions, and expressed choices. Goals can differ in their specificity and in terms of their remoteness in time. Goals help people to organize and guide behavior, and to sustain it over extended time periods without the need for external reinforcement. This self-motivating characteristic of goals arises from people's ability to link the fulfillment of the goal to self-satisfaction. This requires people to symbolically represent the desired outcome, and to evaluate their own behavior in comparison to an internally set standard of performance.

A further SCCT key construct that supplements the three mechanisms specified by Bandura is the concept of vocational interests. In SCCT, vocational interests are defined as "patterns of likes, dislikes, and indifferences regarding career-relevant activities and occupations" (Lent et al., 1994, p. 88). Although many conceptualizations and determinants of interests have been identified in the literature (see e.g., Silvia, 2006; Swanson & Gore, 2000, for an overview), SCCT primarily focuses on the role of experiential and cognitive factors in the development of vocational interests.

Three interlocking models (addressing interest development, vocational choice, and academic performance) have been proposed in order to address the dynamic interaction between the aforementioned constructs. The model that is most relevant to the proposed research is the model of interest development. According to SCCT, self-efficacy, outcome

expectations, interests, and goals interact reciprocally with each other (Figure 1). The process can be described as follows: When children grow up, they are exposed (directly or vicariously, i.e. by observing others) to many different activities. Through repeated activity engagement, modeling, and reinforcing experiences (mastery or feedback from others), children are thought to develop their own performance standards, domain-specific self-efficacy, and outcome expectations; these in turn influence the formation of enduring intrinsic interests. Newly formed interests then lead to approach behavior and choice goals, giving way to further practice and exposure opportunities, which result in specific outcomes that than lead to the revision of self-efficacy and outcome expectancy estimates. The different linkages between the constructs have been empirically investigated to varying degrees. Due to the extensive volume of empirical studies addressing the specific links between constructs as well as the model as a whole, the pertinent literature will be reviewed in a separate chapter.

Work values

Social cognitive career theory does not focus explicitly on the construct of work values. However, SCCT acknowledges that work values might have an influence on vocational behavior, and work values are included as part of the construct of outcome expectations (Lent et al., 1994). The relatively low emphasis on work values in the guidance of vocational behavior is not restricted to SCCT, and most theories of vocational behavior do not regard work values as a central concept. A notable exception, however, is the Theory of Work Adjustment (TWA; Dawis & Lofquist, 1984). The TWA is a framework whose central tenet is the fit (congruence) between a person and his or her work environment, which in turn is predictive of job satisfaction. Two important person variables that are emphasized in this

model are the individual's abilities, and his or her needs and values. If the individual has the abilities that a job requires, *satisfactoriness* ensues. On the other hand, if the job setting matches an individual's needs and values, i.e. provides a positively reinforcing reward pattern, *satisfaction* is the result. In this context, values are seen as "second-order needs" or common elements that are primary dimensions of needs. Dawis and Lofquist identified six crucial values, namely achievement, comfort, status, altruism, safety, and autonomy. Within TWA, values are distinguished from interests in an operational sense based on the dimensions of importance vs. liking (Dawis, 1991). According to this distinction, values refer to the importance the individual assigns to particular work outcomes, whereas interests refer to what the individual likes or dislikes.

Work values as guiding influence on vocational behavior have not received much empirical attention. Several factors that might explain this paucity of research efforts directed towards work values have been identified (see Rounds & Armstrong, 2005, for an overview). As described above, there is a dearth of theories that might guide the formulation of research questions and hypotheses. Conceptual issues that have been identified are the operationalization of the construct, and its distinction from related concepts such as general life values, interests, and needs. In addition, authors disagree on issues such as finding a suitable taxonomy for work values that might guide specific research hypotheses. Another shortcoming relates to the availability of measures that assess work values. Few measures are available, and not all of them have satisfying psychometric characteristics.

Due to SCCT's lack of emphasis on work values, the conceptualization of work values offered by TWA will be adopted instead as the theoretical basis for the understanding, conceptualization, and operationalization of work values in the context of the present

research. This includes the operational distinction between interests and values in terms of liking an activity vs. the importance placed on possible outcomes from engaging in the activity.

<div align="center">Review of Empirical Studies Related to SCCT</div>

An abundant number of studies have been conducted to empirically validate the SCCT model. Whereas some studies have focused on the model in its entirety, most studies have addressed the links between specific constructs. Therefore, the following review will be organized according to the construct linkages of interest to the proposed study; these are the links between self-efficacy and interests, interests and choice goals, and interests and outcome expectations.

Self-efficacy – interest link

The SCCT framework predicts that there is a significant correlation between one's self-efficacy beliefs related to a specific vocational domain and one's vocational interests. More specifically, SCCT specifies a causal relation between the two variables, with self-efficacy effecting the development of interests (see Figure 1). Unfortunately, most research on the relation between the two constructs has been correlational in nature from which causality cannot be inferred. Research published prior to 2003 has been included in a comprehensive meta-analysis (Rottinghaus et al., 2003), and, due to the bulk of literature, the review of individual studies, if applicable, will be focused mainly on research published during the past five years. More recently, researchers began to conduct longitudinal studies designed to address the time course of interest and self-efficacy development. To date, three such studies (Denissen, Zarrett, & Eccles, 2007; Nauta et al., 2002; Tracey, 2002) have been published and will be reviewed here. A few studies have employed an experimental design

to study the relation between self-efficacy and interests (e.g., Betz & Schifano, 2000; Luzzo et al., 1999; Silvia, 2003). However, these studies focused exclusively on the manipulation of self-efficacy; no studies could be found with regard to experimental manipulation of interests. More recently, research has focused on assessing the relation between self-efficacy and interests in ethnic minority and international samples. In the following sections the available research will be categorized according to the distinctions made above, starting with correlational research (including cross-cultural research), and followed by longitudinal and experimental findings.

Correlational research on the link between self-efficacy and interests. A comprehensive meta-analysis summarizing correlational research on the self-efficacy – interest link has been published by Rottinghaus et al. (2003). The authors analyzed 60 independent samples (n = 39,154) from 49 studies (38 published, and 11 unpublished). Studies were included if interests and self-efficacy had been measured in parallel (i.e., measures that were co-normed, such as the Strong Interest Inventory (SII; Harmon, Hansen, Borgen, & Hammer, 1994) in combination with the Skills Confidence Inventory (SCI; Betz, Borgen, & Harmon, 1996), or the Campbell Interest and Skills Survey (CISS; Campbell, Hyne, & Nilsen, 1992)), yielding a number of 53 samples that met this criterion. The authors calculated average weighted (by sample size) pairwise cross-correlations between parallel samples as a measure of effect size. In addition, more detailed analyses were conducted that evaluated the data by content domain (i.e., the six RIASEC domains and more specific subdomains such as science or mathematics), gender, measures used, and age group.

The results from the meta-analysis can be summarized as follows: The overall weighted mean effect size for the correlation between self-efficacy and vocational interests

was $r = .59$ (the 95% confidence interval ranged from .58 to .59). This finding replicated the analysis based on 13 samples presented by Lent et al. (1994), who found an average correlation of .53. Rottinghaus et al. concluded that the moderate correlation between self-efficacy and interests confirmed SCCT's proposition that self-efficacy and interests are related but conceptually distinct constructs. An additional finding was that the strength of the relation between self-efficacy and interests was relatively consistent across the RIASEC domains (the largest correlation occurred for the Investigative theme with $r = .68$, and the lowest correlation was seen in the Enterprising theme with $r = .50$). However, the type of measure used to assess self-efficacy and interests moderated this finding: all correlations were significantly higher, and showed more consistency across the domains when the two constructs were measured with the CISS rather than with the SII/SCI scales. Correlations that were computed for more specific domains such as science, art, and mathematics were generally in the same effect size range as the results for the more comprehensive domains. Therefore, there was not enough evidence to support SCCT's proposition that, the more specific the occupational domain under consideration, the stronger the relation between the two constructs should be. A further finding was that gender moderated the strength of the correlations in some of the domains. Self-efficacy – interest correlations were significantly stronger (based on a Bonferroni- adjusted significance level of $p < .005$) for men for the Realistic, Social and Conventional domains. Another hypothesized moderator, age group, affected the relation between the two variables in the hypothesized direction (stronger correlations for working adults relative to college students and adolescents), but the differences in correlations remained below statistical significance.

Overall, one can conclude that there is ample empirical evidence to support that a person's self-efficacy beliefs about a specific occupational activity is linked to the expressed interest pertinent to the same domain. More recently, researchers started to look at whether the self-efficacy – interest link also generalizes to ethnic minority and international samples. So far, the relation between self-efficacy and interests has been empirically supported in samples of African American college students (Gainor & Lent, 1998; Lent et al., 2005; Waller, 2006), Mexican American adolescents (Flores, Navarro, Smith, & Ploszaj, 2006; Navarro, Flores, & Worthington, 2007), Japanese college students (Adachi, 2004), and Italian high-school students (Lent, Brown, Nota, & Soresi, 2003).

Longitudinal research on the link between self-efficacy and interests. Correlational research offers a snapshot in time on the relation between two variables. However, correlational studies cannot answer questions regarding the development of the relation over time. Therefore, more recent research efforts focused on the evaluation of the relation between self-efficacy and interests from a longitudinal standpoint. Two studies have been reported in the literature that explicitly looked at whether self-efficacy precedes the development of interests (as posited by SCCT), whether the reverse might be true, or whether the relation between the two constructs is bidirectional (Nauta et al., 2002; Tracey, 2002). A third longitudinal study focused on how the coupling of the two constructs, i.e. the strength of the correlation, changes over time (Denissen et al., 2007). The findings from these three key studies will be presented here.

Tracey (2002) examined how the relation between self-efficacy and interests developed over a one-year period in a sample of 5th grade elementary school children (n = 126, with 71 students being female) and a sample of 7th grade middle school students (n =

221, with 113 students being female). Tracey assessed the children's interests and self-efficacy beliefs related to activities representing the six RIASEC domains using the revised version of the Inventory of Children's Activities (ICA-R; Tracey & Ward, 1998). The ICA-R covers 30 activities derived from the RIASEC model adapted to the occupational knowledge level of elementary school children. Self-efficacy (being good at the activity in question) and interests (liking the activity in question) were assessed based on a 5-point Likert response format. The ICA-R has shown to have adequate psychometric properties. The children completed the questionnaire twice, separated by a time period of one full year.

To analyze the longitudinal relations between the two constructs, Tracey used structural equation modeling (using a LISREL algorithm with maximum likelihood estimation) based on the covariance matrices of the six (RIASEC) interest and competence scales, both measured at times 1 and 2. Separate analyses were conducted for the two samples. Four different models were tested. The first model assumed no cross effects between self-efficacy and interests, the second assumed that interests would effect self-efficacy, the third model addressed the reverse case of self-efficacy driving interests (as hypothesized by SCCT), and the fourth model assumed a reciprocal relation between the two variables.

The main result of the study can be summarized as follows: For both samples, the reciprocal model provided the best fit with the data. This finding held up across all six RIASEC domains as well as gender. Therefore, it seems that not only do changes in self-efficacy precede changes in interest (the direction traditionally posited by SCCT), but changes in interests also seem to lead to changes in self-efficacy over time. Tracey explained the latter result by pointing out that interests can serve as a guiding and motivating function

towards the initiation of approach behavior. Repeated engagement in an activity in turn provides ample opportunities for developing a sense of competency related to the chosen activity.

Nauta et al. (2002) addressed the same research question as Tracey (2002), namely to establish through a longitudinal design whether changes in self-efficacy precede changes in interests, whether the reverse is true, or whether the relation is bidirectional. Unlike Tracey, however, Nauta et al. focused on college students as their population of interest. The sample consisted of 104 students from a large Midwestern university (79% female). Participants completed both the Skills Confidence Inventory and the Strong Interest Inventory at three points in time (3 months and 7 months after the initial assessment) over the course of one academic year. To model the temporal nature of the relation between self-efficacy and interests, structural equation modeling (LISREL algorithm with maximum likelihood procedure) was employed. Five different models were evaluated in terms of their fit with the observed data; four of these were identical to the models included in Tracey's study. The additional model tested by Nauta et al. was a reciprocal model with the constraint of assuming that the antecedent variables do not differ in strength.

The results were consistent with Tracey (2002). For both time lags, a reciprocal model provided the best fit with the data. Moreover, the reciprocal temporal precedence for the 7-month period differed in strength. The effect for the development of subsequent interests based on initial self-efficacy was significantly stronger than the effect for development of self-efficacy based on initial interests, albeit the effect size was small. Across the six RIASEC domains, initial *self-efficacy* preceded the development of interests in the artistic, social, enterprising, and conventional domains while initial levels of *interest*

predicted the development of self-efficacy in the social and conventional domains. Overall, when combining the findings from Tracey (2002) and Nauta et al. (2002), there seems to be converging evidence that self-efficacy does not only drive interest development (as emphasized by SCCT), but that the relation between the two constructs is bidirectional, meaning initial interest can also lead to changes in self-efficacy beliefs.

Another study that examined the longitudinal development of the self-efficacy – interests relation addressed the extent to which the coupling (the intraindividual association) between domain-specific self-efficacy and interests changes over time (Denissen et al., 2007). A sample of about 1,000 children (grouped in three cohorts representing grade levels 1-12 and ages 6-17) from four different Michigan cities was included in the study. The study was conducted over a 12-year period, and data collection occurred yearly. The children completed measures of interest and confidence related to three academic domains (English, mathematics, and science), and two non-academic domains (instrumental music and sports). Both interests (liking the activity) and self-efficacy (being good at the activity) were assessed on a 7-point Likert-type scale. With regard to data analysis, intraindividual correlations between self-efficacy and interest ratings were computed first, and a Hierarchical Linear Modeling technique (including both linear and quadratic terms) was used to model the longitudinal trajectories of the couplings.

The main finding pertinent to the proposed study was that coupling between interests and self-efficacy increased with age, meaning that the intraindividual association between the two constructs became stronger as the children grew older. The authors offered several explanations of this finding. First, the stronger coupling at later ages might be due to the accumulation of reciprocal influences between self-efficacy and interests (a finding that

would be consistent with the results of Tracey (2002) and Nauta et al. (2002)). A second explanation, which was supported by Denissen et al.'s data, is that the two variables become more stable over time due to processes such as niche-picking, social pressures, and profile differentiation. A third explanation relates to the increase in cognitive maturity over time, and the increased ability to form associations between one's beliefs, perceptions, and experiences.

Experimental research on the link between self-efficacy and interests. As shown in the previous section, longitudinal research can offer a glimpse into the development of the relation between self-efficacy and interests over time. However, only a true experimental design, which requires randomization as well as the manipulation of the independent variable(s), can directly address the question of causality. So far, several experimental studies have addressed the question whether changes in self-efficacy can cause changes in interests (Barak et al., 1992; Betz & Schifano, 2000; Campbell & Hackett, 1986; Hackett, Betz, O'Halloran, & Romac, 1990; Hackett & Campbell, 1987; Luzzo et al., 1999; Silvia, 2003), but no study has yet tested the hypothesis that changes in interests drive changes in self-efficacy. The available experimental evidence supporting a causal self-efficacy-to-interests link is summarized below. Two types of approaches towards the manipulation of self-efficacy have been described in the literature. The first approach involves the manipulation of self-efficacy based on task difficulty (e.g., Campbell & Hackett, 1986; Hackett & Campbell, 1987; Silvia, 2003), the second approach made use of more ecologically valid interventions to raise self-efficacy based on the sources of self-efficacy postulated by Bandura (e.g., Betz & Schifano, 2000; Luzzo et al., 1999).

The first attempts to manipulate self-efficacy were based on task difficulty. For example, in two experiments conducted by Hackett and Campbell, undergraduate students were randomly assigned to either a success (easy task) or a failure condition (difficult task) with regard to an incomplete numbers series task (Campbell & Hackett, 1986), or an anagram solving task (Hackett & Campbell, 1987), respectively. In both studies, students in the success conditions reported significantly higher self-efficacy regarding the task than those in the failure condition. This manipulation resulted in significant differences in interest ratings of the tasks, with students with high self-efficacy also reporting high interest. Gender effects were observed in both studies. Women were significantly more likely than men to attribute their success to luck, and their failure to lack of ability.

Silvia (2003), conducted a similar experimental study in which self-efficacy was manipulated, and interest was the dependent variable. However, Silvia hypothesized that the relation between interest and self-efficacy was quadratic rather than linear. According to Silvia, when individuals have very low levels of self-efficacy regarding a task, they are not very likely to attempt it, and if they nonetheless do, frustration ensues. On the other hand, when individuals exhibit very high levels of self-efficacy and success is certain, the task is being perceived as boring and unchallenging, and interest in engaging in the activity will be low. Interest in a task should be highest when a modest level of self-efficacy is present, and the outcome of the task is not entirely certain.

Silvia tested this hypothesis in two experiments. In the first experiment, 30 undergraduate students (12 female) were given short activity descriptions that differed in difficulty in order to manipulate self-efficacy. Students were assigned to one of three experimental conditions encompassing either the easy, moderately difficult, or highly

difficult activities. Students were asked to rate their self-efficacy (manipulation check) and interest regarding the activities. The manipulation check revealed, that the participants' self-efficacy ratings linearly decreased as expected with perceived difficulty of the task. Regarding the interest ratings, individuals in the moderate condition showed the highest interest in the activities, but students in the easy and very difficult conditions both had low interest ratings. The data fit well the hypothesized quadratic model. In his second experiment, 33 undergraduate students (nine female) were asked to play a "fuzzy dart" game in which they had to throw a velvet-covered ball at a target board. Difficulty, and resulting sense of self-efficacy was manipulated by letting the participants throw the ball from three different distances away from the target. The dependent variable was expressed interest in continuing to play five more rounds of the game. The rationale was that students who where in the short distance condition would find the task boring because it was very easy to hit the bulls eye on the target from that distance. On the other hand, participants who were furthest away from the target and who had very slim chances of succeeding at aiming at the target, were thought to get frustrated by the lack of success, and rate the game as less interesting. Interest was assessed by asking the participants in terms of how interesting they found the game, and how much they would like to play five more rounds. The results from the second experiment also confirmed the hypothesis that the relation between self-efficacy and interest might not be linear, but follow an "inverted-U" function.

The second main approach towards the manipulation of self-efficacy is based on providing mastery and vicarious learning experiences as part of an intervention to raise self-efficacy in a specific academic domain. For example, Betz and Schifano (2002) developed an intervention designed to raise realistic self-efficacy in woman with the goal of

consequently raising their interest in these types of occupations. Female college students were randomly assigned to either the intervention or a control condition. The intervention consisted of a seven-hour long training in building, repair, and construction activities during which the participants were exposed to both modeling and the opportunity to gain mastery in the activities presented. Additional strategies were the provision of social persuasion, and the teaching of relaxation techniques to reduce anxiety. As hypothesized, participants in the intervention condition who underwent the training had significantly higher realistic self-efficacy along with higher interest for these types activities in comparison to the control group.

A similar study has been conducted by Luzzo et al. (1999) who investigated the separate and combined effects of performance accomplishment and vicarious learning on the mathematics and science self-efficacy, interest, and academic choices of a sample of college students. In the performance accomplishment condition, participants received the feedback of a passing score on a number series task. In the vicarious learning condition, participants were shown a video in which models talked about their success and satisfaction regarding their science careers. At a follow-up assessment four weeks later, the authors found that the largest increase in self-efficacy and interests had occurred in the participants in the combined mastery / vicarious learning condition. This group showed significantly higher interest towards math and science than the mastery only condition, which in turn gave significantly higher interest rating than both the vicarious learning and control conditions. Vicarious learning did not have a significant effect relative to the control condition. The result of this study supports the notion that mastery (especially in combination with vicarious learning) is a powerful source of self-efficacy, which then can lead to changes in interest.

Outcome expectancies – interest link

The SCCT model predicts that there is a positive correlation between outcome expectancies and interests. Moreover, the theory posits that outcome expectancies are a separate construct that contributes uniquely to the variance in interests. Similar to the relation between self-efficacy and interests, most research linking outcomes expectancies and interests is correlational in nature, but results from these studies clearly support the hypothesized relation between outcome expectancies and interests (e.g., Adachi, 2004; Cunningham, Bruening, Sartore, Sagas, & Fink, 2005; Fouad & Guillen, 2006; Lent et al., 2001; Lent et al., 1994; Lent et al., 2003; Navarro et al., 2007; Smith & Fouad, 1999). Correlation coefficients for the relation between the two constructs have been shown to be in the moderate range from .40 to .50. In addition, when several construct links within the SCCT model were tested in parallel, outcome expectancies uniquely contributed to the explanation of variability in interests as indicated by changes in R^2 in a multiple regression model in the range of .10 to .20 (Fouad & Guillen, 2006).

Diegelman and Subich (2001) studied whether increased outcome expectations for an undergraduate psychology degree would lead to higher interest as well as greater intent of pursuing such a degree. A sample of 85 college students (52 female) who were not psychology majors participated in an intervention comprised of a presentation and discussion of career opportunities related to a psychology major. The dependent variables were self-efficacy, interest, and choice intent with regard to majoring in psychology. All variables were measured before (pretest) and after the intervention (posttest). A manipulation check revealed that ratings of outcome expectancies regarding a psychology degree significantly increased from pretest to posttest. In addition, both interest and choice intent significantly increased as

a result of the intervention. In contrast, there was no difference in self-efficacy between pretest and posttest ratings. The finding that changes in outcome expectancies did not result in changes in self-efficacy can be interpreted as support for the hypothesis that these two constructs are independent from each other.

Interest – choice goals link

Several studies have assessed the relation between the constructs of interests and choice goals. The SCCT framework predicts that there is a positive relation between the two constructs. So far, only correlational research has addressed this question. Overall, the available empirical evidence supports the hypothesis of an interest – choice goal link (e.g., Cunningham et al., 2005; Flores et al., 2006; Fouad, 2007; Gainor & Lent, 1998; Lent et al., 2001; Lent et al., 2003; Lent et al., 2005; Waller, 2006). The magnitude of the correlation found in these studies tended to be higher than for the other construct links, albeit the range was large, depending on the study and the specific domain under investigation. For example, Lent et al. (2003) reported interest-choice goal correlations for the six RIASEC domains. The correlation was lowest for the artistic type ($r = .20$) and highest for the realistic type ($r = .91$).

Critical Evaluation of the Empirical SCCT Literature

Since its inception, social cognitive career theory has stimulated a volume of research activities. Most studies so far have focused on theory confirmation by testing predictions regarding the links between SCCT constructs such as self-efficacy, interests, and outcome expectancies. Overall, there is ample support for the construct relations hypothesized by SCCT. More recently, researchers have been attempting to investigate whether the model also holds up across different ethnic populations. In addition, current efforts are being directed towards the integration of SCCT with other frameworks. This includes theories of

personality (Borgen & Betz, 2008; Hartman & Betz, 2007; Nauta, 2004) and theories addressing gender and racial identity (e.g., Betz, 2006; Betz & Hackett, 1997; Brown, 2004; Byars-Winston, 2006; Gainor & Lent, 1998). Further, researchers are trying to learn more about specific factors that contribute to the development of vocational self-efficacy beliefs. This includes the four sources postulated by Bandura (Betz & Schifano, 2000; Luzzo et al., 1999), but also additional sources such as sibling and peer support (Ali, McWhirter, & Chronister, 2005), family socioeconomic status (Bandura, Barbaranelli, Vittorio Caprara, & Pastorelli, 2001), acculturation level of ethnic minority individuals (Flores et al., 2006), or perception of gender-stereotyped occupations (Ji, Lapan, & Tate, 2004).

Despite all the progress that is being made regarding the validation of SCCT, there are several limitations of the current body of research. Many studies conducted so far can been criticized on methodological grounds (see Betz & Hackett, 2006, for a review). One issue pertains to the operationalization of SCCT constructs. Betz and Hackett point out that many researchers do not adhere to the SCCT definitions of the construct (e.g., mislabeling self-efficacy as a trait), or fail to recognize that the constructs refer to specific domains rather than being all-encompassing concepts. Another target of criticism in SCCT research has been the use of scales with questionable psychometric properties.

The following aspects related to SCCT have not received sufficient empirical scrutiny and might be addressed in future research. First, there is a lack of understanding of how vocational interests develop and how different factors interact to create interest in a specific activity. According to SCCT, self-efficacy beliefs are the primary route through which interests develop. However, recent evidence suggests that there are other factors, such as motivational variables (Silvia, 2001, 2006) or genetic contributions (Betsworth et al., 1994;

Lykken, Bouchard, McGue, & Tellegen, 1993) that have shown to be highly influential in interest formation. More research should be conducted that focuses on the relative importance of these factors in conjunction with self-efficacy. A related aspect that is currently not well understood is the longitudinal trajectory of interest development. More research is needed that addresses questions regarding the factors that are most important at different developmental stages or transitions, or the stability of interests over time. Finally there is a paucity of true experimental research that could help identify the causal or directional nature of the relation between different SCCT constructs. Incidentally, no study has been conducted to date in which interests were manipulated experimentally. Hence, the present study serves as a first attempt to manipulate vocational interests in a controlled laboratory experiment.

<center>Hypotheses</center>

The main hypotheses for the proposed research were as follows: Based on the literature (Diegelman & Subich, 2001; Fouad & Guillen, 2006; Lent et al., 1994), it was expected that vocational interests can be manipulated via outcome expectations such as work values. Specifically, individuals were hypothesized to be more interested in jobs that are congruent with their own values than in those that are incongruent with their values (everything else being equal). Assuming that the experimental manipulation is successful, level of interest in a job was predicted to influence self-efficacy in either a direct or indirect way via choice goals. If the indirect path holds true, individuals who express higher interest in a job profile based on the aforementioned manipulation should be more likely to express intentions to pursue such a job in the future, but there should be no immediate effects on self-

efficacy directly. This result would be in accordance with social cognitive career theory (Judge & Bretz, 1992; Lent et al., 1994).

If changes in job-related interests directly lead to immediate changes in self-efficacy, this would be support for a direct interest-self-efficacy link. This outcome can be judged as less likely to occur based on the following rationale: Whereas for the indirect link a plausible mechanism can be specified (interest leads to approach behavior, prolonged activity engagement leads to mastery experiences, therefore raising the level of self-efficacy (Lent et al., 1994; Nauta et al., 2002; Tracey, 2002), it is not quite clear how an increase in interests can have a direct immediate effect on self-efficacy. In addition to the challenge of determining a suitable mechanism, there is other evidence that would contradict such a finding. Diegelman and Subich (2001) found that outcome expectancies did influence interests, but there was no immediate effect on self-efficacy. Also, longitudinal evidence (Nauta et al., 2002; Tracey, 2002) suggests that time is an important factor to be considered when examining the causal effects between interests and self-efficacy; this, again, would support the indirect interest – self-efficacy pathway rather than the direct link.

With regard to the relative importance of interests and work values related to likelihood of pursuing an activity, there is no previous research available that might guide the formulation of a detailed hypothesis. Nonetheless, it is possible that preexisting activity-based interest moderates the size of the effect of the work value manipulation. As shown in Figure 2, the effect might be largest for individuals in the mid-range of domain-specific preexisting interest. These individuals might have enough interest to be willing to consider a job, but they might rely on factors secondary to interest to decide whether an option is worth pursuing.

CHAPTER 3: METHOD

The present study was conducted in three conceptual steps. The first step consisted of a pilot study that assessed the adequacy of the of job descriptions as dependent variable. The second step was a mass screening of potential participants with the goal of preselecting participants at different levels of preexisting activity-based interest, and to determine normative work value ratings. The third step consisted of the actual experimental study in which the main hypotheses were tested. The description of research methodology (participants, measures, and procedures) will follow the conceptual structure as outlined above.

Pilot Study

The pilot study was the first step in the sequence of the present research. The goals of the pilot study included the choice of the occupational domains, the construction of the job descriptions representing the chosen domains, and the assessment of the resulting measure with regard to internal consistency, item functioning, readability, and questionnaire length. A detailed description of the pilot study can be found in the appendix. The following section includes the rationale behind the choice of occupational domains, as well as a description of the pilot study sample, questionnaire design, procedure, and a summary of the results.

Choice of occupational domains

The occupational domains of sales, information technology, and teaching were chosen to be included in the present study. The choice to include these occupational domains was made based on the following rationale: First, only those domains for which reliable and valid scales are already in existence were considered. Second, the domains should be applicable and relevant to a college student population. Third, the domains should be

relatively homogeneous in content in order to increase internal reliability of the scales. Fourth, several domains that differ in their emphasis (e.g., social activities vs. realistic activities) are preferable to one single domain in order to increase the generalizability of the results. Lastly, the domains should be highly familiar to the participants.

Description of the pilot measure

For the pilot measure, a set of 24 domain-specific job descriptions (with eight items representing each of the three occupational domains) were created based on job descriptions obtained from the O*NET occupational database. Two issues had to be considered concerning the sets of job descriptions; these were the optimal number of items to be used, and the specific content of the descriptions. With regard to the number of items, there should be enough items per domain to have good internal reliability of the subsequent interest, confidence, and choice goal ratings. The use of too many items, however, might lead to experimental fatigue in the participants, which might lead to experimental error inflation.

In terms of the content of the activity descriptions, the following aspects were considered. First, the different exemplars should adequately represent the respective occupational domain (content validity) without being too heterogeneous in order to maintain good internal consistency. Further, the content should be congruent with the content of the Basic Interest Markers (BIMs) that were used to assess pre-existing levels of interests in order to maintain construct validity; therefore, the job descriptions were based on the item content of the BIM scales. Finally, the job descriptions should be commensurate with the vocational reality of college students (e.g., mainly entry level jobs were included). All 24 items appeared on the questionnaire in random order with the limitation that no two job

descriptions of the same domain should appear in direct succession. Two versions of the questionnaire were constructed to address possible item order effects.

The response format for the three dependent variables was a 5-point Likert scale; participants were asked to rate each job description in terms of their interest ("please indicate how much you would like to do the job"), confidence ("please indicate how confident you feel about succeeding at the described activities"), and choice intention ("please indicate the likelihood of engaging in the described activities in the future"). Higher ratings indicate greater job-related interest, confidence, and choice intention, respectively.

In addition, the pilot measure contained a set of demographic variables (age, gender, academic major, and class standing), a question about the completion time of the questionnaire, and an open-ended 'comment' section where participants could indicate any other issues they encountered in the process of completing the measure.

Participants

Participants (n = 45) for the pilot study were recruited from three psychology methods courses offered at ISU during the Summer term 2008 (PSYCH 440, PSYCH 301, PSYCH 302). Participants received extra credit towards their respective course for completion of the measure. The sample characteristics were as follows: 66.7% of participants were women and 33.3% were men; the mean age across all participants was 23.4 years (*SD* = 5.6). Most participants (60%) were psychology majors, 24.4% indicated a major other than psychology, and 15.5% did not report a major. Most students were in their senior year in college (73.3%), 17.8% were juniors, 2.2% were sophomores, and 6.7% were graduate students.

Procedure

Paper copies of the questionnaire were distributed during regular class time. Participants were instructed to complete the measure outside of class and to hand it back to the class instructor by a specified date. Upon return of the questionnaire, participants signed a sheet to document the completion of the measure in order to obtain extra credit.

Results of the pilot study

The following is a short summary of the main results of the pilot study. A detailed account of the findings and the procedure of scale revision can be found in the appendix. The results from the pilot study suggested that all scales had excellent internal consistency. Nonetheless, there were two items related to sales, and one item related to teaching that had a negative impact on the reliability of the respective scales; these items were not included in the final measure. Additional changes to the measure involved the adjustment of the number of job descriptions included for each domain based on considerations of measure reliability and questionnaire length. The final measure included a total of 30 job descriptions (10 for each domain).

Mass Testing

All students enrolled in ISU's introductory psychology classes have the chance to participate in a mass testing screening at the beginning of each academic semester in exchange for course credit. During mass testing, participants complete a series of screening measures that allow researchers to select participants based on some criterion. With regard to the present study, the first purpose of mass testing was to screen individuals based on their level of preexisting activity-based interest in information technology, sales, and teaching. The second objective was to determine normative ratings of different work values in order to

select the values to be included in the experimental manipulation of the main study. The

following section includes a description of the mass testing participant sample, the two

measures administered, and the procedure of mass testing administration.

Participants

Mass testing at the beginning of the 2008 Fall semester yielded a total of 1,062

completed data sets. Out of the 1,062 participants, 438 (41.2%) were male, and 624 (58.8%)

were female. Participants' mean age was 19.3 (*SD* = 2.4). Overall, 51.1% of participants

were classified as freshmen, 27.5% as sophomores, 14.2% as juniors, 6.7% as seniors, and

0.5% as graduate students. With regard to ethnicity, 87.6% of the sample were Caucasian

American, 2.4% African American, 1.6% Hispanic American, 2.9% Asian American, 0.3%

Native American, and 1.3% identified as multiracial; 2.8% of the participants were

international students, and 1.1% did not disclose their ethnicity.

Measures

Two measures pertinent to the present study were included in mass testing. These

were the Basic Interest Markers (BIMs: Liao, Armstrong, & Rounds, 2008) and a work value

rating scale. The BIMs were used to assess participants' preexisting level of interest in the

domains of information technology, sales, and teaching. Results from the BIMs were used to

selectively invite individuals based on their level of activity-based interest to participate in

the main study. The work value rating scale was administered in order to determine the

relative importance of different work values. This information was used in the main

experiment to create the two levels of the within-subjects factor (value congruency).

Basic Interest Markers (BIMs). In order to create the three levels of the preexisting

activity-based interest factor, the Basic Interest Markers were used in the present study. The

Basic Interest Markers (BIMs: Liao et al., 2008) were designed to measure domain specific

vocational interests for research purposes. The complete scale consists of 343 items (short,

contextualized interest activity phrases such as "edit a newspaper article") grouped into 31

BIM scales that represent a specific occupational domain. The three scales selected for the

present study are comprised of 13 items (sales), 12 items (information technology), and ten

items (teaching), respectively (all the items for each scale are listed in the appendix).

Respondents indicate how much they would like to do each activity on a 5-point scale from 1

= "strongly dislike" to 5 = "strongly like"; therefore, higher scores indicate more interest in

the activity. Scores can range from a minimum score of 10 (teaching), 12 (information

technology), and 13 (sales) to a maximum score of 50 (teaching), 60 (information

technology), and 65 (sales), respectively. Based on the norming sample, mean and standard

deviation for sales, information technology, and teaching are $M = 2.84$ ($SD = 0.80$), $M = 2.60$

($SD = 0.76$), and $M = 3.05$ ($SD = 0.78$), respectively. Mean and standard deviation of the data

from the present study were similar to those of the norming sample, with $M = 2.80$ ($SD =$

0.91) for sales, $M = 2.59$ ($SD = 0.92$) for information technology, and $M = 2.89$ ($SD = 0.86$)

for teaching. The BIMs were normed on a sample of 359 college students enrolled in 54

different major fields of study (see Liao et al., 2008, for a detailed description of the norming

sample).

Internal consistency estimates for the 31 BIMs range from $\alpha = .85$ to $\alpha = .95$. For the

three BIMs intended for use in the proposed study, the internal consistency coefficients were

as follows: For sales, $\alpha = .93$; for information technology, $\alpha = .92$; and for teaching $\alpha = .90$;

therefore, all three scales have excellent reliability. Internal consistency estimates for sales,

information technology, and teaching in the participant sample of the present study were

similar to the values reported by Liao et al. (2008), namely $\alpha = .95$ (sales), $\alpha = .95$ (information technology), and $\alpha = .91$ (teaching).

Good convergent validity has been demonstrated by correlating the BIM with content-similar Basic Interest Scales (BISs) from the Strong Interest Inventory (Harmon et al., 1994). The correlation of the sales BIM with the sales BIS is $r = .62$, the information technology BIM correlates $r = .65$ with the programming and information system BIS, and the correlation of the teaching BIM with the teaching and education BIS is $r = .60$ (Liao et al., 2008). Concurrent validity was established by using discriminant function analyses to predict membership in 12 academic major areas based on the BIMs (Liao et al., 2008). The 31 BIM scales accounted for 95.1% of the variance in the 12 categories, and group membership was correctly predicted 63.4% of the time (chance hit rate was 8.33%).

Work value rating scale. The scale used in the present study to assess the relative importance of an individual's work values was a 23-item scale (see appendix) adapted from the Minnesota Importance Questionnaire (MIQ: Gay, Weiss, Hendel, Dawis, & Lofquist, 1971; Rounds, Henly, Dawis, Lofquist, & Weiss, 1981). The 23 items represent different work values (such as achievement, independence, creativity, etc.), and individuals were asked to rate each of the values in terms of how important they are to them on a Likert scale from 1 ("not very important") to 5 ("very important"). The MIQ has proven to be useful in both research and counseling settings, and it has been shown to have excellent psychometric characteristics (Rounds & Armstrong, 2005). Participants' mean rating and standard deviation of the 23 work values are summarized in Table 1. In general, mean ratings across the different values were high (average ratings of all values exceeded 3.0 on a 5-point scale), meaning that participants rated most values as very important to them. Specifically, the

values of ability, achievement, advancement, moral values, working conditions, and job security had modal ratings of 5 (the scale ceiling).

Procedure

The three BIM scales and the value rating scale were administered online during mass testing at the beginning of the 2008 Fall semester. The resulting data were used later in the actual experiment to categorize participants into groups based on their domain-specific BIM scores, and to determine which work values had the greatest consensus with regard to importance.

The Study

The pilot study assured that the measure consisting of job descriptions used as dependent variable in the main study was adequate with regard to content, length, and internal consistency. The two measures administered during mass testing enabled the selection of participants based on differing levels of preexisting interest in the three relevant occupational domains, and the selection of work values to be included in the experimental manipulation. With these prerequisites in place, the main study could be conducted. The goal of the main study was to manipulate levels of job-related interest based on the relative importance of work values, and to measure how this manipulation affects confidence and choice ratings. The following section addresses the methodology of the main study, including a description of the participant sample, measure, procedure, as well as the experimental design and data analysis strategies.

Participants

The participant sample was drawn from Iowa State University's (ISU) introductory psychology undergraduate subject pool. Participants were able to participate for experimental

credit applied to their respective introductory psychology courses. The participant pool was composed of students that are representative of the range of academic majors offered at ISU. Participants were eligible to participate in the main part of the experiment if they had completed all the relevant items in mass testing.

The final sample included 180 participants (112 female, and 68 male) with a mean age of 19.7 years ($SD = 2.0$). Overall, 43.9% of participants were classified as freshmen, 28.3% as sophomores, 17.2% as juniors, and 10.6% as seniors. With regard to ethnicity, 90.1% of the sample were Caucasian American, 2% African American, 1.4% Hispanic American, 1% Asian American, 0.5% Native American, and 1.4% identified as multiracial; 3% of the participants were international students, and 0.6% did not disclose their ethnicity.

For the purpose of the present study, participants were classified based on their standing in the distribution of the BIM scores in "high activity-based interest" (at or above the 66th percentile), "medium activity-based interest" (33rd to 66th percentile), and "low activity-based interest" (at or below the 33rd percentile) groups. The cut-off scores for each of the groups were determined based on the distribution of scores obtained during mass testing. Separate distributions were created for men and women to account for possible gender differences with regard to interest in the three domains. Raw score cutoffs for information technology, sales, and teaching are summarized in Table 2. As can be seen in the table, the cutoff scores for classifying participants into different groups were somewhat different for men and women, which suggests the presence of gender differences in absolute level of activity-based interest. The number of participants classified into each of the groups is presented in Table 3.

Measure

The experimental measure was based on the questionnaire developed during the pilot study stage. As reported above, the questionnaire consisted of 30 short job descriptions (ten each for information technology, sales, and teaching, respectively) that were modeled after job activity descriptions obtained from the O*NET occupational database. As assessed in the pilot study, the descriptions within each of the domains had excellent internal consistency. The sets of job descriptions developed during the pilot stage provided the framework onto which the experimental manipulation of job-related interest based on work values was added. Thus, each job description contained domain-specific information, but also included a reference to a work value associated with the specific position. Whereas the domain-specific information was the same across all conditions, the work value statement was manipulated to create the two levels of job-related interest as a within-subjects factor.

The procedure to create the two levels of job-related interest can be described as follows. Five of the 10 items in each domain were randomly assigned to form the congruent value-condition, and the remaining five items were used to form the incongruent value-condition. Based on the results from mass testing, the values of ability, achievement, advancement, working conditions, and job security were chosen to be added to the job descriptions to form the congruent value-condition. The rationale for this choice was as follows: Many of the value ratings obtained during mass testing showed a ceiling effect, meaning that most participants rated them as "very important". Since there seemed to be a consensus across participants in terms of what values were the most important, the five values that received the highest ratings overall were chosen to be included in the congruent value-condition. Moreover, statistical analyses did not reveal any gender differences in value

endorsement, nor did classification based on preexisting activity-based interest level affect

the ratings of any of the values. The five values chosen all had mean ratings over 4.0, with a

modal rating of 5, the highest possible rating (see Table 1 for the exact values). For the

incongruent value-condition, five specifiers were chosen that were generally considered as

undesirable with regard to a job position. The five values that formed the incongruent value-

condition were low pay, frequent night and weekend shifts, lack of job security, frequent

geographic relocation, and long working hours. A sample questionnaire that includes all the

job descriptions with their respective work value statements can be found in the appendix.

Finally, four alternate forms of the measure were created. The forms differed in the overall

order of the items, which was randomly determined with the constraint that no two items

belonging to the same domain should appear in direct succession.

The response format used to measure the three dependent variables was a 5-point

Likert scale; participants were prompted to rate each job description in terms of their job-

related interest ("please indicate how much you would like to do the job"), confidence

("please indicate how confident you feel about being effective at the described activities"),

and choice intention ("please indicate the likelihood of engaging in the described activities in

the future"). Higher ratings indicated job-related greater interest, confidence, and choice

intention, respectively. Internal consistency estimates for all three variables was excellent

across the three occupational domains and the two levels of value congruency (see Table 4).

Procedure

All participants (n = 1,062) for which complete data sets (BIMs and work value rating

scale) were available from mass testing were eligible to participate in the main study.

Participants were prescreened based on their BIM scores to determine those individuals who

scored in three specified regions of the score distributions (below the 15th percentile, between the 42nd and 57tth percentiles, and above the 85th percentile) in order to enhance within group homogeneity with regard to participant classification based on level of preexisting activity-based interest. Participants who fell into such a specified region of the BIM score distribution in more than one of the three occupational domains were contacted first. The participants selected through this procedure were contacted by email and invited to participate in the main experiment. The email contained as attachments both the informed consent document and one of the four forms of the job description questionnaire (participants were randomly assigned to one of the four alternate forms of the questionnaire). As specified in the email instructions, participants were asked to complete the informed consent document and the questionnaire in electronic form, and to send them back via email to the researcher upon completion. A total of 596 potential participants were contacted, and 203 questionnaires were returned, yielding a return rate of 34.1%. There were no significant group differences with regard to mean age, and ethnicity and gender distributions between individuals who decided to participate in the study in comparison to those who did not. Out of the 203 returned questionnaires, 23 could not be used due to technical reasons (e.g., corrupt files) or incomplete responses. Therefore, 180 usable questionnaires were included in the present study. The mean completion time for the questionnaire was $M = 21$ minutes ($SD = 14$ minutes). Upon receipt of the questionnaire by the researcher, participants received experimental credit towards their psychology course.

Experimental design and data analysis

The study was a true experiment that included three independent variables (two between-subjects factors and one within-subjects factor), and three dependent variables. In

the following section the experimental design (including a description of the independent and

dependent variables) and the statistical analyses used to test the study's hypotheses will be

described.

Independent variables. There were three independent variables in the experimental

design. The first factor, a between-subjects factor, was the level of preexisting activity-based

interest as measured by the BIMs. Three levels of this factor were created based on gender-

normed distributions: Individuals scoring at or below the 33rd percentile on the BIMs formed

the 'low activity-based interest' group; individuals scoring between the 33rd and 66th

percentiles formed the 'medium activity-based interest' group; individuals scoring at or

above the 66th percentile formed the 'high activity-based interest' group. The second factor (a

between-subjects factor) included in the design was gender (two levels, male and female) in

order to test for the presence of gender differences in job-related interest, confidence, and

choice ratings across the occupational domains. The third factor, the within-subjects factor,

was work value congruency. This factor had two levels, namely the congruent value-

condition, and the incongruent value-condition. In each condition, the mean ratings across

the five items within the respective condition were used in the analyses.

Dependent variables. All three dependent variables were analyzed separately for each

of the three occupational domains. The dependent variables were the job description ratings

of interest (these data were used for a manipulation check), confidence, and choice goals.

Job-related interest, in congruence with SCCT's definition of the construct, was

operationalized as the mean rating on a 1 to 5 scale across the five job descriptions in the

respective experimental value condition in response to the following prompt: "please indicate

how much you would like to do the job by choosing the number that most closely represents

how you feel about it". Self-efficacy (confidence), in congruence with SCCT's definition of

the construct, was operationalized as the mean rating on a 1 to 5 scale across the five job

descriptions in the respective experimental condition in response to the following prompt:

"please indicate how confident you feel about being effective at the described activities by

choosing the number that most closely represents how you feel about it". Choice goals, in

congruence with SCCT's definition of the construct, was operationalized as the mean rating

on a 1 to 5 scale across the job descriptions in the respective experimental condition in

response to the following prompt: "please indicate the likelihood of engaging in the

described activities in the future by choosing the number that most closely represents how

you feel about it".

     Statistical analysis. The design was a 3 (group) x 2 (gender) x 2 (congruency)

experimental design; the resulting data for each of the three dependent variables were

analyzed statistically in a series of repeated-measures ANOVAs. Post-hoc tests (using the

Games-Howell method, which does not assume equal variances and equal sample sizes) were

conducted to find out which of the three groups significantly differed from each other.

CHAPTER 4: RESULTS

Preliminary Analyses

Correlation analyses

One a priori criterion for the choice of the occupational domains was the relative independence of the domains from each other in order to enhance the generalizability of the findings. Therefore, a correlation matrix was calculated to quantify the correlations between jo-related interest, confidence, and choice ratings for each of the three occupational domains (see Table 5). Across the three dependent variables the analysis revealed that there was virtually no correlation in paired ratings between information technology and teaching, and between sales and teaching, respectively ($r_s < |.1|$). Ratings for the information technology domain correlated moderately (r ranging from about .2 to .4) with the respective ratings for the sales domain. This result supported that the chosen occupational domains were indeed independent from each other, meaning that, for example, interest in information technology did not predict interest in teaching.

A second comparison of interest was the intercorrelation between job-related interest, confidence, and choice ratings *within* an occupational domain. Based on SCCT, the prediction is that there is a sizeable positive correlation between the three constructs. The result was similar across the three occupational domains, with positive correlations between the constructs ranging from $r = .65$ to $r = .88$. More specifically, the average correlation across the three domains was $r = .75$ (resulting in 56% shared variance) between interest and confidence, $r = .85$ (72% shared variance) between interest and choice, and $r = .71$ (50% shared variance) between confidence and choice. The magnitude of these correlations is comparable to previous results reported in the literature; in addition, the finding of a

somewhat stronger correlation between interests and choice has been documented previously as well (Cunningham et al., 2005; Flores et al., 2006; Fouad, 2007; Gainor & Lent, 1998; Lent et al., 2001; Lent et al., 2003; Lent et al., 2005; Rottinghaus et al., 2003; Waller, 2006).

Gender differences across occupational domains

Gender was in included as factor in the repeated-measures ANOVA in order to test whether men and women differed in their job-related interest, confidence, and choice goal ratings. The analyses revealed a significant main effect of gender in the domains of information technology and teaching (see Tables 6 and 7). Specifically, men expressed significantly higher job-related interest ($F[1, 174] = 58$, $p < .001$, $\eta^2 = .250$), confidence ($F[1, 174] = 22$, $p < .001$, $\eta^2 = .113$), and choice intentions ($F[1, 174] = 33$, $p < .001$, $\eta^2 = .160$) than women for information technology. Conversely, women expressed significantly higher job-related interest ($F[1, 174] = 9.9$, $p = .002$, $\eta^2 = .054$) and confidence ($F[1, 174] = 7.0$, $p = .009$, $\eta^2 = .039$) than men towards teaching; however, differences in teaching choice intentions failed to reach statistical significance ($F[1, 174] = 2.3$, $p = .132$). Likewise, men and women did not differ significantly in their job-related interest ($F[1, 174] = 0$, $p = 1$), confidence ($F[1, 174] = 0.8$, $p = .369$), or choice ratings ($F[1, 174] = 0.2$, $p = .683$) in the sales domain.

In addition, a significant gender by group interaction indicated that the magnitude of the gender difference in the information technology job ratings was moderated by the level of preexisting activity-based interest. Specifically, the gender difference was significantly larger at higher levels of preexisting activity-based interest (see Figures 3-5); this effect held true for all three dependent variables (for job-related interest $F[2, 174] = 5.5$, $p = .005$, $\eta^2 = .059$;

for confidence $F[2, 174] = 3.5$, $p = .032$, $\eta^2 = .039$; for choice $F[2, 174] = 3.0$, $p = .05$, $\eta^2 = .033$).

Main Results

The following results section is organized in the order of the hypotheses tested. The first goal of the present study was to show that work values could be used to manipulate participants' level of job-related interest in specific occupational domains. Under the assumption that the manipulation check proved successful, the second goal was to determine the effect of the job-related interest manipulation on confidence and choice ratings. Descriptive statistics (mean and standard deviation) for all dependent variables are summarized in Tables 6-8.

Manipulation of job-related interests based on work values (manipulation check)

The hypothesis that job-related interest can be manipulated based on congruency of work values is fully supported if a significant main effect of value-congruency is obtained. In the present study this hypothesis was supported across all three occupational domains included in the study: Participants, irrespective of preexisting level of activity-based interest, reported on average significantly more interest in the value-congruent job profiles than in their value-incongruent counterparts (for information technology interest: $F[1, 174] = 13.8$, $p < .001$, $\eta^2 = .073$; for sales interest: $F[1, 174] = 95.9$, $p < .001$, $\eta^2 = .355$; for teaching interest: $F[1, 174] = 68.6$, $p < .001$, $\eta^2 = .283$). The magnitude of the mean difference in rated job-related interest between the two value conditions was between 0.25-0.5 scale points on a 5-point scale. The effect size varied across the three occupational domains: value congruency explained only 7% (moderate effect size) of the variance in job-related interest for information technology, but the manipulation accounted for 28% of the variance in job-

related teaching interest and 36% of the variance in job-related sales interest, respectively, which is equivalent to a large effect (Cohen, 1988). The observation of a smaller effect with regard to information technology might be due to the finding that participants generally indicated little job-related interest in this domain (see Table 6); it is likely that the resulting floor effect might have prevented greater differentiation between the two value conditions.

Confidence and choice as a function of job-related interests

Since the manipulation check proved to be successful, the hypothesis that different levels of job-related interest are causally linked to domain-specific ratings of self-efficacy and choice intentions was tested. Here, several outcomes were possible: If job-related interests influenced self-efficacy indirectly via choice goals, participants, on average, would be significantly more likely to express the intention to pursue a particular job in the future in the congruent value-condition compared to the incongruent value-condition, and there would be no significant mean difference in the confidence ratings. If job-related interests influenced self-efficacy in an immediate and direct way, participants would express significantly higher ratings of confidence of being successful at the job for the congruent value-condition compared to the incongruent value-condition, but there would be no significant difference in the choice goal ratings between the two conditions. If job-related interests affected confidence in both a direct and indirect way, a significant mean difference between the two conditions on both the self-efficacy and choice goal variables would be expected.

The data provided support for the latter scenario. There was a significant main effect of value congruency (job-related interest level) for both the confidence and choice ratings across all three occupational domains. Participants, irrespective of preexisting level of activity-based interest, had on average significantly higher confidence ratings for value-

congruent job descriptions as compared to the value-incongruent descriptions (for information technology confidence $F[1, 174] = 7.2$, $p = .008$, $\eta^2 = .040$); for sales confidence $F[1, 174] = 33.7$, $p < .001$, $\eta^2 = .162$); for teaching confidence $F[1, 174] = 30.6$, $p < .001$, $\eta^2 = .150$). In addition, participants, irrespective of preexisting level of activity-based interest, had on average significantly higher choice intention ratings for value-congruent job descriptions as compared to the value-incongruent descriptions (for information technology choice $F[1, 174] = 20.3$, $p < .001$, $\eta^2 = .105$); for sales choice $F[1, 174] = 45.8$, $p < .001$, $\eta^2 = .208$); for teaching choice $F[1, 174] = 60.4$, $p < .001$, $\eta^2 = .258$).

Influence of preexisting level of activity-based interest on job description ratings

Since the content of the job descriptions was modeled after the content of the BIMs, it was expected that the ratings of the job descriptions reflected the differences in preexisting activity-based interest as measured by the BIMs. If this hypothesis was supported, a main effect of preexisting level of activity-based interest should be found. More specifically, it was expected that individuals in the "low" activity-based interest group should give significantly lower ratings (job-related interest, confidence, and choice) to the job descriptions than individuals with "medium" activity-based interest; participants in the "medium" activity-based interest group in turn were expected to show significantly lower ratings on the dependent variables than the "high" activity-based interest group.

The hypothesis was fully supported. Across the three occupational domains there was a significant main effect of preexisting level of activity-based interest with regard to rated job-related interest (for information technology interest $F[2, 174] = 48.7$, $p < .001$, $\eta^2 = .359$); for sales interest $F[2, 174] = 46.8$, $p < .001$, $\eta^2 = .350$); for teaching interest $F[2, 174]$

$= 67.2, p < .001, \eta^2 = .436$), confidence (for information technology confidence $F[2, 174] =$

$22.8, p < .001, \eta^2 = .208$); for sales confidence $F[2, 174] = 43.2, p < .001, \eta^2 = .332$); for

teaching confidence $F[2, 174] = 42.1, p < .001, \eta^2 = .326$), and choice (for information

technology choice $F[2, 174] = 24.9, p < .001, \eta^2 = .222$); for sales choice $F[2, 174] = 38.3, p$

$< .001, \eta^2 = .306$); for teaching choice $F[2, 174] = 51.4, p < .001, \eta^2 = .371$). Games-Howell

post-hoc analyses showed that group differences in expressed interest, confidence, and

choice regarding the job descriptions were in the expected direction; this held true for all

three occupational domains. Specifically, participants in the "high" activity-based interest

group had on average significantly higher job-related interest, confidence and choice ratings

than participants in the "medium" activity-based interest group, who in turn had on average

significantly higher ratings on these variables than individuals in the "low" activity-based

interest groups (see Table 9 for mean differences between groups, standard error,

significance levels and 95% confidence intervals). The observed mean score difference

between the "low" interest and "high" interest groups was generally in the magnitude of 1

scale point or more (on a 5-point scale).

Interaction between value congruency and preexisting level of activity-based interest

The hypothesis was that preexisting activity-based interest moderates the effect of the

work value manipulation. If this is the case, there will be a significant interaction between

value congruency and preexisting level of activity-based interest. The results of the present

study did not support the hypothesis; the group by congruency interaction term did not reach

statistical significance for any of the three domains ($F_s[2,174] < 1, p > .05$).

CHAPTER 5: DISCUSSION

General Discussion

The main goal of the present study was to investigate whether work values can be used to create different levels of job-related interests, and to assess how this experimental manipulation influences ratings of confidence and vocational choice. Previous research has established relations between SCCT's key constructs of interests, confidence, outcome expectations, and choice. Most of this body of research, however, is based on correlational studies from which the conclusion of causality cannot be drawn. Of particular interest in the literature has been the link between vocational interests and self-efficacy. The theory specifies that self-efficacy is the precursor to the development of interests, which has been confirmed experimentally. Longitudinal evidence (Denissen et al., 2007; Nauta et al., 2002; Tracey, 2002) has indicated, however, that the direction of causality might also be reversed, with interests being the precursor to confidence, but only a study based on a true experimental design can fully answer this question. The present study is the first in which experimental manipulation of vocational interests was attempted in order to assess whether interests can be a precursor to confidence. Three different occupational domains (information technology, sales, and teaching) were included in the study, and level of interest was manipulated by adjusting the desirability of work values embedded in a set of job descriptions. The following discussion will focus on the key results pertinent to the two main research questions, namely the possibility of manipulating interests based on work values, and the resulting influence on confidence and choice ratings as defined within the framework of social cognitive career theory.

The relation between work values and job-related interests

Based on theoretical rationale (SCCT predicts a positive correlation between outcome expectancies and interests) and previous experimental evidence (Diegelman & Subich, 2001) it was hypothesized that work values, which are included among the construct of outcome expectancies, would have an influence on the level of job-related interest. The hypothesis was supported across three occupational domains, namely information technology, sales, and teaching. Individuals showed significantly more interest in the job positions that were associated with desirable work values as opposed to unappealing work values. Work value congruency explained 7% to 36% of the variance in job-related interest ratings, which amounted to up to half a scale point on a 5-point scale. The success of the attempted manipulation is particularly notable since interests are considered to be a relatively stable construct: There is evidence that interests are partially determined by genetic factors (Betsworth et al., 1994; Lykken et al., 1993), and interests have been linked to personality traits (Barrick, Mount, & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002; Staggs, Larson, & Borgen, 2007) which are shown to fluctuate little over time. In addition, longitudinal studies have shown that an individual's interest profile stays relatively stable over time (e.g., Low & Rounds, 2007; Rottinghaus, Coon, Gaffey, & Zytowski, 2007; Tracey & Robbins, 2005). However, the present study showed that individual differences in interests are not only caused by differences in these more stable factors, but some of the variance in vocational interests can also be explained by the specific context in which these interests are being assessed. This idea is consistent with SCCT, which specifies that outcome expectancies, such as the degree of congruency with one's work values, serve to refine the

broader concept of interests as it applies to a more specific context. For example, an individual might have a general interest in investigative activities, but decides to not pursue this interest in a corporate environment that is incongruent with the individual's value of independence and resentment of hierarchical structures.

Despite having shared variance, the results obtained in the present study indicated that work values and interests are separate constructs that provide incremental information about vocational behavior. Although some theorists do not conceptually distinguish between values and interests (e.g., Dukes, 1955; Macnab & Fitzsimmons, 1987), most authors treat them as more or less separate constructs (e.g., Dawis, 1991; Gordon, 1975; Kinnane & Suziedelis, 1962; Rokeach, 1968; Savickas, 1999; Super, 1973). Despite the scarcity of empirical research on the relation between interests and values, the available evidence supports the notion that interests and values overlap to some extent; the magnitude of the existing correlations is moderate and often domain-specific (Breme & Cockriel, 1975; Gordon, 1975; Kinnane & Suziedelis, 1962; Knapp & Knapp, 1979; Rottinghaus & Zytowski, 2006; Super, 1970).

In sum, the present study showed that work values could be used to influence an individual's level of job-related interest despite the relative stability of this construct. This experimental study is a first step in the direction of exploring the relation between interests and work values and their relative importance in influencing vocational behavior.

Relation between job-related interests, confidence, and choice goals

Having assured that the manipulation of interests based on work values was successful, the effect of level of job-related interest on confidence and choice ratings was evaluated. Most importantly, since the present study was a true experiment as characterized

by manipulation of an independent variable (job-related interest), random assignment of job descriptions to either the congruent or incongruent value-condition, and the use of a within-subjects design to control for possible confounding factors, conclusions about causality of the relation between the variables could be drawn. Further validity of the experimental manipulation was established by showing that job-related interest, confidence, and choice ratings of three groups of participants (that differed in their level of preexisting activity-based interest) were significantly different as predicted.

As discussed above, SCCT (Lent et al., 1994) specifies that interests, self-efficacy, and choice goals should be positively correlated with each other. Previous empirical research has confirmed these connections (see the literature review section for details), and the results from the present study were consistent with these predictions. The direction of causality has also been specified by SCCT, with self-efficacy being a precursor to interests, which in turn direct an individual's choice goals. Several studies have tested and supported the self-efficacy – interest link in the direction hypothesized by SCCT (Betz & Schifano, 2000; Campbell & Hackett, 1986; Hackett et al., 1990; Hackett & Campbell, 1987; Luzzo et al., 1999; Silvia, 2003). However, results from longitudinal studies (Denissen et al., 2007; Nauta et al., 2002; Tracey, 2002) indicate that the causal link between interests and self-efficacy might be reversed, with interests being a precursor to the development of self-efficacy.

Although SCCT does not explicitly specify the existence of a direct link between interests and confidence, it allows for the development of self-efficacy through an indirect pathway via choice goals: If people are interested in an activity they are more likely to choose to engage in it. Through repeated exposure to interest-relevant activities individuals gain (or fail to achieve) a sense of mastery, which contributes to their sense of self-efficacy.

The results from the present study support this pathway. Participants were significantly more likely to express willingness to pursues a job in the future when their interest rating for this job was high. Importantly, this pathway of self-efficacy development based on interests via choice goals necessitates a time lag that is sufficient to allow for the buildup of experiences that shape the development of self-efficacy; this is congruent with the results from longitudinal research (Denissen et al., 2007; Nauta et al., 2002; Tracey, 2002) that examined the change in interests and confidence over time.

In addition to supporting an indirect interest-confidence pathway that develops over time, the results from the present study indicate that the level of interest also has a more direct and immediate effect on confidence appraisal. Specifically, participants expressed significantly more confidence in being able to be successful at a job when their rated interest in the job description was high. This finding runs counter to SCCT, which does not explicitly specify a direct interest-confidence link. Since there was no time lag between participants' ratings of job-related interest and confidence, there must be a second mechanism that does not necessitate the repeated exposure to the domain in question. One possibility that is consistent with SCCT that might provide an explanation for the immediate effect of interest on confidence is the existence of a cognitive or affective mediating factor since the operationalization of interests in terms of likes or dislikes inherently includes an affective component. Affective states, in turn have been described as one of the four basic mechanisms that determine ones self-efficacy beliefs (Bandura, 1982, 1986; Lent et al., 1994). The idea that there is a cognitive or affective mediator that accounts for the immediate influence of interests on confidence could not be tested in the present study; further research

is needed to replicate the effect, and to clarify the exact mechanism by which changes in interests can cause changes in confidence in a direct and immediate way.

In sum, the present study is the first in which the level of interest was manipulated experimentally by means of work values in order to test the hypothesis that interests can be a precursor to confidence. The results support both an indirect causal link (via choice goals) and a more direct immediate mechanism connecting interests with self-efficacy.

Strengths, Limitations, and Future Directions

The present study helped to gain a clearer picture of the complex interaction between vocational interests, confidence, work values, and occupational choice. The study's design exhibits many strengths that increase the validity of the results. Among these are the use of a true experimental design characterized by manipulation of an independent variable, random assignment, and control of confounding variables through a within-subjects design. In addition, level of job-related interest was manipulated based on work values, which are thought to be independent from ability (level of ability, mediated through self-efficacy beliefs, has been shown to be effective in creating different levels of interests (Silvia, 2003) – this would limit the interpretability of the results, since confidence is also one of the dependent variables in this study). A further strength of the present study was the use of four alternate forms in which the order of the appearance of the 30 job descriptions was varied. Generalizability was enhanced through the inclusion of three independent occupational domains, as well as the use of a total of five job descriptions in each condition. Moreover, the stimuli in the study were job descriptions modeled after actual job profiles from the occupational database O*NET.

Nonetheless, there are several limitations of the study design that should be addressed in future research. First, there were three specific occupational domains included in the study, which were chosen based on their relative independence from each other in order to maximize the generalizability of the findings. Although the results were consistent across the three domains, future studies should include additional occupational domains in order to cross-validate the findings.

Second, the population of interest in this study was college students. College students are often only at the beginning of forming their vocational identity, including interests and values. In addition, because of their age and point in life they typically do not have much work experience. Considering that the stimuli in the present study were job descriptions, it would be important to replicate the results with different populations such as working adults who have accumulated more experience in the job application process, and who might have a more solidified vocational identity.

A third limitation of the present study is related to the format of the stimuli. In order to manipulate interests via work values, a set of job descriptions was created. The validity of the findings could be further strengthened if the aforementioned experimental manipulation could be extended to other formats such as, e.g., descriptions of academic majors.

A further limitation relates to the choice of work values used to create the two experimental conditions. The work values chosen for the congruent value-condition were the five values that were rated the highest by participants in the prescreening. Although there was a general consensus regarding the importance of these values, a minority of participants nonetheless might have rated other values (that were not part of the work value manipulation) as more important, hereby possibly limiting the effect size of the value congruency main

effect. A related point concerns the relative effectiveness of work values to influence the level of job-related interest. In the present study, the average rating across five values was used rather than the specific contribution of any one value. Future research could look at the relative influence of specific work values (both value-congruent and value-incongruent) and how work value relevance is moderated by area of occupational domain (there is evidence that some interests and values are correlated; for example, the importance of a high income is positively correlated with enterprising interests, but negatively correlated with social interests (Rottinghaus & Zytowski, 2006)).

Finally, the results from the present study indicated that changes in level of interest lead to an *immediate* effect on confidence. It is difficult to specify a mechanism to adequately explain this finding, and further research should be directed towards elucidating the mechanism that leads to parallel concurrent change in confidence when the level of interest is changed.

Implications for Practice

The findings obtained from the present study do not only have theoretical implications but they can also be applied to the process of career counseling. Structured inventories routinely used in career counseling tend to have their main focus on occupational interests, and, to a lesser extent, on confidence. With the exception of the Kuder Career Planning System, work values are often a neglected factor in the assortment of structured career assessment tools. However, the results from the present study suggest that work values are an important influence on a client's interests and career choice, and should be systematically included in career assessment and the counseling process. Moreover, the results indicate that work values might be a precursor to the development of interests. Hence,

it is important not only to determine what an individual's interests are, but exploration should also include an understanding of how these interests developed. For example, it is important to distinguish whether interest development occurred based on the level of confidence (as specified by SCCT), or whether an individual becomes interested in an activity because of its congruence with the client's value system. The determination of the mechanism of interest development is important because it directs the clinician towards different areas of exploration (including the client's worldview, environmental and family influences, life experiences, etc.), which in turn dictates the choice of suitable counseling interventions.

A second implication for career counseling relates to how various factors in the client's life can act as a barrier to choosing a particular career path. It is often the case that people do not pursue a career path despite high levels of interest. One such barrier might be related to a client's value system. A client might be very interested in a teaching career, but the career might be incongruent with the importance he or she places on status and income. Therefore, values can be used in conjunction with other variables to assess the practicality of different career options.

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Figure 1. *SCCT's interest-choice model.*
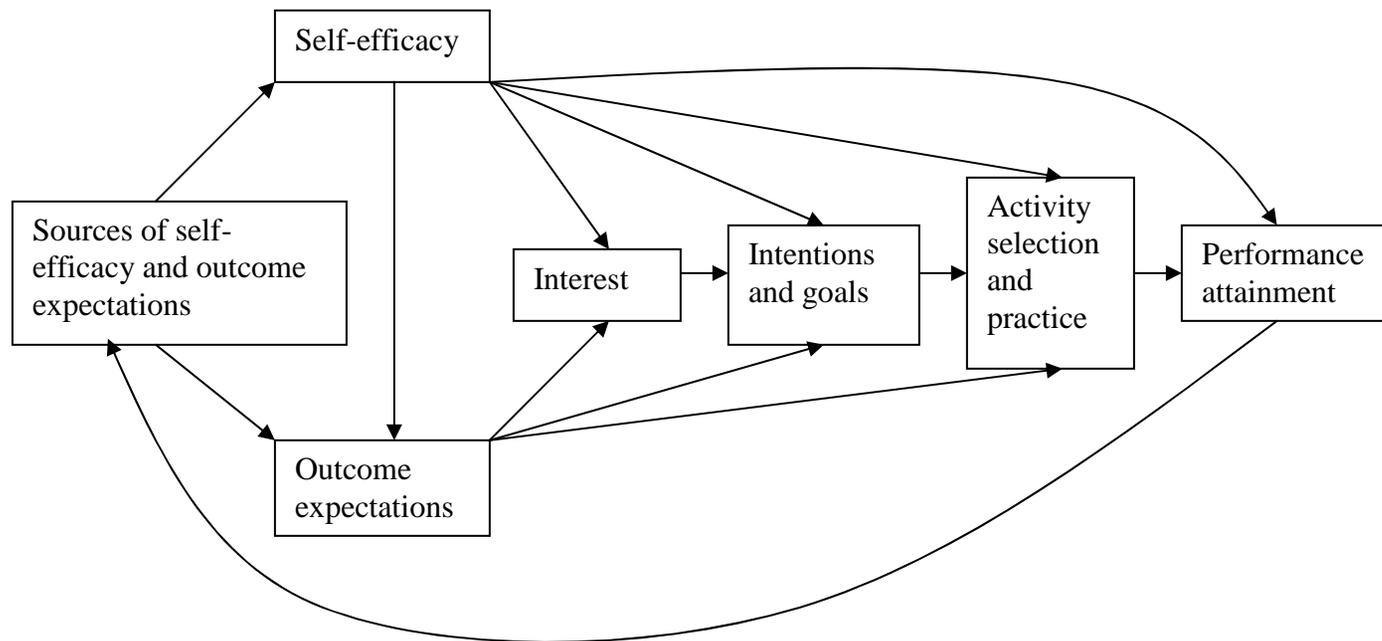
Figure 2. *Hypothesized moderation of the work value manipulation by preexisting level of activity-based interest (data will be analyzed separately for information technology, sales, and teaching, respectively).*
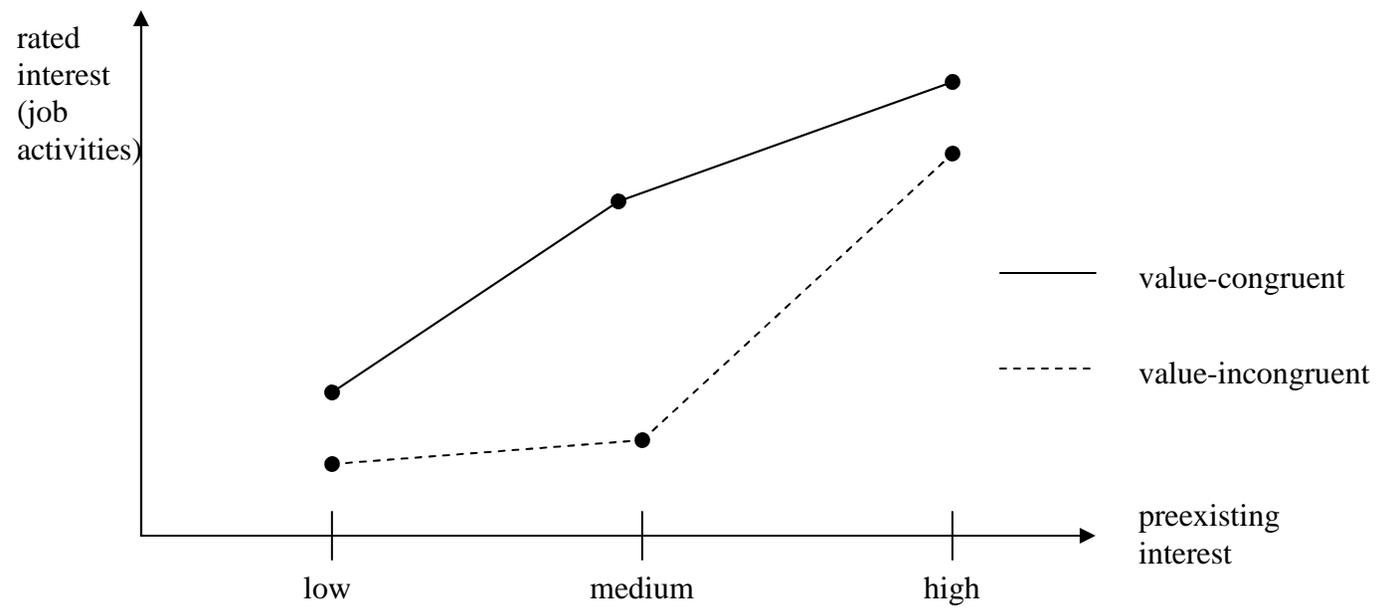
Figure 3. *Gender by group interaction for interest (information technology).*

information technology interest ratings
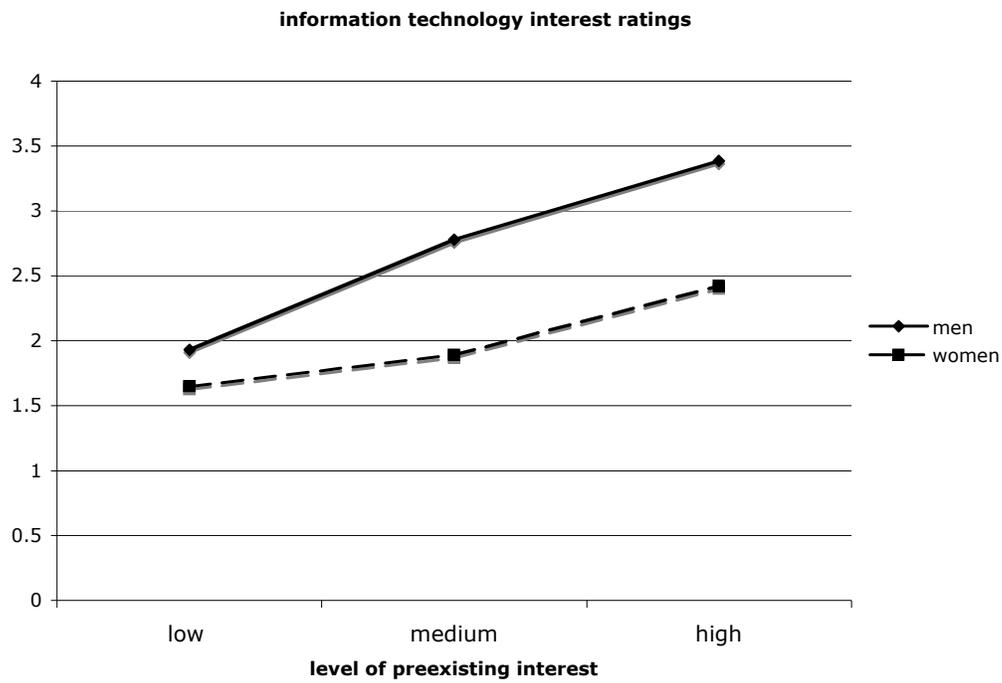
Figure 4. *Gender by group interaction for confidence (information technology).*

information technology confidence
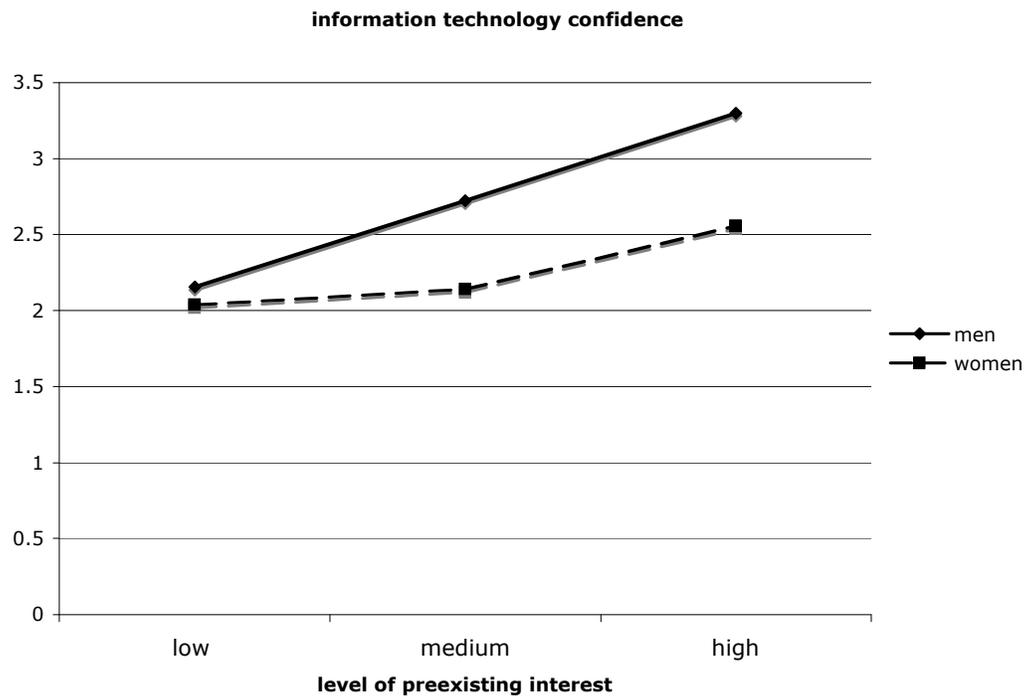
Figure 5. *Gender by group interaction for choice (information technology).*

information technology choice

level of preexisting interest
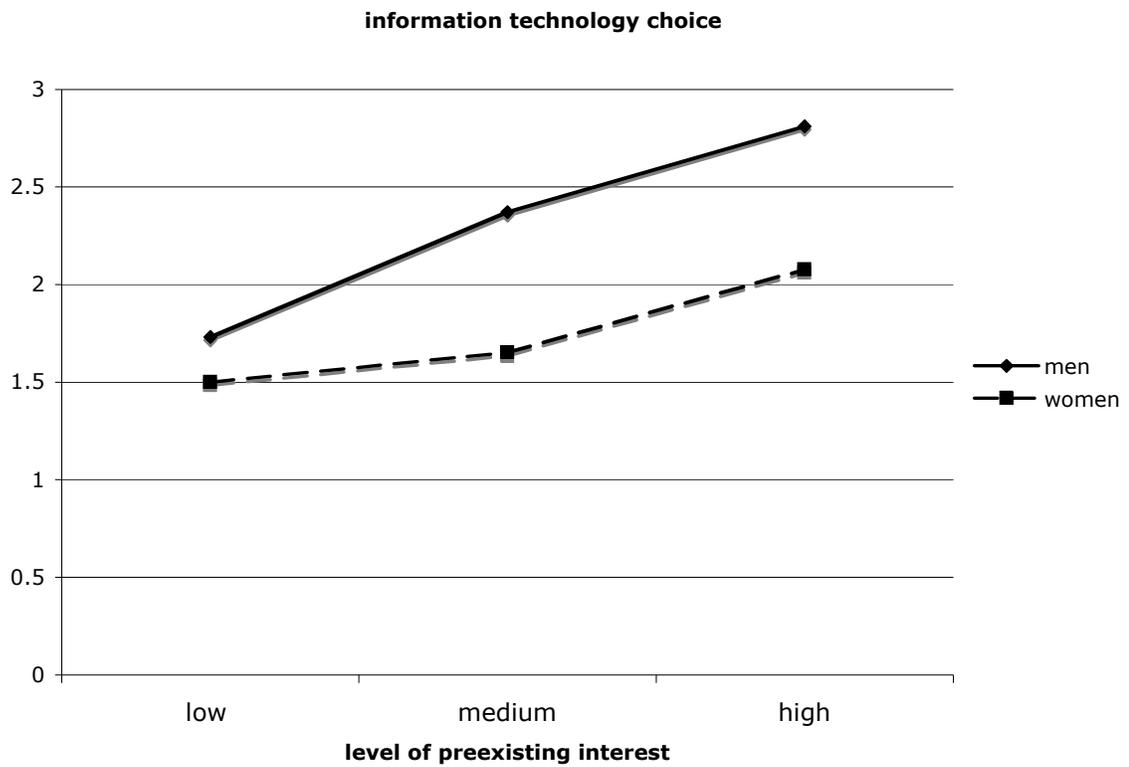
TABLES

Table 1. *Mean, mode, and standard deviation of ratings of 23 work values.*

Value	Mean	Mode	Standard deviation
Ability	4.45	5.00	0.66
Achievement	4.56	5.00	0.64
Activity	3.72	4.00	0.89
Advancement	4.31	5.00	0.75
Authority	3.38	4.00	1.03
Coworkers	4.29	4.00	0.74
Compensation	4.09	4.00	0.87
Creativity	4.02	4.00	0.91
Independence	3.26	3.00	1.07
LS (human)	4.19	4.00	0.75
LS (tech)	4.22	4.00	0.75
Moral	4.27	5.00	0.91
Policies	3.65	4.00	0.92
Work conditions	4.46	5.00	0.69
Recognition	3.95	4.00	0.92
Responsibility	4.18	4.00	0.74

Note. *Values were rated in terms of importance, where 1 = not important at all, and 5 = very important.*
No significant gender differences were observed on any of the value ratings.
n = 1062.

Table 1. *(continued)*

Security	4.36	5.00	0.71
Social service	4.05	4.00	0.89
Status	3.92	4.00	0.95
Variety	3.80	4.00	0.91
Cultural ID	3.62	4.00	1.12
Parent ID	4.03	4.00	0.97
Location	3.57	4.00	1.14

Table 2. *BIM raw score cutoffs used to classify participants into groups of high (at or above the 66th percentile), medium (33rd-66th percentile), and low interest (at or below the 33rd percentile).*

	Information tech		Sales		Teaching	
Percentile	*men*	*women*	*men*	*women*	*men*	*women*
33rd	2.58	1.92	2.77	2.31	2.40	2.60
66th	3.33	2.58	3.54	3.08	3.20	3.30

Note. *Raw scores can range from 1.00 to 5.00.*

Cutoffs based on the distribution of scores from mass testing participants (n_{male} = 438; n_{female} = 624).

Table 3. *Number of participants at different levels of interest.*

Interest	Information tech		Sales		Teaching	
	Men	*Women*	*Men*	*Women*	*Men*	*Women*
Low	24	41	22	39	32	43
Medium	21	36	18	32	14	36
High	23	35	28	41	22	33
Total	68	112	68	112	68	112

Table 4. *Internal consistency estimates (Cronbach's alpha) by value condition, occupational domain, and dependent variable.*

	Information Tech.		Sales		Teaching	
	Cong	Incong	Cong	Incong	Cong	Incong
Variable						
Interest	.88	.80	.86	.82	.90	.87
Confidence	.87	.88	.81	.80	.89	.87
Choice	.88	.87	.88	.85	.92	.90

Note. *"Cong" demotes the value-congruent condition; "Incong" denotes the value-incongruent condition.*
n = 180

Table 5. *Correlation matrix of all 18 job description ratings.*

	ITint cong	ITint inc	ITcnf cong	ITcnf inc	ITch cong	ITch inc	Sint cong	Sint inc	Scnf cong	Scnf inc	SCh cong	SCh inc	Tint cong	Tint inc	Tcnf cong	Tcnf inc	TCh cong	TCh inc
ITint cong	1	.78	.79	.75	.87	.77	.37	.38	.28	.34	.30	.33	-.11	-.09	-.13	-.21	.02	-.01
ITint inc	.78	1	.58	.72	.69	.83	.26	.33	.18	.28	.22	.29	-.15	-.10	-.21	-.23	-.03	-.04
ITcnf cong	.79	.58	1	.85	.76	.63	.28	.24	.37	.46	.25	.27	-.06	-.09	-.01	-.04	.01	-.01
ITcnf inc	.75	.72	.85	1	.70	.75	.28	.25	.33	.43	.25	.26	-.05	-.07	-.01	-.03	.02	.01
ITch cong	.87	.69	.76	.70	1	.83	.39	.38	.26	.32	.38	.43	-.12	-.11	-.15	-.22	.07	.03
ITch inc	.77	.83	.63	.75	.83	1	.34	.38	.21	.29	.34	.43	-.16	-.13	-.22	-.28	.00	.00
Sint cong	.37	.26	.28	.28	.39	.34	1	.77	.78	.68	.88	.75	.10	.04	.01	-.03	.09	.05
Sint inc	.38	.33	.24	.25	.38	.38	.77	1	.53	.66	.70	.86	.11	.18	.05	.03	.13	.14
Scnf cong	.28	.18	.37	.33	.26	.21	.78	.53	1	.79	.71	.56	.18	.09	.26	.20	.09	.07
Scnf inc	.34	.28	.46	.43	.32	.29	.68	.66	.79	1	.62	.65	.17	.13	.27	.25	.12	.12
SCh cong	.30	.22	.25	.25	.38	.34	.88	.70	.71	.62	1	.82	.00	-.02	-.07	-.07	.04	.05
SCh inc	.33	.29	.27	.26	.43	.43	.75	.86	.56	.65	.82	1	-.03	.02	-.07	-.10	.04	.09
Tint cong	-.11	-.15	-.06	-.05	-.12	-.16	.10	.11	.18	.17	.00	-.03	1	.85	.83	.81	.83	.72
Tint inc	-.09	-.10	-.09	-.07	-.11	-.13	.04	.18	.09	.13	-.02	.02	.85	1	.71	.78	.81	.84
Tcnf cong	-.13	-.21	-.01	-.01	-.15	-.22	.01	.05	.26	.27	-.07	-.07	.83	.71	1	.90	.69	.61
Tcnf inc	-.21	-.23	-.04	-.03	-.22	-.28	-.03	.03	.20	.25	-.07	-.10	.81	.78	.90	1	.69	.67
TCh cong	.02	-.03	.01	.02	.07	.00	.09	.13	.09	.12	.04	.04	.83	.81	.69	.69	1	.90
TCh inc	-.01	-.04	-.01	.01	.03	.00	.05	.14	.07	.12	.05	.09	.72	.84	.61	.67	.90	1

Note. *ITint =rated interest in information technology jobs; ITcnf = rated confidence in successfully performing information technology jobs; ITCh = rated choice intention regarding information technology jobs; Sint = rated interest in sales jobs; Scnf = rated confidence in successfully performing sales jobs; SCh = rated choice intention regarding sales jobs; Tint = rated interest in teaching jobs; Tcnf = rated confidence in successfully performing teaching jobs; TCh = rated choice intention regarding teaching jobs; cong = value-congruent condition; inc = value-incongruent condition.*
n = 180
r_s of |.23| and larger are statistically significant at p < .001 (two-tailed)

Table 6. *Mean and standard deviation for interest, confidence, and choice ratings by group, gender, and value congruency for information technology.*

	Interest			Confidence			Choice		
	Congruent	Incongruent	Total	Congruent	Incongruent	Total	Congruent	Incongruent	Total
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Group									
High									
Male	3.43 (.62)	3.34 (.54)	3.39 (.58)	3.31 (.69)	3.29 (.69)	3.30 (.69)	2.91 (.85)	2.71 (.68)	2.81 (.77)
Female	2.49 (.74)	2.35 (.80)	2.42 (.77)	2.61 (.60)	2.50 (.62)	2.56 (.61)	2.11 (.77)	2.04 (.83)	2.08 (.80)
Total	2.86 (.83)	2.75 (.86)	2.81 (.85)$_a$	2.89 (.72)	2.81 (.75)	2.85 (.74)$_a$	2.43 (.89)	2.31 (.84)	2.37 (.87)$_a$

Note. *"High" denotes high preexisting interest in information technology (at or above the 66th percentile) on the information technology Basic Interest Marker scale. "Medium" denotes moderate preexisting interest in information technology (33rd to 66th percentile) on the information technology Basic Interest Marker scale. "Low" denotes low interest in information technology (at or below the 33rd percentile) on the information technology Basic Interest Marker scale.*

n = 180 (112 female, 68 male).

[a]main effect of group; the mean difference between levels is significant at p < .001.

[b]main effect of value congruency; the mean difference between levels is significant at p < .05.

[c]main effect of gender; the mean difference between levels is significant at p < .05

Table 6. (*continued*)

	Interest			Confidence			Choice		
	Congruent	Incongruent	Total	Congruent	Incongruent	Total	Congruent	Incongruent	Total
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Medium									
Male	2.88 (.76)	2.67 (.71)	2.78 (.74)	2.82 (.74)	2.63 (.75)	2.73 (.75)	2.53 (.81)	2.21 (.73)	2.37 (.77)
Female	1.99 (.53)	1.80 (.54)	1.90 (.54)	2.21 (.68)	2.07 (.62)	2.14 (.65)	1.74 (.42)	1.57 (.49)	1.66 (.46)
Total	2.32 (.76)	2.12 (.74)	2.22 (.75)$_a$	2.43 (.76)	2.28 (.72)	2.36 (.74)$_a$	2.03 (.70)	1.81 (.66)	1.92 (.68)$_a$
Low									
Male	1.95 (.72)	1.91 (.79)	1.93 (.76)	2.16 (.73)	2.15 (.72)	2.16 (.73)	1.73 (.69)	1.73 (.75)	1.73 (.72)
Female	1.73 (.62)	1.57 (.51)	1.65 (.57)	2.10 (.81)	2.00 (.77)	2.05 (.79)	1.58 (.60)	1.42 (.50)	1.50 (.55)
Total	1.81 (.66)	1.69 (.64)	1.75 (.65)$_a$	2.12 (.78)	2.04 (.75)	2.08 (.76)$_a$	1.64 (.64)	1.53 (.62)	1.59 (.63)$_a$
Total									
Male	2.74 (.93)	2.63 (.91)	2.69 (.92)$_c$	2.75 (.86)	2.69 (.85)	2.72 (.86)$_c$	2.38 (.92)	2.21 (.82)	2.30 (.87)$_c$
Female	2.05 (.70)	1.89 (.70)	1.97 (.70)$_c$	2.29 (.74)	2.17 (.71)	2.23 (.73)$_c$	1.80 (.65)	1.66 (.67)	1.73 (.66)$_c$
Total	2.31 (.86)$_b$	2.17 (.86)$_b$	2.24 (.86)	2.47 (.81)$_b$	2.37 (.81)$_b$	2.42 (.81)	2.02 (.81)$_b$	1.87 (.77)$_b$	1.95 (.79)

Table 7. *Mean and standard deviation for interest, confidence, and choice ratings by group, gender, and value congruency for teaching.*

	Interest			Confidence			Choice		
	Congruent	Incongruent	Total	Congruent	Incongruent	Total	Congruent	Incongruent	Total
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Group									
High									
Male	3.95 (.66)	3.69 (.67)	3.82 (.67)	3.98 (.66)	3.88 (.61)	3.93 (.64)	3.51 (.99)	3.17 (1.1)	3.68 (1.0)
Female	4.26 (.76)	3.91 (.77)	4.09 (.77)	4.21 (.65)	4.06 (.68)	4.14 (.67)	3.77 (.98)	3.43 (1.0)	3.60 (1.0)
Total	4.14 (.73)	3.82 (.74)	3.98 (.74)$_a$	4.12 (.66)	3.99 (.65)	4.06 (.66)$_a$	3.67 (.98)	3.33 (1.0)	3.50 (1.0)$_a$

Note. *"High" denotes high preexisting interest in teaching (at or above the 66th percentile) on the teaching Basic Interest Marker scale. "Medium" denotes moderate preexisting interest in teaching (33rd to 66th percentile) on the teaching Basic Interest Marker scale. "Low" denotes low interest in teaching (at or below the 33rd percentile) on the teaching Basic Interest Marker scale.*

n = 180 (112 female, 68 male).

[a]main effect of group; the mean difference between levels is significant at *p* < .001.

[b]main effect of value congruency; the mean difference between levels is significant at *p* < .05.

[c]main effect of gender; the mean difference between levels is significant at *p* < .05

Table 7. (*continued*)

	Interest			Confidence			Choice		
	Congruent	Incongruent	Total	Congruent	Incongruent	Total	Congruent	Incongruent	Total
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Medium									
Male	3.19 (.81)	2.79 (.79)	2.99 (.80)	3.49 (.87)	3.28 (.74)	3.39 (.81)	2.60 (.91)	2.38 (.72)	2.49 (.82)
Female	3.50 (.49)	3.08 (.61)	3.29 (.55)	3.59 (.42)	3.45 (.46)	3.52 (.44)	2.71 (.69)	2.45 (.71)	2.58 (.70)
Total	3.42 (.60)	3.00 (.67)	3.21 (.64)$_a$	3.56 (.57)	3.40 (.55)	3.48 (.56)$_a$	2.68 (.75)	2.43 (.71)	2.56 (.73)$_a$
Low									
Male	2.46 (.76)	2.19 (.71)	2.33 (.74)	2.81 (.70)	2.70 (.68)	2.76 (.69)	2.03 (.78)	1.82 (.64)	1.93 (.71)
Female	2.93 (.79)	2.62 (.77)	2.78 (.78)	3.33 (.73)	3.10 (.73)	3.22 (.73)	2.28 (.74)	2.01 (.64)	2.15 (.69)
Total	2.73 (.81)	2.44 (.77)	2.59 (.79)$_a$	3.11 (.76)	2.93 (.73)	3.02 (.75)$_a$	2.17 (.77)	1.93 (.65)	2.05 (.71)$_a$
Total									
Male	3.09 (.98)	2.80 (.97)	2.95 (.98)$_c$	3.33 (.88)	3.20 (.84)	3.27 (.86)$_c$	2.63 (1.1)	2.37 (1.0)	2.50 (1.0)
Female	3.51 (.88)	3.15 (.89)	3.33 (.89)$_c$	3.67 (.72)	3.50 (.75)	3.61 (.74)$_c$	2.86 (1.0)	2.57 (.98)	2.72 (1.0)
Total	3.35 (.94)$_b$	3.02 (.93)$_b$	3.19 (.94)	3.54 (.80)$_b$	3.38 (.80)$_b$	3.46 (.80)	2.77 (1.0)$_b$	2.49 (.99)$_b$	2.63 (1.0)

Table 8. *Mean and standard deviation for interest, confidence, and choice ratings by group, gender, and value congruency for sales.*

	Interest			Confidence			Choice		
	Congruent	Incongruent	Total	Congruent	Incongruent	Total	Congruent	Incongruent	Total
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Group									
High									
Male	3.56 (.70)	3.12 (.75)	3.34 (.73)	3.74 (.51)	3.57 (.54)	3.66 (.53)	3.08 (.87)	2.80 (.84)	2.94 (.86)
Female	3.37 (.87)	2.91 (.79)	3.14 (.83)	3.57 (.76)	3.39 (.69)	3.48 (.73)	3.01 (1.1)	2.68 (.94)	2.85 (1.0)
Total	3.45 (.80)	3.00 (.77)	3.23 (.79)$_a$	3.64 (.67)	3.47 (.63)	3.56 (.65)$_a$	3.04 (.99)	2.73 (.90)	2.89 (.95)$_a$

Note. *"High" denotes high preexisting interest in sales (at or above the 66th percentile) on the sales Basic Interest Marker scale. "Medium" denotes moderate preexisting interest in sales (33rd to 66th percentile) on the sales Basic Interest Marker scale. "Low" denotes low interest in sales (at or below the 33rd percentile) on the sales Basic Interest Marker scale.*

n = 180 (112 female, 68 male).

$_a$main effect of group; the mean difference between levels is significant at *p* < .001.

$_b$main effect of value congruency; the mean difference between levels is significant at *p* < .05.

Table 8. (*continued*)

	Interest			Confidence			Choice		
	Congruent	Incongruent	Total	Congruent	Incongruent	Total	Congruent	Incongruent	Total
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Medium									
Male	2.87 (.61)	2.14 (.55)	2.51 (.58)	3.26 (.72)	2.96 (.63)	3.11 (.68)	2.50 (.53)	1.94 (.48)	2.22 (.51)
Female	3.02 (.63)	2.60 (.68)	2.81 (.66)	3.21 (.46)	3.04 (.47)	3.13 (.47)	2.46 (.63)	2.26 (.75)	2.36 (.69)
Total	2.97 (.62)	2.44 (.67)	2.71 (.65)ₐ	3.23 (.56)	3.01 (.53)	3.12 (.55)ₐ	2.48 (.59)	2.15 (.68)	2.32 (.64)ₐ
Low									
Male	2.31 (.84)	2.00 (.78)	2.16 (.81)	2.74 (.53)	2.56 (.59)	2.65 (.56)	1.91 (.61)	1.85 (.61)	1.88 (.61)
Female	2.22 (.65)	1.90 (.53)	2.06 (.59)	2.68 (.67)	2.45 (.66)	2.57 (.67)	1.84 (.56)	1.57 (.44)	1.71 (.50)
Total	2.26 (.72)	1.93 (.63)	2.10 (.68)ₐ	2.70 (.62)	2.49 (.63)	2.60 (.63)ₐ	1.86 (.57)	1.67 (.52)	1.77 (.55)ₐ
Total									
Male	2.97 (.89)	2.50 (.88)	2.74 (.89)	3.29 (.71)	3.08 (.72)	3.19 (.72)	2.55 (.86)	2.27 (.81)	2.41 (.84)
Female	2.87 (.88)	2.47 (.80)	2.67 (.84)	3.16 (.75)	2.96 (.74)	3.06 (.75)	2.45 (.94)	2.17 (.88)	2.31 (.91)
Total	2.91 (.88)ᵦ	2.48 (.83)ᵦ	2.70 (.86)	3.21 (.74)ᵦ	3.01 (.73)ᵦ	3.11 (.74)	2.48 (.91)ᵦ	2.21 (.85)ᵦ	2.35 (.88)

Table 9. *Games-Howell post-hoc analyses for group differences with regard to preexisting level of interest.*

Domain	comparison	mean diff.	SE	p	95% CI
Variable					
Information technology					
Interest	H-L	1.05	0.13	<.001	0.74 to 1.36
	H-M	0.59	0.14	<.001	0.25 to 0.92
	M-L	0.47	0.12	.001	0.18 to 0.72
Confidence	H-L	0.77	0.13	<.001	0.46 to 1.07
	H-M	0.50	0.13	.001	0.19 to 0.80
	M-L	0.27	0.13	.094	-0.04 to 0.58
Choice	H-L	0.78	0.13	<.001	0.47 to 1.09
	H-M	0.45	0.14	.004	0.12 to 0.78
	M-L	0.33	0.11	.012	0.06 to 0.60
Sales					
Interest	H-L	1.13	0.12	<.001	0.85 to 1.41
	H-M	0.52	0.12	<.001	0.24 to 0.80
	M-L	0.61	0.11	<.001	0.34 to 0.88
Confidence	H-L	0.96	0.10	<.001	0.71 to 1.21
	H-M	0.43	0.10	<.001	0.19 to 0.67
	M-L	0.53	0.10	<.001	0.28 to 0.77

Note. *"H" denotes the "high interest" group; "M" denotes the "medium interest" group; "L" denotes the "low interest" group.*

Table 9. (*continued*)

Domain	comparison	mean diff.	SE	*p*	95% CI
Variable					
Sales					
Choice	H-L	1.12	0.13	<.001	0.82 to 1.41
	H-M	0.57	0.13	<.001	0.25 to 0.89
	M-L	0.54	0.10	<.001	0.30 to 0.79
Teaching					
Interest	H-L	1.40	0.13	<.001	1.09 to 1.70
	H-M	0.77	0.12	<.001	0.48 to 1.06
	M-L	0.63	0.12	<.001	0.35 to 0.91
Confidence	H-L	1.03	0.12	<.001	0.75 to 1.32
	H-M	0.57	0.11	<.001	0.30 to 0.84
	M-L	0.47	0.11	<.001	0.20 to 0.73
Choice	H-L	1.45	0.15	<.001	1.08 to 1.81
	H-M	0.94	0.16	<.001	0.55 to 1.33
	M-L	0.50	0.13	<.001	0.20 to 0.80

APPENDIX

Appendix 1. *Measures used in mass testing.*

Basic Interest Markers (BIM)

Administration instructions:

"This inventory contains a list of activities to help you explore your vocational interests.

Please indicate how much you would like to do each activity by circling the number that

most closely represents how you feel about it."

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1	2	3	4	5

Items:

Teaching scale

1. Develop a lecture

2. Design tests to evaluate students' learning

3. Take a teacher development workshop

4. Create an effective classroom atmosphere

5. Interact with students in a classroom setting

6. Facilitate students' discussions

7. Design an active learning activity

8. Conduct seminars

9. Offer feedback on student papers

10. Supervise high school students' research projects

Sales scale

1. Describe features and benefits of a product or service you sell

2. Increase sales in your sales territory

3. Work in a position that offers a commission based on sales

4. Convince people about the usefulness of a new gadget

5. Promote sales of medical equipment to physicians

6. Sell services and equipment

7. Determine customer needs

8. Explain products to customers

9. Persuade customers to spend money

10. Sell commercial property

11. Sell a new product to consumers

12. Learn new sales tactics

13. Be a sales representative for a retail business

Information Technology scale

1. Design a technology system for distance learning

2. Acquire the latest electronic technology

3. Maintain network hardware and software

4. Maintain a website for an organization

5. Keep up-to-date on the latest software

6. Take a course on network administration

7. Design a computer system for an organization

8. Use computers to archive historical documents

9. Create a computer database

10. Improve computer network efficiency

11. Modify existing software

12. Install a new computer system

Work value rating scale (based on the Minnesota Importance Questionnaire)

Rate each of the following work values on a scale of 1 (not very important) to 5 (very important) according to their importance to you:

1. _____ **Ability utilization** (I could do something that makes use of my abilities)

2. _____ **Achievement** (I could get a feeling of accomplishment)

3. _____ **Activity** (I could be busy all the time)

4. _____ **Advancement** (I could have an opportunity for self advancement)

5. _____ **Authority** (I could tell people what to do)

6. _____ **Coworkers** (People at my place of employment would be easy to make friends with)

7. _____ **Compensation** (My salary would compare well with that of others)

8. _____ **Creativity** (I could try out my own ideas)

9. _____ **Independence** (I could be alone)

10. _____ **Leadership – Human relations** (My supervisor / boss would back me up)

11. _____ **Leadership – Technical** (My supervisor would communicate expectations well)

12. _____ **Moral values** (I could do things without feeling they are morally wrong)

13. _____ **Policies and Practices** (Policies and practices would be observed

consistently)

14. _____ **Working conditions** (I could have good working conditions)

15. _____ **Recognition** (I could get recognition / praise for the things I do)

16. _____ **Responsibility** (I could make decisions on my own)

17. _____ **Security** (The employer would provide for my continuing employment)

18. _____ **Social service** (I could do things for other people)

19. _____ **Social status** (I could be somebody in the job)

20. _____ **Variety** (I could do something different every day)

21. _____ **Cultural identity** (I could be in an environment where people of my

ethnic origin are accepted and have good job possibilities)

22. _____ **Parent identity** (I could be in a family friendly environment where

parents are supported and work hours are flexible to meet the needs of the

family)

23. _____ **Geographic location** (I could be close to my family of origin)

Appendix 2. *Results of the pilot study.*

As described in the main text, a pilot study was conducted to evaluate the appropriateness of the job activity descriptions to be used in the vocational interest manipulation. Specifically, the following aspects were examined: a) evaluation of internal consistency estimates of the interest, confidence, and choice ratings of the three domain-specific job activity descriptions; b) identification of items that have a negative impact on the scale reliability estimates; c) questionnaire completion time and appropriateness of questionnaire structure and wording.

Description of the pilot measure

For the pilot measure, a set of eight domain-specific job descriptions (for the domains of Information Technology, Sales, and Teaching, respectively) were created based on job descriptions obtained from O*NET. All 24 items appeared on the questionnaire in random order with the limitation that no two job descriptions of the same domain should appear in direct succession. Two versions of the questionnaire were constructed to address possible order effects.

Participants were asked to rate each job description on a 5-point Likert scale in terms of their interest ("please indicate how much you would like to do the job"), confidence ("please indicate how confident you feel about succeeding at the described activities"), and choice intention ("please indicate the likelihood of engaging in the described activities in the future"). Higher ratings indicate greater interest, confidence, and choice intention, respectively.

In addition, the pilot measure contained a set of demographic variables (age, gender, academic major, and class standing), a question about the completion time of the

questionnaire, and an open-ended 'comment' section where participants could indicate any other issues they encountered in the process of completing the measure.

Participant sample and procedure

Participants (n = 45) for the pilot study were recruited from three psychology Methods courses offered at ISU during the Summer term 2008 (PSYCH 440, PSYCH 301, PSYCH 302). Participants received extra credit towards their respective course for completion of the measure. The sample characteristics were as follows: There were 66.7% women and 33.3% men in the sample, and the mean age was 23.4 years (SD = 5.6). Most participants (60%) were psychology majors, 24.4% indicated a major other than psychology, and 15.5% did not report a major. Most students were in their senior year in college (73.3%), 17.8% were juniors, 2.2% were sophomores, and 6.7% were graduate students.

Paper copies of the questionnaire were distributed during regular class time. Participants were instructed to complete the measure outside of class and to hand it back to the class instructor by a specified date. Upon return of the questionnaire, participants signed a sheet to document the completion of the measure in order to obtain extra credit.

Results

Internal consistency estimates

For each of the three occupational domains, internal consistency estimates (Cronbach's alpha) were calculated for the three different ratings. These results are summarized in Table 10. Due to the relatively small sample size, the results have to be interpreted with caution. Nonetheless, the following findings can be deduced: Overall, the internal consistency of all nine scales is high, meaning that the respective eight job

descriptions are very similar in content. Further, it appears that Information Technology and Teaching are generally more homogeneous than the three Sales scales.

Identification of problematic scale items

In order to examine whether any of the eight respective scale items have a negative impact on the reliability of the scales, Cronbach's alpha was recalculated for the remaining seven items after deletion of an item. In addition, the intercorrelations of all eight items, and the item-total correlations were examined to identify items that do not fit adequately with the rest of the scale. Thus, inadequate items were identified based on a) the observation of an increase in the overall scale reliability when the item is deleted from the scale; b) a low correlation of the item with other items in the scale; c) a low correlation of the item with the scale total; and d) an examination of the content of the item in comparison to other items that function adequately.

Based on the above considerations, the following results were obtained. For all three Information Technology scales, all eight items contributed positively to the overall scale reliability. Therefore, there was no need to change any of the job descriptions pertaining to this domain, especially when one considers that the overall scale reliabilities were already excellent.

The Sales domain had the lowest internal consistency of the three domains. The item analysis revealed that there were two items (S9 and S11) that were problematic in both the "interest" and "choice" variables. A look at the item content complemented the statistical analysis: Most Sales descriptions were relatively general in nature, but item S9 described a sales-related job in advertising. Likewise, the content of item S11 deviated from the majority of the items in terms of its emphasis on supervision and training of sales personnel rather

than direct sales activities. It is likely that the emphasis on advertising and supervision activities taps into different interest and choice profiles than the remaining six items.

With regard to the Teaching domain, the following was found. Although Teaching had the highest internal consistency overall, there was one item (T17) that had a negative impact on the scale reliability of the interest ratings. A comparison of the item content revealed that item T17 describes the activities of a school administrator whereas all other items describe activities directly related to classroom teaching. Therefore, job profile T17 seems to tap into other interests than teaching that might not be shared by everyone who enjoys the primary activities involved in teaching.

Questionnaire format and completion time

The mean completion time of the questionnaire was 16.5 minutes ($SD = 7.1$), which is not overly long. However, the range of reported completion times was large, spanning from 5 minutes to 40 minutes. Since reading the entire questionnaire at normal reading speed takes about 15 minutes, it might be advisable to eliminate data from participants who completed the measure in less than 10 minutes in order to reduce experimental error in the data. None of the participants reported any difficulties understanding the content of the job descriptions, so the wording seemed to be adequate. However, many students complained about the 'repetitive' and 'redundant' nature of the questionnaire items. This suggests that experimental fatigue might be an issue that needs to be considered when devising the final measure.

Scale Revision

The job profile measure was revised based on the findings reported above, taking into account the following considerations. The pilot measure included eight job descriptions per occupational domain. However, in the experimental version, half of the items will be randomly assigned to the value-congruent condition, and half of the items to the value-incongruent condition for each participant. The challenge regarding this design is to have an adequate number of job descriptions in each condition to maintain adequate internal reliability without extending the length of the questionnaire unduly. For eight items, the scale with the lowest reliability had a value of $\alpha = .85$. Under the assumption of similar item content, the Spearman-Brown formula (Equation 1) can be used to estimate the minimum number of items necessary to meet a specified reliability cutoff:

$$r_{SB} = \frac{nr}{1 + (n-1)r} \qquad (1)$$

r_{SB} is the scale reliability as corrected by the Spearman-Brown formula; r is the reliability of the original scale (here: $r = .85$); n is the ratio of the number of items in the scale corrected by the Spearman-Brown formula divided by the number of items in the original scale (there are eight items in the original pilot scales).

If the cutoff for acceptable reliability is set to $r_{SB} = .8$, the number of items that is necessary to achieve this value is six (5.6 is the exact value yielded by the formula). Therefore, assuming that the content of the items remained unchanged, a minimum of six items per condition would be necessary to assure that all nine scales exceed the reliability cutoff of $\alpha = .8$.

In the final experimental measure, the following compromise between scale length and reliability was reached. Rather than using six items per condition as calculated above, only five items were included in each condition to keep the questionnaire at a reasonable length (22.5 minutes on average, assuming a constant pace). Thus, each occupational domain now contains 10 items, adding up to a total of 30 items. The slight loss in scale reliability can be compensated for by adjusting the content of the scales. Specifically, the scale items that have been identified as contributing negatively to the scale reliability (items S9, S11, and T17) were replaced, and the content of the additional items was closely matched to existing items with good inter-item correlations. Overall, these changes should yield good scale reliability without unduly burdening the attentional resources of the participants in the study.

Table 10. *Internal consistency estimates for the three occupational domains.*

Scale	Cronbach's α (N=8)
Information Technology	
Interest	.89
Confidence	.92
Choice	.93
Sales	
Interest	.85
Confidence	.87
Choice	.85
Teaching	
Interest	.90
Confidence	.90
Choice	.92

Appendix 3: *Job description measure – representative example (each job description is identified in terms of occupational domain and level of value congruency for illustration purposes; participants did not see this information).*

Vocational behavior scale

The measure consists of 30 short descriptions of various job profiles. For each of the descriptions, you will be asked to rate the job in terms of how much you would like to do it, how confident you feel about your ability to do the job, and the likelihood that you will engage in the described activities in the future.

Please pay attention to the following points:

1) You will give three ratings to every job profile. Please pay close attention to the different prompts, since each of them measures a different aspect of vocational behavior.
2) Please monitor the time it takes you to complete the measure.
3) You are also being asked to indicate some basic demographic information. Please note that your responses are completely anonymous. However, you may choose not to answer these questions if you do not feel comfortable disclosing this information.

Please contact me if you have any questions. Thanks for your participation!

Verena Bonitz, Ph.D.
Department of Psychology
W183 Lagomarcino Hall
vsbonitz@iastate.edu

Demographic information:

Male ☐   Female ☐

Age:

Academic major:

Freshman☐   Sophomore☐   Junior☐   Senior☐   Graduate☐

Measure of vocational behavior:

Please indicate your start time:

Please read the following job profiles carefully, then rate each profile based on each of the 3 prompts.

Job # 18 (sales, value-incongruent): The job activities can be described as follows:

- Selling goods for wholesalers or manufacturers where technical or scientific knowledge is required.
- Contacting new and existing customers to discuss their needs, and to explain how these needs could be met by specific products and services.
- Answering customers' questions about products, prices, availability, product uses, and on technical knowledge of product capabilities.
- Negotiating prices and terms of sale.
- Assisting customers in making product selections.
- This job requires frequent night and weekend shifts.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 3 (IT, value-incongruent): The job activities can be described as follows:

- Researching, designing, developing, and testing computer or computer-related equipment for commercial, industrial, military, or scientific use.
- Supervision of the manufacturing and installation of computer or computer-related equipment and components.
- Analyzing user needs and recommending appropriate hardware.
- Conferring with engineering staff and consulting specifications to evaluate interfaces between hardware and software.
- Providing technical support to designers, marketing and sales departments, suppliers, and engineers throughout the product development and implementation process.
- This job requires you to relocate every year.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Job # 16 (sales, value-incongruent): The job activities can be described as follows:

- Collecting and analyzing data on customer demographics, preferences, needs, and buying habits.
- Overseeing product development or monitoring trends that indicate the need for new products and services.
- Negotiating contracts with vendors and distributors to manage product distribution, establishing distribution networks.
- Determining pricing and discount rates.
- Preparing budgets and approving budget expenditures.
- The salary for this position is lower than in other comparable jobs

1) Please indicate **<u>how much you would like to do the job</u>** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

2) Please indicate **<u>how confident you feel about being effective</u>** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

3) Please indicate the **<u>likelihood of engaging in the described activities in the future</u>** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Job # 6 (IT, value-congruent): The job activities can be described as follows:

- Monitoring and controlling electronic computer and peripheral electronic data processing equipment to process business, scientific, engineering, and other data according to operating instructions.
- Entering commands at a computer terminal and setting controls on computer and peripheral devices.
- Operating spreadsheet programs and other types of software to load and manipulate data and to produce reports.
- Overseeing the operation of computer hardware systems, including coordinating and scheduling the use of computer terminals and networks to ensure efficient use.
- This job provides excellent advancement opportunities.

1) Please indicate **<u>how much you would like to do the job</u>** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

2) Please indicate **<u>how confident you feel about being effective</u>** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
1☐   2☐   3☐   4☐   5☐

Job # 25 (teaching, value-congruent): The job activities can be described as follows:

- Observing students to determine qualifications, limitations, interests, abilities, and other individual characteristics.
- Establishing clear objectives for all lesson units, and projects, and communicating those objectives to students.
- Instructing and monitoring students in use and care of equipment and educational materials.
- Providing guidance to students regarding personal, academic, vocational, or behavioral issues.
- This job allows you to make efficient use of your abilities.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence   confidence   confidence   confidence
1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
1☐   2☐   3☐   4☐   5☐

Job # 7 (IT, value-incongruent): The job activities can be described as follows:

- Researching, designing, developing, and testing software and network distribution software for medical, industrial, military, communications, scientific, and general computing applications.
- Setting operational specifications and formulating and analyzing software requirements.
- Modifying existing software to correct errors, to adapt it to new hardware or to upgrade interfaces.
- Consulting with engineering staff to develop specifications and performance requirements, and resolving customer problems.
- This job requires frequent night and weekend shifts.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 29 (teaching, value-incongruent): The job activities can be described as follows:

- Conducting classes, workshops, and demonstrations, and providing individual instruction to students as necessary.
- Enforcing rules and policies governing students.
- Meeting with other instructors to discuss individual students and their progress.
- Preparing and administering written, oral and performance tests, and issue grades in accordance with performance.
- Assigning and grading class work and homework
- This job requires you to relocate every year.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 11 (sales, value-incongruent): The job activities can be described as follows:

- Answering customers' questions about products, prices, availability, and credit terms.
- Quoting prices, credit terms and other bid specifications.
- Preparing sales presentations and proposals that explain product specifications and applications.
- Informing customers of estimated delivery schedules, services contracts, and warranties.
- Completing expense and sales reports.
- The job is time-limited and future-employment cannot be guaranteed.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 1 (IT, value-incongruent): The job activities can be described as follows:

- Planning, directing, and coordinating activities in fields such as electronic data processing, information systems, systems analysis, and computer programming.
- Managing backup, security, and user help systems
- Monitoring advances in computer relevant technologies.
- Evaluating the company's technology use and needs, and recommending improvements.
- Assigning and reviewing the work of systems analysts, programmers, or other computer-related workers.
- Meeting with department heads, managers, supervisors, and vendors to solicit cooperation and resolve problems.
- The salary for this position is lower than in other comparable jobs.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 17 (sales, value-incongruent): The job activities can be described as follows:

- Negotiating prices, and terms of sales and service agreements.
- Initiating sales campaigns in order to meet sales and production expectations.
- Locating and contacting potential clients to offer products or services.
- Informing customers of available options for products and services.
- Drawing up sales contracts.
- The position demands long hours.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike Neutral Like Strongly
Dislike   Like
1☐ 2☐ 3☐ 4☐ 5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low low moderate high very high
confidence confidence confidence confidence confidence
1☐ 2☐ 3☐ 4☐ 5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely Unlikely Neutral Likely Very likely
1☐   2☐ 3☐ 4☐ 5☐

Job # 5 (IT, value-congruent): The job activities can be described as follows:

- Installing, configuring, and supporting an organization's local area network and internet system.
- Maintaining network hardware and software.
- Monitoring a network to ensure network availability to system users and performing necessary maintenance to support network availability.
- Supervision of other network and client server specialists.
- Recommending changes to improve systems and network configurations, and determining hardware or software requirements related to such changes.
- Conferring with network users about how to solve existing system problems.
- This job offers excellent working conditions.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike Neutral Like Strongly
Dislike   Like
1☐ 2☐ 3☐ 4☐ 5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low low moderate high very high
confidence confidence confidence confidence confidence
1☐ 2☐ 3☐ 4☐ 5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 21 (teaching, value-congruent): The job activities can be described as follows:

- Preparing course materials such as syllabi, homework assignments, and handouts.
- Preparing and delivering lectures to students.
- Initiating, facilitating, and moderating classroom discussions.
- Evaluating and grading students' class work, assignments, and papers.
- This job is most suitable for individuals who seek personal achievement.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 9 (IT, value-congruent): The job activities can be described as follows:

- Performing data backups and disaster recovery operations..
- Developing standards and guidelines to guide the use and acquisition of software and to protect vulnerable information.
- Advising customers about, or performing maintenance of software systems.
- Directing software programming and developing documentation.
- Answer telephone calls to assist computer users encountering problems.
- The position guarantees a high level of job security.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 14 (sales, value-congruent): The job activities can be described as follows:

- Directing the actual distribution of a product or service to a customer.
- Coordinating sales distribution by establishing sales territories, quotas, and goals.
- Analyzing sales statistics to determine sales potential and inventory requirements.
- Resolving customer complaints regarding sales and service.
- Consulting with department heads to plan advertising services.
- This job provides excellent advancement opportunities.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 28 (teaching, value-congruent): The job activities can be described as follows:

- Performing duties that are instructional in nature or delivering direct services to students or parents.
- Tutoring and assisting children individually or in small groups in order to help them master assignments.
- Supervising students in classrooms, halls, or on field trips.
- Observing students' performance, and recording relevant data to assess progress.
- Organizing and labeling materials in a manner appropriate to the students' developmental level.
- This job offers excellent working conditions.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 12 (sales, value-congruent): The job activities can be described as follows:

- Determining the demand for products and services offered by a firm and its competitors, and identifying potential customers.
- Developing pricing strategies with the goal of maximizing the firm's profits while ensuring customer satisfaction.
- Evaluating the financial aspects of product development.
- Directing the hiring, training, and evaluation of sales staff.
- Using sales forecasting and strategic planning to ensure the sale and profitability of products.

- This job allows you to make efficient use of your abilities.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 2 (IT, value-incongruent): The job activities can be described as follows:

- Analyzing science, engineering, business, and other data processing problems related to electronic data processing systems.
- Analyzing user requirements and procedures to automate or improve existing systems.
- Testing, maintaining, and monitoring computer systems and programs, including coordinating the installation of computer systems and programs.
- Determining computer software or hardware needed to set up or alter systems.
- Training staff and users to work with computer systems and programs.
- This position demands long hours.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 15 (sales, value-congruent): The job activities can be described as follows:

- Monitoring sales activities to ensure that customers receive satisfactory service.
- Keeping records of purchases, sales, and requisitions.
- Preparing and delivering sales presentations to new and existing customers.
- Collaborating with colleagues to exchange information such as selling strategies.
- Establishing training programs for sales representatives.
- This job is most suitable for individuals who seek personal achievement.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 22 (teaching, value-incongruent): The job activities can be described as follows:

- Teaching or instructing youths and adults in remedial education classes.
- Observing and evaluating students' work to determine progress and making suggestions for improvement.
- Maintaining accurate and complete student records.
- Preparing students for further education by encouraging them to explore learning opportunities and to persevere with challenging tasks.
- This job requires frequent night and weekend shifts.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 20 (sales, value-congruent): The job activities can be described as follows:

- Identifying potential customers using sales campaigns, mailing lists and personal contacts.
- Corresponding with customers and coworkers in order to answer inquiries, and discuss product trends.
- Arranging for processing and shipping of sold products.
- Reviewing orders to determine product types and quantities required in order to meet customer demand.
- Forecasting and tracking sales and marketing trends, and analyzing the collected data.
- This job offers excellent working conditions.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence confidence confidence confidence
1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
1☐   2☐   3☐   4☐   5☐

Job # 10 (IT, value-congruent): The job activities can be described as follows:

- Coordinating and linking the computer systems within an organization to increase compatibility and information sharing.
- Reviewing computer system capabilities, workflow, and scheduling limitations.
- Maintaining current knowledge of what types of computer network technologies are available.
- Adapting exiting software technology to new applications.
- Assisting customers in resolving computer network problems.
- This job is most suitable for individuals who seek personal achievement.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence confidence confidence confidence
1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
1☐   2☐   3☐   4☐   5☐

Job # 27 (teaching, value-congruent): The job activities can be described as follows:

-   Teaching students in public or private schools in one or more subjects at the middle, intermediate, or junior high level.
-   Adapting teaching methods and instructional materials to meet students' varying needs and interests.
-   Instructing through lectures, discussions, and demonstrations.
-   Preparing, administering, and grading tests and assignments to evaluate student progress.
-   Establishing clear objectives for all lessons, units, and projects.
-   The position guarantees a high level of job security.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly Dislike	Dislike	Neutral	Like	Strongly Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low confidence	low confidence	moderate confidence	high confidence	very high confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely	Unlikely	Neutral	Likely	Very likely
1☐	2☐	3☐	4☐	5☐

Job # 13 (sales, value-congruent): The job activities can be described as follows:

-   Researching market conditions in local, regional, or national areas to determine potential sales of a product or service.
-   Gathering information of competitors, prices, sales, and methods of marketing.
-   Using survey results to create a marketing campaign.
-   Measuring and assessing customer and employee satisfaction.
-   Preparing reports of findings, illustrating data graphically and translating complex findings into written text.
-   The position guarantees a high level of job security.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence   confidence   confidence   confidence
1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
1☐   2☐   3☐   4☐   5☐

Job # 30 (teaching, value-incongruent): The job activities can be described as follows:

- Planning and conducting activities for a balanced program of instruction, demonstration and work time that provides students with opportunities to observe, question and investigate.
- Instructing through lectures, discussions, and demonstrations.
- Meeting with parents and guardians to discuss their children's progress.
- Observing and evaluating students' performance, behavior, and social development.
- Writing instructional materials on designated subjects or tasks.
- The salary for this position is lower than in other comparable jobs.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence   confidence   confidence   confidence
1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
1☐   2☐   3☐   4☐   5☐

Job # 23 (teaching, value-congruent): The job activities can be described as follows:

- Teaching students through lectures, discussions, and other instructional activities.
- Planning and developing instructional methods and content for courses.
- Maintaining regular office hours in order to advise and assist students.
- Conferring with parents and staff to discuss educational activities and policies.
- Assigning lessons and correcting homework.
- This job provides excellent advancement opportunities.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence   confidence   confidence   confidence

1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
1☐   2☐   3☐   4☐   5☐

Job # 8 (IT, value-incongruent): The job activities can be described as follows:

- Testing programs and databases, correcting errors, and making necessary modifications.
- Training users and answering questions.
- Applying principles and techniques of computer science, engineering, and mathematical analysis.
- Monitoring and responding to error messages.
- Building, testing, and modifying product prototypes, using working models or theoretical models.
- The job is time-limited and future employment cannot be guaranteed.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly	Dislike	Neutral	Like	Strongly
Dislike				Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low	low	moderate	high	very high
confidence	confidence	confidence	confidence	confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

| Very unlikely | Unlikely | Neutral | Likely | Very likely |
| 1☐ | 2☐ | 3☐ | 4☐ | 5☐ |

Job # 26 (teaching, value-incongruent): The job activities can be described as follows:

- Developing a lecture or a class discussion format.
- Designing tests and homework assignments to assess students' learning.
- Participating in continuing education workshops for teachers.
- Offering feedback on student papers and other projects.
- Interacting with students in a classroom setting, hereby creating an effective classroom atmosphere.
- This position demands long hours.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly	Dislike	Neutral	Like	Strongly
Dislike				Like
1☐	2☐	3☐	4☐	5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low	low	moderate	high	very high
confidence	confidence	confidence	confidence	confidence
1☐	2☐	3☐	4☐	5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
      1☐   2☐   3☐   4☐   5☐

Job # 19 (sales, value-incongruent): The job activities can be described as follows:

- Determining customers' product or service needs, and preparing proposals to sell services that address those needs.
- Reviewing product development trends in order to advise customers regarding innovative products.
- Completing sales order tickets for processing of customer initiated orders.
- Contacting current and prospective customers in order to present relevant information and explain available services.
- Interviewing customers regarding their satisfaction with products or services.
- This job requires you to relocate every year.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
   1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence   confidence   confidence   confidence

   1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
      1☐   2☐   3☐   4☐   5☐

Job # 24 (teaching, value-incongruent): The job activities can be described as follows:

- Instructing students individually or in groups.
- Establishing and enforcing rules for behavior and procedures for maintaining order among the students.
- Providing extra assistance to students with special needs.
- Preparing materials and classroom facilities for class activities.
- Advising students on academic or vocational programs.
- The job is time-limited and future employment cannot be guaranteed.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
   1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence   confidence   confidence   confidence

   1☐   2☐   3☐   4☐   5☐

3) Please indicate the **likelihood of engaging in the described activities in the future** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely
   1☐   2☐   3☐   4☐   5☐

Job # 4 (IT, value-congruent): The job activities can be described as follows:

- Coordinating changes to computer databases.
- Testing and implementing databases with help of database management systems.
- Planning, coordinating, and implementing security measures to safeguard computer databases.
- Developing methods for integrating different products so they work properly together such as customizing commercial databases to fit specific needs.
- Specifying users and user access levels for each segment of a database.
- This job allows you to make efficient use of your abilities.

1) Please indicate **how much you would like to do the job** by choosing the number that most closely represents how you feel about it:

Strongly   Dislike   Neutral   Like   Strongly
Dislike   Like
   1☐   2☐   3☐   4☐   5☐

2) Please indicate **how confident you feel about being effective** at the described activities by choosing the number that most closely represents how you feel about it:

Very low   low   moderate   high   very high
confidence   confidence   confidence   confidence   confidence

   1☐   2☐   3☐   4☐   5☐

3) Please indicate the **<u>likelihood of engaging in the described activities in the future</u>** by choosing the number that most closely represents how you feel about it:

Very unlikely   Unlikely   Neutral   Likely   Very likely

1☐   2☐   3☐   4☐   5☐

Please note your end time:

Comments: