DISSERTATION

STRUCTURE OF CALLING AND VOCATION ACROSS GENDER AND AGE COHORT

Submitted by

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY BRANDY M. ELDRIDGE ENTITLED STRUCTURE OF CALLING AND VOCATION ACROSS GENDER AND AGE COHORT BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

STRUCTURE OF CALLING AND VOCATION ACROSS GENDER AND AGE COHORT

The Calling and Vocation Questionnaire (CVQ) is a measure based on Dik and Duffy's (2009) theoretical conceptualization of calling, which includes three dimensions: (1) a transcendent summons, (2) deriving or expressing meaning or purpose through work, and (3) a prosocial orientation in work. Additionally, this definition posits two overarching aspects of calling: presence and search. To date, research has established the CVQ as a reliable, valid psychological instrument for the purpose of measuring calling. The present study sought to further evaluate the structure of the measurement model of the CVQ by conducting confirmatory analyses. Specifically, multigroup analysis within the structural equation model paradigm was conducted using four groups of college students: women in their first year, men in their first year, women in their last year, and men in their last year of their undergraduate degree program. The purpose was to assess the utility of the CVQ as a psychological measure for college students in general; that is, if the measurement model operates similarly across groups, the CVQ can then be employed with increased confidence with college students, regardless of their subgroup membership (e.g., year in school, gender). Participants were students recruited from an institution of higher education in the Western United States. The results indicated that the initially proposed measurement model of the

CVQ, based on Dik and Duffy's (2009) conceptualization, did not provide a good fit to the data. The model was modified by assigning all of the prosocial orientation items related to search for calling to the presence of calling factor, resulting in good model fit for all groups. Structural equation modeling multigroup analyses indicated the revised measurement model remained consistent across all four groups, with the exception of one factor loading. Additional analyses were conducted assessing differences in means scores between the four groups. The results indicated no significant differences in presence of or search for calling across age cohort. Significant gender differences were found, whereby women scored higher than men on both presence of and search for calling. These results were confounded, however, by the unequal distribution of majors between women and men. Based on these results, it was concluded that the CVQ shows promise as a measure with utility across various groups of college students. Future directions for research and practice are also explored.

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DEDICATION

For my mom, who weathered the storm

to pursue her calling

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CHAPTER I

LITERATURE REVIEW

For most people, work represents an important aspect of their lives, with the majority of adults spending more time engaged in activities related to work than in any others. Accordingly, work has been a domain of significant research interest within counseling psychology. Along with the trend toward positive psychology within counseling and vocational psychology (Lopez et al., 2006; Robitschek & Woodsen, 2006), one construct has recently emerged within the literature: viewing one's work as a calling. The concept of calling has received substantial theoretical attention, though empirical understanding of the construct has remained limited due to lack of a psychometrically sound, multidimensional measure. In response to the lack of such a measure, Eldridge (2007) developed and psychometrically evaluated a multidimensional measure of calling, the Calling and Vocation Questionnaire (CVQ), which has since undergone further development (Dik, Eldridge, & Steger, 2008) The purpose of the present study is to further empirically assess the CVQ to gauge its utility as a psychological measure of calling among college students in general. To accomplish this purpose, this study seeks to establish that the CVQ operates similarly across various groups within the college student population, thereby lending support to the use of the measure for college students in general. Specifically, the present study will compare the measurement model of the CVQ across four groups: women who are in the first year of college, men who are also in their first year, women who are in the last year of their

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undergraduate education, and men who are also in their last year. If the measurement model of the CVQ remains equivalent across these groups, this will provide evidence that the model operates similarly across various subgroups within the overall population of college students, thus lending additional support to the psychometrics and utility of the measure. An additional purpose of this study is to evaluate potential group differences in calling by comparing mean scores on the CVQ between the four groups.

Conceptual and Theoretical Roots of Calling and Vocation

The term "calling" as it applies to one's work or career was originally applied to describe the calling from God to enter a monastic order (Serow, 1994). Indeed, finding meaning within one's work has been emphasized in a variety of religious traditions (Treadgold, 1999). According to Serow (1994), the conceptualization of calling was expanded during the Reformation, during which theologians such as Martin Luther and John Calvin emphasized that a sense of calling could be experienced in everyday professions and that God could be glorified through the work of ordinary people. As Hardy (1990) put it, "…all work, provided it contributes to the common good, possesses an inherent religious dignity, no matter how mean or low it may be in outward appearance" (p. 58) and "God has given each person certain talents and abilities which they should exercise for their neighbor's good" (p. 66).

According to Treadgold (1999), in more recent times the concept of calling has developed beyond a religious context to now encompass a broader, more secularized meaning in common use. Treadgold also linked the concept of calling to constructs important in the theories of classic psychological thinkers, including the process of individuation in Jung's understanding of the personality, Maslow's idea of self-actualization, and Erikson's

proposed drive for generativity. Serow (1994) agreed with Treadgold's (1999) assessment of the secularization of the concept of calling, relating that though religious believers are still likely to perceive calling as originating from a higher power, other potential sources of calling (e.g., the needs of society) have emerged. Mintz (1978) also agreed, stating that for many individuals,

> …instead of God doing the calling, it is society or duty which beckons; the call is itself experienced as a sense of inner conviction rather than as a spiritual prompting; instead of religious fervor, it is 'intellectual passion' which accompanies the work (p. 18).

A series of recent theoretical works have proposed frameworks for understanding the construct of calling. Hall and Chandler (2005) defined calling as work that is deeply meaningful, personally fulfilling, and which is perceived as one's purpose in the world. Hall and Chandler linked calling to the concept of psychological success, defined by the authors as the subjective viewpoint that one is successful (as opposed to objective success, which they operationalized as consisting of external factors such as wealth). According to Hall and Chandler, an individual with a sense of calling will be more likely to develop personal goals and put effort into achieving them, which will contribute to a feeling of psychological success.

Another recent theoretical approach compares calling to other possible approaches one may take toward one's occupation. Specifically, a distinction is made between Job, Career, and Calling types (Bellah, Madsen, Sullivan, Swindler & Tipton, 1986; Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). People who approach their work as a Job are conceptualized as treating work as a means to an end, a way to procure financial and other resources so that life outside of work can be enjoyed more thoroughly. Those who identify with the Career type of approach are more personally involved with their work,

striving to advance through the occupational hierarchy and marking their success by such advancement. People with a Calling will also strongly emphasize their work; however, their motivation for work is characterized predominantly by seeking fulfillment and social value in the work, rather than seeking material resources or promotions.

Dik and Duffy (2009) put forth a working definition of calling, basing their work on an extensive multidisciplinary literature review that encompassed historical and modern conceptualizations of the construct. They defined calling as "a transcendent summons, experienced as originating beyond the self, to approach a particular life role in a manner oriented toward demonstrating or deriving a sense of purpose or meaningfulness and that holds other-oriented values and goals as primary sources of motivation" (p. 427). This definition encompasses three primary domains: (1) an external source providing a summons, (2) drawing or expressing meaning or purpose, and (3) other-oriented values serving as a primary motivation. Additionally, Dik and Duffy's conceptualization proposed two overarching aspects of calling: presence and search. According to the authors, some individuals might feel a clear sense of having identified their calling, whereas others may feel certain that they have a calling but are still seeking to identify it specifically.

Several significant aspects of Dik and Duffy's (2009) theoretical conceptualization of calling stand out. First, they worked to differentiate calling from the closely related concept of vocation, which has frequently been used interchangeably with calling, but has evolved to incorporate a much broader meaning (Schuurman, 2004). Dik and Duffy (2009) proposed that vocation can be defined as encompassing the second two domains of calling (derivation of meaning and other-oriented values), whereas the unique component of calling is a sense of being summoned by an external force. It is also noteworthy that Dik and Duffy suggested

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that a calling may apply to any of a variety of life roles (e.g., volunteer or family roles), and thus one is not limited to experiencing a calling only within an occupational role. Finally, Dik and Duffy's (2009) conceptualization represents a theoretical definition which is multidimensional with sufficient specificity and detail to guide psychometrically sound measurement of the construct.

Elangovan, Pinder, and McLean (in press) also offer a multidimensional definition of calling based on review of the definitions present in the theoretical discourse to date, which in general is consistent with the definition proposed by Dik and Duffy (2009). According to Elangovan et al. (in press), three features have been consistent in the various definitions present in the literature. First, they emphasized that calling indicates a sense of action, of doing rather than just being. As they put it, "…while beliefs, attitudes and values are essential and ever-present, the concept of callings, per se, focuses on the actions they motivate" (p. 2). The final two features mirror those proposed by Dik and Duffy (2009): a sense of clarity of purpose or identification of personal mission, and prosocial intentions. Thus, Elangovan et al. (in press) offered the following definition of calling: "…a course of action in pursuit of pro-social intentions embodying the convergence of an individual's sense of what he or she would like to do, should do, and actually does" (p. 3). They emphasized that calling has significant potential for understanding a variety of organizational behaviors and encourage extension of theoretical discourse to empirical investigation of the construct.

In sum, the concept of calling has rich theoretical and historical roots, and a variety of definitions of the construct have been put forward. Recent academic discourse has focused on providing a definition of the construct that will provide sufficient structure and specificity to guide empirical pursuits seeking to better understand the role and impact of calling on career

development and other variables. As noted above, the purpose of the present study is to serve as a bridge between theory and research by providing further psychometric evaluation of a multidimensional measure of calling based on theoretical understanding of the construct and designed to provide a means of quantitative operationalization of calling in order to guide future empirical investigation.

<div align="center">Calling in the Empirical Literature</div>

Despite lack of agreement in terms of definition and unavailability of sound measurement techniques, a small body of initial empirical studies has evaluated the extent to which calling relates to a variety of demographic and outcome variables.

Qualitative Methodology

Much of the initial empirical work on calling has relied on qualitative data collection and analyses. Oates, Hall, and Anderson (2005) used semi-structured interviews and grounded theory methodology to evaluate the impact of calling on the experience of interrole conflict (i.e., the stress experienced while trying to balance work and family roles) in mothers employed in Christian universities. Four important findings emerged. Specifically, the women in the study: (1) experienced their callings as compelling and endorsed being very certain about them; (2) characterized their callings as meaningful pursuits; (3) reported having a calling to multiple life roles and described them as organized hierarchically (e.g., upon a child's birth, the calling to motherhood became of primary importance); and (4) perceived themselves as needing the support of others in order to be able to successfully fulfill their callings. Oates and colleagues concluded that a sense of calling was an important resource on which the women were able to draw when combating interrole conflict.

A similar study was conducted by Sellers, Thomas, Batts, and Ostman (2005), in which intensive interviews were used to collect information about the experiences of women endorsing dual callings to motherhood and career. The results of this study indicated that the women experienced their calling to motherhood and to career differently, particularly in terms of feeling that the calling to motherhood was identified only after entering that role. Additionally, the women reported that they felt supported in their decision to follow dual callings by their significant others, but felt pressure to conform to societal norms of assuming traditional gender roles (i.e., leaving the workplace to focus only on the role of motherhood upon the birth of a child) from other external forces (e.g., the church, culture at large).

Serow (1994) used a combination of survey and interview data collection techniques to investigate the importance of the concept of calling to the profession of teaching, specifically. He concluded that students who experienced their impending teaching career as a calling were more likely to feel enthusiastic and committed to teaching, to consider how their career choice might affect others, to be less concerned about sacrifices they would need to make to achieve their occupational goals, and to have less distinct boundaries between their professional and personal lives. Similarly, Serow, Eaker, and Cielchalski (1992), having utilized factor analytic procedures to assess influences on the decision to become a teacher, reactions to teaching, and what one values most in life, concluded that: (1) calling is an important component of the way in which students training for careers in teaching approach their chosen occupation; (2) other-oriented values were an important feature of prospective teachers' career decision-making (i.e., they endorsed wanting to help people); and (3) prospective teachers view their chosen occupation as requiring integrity and responsibility, as teachers are important influences in the lives of their students.

Another qualitative study sought to clarify the extent to which definitions of calling presented in current literature reflect the understanding of the construct held by college students (Hunter, Dik, & Banning, in press). In this study, participants were asked to respond to open-ended questions regarding how they would define calling and what it means to approach one's career as a calling. Emergent qualitative document analysis was used to determine what major themes characterized the content of the responses. Three primary themes emerged from the definitions of calling offered by the participants. First, the responses indicated the perception of a guiding force, with some participants identifying a specific source (e.g., God, destiny), while others were less explicit. Additionally, some responses indicated an external source of the summons, whereas others identified something internal (e.g., unique personal gifts and talents), and still others pointed to some combination of the two. Second, the responses were characterized by a theme of personal fit and eudemonic well-being, as participants noted that a calling occurs when a high degree of fit exists between one's personal abilities and attributes and the nature of the work and the positive outcomes that are expected when such a match occurs. Finally, a theme of altruism emerged, as the participants described calling as resulting in positive societal outcomes, both broadly and within a more specific context (e.g., helping a particular group).

Hunter et al. (in press) also discussed the behavioral implications of calling that emerged from their analysis of students' responses to an inquiry about what approaching one's career as a calling would entail. The themes emerging from the responses indicated that behavioral responses to calling include: (1) following a guiding force, (2) pursuing interests, talents, or meaning, (3) pursuing altruism, and (4) effortful dedication to the work. Additionally, the results indicated that when participants were asked if calling can relate to

other life areas outside of the work domain, they indicated that relationships, meaningful activities (e.g., hobbies), and lifestyle or character (i.e., personal growth) are all additional domains in which they perceive it to be possible to experience a sense of calling. It is noteworthy that some participants indicated that calling could apply to any and all domains of life. The authors concluded that these themes are consistent with the characteristics of calling emphasized in the current literature.

French and Domene (2010) also employed qualitative methods in their study addressing the sense of "life calling" (p. 2) experienced by young women in college. French and Domene conducted semi-structured interviews with seven women college students who identified as Christian and endorsed having a strong sense of calling in their lives. The results of these interviews indicated that for these young women, calling was experienced as a broad phenomenon, encompassing their entire areas of life, and was therefore relevant for more than just their vocational identity. They illustrated this with a quote from one of the participants: "I think a career can be your job, but a life calling is who you are, becoming what you do…I don't think someone's life calling is to work as an environmentalist, well maybe it is, but I think you're called to be a person that cares about the environment" (p. 7). Additionally, the respondents indicated that their callings emerged over time and became clearer as they pursued their particular interest areas.

French and Domene (2010) also reported that themes emerging from the responses collected indicated five characteristics of calling: (1) an altruistic focus, (2) intensity, (3) deep passion for the calling area, (4) facilitation of the discovery of calling in others, and (5) the burdens of having a calling (e.g., sacrificing other interests in pursuit of the calling). Additionally, the respondents pointed to the supportive role of others in their lives and the

importance of exposure to the life calling area as important factors that influenced how their calling emerged. Finally, themes of taking initiative and resiliency arose in the interviews, as participants discussed working to gain experience in their calling areas and having to overcome obstacles to do so.

In summary, the qualitative literature on calling indicates that it is an important source of meaning for individuals (Oates et al., 2005) and that it provides a context for understanding life roles (Sellers et al., 2005) and the importance of work (Serow, 1994; Serow et al., 1992). Furthermore, it appears that individuals understand their calling as being linked to a specific source, a means of fostering well-being, and an opportunity to engage in altruism (Hunter et al., in press). Additional characteristics that individuals associate with calling include a feeling of deep passion, facilitation of discovery of calling in others, and feeling burdened by the calling, such as when a calling necessitates sacrifices (French & Domene, 2010).

Quantitative Methodology

Quantitative methods also have been employed in empirical investigations of calling. Wrzesniewski, McCauley, Rozin, and Schwartz (1997) asked participants to rate the degree to which the occupational approaches of three hypothetical individuals (presented in three paragraphs, one each for Job, Career, and Calling) corresponded to the way they themselves approach their own work. The results indicated that an approximately equal number of participants endorsed each style as being most similar to their own. Additionally, Wrzesniewski and her colleagues found that those individuals who identified with the Calling orientation tended to be higher in job pay and educational level, were in occupations with higher status and prestige (though it is noteworthy that one-third of administrative assistants

in their sample endorsed having a Calling orientation), were more satisfied with their work and in their lives, and reported fewer absences from work than those endorsing a Job or Career approach.

Using the same theoretical conceptualization of Job, Career, and Calling, Park (2009) evaluated the effect of calling on the protean career with a sample of professionals within a Korean financial service company. According to Park, the protean career refers to the modern development of individuals being responsible for self-directing their careers, rather than the organization guiding such development. An individual embracing this approach to occupational development is more likely to be proactive and make career-related decisions based on personal values. Because of this emphasis on personal values, Park hypothesized that perceptions of calling would be positively related to protean career. The results indicated that the calling orientation was significantly positively related to the protean career, and the relationship between the two was stronger than for either of the other independent variables: subjective career success and organizational learning climate. Additionally, the relationship between calling and protean career was found to be partially mediated by subjective career success. Park concluded that "…people having a stronger calling orientation may have a more rewarding relationship with their work, which is their passion in life" (p. 648), and that the approach of viewing work as inseparable from life may enhance self-directed career management.

Davidson and Caddell (1994) reacted to the secularization of the construct of calling, saying, "The purely secular approach distorts our understanding of people's orientations to work, leaving the false impression that nobody thinks of work in religious terms, when, in fact, some people do" (p. 145). After surveying members of Christian congregations with a

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variety of denominational identifications, Davidson and Caddell found that religion did indeed influence the way individuals viewed their work, and that in particular those who viewed religion as an integral aspect of their identity were more likely to approach their work as a calling. The authors also found that calling was related to several demographic variables, specifically higher socioeconomic status, strong beliefs about social justice, and perception of job stability.

Steger and Dik (2009) assessed the importance of calling to the career decision-making of college students. The authors defined calling as a person's belief that she or he is called upon to do a particular kind of work. Results indicated calling was indeed relevant to college students, as the majority identified themselves as having a calling to a specific type of work; many additionally endorsed being high in presence of calling (i.e., having identified the specific nature of their calling). Results also indicated that for individuals seeking global-level meaning in life, self-efficacy for choosing a career and general well-being were increased if they experienced meaning in their careers. The authors concluded that people who are seeking meaning in life can be satisfied by experiencing meaning in their careers.

Dik and Steger (2008) conducted an intervention study to assess the impact of including calling in a career workshop intervention. The calling-infused workshop was compared to a traditional workshop intervention (consisting of assessment and interpretation of interests, values, and abilities) and a wait-list control. The results indicated that both workshops improved career-related outcomes and overall well-being when compared to the control group. The addition of the calling component neither added to nor detracted from the efficacy of the traditional intervention. However, a marginally significant result indicated that counselor self-disclosure had little effect for participants in the traditional intervention

condition in terms of meaning in life scores, but did lead to differences in meaning in life scores for the participants in the calling condition. This led the authors to suggest that "counselors may need to provide tangible and personal examples of the role of calling and vocation in their own career development processes to activate the benefits of considering career issues in this possibly novel way" (p. 210).

Duffy and Sedlacek (2007a) examined the relationship between search for and presence of calling and other career development variables. Search for calling was found to correlate positively with indecisiveness and lack of educational information; negative relationships were found between search for calling and decidedness, career comfort, self-clarity, and choice-work salience. Presence of calling showed an opposite pattern, correlating positively with decidedness, career comfort, self-clarity, and choice-work salience and negatively with indecisiveness and lack of educational information. Additionally, Duffy and Sedlacek found that search for and presence of calling added unique variance above and beyond self-clarity, choice-work salience, lack of educational information and indecisiveness in predicting career decidedness and comfort. The authors concluded that the construct of calling is an important one that in the future should be taken into consideration by individuals working in practical, theoretical, and research areas.

In a separate study, Duffy and Sedlacek (in press) evaluated the degree to which first-year students endorsed a calling within the context of their career as being relevant to them, as well as the relationship of calling to demographic variables, religiousness, life satisfaction, and meaning in life. Overall, 44 percent of the sample endorsed having a calling as been mostly or totally true of them, with only nine percent characterizing it as not at all true of them. Students who aspired to advanced degrees were more likely to endorse experiencing

presence of calling, and those intending to pursue law, medical or doctoral degrees were slightly less likely to endorse searching for a calling. Presence of calling was found to have weak correlations with life satisfaction and religiousness, as well as a moderate correlation with meaning in life. Finally, a moderate negative relationship was found between presence of calling and search for calling.

Peterson, Park, Hall, and Seligman (2009) conducted a study focusing on zest in work, a concept they characterized as "…a positive trait reflecting a person's approach to life with anticipation, energy and excitement" (p. 161). Using the Work-Life Questionnaire paragraphs meant to measure work as a Job, Career or Calling designed by Wrzesniewski et al. (1997), Peterson and his colleagues (2009) found that zest was predictive of approaching one's work as a calling. Additionally, professional workers were found to be most likely to view their work as a calling, with clerical workers being the least likely to do so, though individuals who perceive their work as a calling were found within all occupational domains surveyed. Of the entire sample, 37 percent of respondents were classified as having a calling, according to their responses on the Work-Life Questionnaire. Approaching one's work as a calling was also significantly positively correlated with satisfaction at work and life satisfaction. The authors concluded that zest is a significant predictor of calling, more so than other character strengths they assessed, such as hope, gratitude, and curiosity.

In summary, quantitative approaches to calling indicate that it is relevant for many individuals (Steger & Dik, 2009; Wrzesniewski et al., 1997), and is associated with a variety of positive career-related outcomes, such as job satisfaction (Wrzesniewski et al., 1997), self-directed career management (Park, 2009), satisfaction of a desire for meaning in life (Steger & Dik, 2009), and career decidedness (Duffy & Sedlacek, 2007a). An additional conclusion

of these research findings is that, though calling theoretically could apply to any occupation

(Dik & Duffy, 2009), individuals within some occupations (e.g., those with higher status or

prestige; Wrzesniewski et al. 1997) or with certain career-related goals (e.g., obtaining an

advanced degree; Duffy & Sedlacek, in press) may be more likely to endorse calling as being

relevant to their career development.

Mixed-Method Empirical Approaches

Treadgold (1999) used a combination of qualitative and quantitative techniques—

surveys, free-response essays, and interviews—to examine the relationship between calling

(which Treadgold refers to as *transcendent vocation*) and depression, stress, and the clarity of

self-concept. Calling was found to be positively related to clarity of self-concept and

negatively related to both depression and stress. Additionally, participants with a strong sense

of calling were more likely to engage in active, psychologically healthy coping strategies,

such as problem-solving. Individuals who evidenced a low sense of calling were more likely

to engage in avoidance coping, which is considered to be a less psychologically healthy

approach (Treadgold, 1999).

Bunderson and Thompson (2009) also conducted a mixed-method study evaluating

the role of calling in the work of zookeepers, a group that was identified as a population of

interest because they tend to gravitate toward the work out of a sense of passion for a cause

or ideology, rather than out of motivation for material wealth, given that in general financial

compensation for the work is low. The results indicated that zookeepers who identify having

a sense of calling are more likely to be strongly identified with their work and to derive a

broader sense of meaning and significance from it. The zookeepers' perception of calling

tended to center on a connection between their unique attributes and the work itself. As

Bunderson and Thompson put it, "…their sense of calling was grounded in a perceived connection between personal passions and endowments and particular domains of work for which those passions and endowments seem particularly well-suited (e.g., 'It's a calling for me just because my whole life I've been interested in animals')" (p. 37).

Summary and Conclusions

Several important conclusions can be drawn from examination of the research related to calling to date. First, calling is relevant to the career development of many individuals (Oates et al., 2005; Steger & Dik, 2009; Wrzesniewski et al., 1997) and it is reported to be an important source on which people draw when faced with difficulties or stumbling blocks related to their careers (e.g., Oates et al., 2005; Sellers et al., 2005). Calling has also been associated with a variety of positive outcomes, including assistance in navigating interrole conflict (Sellers et al., 2005), commitment to an occupational field (Serow, 1994), job satisfaction (Wrzesniewski et al., 1997), proactive approach to career development (Park, 2009), satisfaction of the desire for meaning in life (Steger & Dik, 2009), and increased career decidedness (Duffy & Sedlacek, 2007a). Additionally, examination of the existing literature indicates that individual's definitions of calling tend to focus on feeling compelled or committed to follow a given career path (Oates et al., 2005; Serow, 1994; Serow et al., 1992), deriving meaning from the work (French & Domene, 2010; Hunter et al., in press; Oates et al., 2005), and altruism or other-oriented values (French & Domene, 2010; Hunter et al., in press; Serow et al., 1992). These definitions are generally consistent with the definitions of the calling construct provided in the theoretical literature (e.g., Bellah et al., 1986; Dik & Duffy, 2009; Hall & Chandler, 2005; Wrzesniewski et al., 1997).

Purpose of the Present Investigation

Dik and Duffy (2009) expressed concern about the lack of a widely available, psychometrically sound measure of calling and the hindrance this has caused to the empirical investigation of calling. In response to this, Eldridge (2007) developed and psychometrically evaluated a measure of the construct, the Calling and Vocation Questionnaire (CVQ), using a sample of college students; the CVQ has since been updated (Dik, Eldridge & Steger, 2008). For college students, calling appears to be a relevant factor in their career decision-making process (e.g., up to 75 percent endorse it as such; Dik & Steger, 2008). Additionally, Dik, Duffy and Eldridge (2009) have suggested that integrating the concept of calling into career interventions may increase benefits for clients wrestling through a variety of vocational concerns. It logically follows that it would be advantageous for those career interventions specifically targeted toward college students, who represent a unique developmental stage in the career decision-making process, to also integrate calling. Thus, it appears important for the CVQ to undergo further empirical evaluation to assess its utility as a psychological measure among college students. The present research seeks to meet this goal by evaluating the structure of the CVQ measurement model across groups, specifically women versus men and first year versus last year students.

Development and Current Status of the CVQ

Eldridge (2007) followed several steps to arrive at an initial 30-item version of the CVQ (see Appendix A). First, an item pool was constructed based on the definition of calling proposed by Dik and Duffy (2009). Items were written with the specific intention of tapping presence of and search for calling for each of the three dimensions of the construct. As a

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means of oversampling the domain, additional items were written that were somewhat

tangential to the theoretical domain of calling. The result was an initial item pool of 180. A

four-level response option format was selected based on two recommendations: (1)

elimination of a neutral response and thus a central tendency response bias, and (2) provision

of sufficient responses for participants to be able to classify themselves without requiring

them to make unreasonably fine distinctions, as may occur with a large number of response

choices (Clark & Watson, 1995). On the CVQ items, response options range from 1 (*Not at

all true of me*) to 4 (*Absolutely true of me*). Items were piloted with students from an

undergraduate psychology class who were asked to assess the clarity of each item using a

yes/no rating and to offer suggestions for improvement on unclear items. This allowed for the

revision of the item pool to decrease redundancy and presence of poorly written or unclear

items; some items were either deleted or rewritten to increase understandability. A final pool

of 156 items was reached; readability statistics indicated that the items were at a standard

difficulty level, as evidenced by a Flesch Reading Ease rating of 64.7 and a Flech-Kincaid

Grade Level rating of 6.0, according to the readability statistics of Microsoft Word.

Data were then collected on the 156 items in the initial pool (Eldridge, 2007), using

participants ($N = 360$) recruited from Introductory Psychology classes at a large, Western

university and additional participants ($N = 96$) recruited from psychology courses at two

small, Midwestern, religiously-affiliated colleges. Overall, participants were relatively

young, with a mean age of 18.78 ($SD = 1.42$, min $= 17$, max $= 31$). The sample was

predominantly female (72.7 percent, $N = 331$), with 25.9 percent ($N = 118$) indicating male;

the rest ($N = 8$) did not disclose their gender. The sample demographics indicated most

participants were White/European Americans (85.1 percent), with 2.2 percent identifying as

Asian American/Pacific Islander, 1.3 percent as Black/African American, 2.4 percent as Latino/Hispanic American, 0.9 percent as American Indian/Native American, 1.8 percent indicating "other" as their ethnic/racial self-identification, and 2.6 percent indicating more than one of the above self-identification options. All participants completed a web-based survey which included the CVQ item pool.

Based on data gathered from these samples, exploratory factor analysis (EFA) procedures were used as a means of item reduction and assessing the factor structure of the item pool (Eldridge, 2007). Specifically, the correlation matrix of the 156 CVQ items was subjected to a principle axis factoring analysis with oblique, promax rotation (kappa = 4). Parallel analysis indicated that nine factors should be retained; these factors were best characterized as: (1) spirituality as source of calling; (2) prosocial orientation; (3) lack of calling, or Job type approach to work; (4) search for meaning/purpose in work; (5) presence of transcendent summons; (6) search for transcendent summons; (7) presence of meaning/purpose in work; (8) need for financial security; and (9) fate as the source of calling. Items comprising Factors 1, 3, 8, and 9 were removed in the first step toward item reduction, as these factors represented other constructs or items referencing a specific source of calling, which was deemed inappropriate because evaluating every possible source of calling would be unwieldy for the purposes of this measure. Item reduction was then achieved through eliminating those items with unacceptably low factor loadings, with factor loadings that were not significantly different across two or more items, and items with unclear or double-barreled wording. Subsequent EFA procedures indicated that removal of these items did not change the factor structure; that is, a solution with five factors (factors 2, 4, 5, 6 and 7 from the initial solution described above) emerged. Items on Factor 2 (prosocial orientation) were

submitted to a separate EFA to evaluate whether the presence and search items could be differentiated. Results indicated this was the case and that two factors emerged: presence of prosocial work and search for prosocial work. This process resulted in the six CVQ scales—five items for each of six scales representing presence of and search for each of the three domains in Dik and Duffy's (2009) conceptualization. Reliability analyses were conducted, and Cronbach alpha coefficients ranged from .87 to .93, indicating acceptable internal consistency of the scales.

Following this initial evaluation of the CVQ items, additional analyses were conducted by Dik, Eldridge, Steger, and Duffy (in preparation) to further refine the measure. The sample described above was randomly split into two subsamples of approximately equal size. Exploratory factor analysis was used with one of the subsamples as a means of item reduction, resulting in six scales—four items each for presence and search within each of the three domains proposed by Dik and Duffy (2009). In Dik and colleague's (in preparation) analyses, four items were retained for each scale, rather than five, due to alpha coefficients indicating acceptable reliability and the overall utility of a shorter scale. The resulting scale was submitted to confirmatory factor analysis (CFA) using AMOS 6.0 and including items indicated by the EFA and all reverse-coded items. After an initial model indicated poor fit, items were eliminated if they had standardized factor loadings below .60 or summed modification indices greater than 25.00; however, an exception was made for one reverse coded-item (i.e., "I do not believe that a force beyond myself has helped guide me to my career"), as it was determined that inclusion of at least one reverse-coded item would be beneficial for protecting against certain response sets, such as random responding or acquiescence. This model resulted in a good fit (χ^2 (df = 237) = 410.87; CFI = .94; NNFI =

.94; SRMR = .05; RMSEA = .06; RMSEA 90% confidence interval = .05 to.07). This final

model was cross-validated using the second half of the sample, with fit indices indicating a

slightly better fit [χ^2 (df = 237) = 391.29; CFI = .96; NNFI = .95; SRMR = .04; RMSEA =

.06; RMSEA 90% confidence interval = .05 to .07]. (See Figure 1 for a graphic depiction of

the final CFA model).

Thus, currently the CVQ consists of 24 items (see Appendix B), four for presence and

four for search within each of the three domains conceptualized by Dik and Duffy (2009).

Scores on the CVQ demonstrated acceptable reliability, with Cronbach alpha coefficients

ranging from .85 to .92 and test-retest coefficients of .75 and .67 for total presence and search

scales, respectively. Test-retest coefficients ranged from .60 to .67 for the six individual

CVQ subscales. (Test-retest reliability coefficients were calculated based on N = 320

participants from the sample described above who completed the CVQ a second time one

month after it was initially administered.)

As a means of assessing the construct validity of CVQ scores, these scores were

correlated with other measures of calling, specifically the paragraphs used in Wrzesniewski,

et al.'s (1997) study and the Brief Calling Scale consisting of two items for presence of

calling and two for search (Dik, Sargent, & Steger, 2008). CVQ scores for presence of

calling were significantly positively related to scores on the Calling paragraph (r = .19, $p <$

.05). Correlations between CVQ scores and the Brief Calling Scale for presence and search

were r = .70, $p <$ .05 and r = .53, $p <$ .05, respectively. These correlations are indicative of

convergent validity. Thus CVQ scores were significantly related to other measures meant to

tap the same construct.

Construct validity of the CVQ was also evaluated by correlating scores on the measure with scores on measures of other, theoretically related variables. CVQ scores were related in expected directions with career decision self-efficacy ($r = .29$, $p < .05$ for presence of calling), presence of meaning in life ($r = .50$, $p < .05$ for presence of calling), search for meaning in life ($r = .44$, $p < .05$ for search for calling), intrinsic work motivation ($r = .30$, $p < .05$ for presence of calling), and career decidedness ($r = .31$, $p < .05$ for presence of calling). Overall, the relationship between these variables and CVQ scores are weaker than the relationship between CVQ scores and the Brief Calling Scale, indicating that though they are related, these variables represent constructs distinct from calling.

Providing further evaluation of the CVQ and the constructs it was designed to measure, Dik, Eldridge, and Steger (2008) conducted a self-report, informant-report study assessing whether an individual's self-perception related to calling could be corroborated by other people. A sample of 37 college students participated in the study, which required them to provide contact information for several individuals who knew them well. These references were then asked to complete the CVQ by responding as they believed the student who recommended them would respond. The comparison of self-report scores to other-report scores indicated positive relationships for both presence of calling CVQ scores ($r = .67$) and search for calling CVQ scores ($r = .38$). These relationships were stronger than those for self-report, other-report comparisons using the Brief Calling Scale (BCS; Dik, Sargent, & Steger, 2008) measures of presence of calling and search for calling ($r = .14$ and $r = .27$, respectively). Additionally, self-report scores on the CVQ showed positive relationships with BCS scores ($r = .69$ for presence of calling and $r = .41$ for search for calling). Thus, calling

self-report scores as measured by the CVQ appeared to be corroborated by the report of others.

Developmental Tasks of Career Development for College Students

According to Career Construction Theory (Super, 1980; Savickas, 2005), in the United States and other industrialized nations, society's "grand narrative" of work and career holds that career development is accomplished across a series of five stages: growth, exploration, establishment, management and disengagement. During the growth stage, children begin to develop their career identity. Super proposed that adolescence and early adulthood bring the exploratory stage, during which individuals work to make appropriate educational and vocational choices based on information about the self and the occupational world. The establishment stage follows, when individuals implement career choices. Once an individual has established a job and advanced to a satisfactory level, she or he works to maintain her or his position through keeping up with new developments in the field, which Savickas referred to as the management stage. Finally, during the disengagement stage, individuals prepare to leave the workforce and decrease their work responsibilities and activities.

These developmental stages are most successfully navigated when an individual cultivates career adaptability, a concept proposed by Savickas (2005), which he described as "a psychosocial construct that denotes an individual's readiness and resources for coping with current and imminent vocational tasks, occupational transitions, and personal traumas" (p. 51). Career adaptability consists of four dimensions: concern, control, curiosity, and confidence. Concern refers to a future orientation, an individual's tendency to orient to her or his own vocational identity and future. Control is an aspect of adaptability that is evident

when an individual feels empowered to shape her or his own vocational future; that is, responsibility is taken for constructing a career. Once control is in place, curiosity provides motivation and initiative for learning about various occupational options, as well as the likely degree of fit between the person and the career environment under consideration. Finally, confidence refers to a sense of self-confidence and "anticipation of success in encountering challenges and overcoming obstacles" (p. 56). That is, when confidence is achieved, the individual will feel self-efficacy toward implementing a course of action.

According to this conceptualization provided by Career Construction Theory (Savickas, 2005), college students are involved in the exploration stage, with developmental tasks including learning more about self-identity, the world of work, and how various occupations may match with one's own identity. Ideally, as college students near the end of their educational career, they will be nearing the establishment stage, readying themselves for obtaining jobs. Thus, it would be expected for college students to experiment with various occupational choices, holding part-time jobs, taking a variety of classes and exploring potential majors, and seeking out internship and volunteer experiences, for example. As college students move from their first year toward graduation, it logically follows that their vocational goals become increasingly more solidified, and upon graduation they are ready to begin the process of implementing these goals.

Knefelkamp and Slepitza (1976) stressed the importance of considering cognitive processes when discussing the career development of college students. Specifically, they indicated nine areas of cognitive development in which to expect qualitative change in individuals over the course of their college years: (1) locus of control, (2) analysis, (3) synthesis, (4) semantic structure, (5) self-processing, (6) openness to alternative perspectives,

(7) ability to assume responsibility, (8) ability to take on new roles, and (9) ability to take

risks with self. According to the Knefelkamp and Slepitza,

> These nine variables have been applied to create an adapted nine position career model which describes the movement of a student from a simplistic categorical view of career, career counseling, and career decision making to a more complex pluralistic view of the same (p. 54).

This view of career development, then, characterized students early in the college

experience as having a dualistic perspective whereby they engage in dichotomous thinking,

believing they must find the one right career. Additionally, at this stage there is emphasis

placed on external sources of authority (e.g., parents, teachers) for guidance in career

decisions. As students begin to move toward multiplicity in their cognition, Knefelkamp and

Slepitza (1976) theorized that they would begin to take more factors into consideration when

making career decisions and be able to apply more sophisticated analysis to these factors,

coming to rely on their decision-making processes to lead them to an appropriate career

choice, rather than waiting for such a choice to be revealed by an authority figure. This is

then aided by the development of relativism, in which students establish a more internal

locus of control and begin to make career decisions based on their own unique needs and

interests. Finally, students enter the later stages of career decision making, which

Knefelkamp and Slepitza described as being characterized by "commitment within

relativism" (p. 56). This occurs when students begin to integrate themselves into a cohesive

whole and are able to reflect on how this interacts with their environment, including potential

occupational environments.

Knefelkamp and Slepitza (1976) cited research they conducted at the Ohio State

University that indicated that college students do move from dualism to relativism as they

progress through their postsecondary education. Additionally, this research indicated a

qualitative difference in what students reported as the important source of information and bases of decision-making in their career development, shifting from external influence to increased reliance on internal experience and personal needs and interests. Knefelkamp and Slepitza's theory is also supported by other research which has found that older college students are less reliant on external factors in career decision-making (Baumgardner, 1976) and become more autonomous in their academics (Foubert, Nixon, Sisson, & Barnes, 2005).

Research supports the assertion that college students enter their higher education experience relatively undecided about their career plans. Gordon and Meyer (2002), for example, found that approximately half of students about to enter postsecondary education endorsed feeling very uncertain about their career goals. However, this indecision does appear to decrease over the course of collegiate experience (Guay, Ratelle, Senécal, Larose, & Deschênes, 2006). Additionally, Healy, O'Shea, and Crook (1985) found that more mature career attitudes, including self-reliance, taking initiative, and planfulness, are related to age, and that older college students tend to have career attitudes that mirror those of satisfactorily employed adults. Thus, research has indicated that college students do differ in the way they think about career decisions, such as selection of a major, depending on their year in school.

Gender and Career Development

Disparities undoubtedly exist in the world of work based on gender. Betz (2008) reported that research continually indicates that women earn less salary than men for equivalent positions. Additionally, she noted that women and men tend to pursue occupations that are congruent with gender-socialization expectations and stereotypes, and for women these occupations tend to be lower in both salary and prestige. Betz also indicated that one fundamental feature of development impacting career choice is gender socialization and role

expectations. Thus, gender appears to be a key variable impacting a person's career development and trajectory.

Gottfredson (2005) directly addressed the impact of gender socialization on career development in her theory of circumscription and compromise. According to Gottfredson, career development occurs in a developmental process by which individuals familiarize themselves with the world of work and then narrow occupational options. This process consists of four stages that cultivate the process of circumscription, that is, narrowing occupational choices by eliminating those deemed inappropriate based on self-concept. First, Gottfredson proposed that children aged three to five begin to classify people based on being "big and powerful versus little and weak" (p. 77), mainly based on the differences between adults and children, which she referred to as Orientation to Size and Power. Children at this stage are aware that holding a job is part of the role of being a "big" person, an adult. Next, from ages six to eight, children begin to make additional distinctions between people based on sex and gender, referred to as Orientation to Sex Roles, and they dichotomously classify behaviors and roles accordingly. Gottfredson theorized that children at this stage begin to reject certain occupations as either too masculine or too feminine to warrant further investigation.

Thereafter, from ages nine to thirteen, older children become aware of social hierarchies, labeled Orientation to Social Valuation. Gottfredson (2005) suggested that at this point in development, individuals determine which types of jobs they perceive to be too difficult or which are too low in social standing to be considered, thus determining what she labeled as tolerable-effort and tolerable-level boundaries, respectively. Combined with the boundaries set around gender roles in the second stage, these define an individual's social

space; that is, the occupations within the world of work that have been defined as acceptable alternatives to consider. Finally, from the age of fourteen on, Gottfredson proposed that individuals go through Orientation to Internal, Unique Self, whereby individuals seek to find occupations that are most likely to be personally fulfilling.

According to Gottfredson (2005), gender socialization plays a large role in career development. She explained the tendency of individuals to conform to certain occupations as consistent with this socialization, as "children of both sexes tend to perceive their own sex as superior and to treat sex-appropriate behavior as imperative" (p. 77). However, Gottfredson affirmed that there is, nonetheless, capacity for individuals to cross gender lines when making their career choices. As she put it,

> …while nature and nurture both affect degree of vocational circumscription by sex type, one-size-fits-all cultural prescriptions encourage many poor person-job fits because the members of both sexes are genetically diverse and, therefore, many do not fit the prescribed average (p. 79).

In general, research findings suggest that men and women tend to pursue careers that are consistent with gender roles and expectations. For example, Beck, Fuller, and Unwin (2006) found that both female and male adolescents in England and Wales endorsed perceiving themselves as having freedom to pursue whatever occupation they should choose, but both also nonetheless demonstrated resistance to crossing the gender divide in particularly single gender dominated professions, such as construction and child care. Additionally, Beck and colleagues found that male adolescents were more reluctant to pursue traditionally feminine occupations than female adolescents were in pursuing traditionally masculine occupations. Madill and colleagues (2004) pointed out that women have been consistently underrepresented in jobs related to science, engineering and technology fields, both in the workplace and educational settings.

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In her review of women's career development literature, Betz (2008) also noted that men and women tend to select occupations that are consistent with gender role expectations. She identified mathematics as being a "critical filter" (p. 723) restricting women from pursuing more technical and scientific career paths. As she explained, though many undergraduate institutions require four years of high school math as a prerequisite for majors within science, technology and engineering, multiple studies have indicated that women are significantly less likely to have met this requirement at the outset of their collegiate experience, thus limiting their major selection from the beginning. Betz also describes a theme emerging from career literature supporting the postulates that women's socialization experiences interfere with the development of self-efficacy related to science, mechanical, technology, and outdoor activities, though she noted that women tend to score higher than men on self-efficacy for social domains, such as the helping professions or teaching. This is a significant potential barrier for women, as self-efficacy serves as an important impetus for selection of college major.

Another important difference in the career development of men and women is the impact of multiple life roles (Betz, 2008). In particular, Betz reviews numerous studies that indicate that women are more likely than men to take family roles and obligations into consideration when planning their careers. She stated that men are less likely to have to "sacrifice levels of achievement to accommodate home and family" (p. 729). This is consistent with the findings of other researchers, as well. For example, Sellers et al. (2005) indicated that balancing work and family roles can be particularly difficult for women, and they pointed to perceptions of calling within both professional and family roles as a key

means through which some women have been able to find satisfactory balance between these roles.

Despite indications of a tendency to pursue careers consistent with gender role expectations, empirical findings indicate that men and women tend to be similar in their approach to career development and decision-making within some specific groups. For example, Holley and Young (2005) surveyed men and women in social work faculty positions about their experiences and choices related to their career trajectory. The results indicated there were no significant differences between men and women in the majority of variables considered, including emphasis of programs in which training was received (i.e., teaching versus research) and considerations when deciding whether to accept a position, which included availability of alternative positions; relative emphasis on teaching, research, and service; and support and opportunities for teaching. Additionally, no significant differences emerged with regard to time spent in relevant work-related activities, or in number of grants or publications. As the authors concluded:

> These findings suggest that the women and men in this sample have comparable work priorities and perform their jobs similarly. Furthermore, the majority of both women and men indicated there were no gender-related concerns that influenced their decisions about which positions to accept, suggesting that social work academia may have made progress over the years in responding to women's concerns about equal opportunities and treatment (p. 310).

Holley and Young (2005) did find some gender differences, however. Specifically, White men were found to have concerns related to their ability to obtain interviews for specific positions, as they perceived organizations as preferring to hire women or members of ethnic minority groups. Women, in contrast, were found to have more concerns related to what environment they would encounter after accepting a position, as they worried about the persistence of "'good-old boys' culture" (p. 310) and potential inequalities in salary.

Additionally, women were likely to cite more reasons than men for changing positions, and their reasons were more likely to include family-related concerns.

Gender differences have not been found to be significant in regard to measurement of career-related variables. For example, Chung (2002) examined the measurement of career decision-making self-efficacy and career commitment among groups of college students. According to the results, no significant differences based solely on gender were found in career decision-making self-efficacy scores, nor were any differences found in the correlation between self-efficacy and career commitment. Women were found to have higher scores on career commitment, though Chung attributed this to the large percentage of Black females in the sample, as his research had previously indicated (Chung & Harmon, 1996, as cited in Chung, 2002) that Black women score higher than Black men on this variable. Similarly, Hardin and Leong (2004) examined the measurement of career decision-making and determined that there were few differences in the way men and women score on this measure. Their results indicated that for men and women career decision-making was correlated similarly with other, related career measures. The notable difference was that women tended to be less involved in the career choice process if they had an internal decision-making style (i.e., independently thinking) versus an external style (i.e., talking through decisions with others); this pattern was opposite for men. The authors attributed this to the greater emphasis women place on interdependence: "…the higher external scores among women as compared to men may reflect this greater tendency as a group to think out loud to involve important others in the information analyzing process" (p. 62).

Stability of Career-Related Variables

As indicated above, both gender and age-related developmental processes affect career-related variables. Unfortunately, however, the current state of research provides little data from which cohort similarities or gender differences could be inferred in relation to calling and vocation specifically. Some research indicates that gender is not a significant predictor of calling (e.g., Davidson & Caddell, 1994). However, much of the research addressing the construct has focused either predominantly on women (e.g., Sellers et al., 2005) or on occupations such as teaching, which have traditionally been dominated by women (e.g., Serow, 1994). Thus, evaluation of gender differences has not been a substantial focus within the research literature addressing calling. There is some indication that the effect of calling may differ as a result of age-related role changes, such as in its effect on role strain between motherhood and occupational roles (Sellers et al., 2005). A construct closely related to calling and vocation is meaning in life, which has also been categorized according to "presence of" and "search for" dimensions (Steger, Frazier, Oishi, & Kaler, 2006). Steger and Kashdan (2007) evaluated the stability of meaning in life in a sample of college students over an approximate 13-month period. Results suggested moderate stability in both the presence and search dimensions of the construct, though some unexplained variance remained, which the authors indicated could be connected with life events that impact levels of meaning in life. Additionally, an unexpected finding emerged whereby search for meaning in life remained stable across the time period. In explanation, the authors concluded:

> Although we might expect those searching for meaning to eventually find it, reducing their search at some later date, it would appear that people's efforts to satisfactorily comprehend their experience persist. In addition, the college years are a time of considerable identity, relational, and vocational development, which might make the search for meaning especially relevant to the present sample (p. 174).

In sum, though some limited research exists suggesting potential patterns in gender and cohort differences or stability in relation to calling and vocation, the present state of the data do not allow for strong inferences of such patterns. It is therefore necessary to turn to evidence for three constructs from the career development literature for which something is known about stability and age and gender differences: interests, abilities, and values. Of these three, abilities is conceptually least similar to calling and vocation, as having a calling or vocation does not specify that one must be good at something in order to fulfill the role to which one is called. As an old adage among Judeo-Christian circles holds, God does not call the equipped, he equips the called. Interests are more conceptually relevant to the construct of calling and vocation, as they can be a significant pathway through which one identifies a calling or vocation. Additionally, some interests, such as Holland's (1997) Social interest type, may be especially relevant to calling because of their shared emphasis on helping others. Values most directly coincide conceptually with calling and vocation, as both represent a means of evaluating what is most important in a workplace environment. Indeed, altruism is considered to be a key component of the content domains of both values (Rounds & Armstrong, 2005) and calling and vocation (Dik & Duffy, 2009). Given that these three constructs do not significantly overlap with calling, however, drawing direct inferences that their patterns will be exactly replicated in the latter is not possible. Nonetheless, the three constructs offer valuable insight into potential stability, gender and cohort difference patterns that may be present within calling and vocation because of their shared impact on career decidedness and development.

Stability of Interests

It is a well-documented occurrence that career interests show developmental differences. That is, interests tend to show fluctuation in adolescents and are not fully stabilized until early adulthood (e.g., Hansen, 2005; Hansen & Swanson, 1983; Low, Yoon, Roberts, & Rounds, 2005). Once adulthood is reached, however, interests are one of the most stable individual difference constructs in psychology (Low, Yoon, Roberts, & Rounds, 2005). Research on the stability of interests began in the 1940s and 1950s. Using a survey of high school students, Fox (1947) found that there was substantial stability in interests. Test-retest correlation coefficients for a two-month interval ranged from .42 to .85 for the interest type scales on the Kuder Preference Record, which measures nine interest types which are analogous to Holland's RIASEC types (several of the Kuder Preference Record types can be collapsed into a single RIASEC type). According to Fox, this pattern of stability was greater for female high school students than for males. Mallinson and Crumrine (1952) also used the Kuder Preference Record to assess the stability of interests among high school students. Students completed the inventory in ninth grade and then again in twelfth. The results indicated that overall scores that were high in ninth grade remained high in twelfth, though a fluctuation in the scores attaining the top rank was documented.

More contemporary studies have echoed the findings of earlier research, coming to the conclusion that there is "impressive consistency in the direction of adults' interests over time" (Low & Rounds, 2007, p.28). Johansson and Campbell (1971) evaluated stability of interests by assessing the construct in individuals aged 33 and then again 12 years later, with a resulting stability coefficient of .80, indicating strong stability of interests in adulthood. Hansen and Swanson (1983) evaluated the stability of interests as measured by the Strong

Interest Inventory (SII; Hansen & Campbell, 1985); the results indicated substantial stability, with median stability coefficients of .85, .86, and .78 for test-retest intervals of 4, 8 and 12 years, respectively. Hansen and Swanson (1983) also found that interests were good predictors of college major, and like Fox (1947), stability was found to be higher in females than in males. Hansen and Swanson (1988) found "a remarkable degree of stability" (p. 185) in SII scores again across 4-, 8- and 12-year intervals, though individual differences in stability were noted. Eldridge, Dik, and Hansen (2007) found that when averaged across all participants, the rank-order of SII scale scores remained stable across intervals of four, eight, and twelve years, with Spearman Rho rank order correlation coefficients ranging from .68 to 1.00. Similarly, Rottinghaus, Coon, Gaffey, and Zytowski (2007) examined stability of the Kuder Occupational Interest Survey and found minor changes in mean when averaged across all participants.

Low, Yoon, Roberts, and Rounds (2005) conducted a meta-analytic review of literature related to the stability of interests through adolescence and middle adulthood. The authors concluded that the degree of stability of interests in adolescence remains unchanged, after which a shift occurs during early adulthood (i.e., ages 18 to 21) whereby stability increases dramatically. Once this shift has occurred, interests appear to remain stable throughout at least the next two decades of life. According to Low and his colleagues, interests in physical and artistic domains tended to remain more stable than those in the scientific, social, enterprising, or clerical areas. In sum, research in this area has led Hansen (2005) to conclude that "by age 20 interests are stable even over periods of 5-10 years, and by age 25 interests are very stable" (p. 285).

Despite the substantial evidence that interests represent a stable construct, an important consideration in research on the stability of interests is the variability among individuals. In their study, Hansen and Swanson (1983) found that stability coefficients for individuals ranged from -.23 to .97. Similarly, Eldridge et al. (2007) found that rank ordered Strong Interest Inventory scale scores demonstrated substantial variability at the individual level, with Spearman Rho correlation coefficients ranging from -.06 to .94. Rottinghaus, Coon, Gaffey, and Zytowski (2007) found a similar pattern among participants completing the Kuder Occupational Interest Survey, with moderate intra-individual stability indicated by an average Spearman Rho correlation coefficient of .54 and test-retest coefficients ranging from $r = .10$ to $r = .76$. Additionally, researchers agree that approximately half of people demonstrate significantly similar profiles across administrations of interest inventories (Fox, 1947; Hansen & Swanson, 1988; Hansen & Swanson, 1983; Lubinski, Benbow & Ryan,1995; Mallinson & Crumrine, 1952), leaving the other half with unstable profiles. Thus, there appears to be a quite large degree of individual variability in the stability of interests.

Another important finding emerging from the literature on the stability of interests is a trend toward increasing stability through adolescence and into early adulthood. As alluded to above, the meta-analytic findings of Low and colleagues (2005) indicated that a shift occurs in the stability of interests between adolescence and early adulthood; specifically, interests become increasingly stable through this developmental period. Similarly, Hansen and Swanson (1983) noted that interests were a good predictor of college major, as discussed above, but that this was more true for participants during their last year than during their first year in college. As the authors put it, "…a student's choice of major before beginning college

may be based on inaccurate or incomplete information, and he/she may change several times before settling on a final choice" (p. 196). Low and his colleagues (2005) echoed this sentiment, stating, "It has been expected that as adolescents make the transition to adulthood, their vocational interests become progressively more stable as their increasing mastery of environmental changes permits better alignments between their interests and their environments" (p. 729). Low and Rounds (2007) link this change to the developmental tasks presented to 18- to 21-year-olds, specifically citing decreased environmental constraints and increased ability to choose one's own contexts, thereby permitting increased exploration of who one is and types of environments in which one might fit well. Finally, Hansen and Dik (2005) found that SII scores predicted occupational membership four (Time 2) and 12 (Time 3) years after initial testing during first year of college (Time 1), as well as concurrently at Time 3. However, 8-year hit rates were higher than 12-year hit rates. Thus, it appears that a developmental process may underlie the stabilization of interests.

Despite documented individual and developmental differences in interests, the model underlying the construct appears to remain consistent across groups. Among all vocational development theories, John Holland's RIASEC hexagon (Holland, 1997) focuses most overtly and specifically on interests (Hansen, 2005). This theory proposes six basic interest types that are arranged in a hexagonal pattern (see Figure 2). The interest types that are closest to each other are theoretically more similar than those that are further apart. Furthermore, they can be organized along continuums representing preferences for working with data versus ideas and people versus things. The six interest types are defined in Table 1. Research indicates that while the structure underlying interests is not actually an equilateral hexagon, the general spherical pattern nonetheless holds. Using the randomization test of

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hypothesized order relationships, Tracey and Robbins (2005) found that the circular structure of interests remained consistent across gender and ethnic groups of middle and high school students (grades eight through twelve).

Similarly, Anderson, Tracey, and Rounds (1997) found that the circular order of Holland's types remains consistent across men and women, using both randomization test of hypothesized order relations and confirmatory factor analytic (CFA) techniques, with the authors concluding that "these models are no more or less accurate representation of the observed data for men than for women" (p. 349). Such findings replicate in cross-cultural samples, as well. Šverko (2008) assessed the structure of interests in Croatian students— adolescents (high school students) and young adults (college students)—using the Personal Globe Inventory, which was designed specifically to measure the spherical model of interests. The spherical model is an extension of Holland's (1997) theory which includes a prestige dimension orthogonal to the People/Things and Data/Ideas dimensions (Tracey & Rounds, 1996). It was found that the spherical model held up across gender and age groups in Croatia. Tracey and Rounds (1996) investigated the spherical model of interests in high school and college students and found that support for the structure was evident in both age groups.

Stability of Vocational Abilities

According to Ryan Krane and Tirre (2005), "The term ability refers to the power to perform a specified act or task, either physical or mental" (p. 330). The authors further identified abilities that have been associated with occupational pursuits, and which frequently appear on assessments today, including inductive reasoning, numerical ability, word fluency, perceptual speed, spatial ability, verbal ability, and memory. Though not as extensively

researched within a career development framework as career interests, vocational abilities also show considerable stability as a construct.

Carroll (1993) provided a very thorough empirical evaluation of abilities, which Ryan Krane and Tirre (2005) state is "considered by many to be the most comprehensive factor-analytic investigation of abilities ever performed" (p. 334). In Carroll's (1993) empirical work, he identified 477 datasets which were evaluated with respect to the factor structure of abilities as well as stability of abilities. This review led Carroll to conclude that abilities have a hierarchical structure, with broader, more general abilities (e.g., general cognitive ability, or *g*) at the top and very specific, narrow abilities at the bottom, with eight broad ability factors (i.e., fluid intelligence, crystallized intelligence, general memory and learning, broad visual perception, broad auditory perception, broad retrieval ability, broad cognitive speediness, and processing speed) in between. Carroll's work indicates that the structure of cognitive abilities remains stable. Dawis, Goldman, and Sung (1992) found similar stability among a sample of young adults, with broader abilities remaining the most stable and more specific abilities (e.g., hand and arm strength) showing more variability. The authors also reported that the rank-order of scores remained stable, indicating that one's abilities relative to those of their peers remained stable over time. According to Ryan Krane and Tirre (2005), the general consensus holds that broader abilities, those higher on the hierarchy presented by Carroll (1993), will remain more stable and less malleable, whereas more specific abilities may have more room for change over time. This led Gottfredson (2003) to suggest that, in working with clients with career concerns, broader level abilities should be assessed with respect to jobs which match the client's abilities first, with more specific abilities coming into play when helping the client make finer distinctions among particular occupations.

In the Seattle Longitudinal Study, Schaie (2005) examined abilities and their stability and change over the course of a person's lifetime. This study included more than 5000 individuals who were followed over a period of about 35 years. In a summary of the main findings, Schaie (1998) related that abilities remain relatively stable over time, with some decline in old age and decrements in fluid intelligence evident before those in crystallized intelligence. As Ryan Krane and Tirre (2005) reiterated, this decline is only modest until one's 80s. Furthermore, the Seattle Longitudinal Study identified several factors which help account for individual differences in age-related change in ability, including absence of chronic diseases, favorable environment (i.e., high socioeconomic status), and maintaining involvement in intellectually stimulating activities. Hertzog and Schaie (1986) reported that individual differences in abilities remained stable over up to 14-year intervals, with individuals retaining their relative ordering of abilities over time. Additional research from this same dataset (e.g., Schaie & Zanjani, 2006; Schaie, Willis, & Pennak, 2005; Schaie, Willis, Hertzog, & Schulenberg, 1987) continued to reiterate this general message about the temporal stability of abilities.

Certain developmental differences in abilities have been identified. For example, Dawis, Goldman, and Sung (1992) found significant growth in ability related to vocabulary, hand and arm strength, reasoning ability, detail perception, and spatial ability in participants between the ages of 18 and 22. Significant decrease in ability was found in finger dexterity. Additionally, in the Seattle Longitudinal Study, Schaie (2005) identified that decline in abilities with advancing age occurs, "and that by the 80s, average decrement is severe except for verbal ability" (p. 418). As a means of summarizing, Hertzog and Schaie (1988) reported, "The young group showed increasing levels of general intelligence, the middle-aged group

had stable levels of intelligence, and the old group showed salient, approximately linear, decline" (p. 122). Thus, changes in abilities are evident at various developmental stages, with most changes being documented during adolescence or late adulthood (e.g., Schaie, 2005; Dawis, Goldman, & Sung, 1992; Schaie, Willis, Hertzog, & Schulenberg, 1987; Schaie, Willis, & Pennak, 2005).

Stability of Work Values

Relatively less research regarding work values exists when compared to that of interests and abilities. However, the research that does exist suggests that values also maintain a large degree of stability, though they can be influenced by a variety of factors. In fact, Pryor (1990) concluded that "values/work aspect preferences, in general, exhibit sufficient stability over time to warrant being considered as traits" (p. 207).

According to Rounds and Armstrong (2005), "Work values are shared interpretations of what people want and expect from work" (p. 305). Early career research indicated little change in work values among students throughout both middle school and high school (e.g., Thompson, 1966; Dipboye & Anderson, 1959; Perrone, 1967, 1973). Additionally, factor structure and individual rank-orders in values among high school students appear to remain consistent across time (Gribbons & Lohnes, 1965; Hendrix & Super, 1968). Pryor (1990) urged for research to extend beyond high school students to better evaluate potential developmental differences. He also differentiated between four different types of stability among work values: (1) characteristic stability—stability of specific values, (2) factor stability—stability of general values, (3) hierarchical stability—the stability of one's hierarchy of values, and (4) response pattern stability—stability of value systems. Based on a sample of individuals studying for a high school equivalency examination at technical

colleges in Austrialia, results indicated acceptable test-retest correlations for characteristic stability and factor stability. Nine of 13 values did not change in rank order (i.e., hierarchical stability), with increased stability when groups (e.g., males versus females) were considered independently. Only 25% of response patterns showed considerable inconsistency. As alluded to above, these types of findings lead Pryor to conclude that work values are a satisfactorily stable construct.

Hagström and Kjellberg (2007) assessed work values among male and female nurses and engineers over three time points: (1) at the end of their vocational training, (2) 18 months later, and (3) another three years thereafter. Overall, work values were rated similarly for men and women. Many of the values showed significant interactions with gender or occupation, whereby stability would be evident for one group but not another, though it is noteworthy that stability among at least one group was found for most variables. Additionally, contrary to the authors' original hypothesis, work values of people who were gender minorities in their occupations (i.e., women in engineering and men in nursing) did not show changes toward becoming more consistent with the gender majority group. The authors explain this as being due to the significant overlap in values that already existed between the gender minority and majority groups. Additionally, gender differences in work values remained stable.

Cotton, Bynum, and Madhere (1997) assessed the stability of intrinsic versus extrinsic work values among a longitudinal sample spanning adolescence to early adulthood. Results indicated that students consistently placed more importance on intrinsic values, with a decline in extrinsic values seen with advancing into young adulthood. It is noteworthy that the authors also reported that race had a bigger influence on work values than socioeconomic

status or employment experience. This is contrary to what Lindsay and Knox (1984) have

pointed out as being a common assumption about value development, namely that experience

with work is an important influence on values. In their longitudinal study, Lindsay and Knox

found strong evidence of continuity between values over a seven-year period. Their results

also indicate that factors such as race, gender and socioeconomic status can affect values

initially, and that in turn, work values influence occupational selection. Porfeli (2006) argued

that the development of values across adolescence (i.e., high school) is governed by a drive

to increase cohesiveness and decrease discrepancy, and he noted that by the time they reach

high school, most people already have value systems in place.

Summary and Implications for Understanding Calling

In sum, interests, abilities, and values evidence significant stability, though individual

and developmental differences are present. However, the structure underlying the constructs

(e.g., the RIASEC model, the hierarchical model of abilities) remains consistent. It is

anticipated that calling may represent a similar pattern. That is, by inference, it is expected

that the underlying measurement model for calling will remain consistent across groups,

though their scores on the measure may be different.

H1) The measurement model will demonstrate invariance across the four groups (that

is, between first year women, first year men, last year women, and last year

men).

Conceptually, as students progress through college, they ordinarily confront

developmental milestones whereby they select a major and likely have given increased

thought to the types of careers they may want to pursue. While at the beginning of college

these ideas may be less defined, the nature of this developmental period requires increasing

clarity as one progresses through college. Stated in an alternative fashion, as people go through college, they may be more likely to identify their calling, and thus shift from a "search for calling" approach to career development to a "presence of calling" approach. It should be noted, however, that this does not necessarily involve a complete shift, with search for calling becoming irrelevant once presence is established. As Eldridge (2007) indicated, there is notable overlap between these two constructs. Thus, while the measurement model may remain similar across groups, students' scores on the CVQ may be different for those early in their college career versus those nearing graduation.

Research has indicated that college students do differ in the way they think about career decisions, such as selection of a major, depending on their year in school. For example, Baumgardner (1976) found that when compared to freshman, sophomores in college used intuitive criteria for career decision making, taking into account their personal feelings and goals. Contrarily, freshman in the study took into account more external influences, such as parental expectations, when making decisions about their career trajectory. In a longitudinal study of college student development, Foubert, Nixon, Sisson, and Barnes (2005) found that throughout their collegiate experience, students showed development in the areas of developing purpose, maturing interpersonal relationships, tolerance, and academic autonomy. Thus, it appears that college students undergo personal development in a variety of areas, the most relevant of which to the present investigation is the development of purpose. Additionally, Guay and colleagues (2006) found that college students experiencing developmental career indecision showed significant decrease in such indecision over three time points throughout their collegiate experience. Though it will not rely on longitudinal data, the present investigation will allow for evaluation of cohort

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differences between first year and last year in relation to calling and vocation, an important first step which will assist in informing future longitudinal studies evaluating developmental effects. As stated above, college students go through important shifts in their development as they progress through their undergraduate experience, including moving from indecision to increased decidedness. As students progress from indecision to decision, it seems intuitive that their approach to calling and vocation may change. Specifically, they may experience more of a sense of presence of calling.

        H2) The CVQ scores for last year students will be significantly higher with respect to presence of calling than for first year students.

        Recall that gender socialization processes can play a substantial role in the development and manifestation of career-related variables and outcomes (Betz, 2008). Despite demonstrated differences in the choice of specific career paths (e.g., Beck, Fuller, & Unwin, 2006; Madill et al., 2004), however, research suggests that men and women tend to demonstrate relative similarity with regard to career development variables (e.g., Chung, 2002; Holley & Young, 2005). Also, gender differences obtained in empirical studies are sometimes attributable to other characteristics, such as the combined effects of gender and minority racial/ethnic identity (Chung, 2002). Additionally, as Dik and Duffy (2009) indicated, a sense of calling is not reserved for a particular type of occupation, but rather could be experienced across a broad range of occupations. Thus, calling is theoretically equally likely to be a relevant career development variable for both women and men.

        H3) There will be no significant differences on CVQ scores between women and men.

CHAPTER II

METHOD

Participants

Four groups of college-age participants were recruited for this study: (1) first year women, (2) first year men, (3) last year women, and (4) last year men. The parameters of the proposed model (Figure 3) indicated that a minimum of 75 participants would be required for each group. Year in school was determined based on participant self-report on an open ended survey question. Those who replied "freshmen," "freshman," "first," or "13th" were considered to be first year students for the purposes of the present research. Those who replied "senior," "fourth," "super senior," or "fifth" were considered to be last year students. Seven last-year men and eight last-year women reported they were fifth year seniors or "super seniors," comprising 8.33 percent and 6.20 percent of their group, respectively. First year participants were recruited from a pool of students required to complete research requirements for lower division psychology courses at a large, Western university. This recruitment resulted in adequate sized groups for both first year men ($N = 221$) and first year women ($N = 269$).

Additional participants were recruited from upper division undergraduate courses at the same university to specifically target a population of last year students. In order to ensure that the groups would be comparable, attempts were made to match participants on relevant variables. Specifically, last year students with a distribution of majors that roughly

corresponded to the expected distribution of majors of the first year sample were targeted. To accomplish this, it was first necessary to predict which majors would most likely be represented in the first year sample. To ascertain this data, a preliminary estimate was obtained from Eldridge's (2007) data, as this represented a recent sample drawn from the same research pool of lower division psychology courses, and thus would provide an approximate distribution of majors likely to be in this sample. Majors reported by participants from the sample collected by Eldridge (2007) were grouped according to their field of study: health-related science, social science, natural resources, natural science, communications, education, liberal arts, fashion- and design-related, business, engineering, art, and psychology. Psychology was included as its own separate category because a large percentage of the sample identified this as their major. In the event that a participant reported a double major, each major was counted independently. The resulting percentages are presented in Table 2.

Professors of upper division courses within the fields of study identified above were contacted with requests for the participation of their students. Capstone courses were specifically targeted, as students taking a capstone course within a given field of study are likely to have declared majors that reflect that course. This allowed for honing in on students with specific majors that would correspond to the predicted distribution of fields of study. A small subset of these professors agreed to offer extra credit for participation, whereas others agreed to pass on information about participation without providing compensation to their students. This recruitment procedure resulted in an adequate sample size for the last year women group ($N = 129$). To recruit additional last year men, emails were sent to major- and interest-specific listservs asking specifically for participants who were men; at this point,

compensation for participation was offered in the form of entry into a drawing for a $25 gift card. As a result, an adequate number of last year men participants was achieved ($N = 84$). The reported majors of the last year participants were also grouped according to the fields of study listed above. The resulting percentages are listed in Table 2. To assess whether similar fields of study were equally represented across groups, the difference in percentages were evaluated with a chi-square test of independence. The fields of study were not equally distributed across the groups, $\chi^2 = 300.72$, $df = 33$, $p < .05$, indicating that efforts to have similar representation of majors across the four groups were not successful. Table 3 illustrates the significant differences from expected values of the fields of study across groups. Notable differences included significantly fewer psychology majors and more engineering majors than expected for first year men, significantly fewer engineering majors and more health-related science majors than expected among first year women, significantly more business and engineering majors than expected among last year men, and significantly more psychology and fashion and design majors than expected among last year women. One possibility for this outcome is the variations in compensation offered by professors for the participation of last year students. That is, if one professor offered extra credit and another did not, students from the course offering credit may have been more likely to participate, and thus their major would be over-represented in the final sample.

Overall, 703 participants provided data usable for the current study. The participants reported a mean age of 19.58 ($SD = 2.74$), with the youngest participant aged 17 and the oldest aged 58. The sample was relatively evenly split between women (56.61 percent) and men (43.39 percent), which likely resulted from the recruiting procedures that purposely sought even numbers of women and men. The sample was predominantly White/European

American (85.1 percent), with 5.1 percent identifying as Latino/Hispanic American, 1.7 percent as African American, 1.7 percent as Asian American/Pacific Islander, 0.4 percent as American Indian/Native American, 0.6 percent indicating their ethnic/racial self-identification as "other," and 5.1 percent indicating more than one of the above listed self-identification categories.

As stated above, 269 of the 703 participants were first year women, constituting 38.26 percent of the sample. The age range for first year women was 17 to 24 ($M = 18.19$, $SD = 0.54$). First year men made up 31.44 percent of the total sample ($N = 221$), with an age range of 17 to 29 ($M = 18.43$, $SD = 1.14$). Last year women constituted 18.35 percent of the sample ($N = 129$), with ages ranging from 20 to 58 ($M = 22.44$, $SD = 3.83$). Finally, last year men consisted of 11.95 percent of the total sample ($N = 84$), with an age range of 21 to 30 ($M = 22.69$, $SD = 2.12$). Though there was not equivalent representation of ethnic/racial identities in the general sample (i.e., the sample was predominantly White), the distribution of ethnic/racial identities across the four participant groups was relatively even (see Table 4).

Procedure

In this study, a web-based survey was used for the collection of data. Participants were presented with a website cover letter describing the purpose of the study, informing them of the voluntary nature of their participation, and outlining the study procedures. Participants indicated at the end of the cover letter whether or not they understood its contents and wished to continue with the study by selecting one of two options: 1) "I understand the terms of this consent form and agree to participate. Take me to the next part of the survey," or 2) "I do not feel comfortable giving my consent at this time. Exit me from this survey." Selecting the option to continue constituted an electronic signature indicating

informed consent. The cover letter was altered to reflect the compensation for participation.

First year students were informed that compensation for the study would consist of points earned toward their grade (see Appendix C), last year students recruited from specific courses were informed that their participation would be compensated with extra credit as determined by their professor (see Appendix D), and last year men recruited from listservs were informed that they would be entered in a drawing for a $25 gift card in exchange for their participation (see Appendix E).

Instruments

Participants completed the Calling and Vocation Questionnaire (CVQ), a 24-item multidimensional measure of calling. Recall that this instrument was developed based on Dik and Duffy's (2009) definition of calling, involving three dimensions: (1) transcendent summons, (2) purpose or meaning derived from the work, and (3) prosocial or other-oriented values. This definition also proposed that an individual can experience either presence of or search for calling. Thus, the CVQ is composed of six subscales, three for each dimension within both presence of and search for calling. The CVQ has demonstrated acceptable reliability and validity in previous research (Eldridge, 2007). For the preliminary, 30-item version, Cronbach alpha coefficients ranged from .87 to .93, and scores on the measure correlated in expected directions with measures of other, related constructs (Eldridge, 2007). The CVQ underwent additional psychometric refinement, resulting in a shorter measure, with four items per subscale, which maintained acceptable reliability estimates, with Cronbach alpha coefficients ranging from .85 to .92 and one-month test-retest coefficients ranging from .60 to .67 across subscales; one-month test retest coefficients for the summed presence of and search for calling scores were .75 and .67, respectively (Dik, Eldridge, Steger, & Duffy, in

preparation). Also as reviewed earlier, evidence for convergent and discriminant validity for CVQ scale scores has been demonstrated. Since the measurement model of the CVQ is the only model of interest in the current study, the CVQ is the only measure that was administered, in addition to collection of information on basic demographic variables.

Data Analyses

The primary purpose of the present investigation was to evaluate the measurement model of the CVQ to establish the utility of the measure for use across groups of college students. To accomplish this, the data were analyzed using the structural equation modeling approach in EQS, version 6.1. Structural equation modeling is a statistical methodology that provides a confirmatory approach to evaluating the goodness of fit of a theoretical model to the data (Byrne, 2006). That is, in structural equation modeling, a model is specified and analyses are conducted to evaluate the extent to which this model provides a good fit to the data. This is counter to exploratory techniques, such as exploratory factor analysis, which use the data to generate the model. A specific type of structural equation modeling technique was used in the present investigation: multigroup analysis. In multigroup analysis, the focus of the statistical investigation is several groups, rather than a single sample, and the intention is to evaluate the extent to which the model remains equivalent across groups. If the model is equivalent across the groups, this is referred to as invariance (Byrne, 2006). In this case, the focus of the multigroup analysis was to address whether the CVQ operates equivalently across four groups: first year women, first year men, last year women, and last year men. In addition to examining fit indices, other significant aspects of the model were evaluated, including factor loadings and intercorrelations.

Preliminary structural equation modeling analyses were conducted to evaluate the

CVQ measurement model suggested by previous research (e.g., Dik, Eldridge, & Steger,

2008; Eldridge, 2007). According to these previous findings, the measurement model of the

CVQ is represented by two factors, presence of and search for calling, with three indicators

each: transcendent summons, purpose or meaning, and other-oriented values (Figure 3).

Subscale sums were used as indicators for these latent variables (see Appendix B for CVQ

subscales, including item content). Thereafter, a multigroup analysis was conducted to

examine whether the measurement structure remains invariant across the four groups. First, a

baseline model was established; in this model, all parameters were allowed to be freely

estimated, with the exception of the factor variances, which were fixed at 1.00 for the

purpose of defining the model. Thereafter, a second model was evaluated in which the

covariance and all factor loadings were constrained to equality. Full elaboration on these

analyses is provided in the following section. The models were estimated using maximum

likelihood and were tested using a covariance matrix. Due to the amount of missing data

(9.10% total; 7.81% for first year women; 9.05% for first year men; 8.53% for last year

women; and 14.29% for last year men), maximum likelihood estimation using the

expectation-maximization algorithm was employed to account for missing data. The model

was defined by fixing the variance of both factors to 1.00. This was done so that the factor

loadings would all be freely estimated, as they were the parameters of most interest given the

purpose of evaluating the measurement structure of the CVQ.

To analyze model fit, one method is to use chi-square, though concerns have been

raised about the susceptibility of this index to sample size and complexity of the model

(Bentler, 1980; Bentler & Bonnet, 1980). A nonsignificant chi-square is indicative of good

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fit. To offset the potential limitations of relying only on chi-square, however, goodness of fit was also evaluated by examination of the comparative fit index (CFI) and the standardized root mean square residual (SRMSR). The CFI is derived from comparing the hypothesized model to the independence model, and as such it provides a measure of complete covariation in the data (Byrne, 2006). The SRMSR represents the average value across the standardized residuals in comparing the hypothesized variance-covariance matrix with the variance-covariance matrix represented by the sample data (Byrne, 2006). Fit was considered good if the CFI is greater than .90, in accordance with convention (Bentler, 1992; Hu & Bentler, 1999). A small SRMSR is consistent with a model that provides a good fit to the data, with values below .05 indicating good fit (Byrne, 2006). Additional two-way analysis of variance (ANOVA) procedures were conducted using PASW (formerly SPSS), version 18.0, to evaluate the difference in mean scores between the groups.

CHAPTER III

RESULTS

Analyses began by attempting to establish a baseline measurement model for the multigroup analysis. A baseline model is determined by conducting the analysis with all four groups, allowing all estimated indicators to vary freely (i.e., no indicators were constrained to equality). Recall that the model was defined according to the measurement model of the CVQ established by previous research (Dik, Eldridge, & Steger, 2008; Eldridge, 2007; see Figure 3). This baseline was also conducted as a means of assuring the model itself was a good fit, before assessing for invariance across groups. If the model proved to have inadequate fit, further analyses would be inappropriate until fit was satisfactorily improved. Results indicated that the model was overall a poor fit, $\chi^2 = 485.310$, $df = 32$, $p < .05$; CFI = .790; SRMSR = .118. Thus, further analyses were halted until the model fit could be improved.

The proposed measurement model for the CVQ was evaluated separately for each group as a means of identifying specifically how to improve the fit. Results indicated that the model was not a good fit for any group: first year women, $\chi^2 = 209.253$, $df = 8$, $p < .05$; CFI = .762; SRMSR = .123; first year men, $\chi^2 = 64.263$, $df = 8$, $p < .05$; CFI = .907; SRMSR = .061; last year women, $\chi^2 = 146.972$, $df = 8$, $p < .05$; CFI = .708; SRMSR = .137; or last year men $\chi^2 = 64.822$, $df = 8$, $p < .05$; CFI = .754; SRMSR = .136. (A summary of these results appears in Table 5.) Thus, re-specification of the model across all groups appeared prudent.

One means of determining mis-specification of a model is to examine the residuals. Large residual values overall would indicate that the general model has not been specified correctly, whereas large values for only a pair of variables would indicate that the mis-specification exists only for the covariance of these variables. The standardized residual matrix was examined to determine what type of mis-specification may be leading to the poor fit of the measurement model. For each group, such examination of the residuals indicated that model mis-specification was isolated to the covariance of the other-oriented indicators (first year women = .515; first year men = .172; last year women = .583; last year men = .534), meaning that a large amount of overlap existed between the other-oriented values indicators for the presence of and search for calling factors. This result was not entirely unexpected, however, given that during the establishment of the CVQ, exploratory factor analysis (EFA) procedures also identified the search and presence items for the prosocial subscales on one factor, though when these items were subjected to a separate EFA these components did emerge on separate factors (Eldridge, 2007). In the present data analysis, to optimize model fit it was decided that these two would be combined into a single indicator. One theoretically reasonable option was to place the resulting combination as an indicator of the presence of calling factor, as the items were designed to tap a work value, in this case prosocial values. Recall that work values can be defined as "…shared interpretations of what people want and expect from work" (Rounds & Armstrong, 2005, p. 305). The prosocial orientation items written to tap the search dimension were intended to capture seeking work that allows a person to live out prosocial values. However, it is possible that these items inadvertently assess the relative presence or absence of this value, rather than searching behavior. Thus, these items may more appropriately be assigned to the presence dimension of

calling, with high scores indicating high value placed on an other-oriented approach to work, and low scores representing less of such emphasis. Thus, a revised measurement model was devised consisting of two latent factors, the first of which, presence of calling, was defined by three indicators: (1) presence of transcendent summons, (2) presence of purpose/meaning, and (3) other-oriented values, as indicated by all eight items, from both presence and search subscales. The second factor had two indicators: (1) search for transcendent summons, and (2) search for purpose/meaning. (See Figure 4 for a depiction of this revised model.)

The revised measurement model was evaluated for each group separately, again to evaluate the fit of the model prior to engaging in analyses for invariance of the measurement model across groups. Results indicated that this revised model was a good fit to the data for all groups: first year women, $\chi^2 = 18.778$, $df = 4$, $p > .05$; CFI = .973; SRMSR = .047; first year men, $\chi^2 = 4.499$, $df = 4$, $p < .05$; CFI = .999; SRMSR = .024; last year women, $\chi^2 = 10.475$, $df = 4$, $p < .05$; CFI = .978; SRMSR = .041; and last year men $\chi^2 = 12.547$, $df = 4$, $p < .05$; CFI = .947; SRMSR = .058. A summary of these results appears in Table 6.

Given that fit of the measurement model was acceptable for all groups, data analysis proceeded to evaluating invariance of the measurement model across groups. A baseline was established by allowing all factor loadings to vary freely. The results indicated that the unconstrained baseline model provided a good fit to the data, $\chi^2 = 46.300$, $df = 16$, $p < .05$; CFI = .980; SRMSR = .044. Next, all factor loadings were constrained to be equal. This model also provided an acceptable fit to the data, $\chi^2 = 74.502$, $df = 31$, $p < .05$; CFI = .971; SRMSR = .113. A chi-square difference test was conducted to assess whether a significant difference existed between the baseline model and the model with the factor loadings constrained to be equal across groups. This analysis indicated there was a significant

difference between the two models, $\Delta\chi^2 = 28.202$, $\Delta df = 15$, $p < .05$. The LaGrangian multiplier test was examined to determine which factor loadings were not operating similarly across the groups. Results indicated that the factor loading for the prosocial orientation indicator was operating differently for first year men and first year women. The constraint for these two groups was lifted, resulting in improved fit of the model, $\chi^2 = 63.597$, $df = 29$, $p < .05$; CFI = .977; SRMSR = .091. A chi-square difference test revealed no significant difference between this model and the baseline model, $\Delta\chi^2 = 17.297$, $\Delta df = 13$, $p > .05$. Next, the covariance was also constrained to be equal across groups. The results indicated that the model with all constraints imposed, including the covariance but excluding the prosocial orientation factor loading for first year men and women (as described above), provided an acceptable fit to the data, $\chi^2 = 65.570$, $df = 32$, $p < .05$; CFI = .977; SRMSR = .098. The covariance was large, positive, and significant ($r = .760$, $p < .05$). Additionally, it is noteworthy that the factor loading for the search for purpose/meaning indicator was fixed to 1.000, indicating that this was driving the search for calling factor. A chi-square difference test indicated no significant difference between the model with all constraints imposed and the previous model (i.e., the model with only factor loadings constrained), $\Delta\chi^2 = 1.973$, $\Delta df = 3$, $p > .05$. This indicates that the model, including almost all factor loadings and the covariance, remains invariant across the four groups. Thus, Hypothesis 1 was supported.

Total scores for presence of and search for calling were subjected to a two-way analysis of variance (ANOVA) with two levels of gender (men and women) and two levels of year in school (first year and last year). Overall scores for presence of calling and search for calling were calculated according to the measurement structure determined in the analyses presented above; that is, total presence score was calculated by combining scores for

the presence of transcendent summons and purpose or meaning subscales and all items related to other-oriented values, while total search for calling scores were obtained by combining scores only for the search for transcendent summons and purpose or meaning subscales. These scores are summarized in Tables 7 and 8. For presence of calling, the main effect of gender was significant, $F(1, 629) = 28.01$, $p < .05$, indicating that the mean score for women ($M = 43.74$, $SD = 9.73$) was significantly higher than that for men ($M = 39.74$, $SD = 9.38$). However, the main effect of year in school was nonsignificant, $F(1, 629) = 0.02$, $p > .05$, indicating no significant difference between mean scores for first year ($M = 41.86$, $SD = 9.51$) and last year students ($M = 42.45$, $SD = 10.39$). The interaction was also nonsignificant, $F(1, 629) = 2.02$, $p > .05$. For a summary of these results, see Table 9. The results for search for calling were similar, with a significant main effect for gender [$F(1, 658) = 11.13$, $p < .05$; men: $M = 20.57$, $SD = 5.31$; women: $M = 21.73$, $SD = 5.38$] and nonsignificant results for the main effect of year in school [$F(1, 658) = 2.86$, $p > .05$; first year: $M = 21.40$, $SD = 5.05$; last year: $M = 20.86$, $SD = 6.08$] and the interaction [$F(1, 658) = 3.42$, $p > .05$]. These results are summarized in Table 10. Based on these results, neither Hypothesis 2 nor Hypothesis 3 was supported.

The finding of significant gender differences was unexpected, and because the two-way ANOVA was conducted using total CVQ summary scores, it was uncertain whether any particular dimension of calling was accounting for the differences. As a means of further investigation, one-way ANOVAs were conducted evaluating mean scores for women and men across each of the three dimensions of presence of calling and two dimensions of search for calling (Table 11). Again, prosocial orientation was evaluated as a single dimension, rather than two representing separate scores for presence of and search for calling. As

depicted in Table 12, these results indicated significant gender differences for all dimensions of calling, except the transcendent summons dimension of search for calling. Specifically, the mean score for women was significantly higher than that for men on all dimensions except search for transcendent summons, for which there was not a significant difference.

One potential reason for the significant gender differences is the field of study of participants. As discussed above, the majors participants reported were not equivalently distributed across groups (see Table 3). Indeed, for women, psychology represented the most common field of study, while for men engineering was the most common. Because the groups were not equivalent with respect to major, it is not possible to conclude that the results discussed above were due to gender, or rather to the effect of chosen field of study. To assess for the potential effects of major choice on presence of and search for calling, one-way ANOVAs were conducted evaluating the mean scores for the major fields of study, for both presence of and search for calling. (See Table 13 for descriptive statistics across field of study). The results indicated a significant difference for presence of calling, $F(11, 452) = 4.194, p < .05$. Post-hoc Tukey HSD comparisons indicated significant differences between engineering and health-related sciences, social sciences, and psychology, as well as between business and social sciences and psychology; all other comparisons were nonsignificant (see Table 14). Likewise, a significant difference was found for search for calling, $F(11, 469) = 1.822, p < .05$. Post-hoc Tukey HSD comparisons indicated a significant difference between engineering and fashion and design; all other comparisons were nonsignificant (see Table 15). Thus, it appears that chosen field of study had a significant impact on scores for calling, and therefore the gender differences discussed above may be confounded by differences related to major.

CHAPTER IV

DISCUSSION

The purpose of this study was to go beyond previous psychometric evaluation of the Calling and Vocation Questionnaire (CVQ) to assess its utility as a measure for use among college students in general, regardless of group membership based on demographic variables (e.g., gender, year in school). To accomplish this, the invariance of the measurement model of the college student version of the CVQ established in prior research (Eldridge, 2007) was evaluated. In particular, the measurement model was compared across first year women, first year men, last year men, and last year women. If evidence of invariance of the measurement model was found across groups, this would be an indication that the CVQ behaves similarly across gender and year in college. Additionally, differences in mean scores on presence of calling and search for calling were evaluated across the four groups.

Evaluation of the Measurement Model

Data analyses initially began by evaluating the measurement model of the CVQ established in previous research (Eldridge, 2007). According to this model, the construct of calling consists of two latent factors, presence of and search for calling, each of which was represented by three indicators: transcendent summons, purpose or meaning, and other-oriented or prosocial values. Additionally, this model corresponds to the theoretical definition of calling set forth by Dik and Duffy (2009). Initial analyses indicated that this model was an inadequate fit for the data. The model was evaluated individually for each

group, as a means of determining a method for satisfactorily improving fit. These results indicated the fit of the proposed measurement model was poor across all four groups, with residual values pointing toward the prosocial values indicators as problematic. In particular, the results suggested that for all four groups, there was such significant overlap in the prosocial values indicators that it was inappropriate to differentiate this into two indicators, one each for the presence of and search for dimensions of calling. This finding was consistent with Eldridge's (2007) results that the prosocial orientation dimension of calling did not readily differentiate itself into presence of and search for factors, unless the items were subjected to their own individual exploratory factor analysis. After examination of the residuals, the eight items representing prosocial values were combined to create one indicator. This indicator was assigned to the presence of calling latent factor. The revised model was then reexamined to determine if the fit had been adequately improved, and the results indicated satisfactory fit across all four groups.

Once the model had been revised and demonstrated good fit across groups, multigroup analysis procedures continued in order to evaluate the degree of invariance of the model across groups. The baseline model, with all estimated indicators allowed to vary freely, indicated good fit. When all factor loadings were constrained to equality, results indicated that the factor loading for the other-oriented values did not remain consistent between first year men and first year women. However, all other indicators, including factor loadings and the factor covariance, were found to be consistent across all four groups. Additionally, the constrained model was found to have no significant difference from the baseline model (with the exception of the one factor loading noted above), indicating that the

model does remain invariant across the four groups. This supported the prediction made in Hypothesis 1 that the CVQ measurement model would remain consistent across groups.

This finding that the CVQ measurement model remains consistent across groups is a significant one. Primarily, this finding indicates that as a measurement instrument, the CVQ operates similarly across groups. If the measurement model were to vary substantially between groups, this would call into question the utility of the measure meant for use among a general college student population. A primary purpose of this study was to provide psychometric evaluation of this measure above and beyond what had already been provided. Recall that previous research had already established the factor structure, reliability, and validity of an initial college student version of the CVQ (Eldridge, 2007), as well as evaluating the factor structure through confirmatory factor analysis and assessing the validity of the construct using self-report, other-report methodology (Dik at al., 2008). However, a missing link existed in understanding whether or not the measurement model operated similarly across various groups. This study served to bridge that gap by affirming that the CVQ does operate similarly across various groups, and thus in the future it can be employed with increased confidence in it psychometric soundness for use with college students.

The results of the present investigation were consistent with the expected outcome of demonstrating invariance of the measurement model across the four groups: first year women, first year men, last year women, and last year men. This indicates that the measurement model of the CVQ operates similarly across various collegiate groups, and thus its utility as a measure for this population has garnered additional support. It should be noted, however, that a change was made to the structure of the measurement model, in that the prosocial orientation items were combined into one indicator, which was assigned to the

presence of calling latent factor. This echoed previous research, which likewise found significant overlap between these two dimensions (Eldridge, 2007). Further empirical work can assist in determining whether there is any utility in separating these items into two subscales, or maintaining them as one subscale.

There are several possible explanations for the overlap between the prosocial orientation indicators in the current research. First, college students who have not yet entered the workforce may experience difficulty differentiating search and presence on these items, as they may not yet have been in a workplace environment that would allow them to easily see how their work will benefit others. Alternatively, both transcendent summons and purpose/meaning in work could arguably be understood independently of actual workplace experience. Another possible explanation for the finding is that presence and search items are not distinctly different enough from one another. This explanation is supported by the fact that this finding has replicated across multiple investigations of the psychometrics of the CVQ (e.g., Eldridge, 2007). Perhaps the items related to prosocial orientation are measuring the presence of a work value, and as such the concept of search is less relevant. The prosocial search items on the CVQ were written with the intention of tapping the search for roles consistent with values. This is consistent with the Theory of Work Adjustment, which posits that individuals will seek out work roles that are in accordance with their values (Dawis, 2005). However, it is possible that the item content did not adequately reflect this search for roles consistent with values, and instead assesses the relative presence or absence of prosocial values. For example, though the item "I am trying to build a career that benefits society" was meant to assess an individual's search for a way to live out an other-oriented approach to work, it may also have inadvertently been tapping relative presence or absence

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of the value. Scores on these items may have reflected confusion about how one goes about "seeking" a value. If this was the case, then prosocial orientation may better be thought of as a component of presence of calling, rather than a dimension of both presence of and search for calling. This would be consistent with research that suggests that work values remain stable and constant over time (e.g., Pryor, 1990).

However, it is possible that this conceptualization provides an overly simplistic understanding of the construct of calling. The overlap in prosocial orientation search and presence items may be indicative of a larger issue. Namely, calling itself may constitute more of a fluid process, rather than a trait that is either present or absent. Indeed, it is possible that search for and presence of calling have similar psychological underpinnings. This possibility is supported by the finding that the overall dimensions of presence of and search for calling themselves demonstrate relatively substantial overlap, both in the present study and previous research (i.e., Eldridge, 2007). This raises the issue of the distinctness of presence and search in relation to calling. Rather than being conceptualized as a distinct process involving moving from search to presence, a more dynamic and fluid relationship may exist between the two, with related underlying psychological processes. It is possible, for instance, that once a person has established a sense of calling, she or he would seek to enhance, expand, and maintain this calling. Thus, the search for calling would continue and would inform the experience of presence of calling. A person may constantly seek for ways to engage in work that supports the calling. Thus, presence of calling may foster search for calling, which in turn defines presence of calling.

Further clarification of the relationship between presence of and search for calling can be provided by consulting the literature on the closely related concept of meaning in life.

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Recall that Steger et al. (2006) operationalized meaning in life as also having presence and search dimensions. In an effort to more adequately understand the unique characteristics of search for meaning, which had previously been a concept largely neglected in the empirical literature, Steger, Kashdan, Sullivan and Lorentz (2008) explored the correlates of search for meaning and its dynamic relationship to presence of meaning. The authors defined search for meaning as, "…the strength, intensity, and activity of people's desires and efforts *to establish and/or augment* their understanding of the meaning, significance and purpose of their lives" (p. 200). As an indication of the complexity of this construct, they further suggested that "…search for meaning might arise from different underlying motivations in different people and thus have different correlations depending on those motivations" (p. 201). Results of their study indicated that decreases in presence of meaning were associated with increases in search for meaning, but did not support the idea that increased search for meaning leads to increased presence of meaning. Additionally, other characteristics seemed to influence search for meaning. For example, people high in autonomy appeared more likely to search for calling when less meaning was experienced, but those high on relatedness were less likely to engage in such searching when faced with experiencing less meaning, which the authors suggested may be related to seeking internal versus external sources of support, respectively.

As the findings of Steger and colleagues (2008) suggest, the relationship between search for and presence of calling may be complex, and further complicated by various other personal characteristics that affect the way in which these constructs are expressed in an individual's life. It is possible that calling will show a similar pattern as meaning in life, in that more support will be found for a process of searching being engaged after decrease in presence of calling, with less empirical support for the hypothesis of a developmental process

of moving from search to presence. However, the concept of moving from searching to presence of calling appears to be integrated into how individuals think about their callings, as evident in the qualitative findings of Bunderson and Thompson (2009):

> The idea that one was born to work with animals implies that one's calling as a zookeeper, or perhaps in some related animal care field, was always there waiting to be discovered. Zookeepers with a calling did not look around and choose zookeeping as a profession; zookeeping was always the "right" profession for them and they simply had to discover this fact (p. 37).

Once a calling is discovered, does search for calling then decrease, as this quote would indicate? There is some empirical support for this hypothesis, as Duffy and Sedlacek (in press) found a moderate negative correlation between presence of and search for calling. However, as detailed above, the results of Steger and colleagues (2008) suggest otherwise, though application of their research methodology specifically to search for calling, rather than general search for meaning in life, would assist in clarifying this issue.

The finding that the other-oriented indicators were not substantially different from one another also has implications for the theoretical definition of calling on which the measurement model was based. Recall that Dik and Duffy (2009) proposed three separate aspects of calling, with two broader dimensions: search for and presence of calling. However, as detailed above, empirical research indicates that there are not substantial differences between the search and presence dimensions of other-oriented values, as measured by the CVQ. This suggests the possibility that the theoretical definition of calling warrants some refinement. It is important to consider whether the other-oriented values represents a dimension of search for or presence of calling, or whether it is better represented by a distinct factor of its own. As discussed above, it is possible that this dimension represents prosocial values, which may be distinct from calling. Secondly, if other-oriented values do represent an aspect of one of the broader dimensions of calling, it is important to consider to which

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dimension it is theoretically and empirically more prudent to assign it. The results of the

present study indicated good fit of the measurement model when prosocial orientation items

were assigned to the presence of calling factor, suggesting that this may be the most

appropriate dimension to which prosocial orientation may be designated. Finally, another

possibility is that other-oriented values may represent a theoretically distinct construct from

calling altogether. However, this divergence is less likely, given the repeated finding that

prosocial values are integral to how individuals perceive calling (French & Domene, 2010;

Hunter et al., in press; Serow et al., 1992). Further empirical investigation of the construct, as

detailed above, will assist in better understanding the extent to which the theoretical

conceptualization of calling warrants revision, as well as the form such refinement of the

theory may take.

An additional consideration for the theoretical conceptualization of calling is the

finding that the factor loading for the purpose/meaning indicator of search for calling was set

to 1.000 in the multigroup analysis, indicating that it was driving the factor. Thus, searching

for purpose or meaning in the work appears to overshadow searching for a transcendent

summons in accounting for search for calling. This indicates that it may be prudent to

consider the relative importance of each of the three proposed dimensions of calling when

theoretically defining the construct. It is important to note, however, that with the exception

of the potential refinements noted here, all other aspects of Dik and Duffy's (2009)

theoretical conceptualization of calling were supported by the present research. This supports

the overall soundness of the theory.

Age Cohort and Calling

Additional analyses were conducted to evaluate the extent to which mean scores in the relevant variables differed depending on gender. The results suggested no significant difference in presence of or search for calling between first year students and last year students. These findings were unexpected, and did not support Hypothesis 2, which predicted that last year students would show significantly higher scores on presence of calling than first year students. Several possible explanations for these findings arise. First, though the sample was divided into groups representing first and last year students, the variability in age for the sample overall was relatively narrow. Thus, the difference in age between the groups may not adequately constitute two separate age cohorts. Indeed, it is possible that they may exhibit similar characteristics as a function of belonging to the same cultural generation; in this case, the majority of the sample would be considered members of the Millennial generation (Howe & Strauss, 2000). Additionally, students may not exhibit differences between these two age groups because the influence of calling may be established much earlier than the beginning of college. That is, it is possible that students come to college already with a sense of whether or not this variable is relevant to their individual career development, in which case it would be expected for age cohorts within college to show few differences with respect to this variable.

As mentioned above, one possible reason no significant differences were found related to age cohort is because students entering college may already have accomplished much of the development that would affect scores on measures of calling, and thus there would be few differences expected between those at the beginning of their collegiate experience and those nearing the end. Much of the research related to developmental

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differences in career have focused on high school students, with results indicating that substantial crystallization of career goals occurs during these formative years. For example, Lokan, Boss and Patsula (1982) found that eleventh graders tended to be more vocationally mature than ninth graders, in general scoring higher on measures of planning orientation, awareness and use of resources for career exploration, and information and decision-making. However, this explanation is not supported by evidence that career interests do not fully stabilize until a person reaches her or his early twenties (e.g., Hansen, 2005; Hansen & Swanson, 1983; Low, Yoon, Roberts, & Rounds, 2005). Additional research is necessary to better clarify the developmental aspects of calling in college students.

Additionally, students in postsecondary education represent a specific population that may differ from their counterparts who did not pursue higher education. Perhaps students who choose to enter college have already accomplished relevant career development tasks. This hypothesis is supported by Lokan and Biggs' (1982) findings that students in eleventh grade who evidenced a deliberative pattern of career development (e.g., having already devoted thought to occupational plans and showing knowledge of the world of work) were more likely to have long-term career and educational aspirations. In comparison, students with other career development patterns (e.g., affective, uncertain) tended to have lower or unrealistic aspirations. It is possible, therefore, that college students comprise a group that have already accomplished many of their career development tasks necessary for crystallization, and therefore few differences would be found between first and last year students.

Another possible explanation is that year in school alone is not the best indicator of career development variables. Instead, it is possible the experiences one seeks out have more

influence in such variables than simply completing four years of college. This explanation

has empirical support from studies indicating that exposing college students to structured

career-exploration tasks produces improvements in career-related outcome variables. For

example, students participating in career development courses have been found to have more

certainty about their career choices and be more crystallized in their vocational self-concept

(Remer, O'Neill, & Gohs, 1984). Additionally, students who participate in career

development workshops meant to foster their understanding of person-environment fit have

increased career decision self-efficacy when compared to their counterparts in a waitlist

control condition, though the incorporation of the concept of calling itself neither increased

nor took away from benefits of participation in the workshop (Dik & Steger, 2008).

Similarly, Barnes and Herr (1998) found that students who participate in a variety of

individual career counseling interventions show a decrease in their undecidedness and

increases in their certainty related to both academic and career-related goals. Additionally, in

a review of the available literature, including that conducted with high school and college

students, Patton and Lokan (2001) found that career maturity differs depending on a variety

of factors, including the type of academic program in which one is enrolled and experiences

related to intended field of study. They concluded that "[t]hese differences between groups of

school students at the same level may be part of the reason why increases in [career maturity]

by grade level for aggregated groups have not been consistently demonstrated" (p. 38).

Additionally, experience may be an important means through which a calling is discerned, as

individuals experiencing a sense of calling have indicated that exposure to the area to which

they feel called was an important means through which the calling emerged (French &

Domene, 2010).

This effect of experiences on career-related variables is consistent with theoretical understanding of career development, which suggests that the exploratory stage of career development is navigated by accomplishing developmental tasks related to learning more about the self and the world of work (Savickas, 2005). Thus, comparing college students across age cohorts may not be as useful as comparing them according to various experiences they have had in the course of their postsecondary education that have assisted them in gaining specific information about themselves, the world of work, and the fit between given occupations and oneself. For example, would students who have pursued internships consistent with their reported major be more likely to perceive calling to be relevant to their vocational identity than those who have not? Likewise, does the quantity and quality of occupational exploration activities impact student's likelihood of endorsing calling as relevant? Additional research is necessary to answer such questions.

Gender Differences and Calling

In addition to evaluating age cohort difference, analyses were conducted examining the extent to which mean scores on calling differed as a function of gender. Significant gender differences were found for both search for and presence of calling, with women having higher mean scores than men on both aspects of calling. Thus, Hypothesis 3, which proposed that no differences would exist based on gender, was not supported. To further evaluate the significant gender differences, each of the dimensions of calling were evaluated separately. This showed significant gender differences for all dimensions of presence of calling (i.e., transcendent summons, purpose/meaning, and other-oriented values), as well as for the purpose/meaning dimension of search for calling. No significant gender difference was found for the transcendent summons dimension of search for calling.

As noted above, the presence of significant gender differences in mean scores on both presence of and search for calling was an unexpected finding. In both cases, women had significantly higher scores on average than men. Additionally, this pattern of results held up across all dimensions of calling, except search for transcendent summons, which evidenced no significant gender differences. This indicates that calling may be a more salient career variable for women in this sample than for men. However, one possible explanation for this finding may be choice of major. Many of the women in the sample identified having majors related to helping professions, such as psychology, whereas the men in the sample tended to be in majors more aligned with science and engineering. Indeed, as reported above, additional statistical analyses indicated significant differences in the means of the various fields of study for both presence of and search for calling.

Given the unequal representation of majors across gender groups, it cannot be conclusively determined whether the significant results were due to gender, chosen field of study, or perhaps some combination of the two. Thus, it is possible that the women are intending to enter professions that more traditionally have been associated with the concept of calling. However, it is also possible that calling is more of a relevant career variable for women than men. Also, it is possible that gender has little influence, and rather it is the effect of field of study that most significantly influences calling in one's career. However, some combination of the two may be most likely, as previous research has indicated that both gender and field of work affect work values. Hagström and Kjellberg (2007), for example, found that altruism was rated more highly by nurses than engineers, and social relations was rated more highly by women than men. However, over the course of time, women's ratings of benefits and career and influence were strengthened for both nursing and engineering,

eliminating initial gender differences in these ratings. Thus, it appears that the relationship between gender and chosen occupational field is complex with regard to impact on career outcome variables. Additional research examining gender differences in calling is necessary to better clarify this unexpected result.

Another possible explanation for these findings is that women may place a higher value on altruism. Past research has indicated that in general, when their values are assessed, women are more likely than men to score highly on altruism. For example, Duffy and Sedlacek (2007b) found that women were more likely to espouse social values emphasizing the importance of helping others and making a contribution to society. As mentioned above, Hagström and Kjellberg (2007), also found that women were more likely to endorse altruistic values, regardless of chosen career field (i.e., women in both traditional female-dominated and nontraditional occupations highly endorsed this value). The operationalization of calling in the present study emphasizes prosocial values. Additionally, as it was scored in this study, the CVQ may have overrepresented prosocial orientation in the scores for presence of calling, as the revised model placed the eight items related to this domain in one indicator of presence of calling, whereas the other two indicators had only four items assigned to each. Overrepresentation of prosocial values on the presence of calling factor may have impacted the results. It is important to note that this does not fully explain the results, however, as gender differences were also found in relation to search for calling, which had no prosocial orientation items included in its scoring in this study.

The finding that women are more likely than men to endorse calling as being relevant for them as they think about their careers is important, as discourse in the literature suggests that having such an approach to one's occupation may be particularly important for women.

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According to Betz (2008), a fulfilling career can assist women in maintaining psychological health:

> Research has shown that the fulfillment of individual potential for achievement is vitally important. Although the roles of homemaker and mother are important and often very satisfying, they do not allow most women to fulfill their unique abilities and talents. These, rather, must be fulfilled through career pursuits or volunteer and avocational activities, just as they are in men (p. 719).

Given the emphasis Betz places on fulfillment and making use of unique talents and abilities, it is logical that calling may provide an experience women incorporate in their occupational identity. For women pursuing both career and family, calling may assist in maintaining balance in these two often competing roles. For example, Sellers et al. (2005) suggested that the concept of calling may assist women in navigating the balance between their work life and their family life, particularly when the women perceived calling as relevant to *both* the professional role and familial roles.

Limitations

This study had a number of strengths, including the use of confirmatory data analysis techniques to further refine the measurement model and the examination of group differences, rather than collapsing across groups, to examine the utility of the CVQ for college students in general. However, caution must be exercised in the interpretation of the results due to the presence of several limitations. The most significant limitation was the lack of equivalence in fields of study represented across the four groups in the sample. Though efforts were made to try to ensure similar representation of majors across the groups, the groups nonetheless had differing distributions of fields of study. Several possible factors likely contributed to the imbalance in majors. First, the participants were offered varying compensation, as some professors willingly offered extra credit to their students and others did not. Such differences in compensation likely impacted the willingness of individuals

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from these various courses to participate in the study. Thus, the fields of study of students in classes that offered extra credit for participation may be overrepresented in the sample. Due to the imbalance in majors, the results of this study must be interpreted with caution, as it cannot be conclusively determined that the findings are due to the variables of interest, namely gender and age cohort, or to the unique characteristics of people pursuing a given area of study.

Also, this study was limited in the conclusions that can be drawn by its cross-sectional design. Based on this data, it would not be justifiable to make any statements about the effect of college experience on calling, for example. That is, since it was not longitudinal in its design, this study assisted in understanding cohort differences, but could not assert that these differences are developmental in nature. Additionally, the age range employed in this study was somewhat limited, as it focused exclusively on college students, most of who were in the traditional college age bracket (i.e., 18 to 24). It would be beneficial for future research to work to understand the developmental aspects of calling, as well as the ways in which the CVQ can be used effectively for a variety of age groups.

Another limitation of this study was the lack of sufficient numbers of last year men participants. As discussed above, targeting classes to correspond as closely as possible to likely demographics of the first year sample proved inadequate for obtaining the numbers of men necessary for the data analysis, and alternative strategies for recruitment were employed, including seeking participants from large, major- or interest-specific listservs. These additional male participants were recruited using a drawing for a $25 gift card rather than points toward a classroom grade, which may have influenced the results of the study by introducing additional characteristics that may be unique to individuals who willingly

respond to this type of participant recruitment technique. This method of recruitment represented a shift from how all other participants were recruited, and it also resulted in less control over the similarity of the groups. As discussed above, this lack of similarity limits the conclusions that can be drawn from the results, as there were significant differences in the percentages of fields of study represented across groups. It is also unclear the extent to which the varying recruitment techniques may have impacted the characteristics of last year men in the final sample.

Finally, the conclusions of this study are limited by the defining characteristics of the four groups examined. Other diverse groups may have additional characteristics that could potentially impact the construct of calling and its measurement. For example, it cannot be determined from the present results whether the CVQ measurement model will operate similarly across various racial/ethnic or cultural groups. It will be important for future research to extend on this study to evaluate the CVQ measurement model across a variety of groups. If the model continues to show evidence of invariance across groups, this will lend support to the CVQ as a measurement instrument for use with a wide variety of individuals. Particularly important variables to investigate further would be other demographic characteristics, such as racial/ethnic identity or religious affiliation. If the CVQ measurement model is equivalent across such groups, this would lend additional support to its utility as an instrument for use among college students in general. Also, the current sample was relatively homogenous with respect to racial/ethnic identity. Having a more diverse sample that better represents the demographics of the college population at large would increase the generalizability of the findings.

Future Directions

In addition to the empirical investigations suggested above, several potential lines of future research can extend on these findings. First and foremost, as with any psychological measure, it will be useful for the CVQ to continue to undergo continued psychometric evaluation and possible revision to ensure its utility and appropriateness for a variety of groups and contexts. It will likely prove useful to seek samples that extend beyond the demographics present in the current sample and in previous samples, such as through recruiting participants from across the country and internationally. This study recruited participants only from one institution of higher learning in the Western United States. In order to build further generalizability of the findings, it would be useful to obtain samples from a wide variety of participants from other collegiate institutions. Based on previous research related to various groups within the collegiate setting, several specific groups emerge as potentially productive for further study related to the CVQ. First, it would likely be useful to assess the CVQ using samples of graduate students, to evaluate whether the psychometrics of the measure remain consistent for this unique group of students. As Duffy and Sedlacek (in press) found, for college freshmen a higher sense of presence of calling was related to aspirations of graduate degrees, and thus graduate students may be more likely to show evidence of high scores on the CVQ. Similarly, students enrolled at two-year colleges may provide additional information about the CVQ, as they have unique characteristics that may not be as representative of their counterparts in four-year institutions, such as economic concerns and limited job experience (Luzzo, 2002). Additionally, past research has indicated that nontraditional students tend to have more mature career attitudes than traditionally-aged students (Luzzo, 1993); thus, nontraditional students represent another group for whom it

would be useful to seek data related to CVQ measurement model and scores. Given the results of this study, it would be expected that the CVQ measurement model would remain equivalent across these additional groups, which would strengthen its generalizability as a psychological measure.

Another aspect of the CVQ needing additional psychometric evaluation is the theoretical and empirical understanding of the measurement model. As discussed above, the measurement model is generally consistent with the theoretical underpinnings of the CVQ, but empirical evidence has repeatedly shown that this theoretical model does not perfectly hold up in college student samples. For example, the present study adjusted the measurement model so that the sum of all eight prosocial orientation items serve as an indicator of presence of calling. Though the structural equation modeling analyses indicated that this provided a good fit to the data, it resulted in scales that are no longer symmetrical, and thus presence of calling scores were more influenced by other-oriented values than either of the other two dimensions, transcendent summons or purpose/meaning. Given that the proposed operationalization of calling involves the influence of all three equally (Dik & Duffy, 2009), this is potentially problematic. Additional theoretical and empirical understanding of the construct of calling is necessary to inform alternative ways in which this problem can be addressed. For example, increased empirical attention should be paid to the prosocial orientation dimension of calling. As Hunter et al. (in press) found, prosocial values are a key component of how college students themselves conceptualize calling. Additionally, other-oriented values serve a central role in current academic definitions of calling (e.g., Dik & Duffy, 2009; Elangovan, Pinder, & McLean, in press). However, empirical evidence from the current study and previous research (e.g., Eldridge, 2007) indicates that the division of

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prosocial values items on the CVQ into presence and search does not stand up under psychometric scrutiny. Additionally, given the overlap between the dimensions of presence of and search for calling, it would be useful for future research to work to more adequately define the relationship between the two, including the ways in which they relate to one another and independently relate to other important outcome variables. Such research could mirror that conducted for theoretically related variables, such as meaning in life (Steger, Kashdan, Sullivan, & Lorentz, 2008).

Additionally, as mentioned previously, the CVQ represents an important contribution to the literature in that it is the first multi-dimensional measure of the calling construct. Given that the psychometrics of the measure have been established across a variety of studies, its use as a research tool can now be pursued. Future studies can evaluate the role of presence of and search for calling in a variety of career-related outcomes, such as career decidedness, satisfaction, choice implementation, and so forth. Researchers can employ this measure across a wide variety of contexts to better understand the career processes of college students. For example, Duffy and Sedlacek (2007a) showed that calling is related to a variety of outcome variables, including career decidedness, self-clarity, work salience, and degree of knowledge about educational information. However, this study used a brief, two item measure as a means of assessing calling, and it would be useful to evaluate the extent to which these findings replicate with a multidimensional measure such as the CVQ. Indeed, due to the lack of such a measure previously available in the literature, many of the studies reviewed above have employed less psychometrically sound instruments, or those which do not provide for a multidimensional perspective of calling to be captured in the data. For example, many used a brief measure of calling with two items each for presence and search

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(e.g., Duffy & Sedlacek, in press; Steger & Dik, 2009). In this sense, the CVQ holds potential to further advance scientific understanding of the construct by allowing for replication and extension of previous findings based on psychometrically sound, multidimensional measurement of the construct.

As mentioned above, future research can also emphasize investigation of the developmental processes that are influenced by calling, as well as the ways in which calling is impacted by personal development. In particular, given findings that many career development tasks may be accomplished prior to entering college (e.g., Lokan, Boss, & Patsula, 1982; Lokan & Biggs, 1982), broadening the research methodology presented in the present study to include comparison of CVQ scores with those of high school students (grades 9 – 12) would likely be beneficial in clarifying the age ranges when calling would be expected to develop. A particularly useful research methodology would employ longitudinal tracking of participants from early adolescence through college, to more fully develop understanding of how calling may develop or impact salient career-related variables during that time. This methodology would also eliminate the possibility of differences related to age being a function of cohort differences, rather than a development process.

One interesting potential area for future research relates to calling and gender. In particular, as Betz (2008) noted, women's career aspirations tend to diminish over time, with women choosing less prestigious careers than they reported wanting to pursue initially. It would be useful to assess the impact that calling has on this dynamic. For example, it is possible that a strong sense of calling would serve as somewhat of a protective factor for women, leading them to continue to pursue initially selected, prestigious careers when their peers who do not perceive themselves as having a calling foreclose on their initial intentions.

Similarly, what role does calling play in facilitating the career development of men pursuing careers in fields that do not conform to their gender-related expectations, such as nursing? Such research would serve as an important addition to the understanding of how gender and career development interact and are impacted by one another. Additionally, understanding the ways in which gender may interact with other important demographic variables may be a constructive line of further research. Betz reminded practitioners that women of color, for example, face a "double jeopardy" (p. 733) of race and gender, creating further disparities in their career aspirations and achievement when compared with White women. This can also be compounded for members of other oppressed groups, such as members of the gay, lesbian, bisexual, transgender, and queer (GLBTQ) community or those with disabilities. Understanding the ways in which calling influences the career development of these individuals would have broad implications both for the empirical literature and clinical practice.

Implications for Practice

Dik, Duffy and Eldridge (2009) proposed that calling may be a particularly worthwhile construct to incorporate into career counseling, and they offered suggestions for how to use all three dimensions of calling (transcendent summons, purpose/meaning, and other-oriented values) to increase clients' understandings of their work-related identities, interests, and desires. Given that the present research further supported the utility of the CVQ as a measure based on this multi-dimensional definition of calling, it follows that it will continue to show promise as a means of incorporating calling into career counseling interventions.

There are several specific groups of clients for whom integrating calling into career counseling may be particularly helpful, as indicated by Dik, Duffy and Eldridge (2009). First, given the religious history and continued significance of the calling construct to the spiritual pursuits of many, clients for whom a particular religious tradition is salient may find this measure helpful. Additionally, it may assist the counselor and the client in better conceptualizing career decision strategies if the client tends toward the passive stance of waiting for revelation of an ideal job match. For this particular context, it will likely be a useful tool for beginning a conversation encouraging a shift to a more active stance toward career decision-making, which may be associated with better outcomes for the client.

The CVQ and the concept of calling may be integrated into career counseling with students across developmental levels. As mentioned above, students may differ in their career development related to a variety of variables, including decidedness (e.g., Guay, Ratelle, Senécal, Larose, & Deschênes, 2006), career maturity (e.g., Lokan, Boss, & Patsula, 1982), and developing purpose (Foubert, Nixon, Sisson, & Barnes, 2005). Assessing the developmental level of a given student can assist a counselor in identifying the unique growth tasks the student is likely to benefit from addressing. Additionally, though this study did not find significant differences in calling for first year versus last year college students, it may still behoove the counselor to tailor interventions specifically to a client's age cohort. For example, with a student who is nearing graduation, assisting in the process of firming up plans for a specific occupational goal may be most prudent, whereas encouraging increased self-exploration may be more appropriate for a first year student who is not facing the impending need to solidify a specific career trajectory. Thus, for last year undergraduate students, evaluating the presence of calling may be most useful, whereas for first year

students, focusing conversation on search for calling may be more applicable. However, recall that it may be overly simplistic to assume that calling is a linear process, proceeding from search to presence. Therefore, regardless of age or grade level, counselors would be well-advised to assist their clients in gaining tools for self-evaluation in order to foster their ability to continually engage in a dynamic process of seeking and nurturing meaning in their work.

Elangovan, Pinder, and McLean (in press) suggested that four antecedents are necessary for initiating search for a calling and subsequently discovering it: (1) an urge to find meaning in life, (2) attentiveness, (3) willingness to experiment with new vocational paths, and (4) growing in understanding of the self. Incorporating these into career counseling can potentially facilitate the process of pursuing meaningful work and foster a sense of calling for clients. A counselor may choose to ask questions assessing where a client is in regard to each of these factors. In addition to the CVQ, other instruments could potentially be employed in this process, as well, such as the Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006). Fostering these four antecedent conditions may also assist counselors in moving clients toward a more proactive approach to their career decision-making, which may be more likely to be associated with positive outcomes (Dik et al., 2009).

Another group for whom integrating calling into career counseling may be particularly productive is women. In her discussion of encouraging positive development for women in career counseling, Betz (2008) stated this simply and eloquently:

> …*passion* is, for some women, loving what they do; for others, it's feeling that they have made a difference in the world…For many women, this is a sense of a life's "calling." Although not all people, men or women, are lucky enough to have such a

passion in their work, helping people find careers about which they can feel passionate should be one of the goals of the psychologist (p. 738).

The results of the present research indicate that, on average, women may find calling to be more relevant to their career development than men, as evidenced by significantly higher scores on the CVQ for women than for men. Assessing the relevance of calling with individual clients may be important, particularly if a client is coping with barriers that may interfere with career trajectory. It is possible that calling may serve as a protective factor for women who may have otherwise foreclosed on viable career options due to low self-efficacy, for example. This may be particularly true for women pursuing careers in traditionally male-dominated fields. Similarly, calling may be a useful concept for men pursuing work that is inconsistent with their gender role expectations. As Betz (2008) pointed out, participating in work that runs counter to socialization and stereotypic gender role expectations may be stressful for both men and women, and the concept of calling may provide a productive means of combating this stress. Also, as individuals strive to seek satisfactory balance between life and work roles (Betz, 2008), calling may prove to be a useful means of aiding clients in understanding the equal importance of these roles, as it did in research examining individuals who experienced a sense of calling to more than one life role (e.g., Sellers et al., 2005).

Additionally, as discussed above, a significant difference emerged in scores on the CVQ depending on an individual's chosen major field of study. Specifically, recall that psychology majors had significantly higher scores on both presence of and search for calling than their counterparts in the engineering field. This indicates that the concept of calling may be more relevant to students within certain majors. However, engagement in work that is experienced as meaningful is potentially important, even for people from majors that are not

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traditionally associated with the concept. As Steger and Dik (2010) indicated, perceiving meaning in one's work assists in providing motivation and fosters strong performance. Thus, encouraging clients from a broad range of academic and interest backgrounds to consider ways in which calling can be relevant to their career may prove beneficial. Some students from majors not traditionally associated with calling may not initially gravitate toward calling as a concept likely to be relevant to their career development. For example, an engineering student may question why his counselor is bringing up the topic, stating, "Why are we talking about calling? I don't want to be a pastor or a doctor." Assisting such students in broadening their understanding of calling and providing psychoeducation about the potential benefits of such an approach to one's occupation can help students integrate calling into their sense of vocational identity, should it prove relevant for the student.

As indicated in the above discussion, incorporating calling into career counseling interventions may be a highly worthwhile endeavor for clients from a variety of backgrounds. The CVQ offers a multidimensional, psychometrically sound measure that can serve as a means of establishing the importance of calling to an individual client, as well as a starting point for conversations about calling with clients who may have not previously considered the potential role calling could play in their career development. Thus, the CVQ is a measure with both research and clinical utility, and as such it represents a significant contribution to the science and practice of psychology.

Summary and Conclusions

The purpose of this study was to further psychometrically evaluate the college student version of the Calling and Vocation Questionnaire (CVQ), a multidimensional measure designed to assess presence of and search for: (1) transcendent summons, (2) purpose or

meaning, and (3) prosocial orientation, the three dimensions of calling proposed by Dik and Duffy (2009). Multigroup analyses were conducted across four groups of college students: first year women, first year men, last year women, and last year men. The results indicated that the initially measurement model of the CVQ did not provide a good fit to the data. Specifically, the indicators for presence of and search for prosocial orientation showed significant overlap, and their items were combined and assigned to a single indicator for the presence of calling factor, which resulted in good model fit. This revised measurement model remained equivalent across all four groups, with the exception of one factor loading.

A second purpose of this study was to explore potential age cohort and gender differences in mean scores on the CVQ. The results indicated no significant differences related to age, which was contrary to what was expected. Also in opposition to the hypothesized outcomes was the finding of significant gender differences, whereby women scored significantly higher than men on both presence of and search for calling. However, this result may have been confounded by the effect of area of study, given that reported majors were not equivalently represented across gender groups. Examination of scores of psychology majors versus those of engineering majors, the field of study reported by the largest percentage of women and men, respectively, indicated significant differences. Specifically, psychology majors scored significantly higher than engineering majors on both presence of and search for calling.

This study represents an important additional step in the process of psychometrically evaluating the CVQ and establishing its utility as a measure. The outcome of the study suggests that the measure is useful across differing groups of college students, as the measurement model remains consistent across groups. Given that previous lack of

multidimensional measures of calling in the current literature, this is particularly significant, as future research can employ the CVQ, and it will thereby serve a key function in furthering empirical understanding of calling and its effects on career development.

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College Student Version of the Calling And Vocation Questionnaire (CVQ, Eldridge 2007)

<u>Instructions</u>: Please indicate the degree to which you believe the following statements describe you, using the following scale. Please respond with your career as a whole in mind. For example, if you are currently working part time in a job that you don't consider part of your career, focus on your career as a whole and not your current job. Try not to respond merely as you think you "should" respond; rather, try to be as accurate and as objective as possible in evaluating yourself. The phrase "my Higher Power" in these items refers to whatever you consider ultimately important or eternal. Examples would be God, Allah, Jesus, a Supreme Being, the Divine, the Almighty, and the Universe. If you do not believe in anything that fits this definition, "1" may be the most appropriate answer to items that reference a Higher Power. Similarly, if any of the questions simply do not seem relevant to you, "1" may be the most appropriate answer.

1 = Not at all true of me
2 = Somewhat true of me
3 = Mostly true of me
4 = Absolutely true of me

Scale 1: Transcendent Summons—Presence
1. I believe that I have been called to my current line of work.
2. I'm in my current line of work because of a clear sense of calling.
3. I was drawn by something beyond myself to pursue my current line of work.
4. I chose my career with the help of a force beyond myself.
5. A transcendent force unmistakably led me to pursue my current area of work.

Scale 2: Transcendent Summons—Search
1. I'm searching for my calling in my career.
2. I yearn for a sense of calling in my career.
3. I am trying to figure out what my calling is in the context of my career.
4. I am engaged in a process of finding the area of work I was called to pursue.
5. I'm trying to identify the area of work I was meant to pursue.

Scale 3: Meaning/Purpose—Presence
1. My work helps me live out my life's purpose.
2. I have a good sense of how my work fits with the overall purpose for my life.
3. I see my career as a path to purpose in life.
4. My career is an important part of my life's meaning.
5. My career gives me a strong sense of purpose.

Scale 4: Meaning/Purpose—Search
1. I am looking for work that will help me live out my life's purpose.
2. I intend to construct a career that will give my life meaning.
3. Eventually, I hope my career will align with my purpose in life.
4. I want to pursue a career that is a good fit with the reason for my existence.
5. I'm trying to find a job that gives my life meaning.

Scale 5: Prosocial Orientation—Presence
1. I try to make sure that the work I do is making the world a better place.
2. The most important aspect of my career is its role in helping to meet the needs of others.
3. Making a difference for others is the primary motivation in my career.
4. My work contributes to the common good.
5. I can make the world a better place with my career.

Scale 6: Prosocial Orientation—Search
1. I am trying to find a career that ultimately makes the world a better place.
2. I want to find a job that meets some of society's needs.
3. I am trying to build a career that benefits society.
4. I am looking to find a job where my work clearly benefits others.
5. I am searching for a career that makes a positive difference in society.

APPENDIX B

24-Item Version of the Calling and Vocation Questionnaire (CVQ)

Preliminary Scale 1: Transcendent Summons—Presence
1. I believe that I have been called to my current line of work.
2. I was drawn by something beyond myself to pursue my current line of work.
3. I do not believe that a force beyond myself has helped guide me to my career.
4. I am pursuing my current line of work because I believe I have been called to do so.

Preliminary Scale 2: Transcendent Summons—Search
1. I'm searching for my calling in my career.
2. I yearn for a sense of calling in my career.
3. I am trying to figure out what my calling is in the context of my career.
4. I'm trying to identify the area of work I was meant to pursue.

Preliminary Scale 3: Purposeful Work—Presence
1. My work helps me live out my life's purpose.
2. I see my career as a path to purpose in life.
3. My career is an important part of my life's meaning.
4. I try to live out my life purpose when I am at work.

Preliminary Scale 4: Purposeful Work--Search
1. I am looking for work that will help me live out my life's purpose.
2. I intend to construct a career that will give my life meaning.
3. Eventually, I hope my career will align with my purpose in life.
4. I want to pursue a career that is a good fit with the reason for my existence.

Preliminary Scale 5: Prosocial Orientation—Presence
1. The most important aspect of my career is its role in helping to meet the needs of others.
2. Making a difference for others is the primary motivation in my career.
3. My work contributes to the common good.
4. I am always trying to evaluate how beneficial my work is to others.

Preliminary Scale 6: Prosocial Orientation—Search
1. I am trying to find a career that ultimately makes the world a better place.
2. I want to find a job that meets some of society's needs.
3. I am trying to build a career that benefits society.
4. I am looking to find a job where my career clearly benefits others.

APPENDIX C

Cover Letter for All First Year Participants

Structure of Calling and Vocation across Gender and Age Cohort - Human Subjects#: 08-289H

You are invited to be in a research study of how career attitudes are related to your well-being. You were selected as a possible participant because you are either a student enrolled in Psychology 100 or 250 or in an upper division course at Colorado State University. We ask that you read this form and ask any questions you may have before agreeing to be in the study. This study is being conducted by Dr. Bryan Dik, a faculty member, and Brandy Eldridge, a graduate student, in the Department of Psychology at Colorado State University.

Background Information: The purpose of this study is to better understand how people view their careers as a part of their lives. A variety of possibilities exist. Some people may view their careers as something they "have" to do (e.g., I work so I can support my lifestyle). Others may view their careers as an important expression of their values (e.g., I work as an expression of who I am, or why I exist). We are interested in these possibilities, as well as in the features of people who hold these various career views. We are also interested in whether these views differ for men and women, as well as for people in different age groups.

Procedures: If you agree to be in this study, we will ask you to do the following things: We will ask you to check the box below to indicate that you understand and agree with the information provided in this consent form. After responding to this item, you will be taken to an online survey that will ask you various questions about your career development, values, and emotions. This will take approximately 30 minutes to complete. At all times you are encouraged to contact the researchers with any questions you have about the study. At the end of the survey, you will be asked whether or not you would like to consent to have your contact information kept by the researchers so they may contact you in the future for a follow-up study. If you do not provide such consent, you do not need to provide such information and none of your information will be kept.

Risks and Benefits of Being in the Study: The study has minimal risks. First, some of the items may ask about topics that are sensitive to you. In order to minimize this risk, you are encouraged to skip any items you find to be sensitive or which cause you any distress. It is not possible to identify all potential risks in an experimental procedure, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. There are no direct benefits to you for participating. However, it is hoped that this study will offer benefits to society as a whole through what it reveals about career attitudes and their relationship to well-being.

Compensation: You will receive 1/2 research points for your completed participation, or

extra credit points as determined by your professor. No other compensation is available. The points will be awarded upon completion of the online survey, as outlined above. You must complete the survey to receive any research points for this study.

Confidentiality: The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a participant. Research records will be kept in a locked file. Do not put your name anywhere on this survey. Instead, use the participant ID number assigned to you to identify your survey responses so that we can award you credit for participating. At the end of the survey you will be asked if we may keep your contact information for potential follow-up research; this information will also be kept private. The names of people not wanting to be on this contact list will be deleted after research points are awarded.

Voluntary Nature of the Study: Your participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting those relationships. Additionally, should you choose to withdraw, you will not receive any penalty against your research participation requirement (i.e., it will not count as a no-show). However, in accordance with the Psychology research policy, you will not receive participation credit for this study. If at any point you feel that you would like to withdraw from the study, you are responsible for contacting the researchers with your name and University identification number so they can assure that your withdrawal is documented and no penalties are administered.

Contacts and Questions: The researchers conducting this study are Dr. Bryan Dik and Brandy Eldridge. You may ask any questions you have now. If you have questions later, you may contact Dr. Dik at bryan.dik@colostate.edu, or (970) 491-3235. Brandy Eldridge may be contacted at: brandy.eldridge@colostate.edu. You may also contact the Research Integrity and Regulatory Compliance Office at Colorado State University, Janell Barker, Human Research Administrator, (970) 491-1655.

You may print this form to keep for your records.

DO NOT PUT YOUR NAME ON ANY PART OF THE ONLINE SURVEY.

An answer to one of these two choices is required to go on

○   I understand the terms of this consent form and consent to participate. Take me to the next part of the survey.

○   I do not feel comfortable giving my consent at this time. Exit me from this survey.

APPENDIX D

Cover Letter for Last Year Participants Recruited from Upper Division Courses

Structure of Calling and Vocation across Gender and Age Cohort - Human Subjects#: 08-289H

You are invited to be in a research study of how career attitudes are related to your well-being. You were selected as a possible participant because you are a student enrolled in an upper division course at Colorado State University. We ask that you read this form and ask any questions you may have before agreeing to be in the study. This study is being conducted by Dr. Bryan Dik, a faculty member, and Brandy Eldridge, a graduate student, in the Department of Psychology at Colorado State University.

Background Information: The purpose of this study is to better understand how people view their careers as a part of their lives. A variety of possibilities exist. Some people may view their careers as something they "have" to do (e.g., I work so I can support my lifestyle). Others may view their careers as an important expression of their values (e.g., I work as an expression of who I am, or why I exist). We are interested in these possibilities, as well as in the features of people who hold these various career views. We are also interested in whether these views differ for men and women, as well as for people in different age groups.

Procedures: If you agree to be in this study, we will ask you to do the following things: We will ask you to check the box below to indicate that you understand and agree with the information provided in this consent form. After responding to this item, you will be taken to an online survey that will ask you various questions about your career development, values, and emotions. This will take approximately 30 minutes to complete. At all times you are encouraged to contact the researchers with any questions you have about the study.

Risks and Benefits of Being in the Study: The study has minimal risks. First, some of the items may ask about topics that are sensitive to you. In order to minimize this risk, you are encouraged to skip any items you find to be sensitive or which cause you any distress. It is not possible to identify all potential risks in an experimental procedure, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. There are no direct benefits to you for participating. However, it is hoped that this study will offer benefits to society as a whole through what it reveals about career attitudes and their relationship to well-being.

Compensation: You will receive extra credit points as determined by your professor for your participation. No other compensation is available. The points will be awarded upon completion of the online survey, as outlined above. You must complete the survey to receive any research points for this study.

Confidentiality: The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a participant. Research records will be kept in a locked file. Do not put your name anywhere on this survey. Instead, after completing the survey, you will be directed to another site and asked to provide your name. This will be used only to award points and will not in any way be connected to your responses to the survey.

Voluntary Nature of the Study: Your participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting those relationships. Additionally, should you choose to withdraw, you will not receive any penalty against your research participation requirement (i.e., it will not count as a no-show). However, in accordance with the Psychology research policy, you will not receive participation credit for this study. If at any point you feel that you would like to withdraw from the study, you are responsible for contacting the researchers with your name and University identification number so they can assure that your withdrawal is documented and no penalties are administered.

Contacts and Questions: The researchers conducting this study are Dr. Bryan Dik and Brandy Eldridge. You may ask any questions you have now. If you have questions later, you may contact Dr. Dik at bryan.dik@colostate.edu, or (970) 491-3235. Brandy Eldridge may be contacted at: brandy.eldridge@colostate.edu. You may also contact the Research Integrity and Regulatory Compliance Office at Colorado State University, Janell Barker, Human Research Administrator, (970) 491-1655.

You may print this form to keep for your records.

DO NOT PUT YOUR NAME ON ANY PART OF THE ONLINE SURVEY.

An answer to one of these two choices is required to go on

○ I understand the terms of this consent form and consent to participate. Take me to the next part of the survey.

○ I do not feel comfortable giving my consent at this time. Exit me from this survey.

APPENDIX E

Cover Letter for Last Year Men Recruited from Listservs

Structure of Calling and Vocation across Gender and Age Cohort - Human Subjects#: 08-289H

You are invited to be in a research study of how career attitudes are related to your well-being. You were selected as a possible participant because you are a student enrolled in an upper division course at Colorado State University. We ask that you read this form and ask any questions you may have before agreeing to be in the study. This study is being conducted by Dr. Bryan Dik, a faculty member, and Brandy Eldridge, a graduate student, in the Department of Psychology at Colorado State University.

Background Information: The purpose of this study is to better understand how people view their careers as a part of their lives. A variety of possibilities exist. Some people may view their careers as something they "have" to do (e.g., I work so I can support my lifestyle). Others may view their careers as an important expression of their values (e.g., I work as an expression of who I am, or why I exist). We are interested in these possibilities, as well as in the features of people who hold these various career views. We are also interested in whether these views differ for men and women, as well as for people in different age groups.

Procedures: If you agree to be in this study, we will ask you to do the following things: We will ask you to check the box below to indicate that you understand and agree with the information provided in this consent form. After responding to this item, you will be taken to an online survey that will ask you various questions about your career development, values, and emotions. This will take approximately 30 minutes to complete. At all times you are encouraged to contact the researchers with any questions you have about the study.

Risks and Benefits of Being in the Study: The study has minimal risks. First, some of the items may ask about topics that are sensitive to you. In order to minimize this risk, you are encouraged to skip any items you find to be sensitive or which cause you any distress. It is not possible to identify all potential risks in an experimental procedure, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. There are no direct benefits to you for participating. However, it is hoped that this study will offer benefits to society as a whole through what it reveals about career attitudes and their relationship to well-being.

Compensation: Compensation for this study is in the form of entry into a drawing for a gift card. No other compensation is available for this study.

Confidentiality: The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a

participant. Research records will be kept in a locked file. Do not put your name anywhere on this survey. Instead, after completing the survey, you will be directed to another site and asked to provide your name. This will be used only to award points and will not in any way be connected to your responses to the survey.

Voluntary Nature of the Study: Your participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting those relationships. Additionally, should you choose to withdraw, you will not receive any penalty against your research participation requirement (i.e., it will not count as a no-show). However, in accordance with the Psychology research policy, you will not receive participation credit for this study. If at any point you feel that you would like to withdraw from the study, you are responsible for contacting the researchers with your name and University identification number so they can assure that your withdrawal is documented and no penalties are administered.

Contacts and Questions: The researchers conducting this study are Dr. Bryan Dik and Brandy Eldridge. You may ask any questions you have now. If you have questions later, you may contact Dr. Dik at bryan.dik@colostate.edu, or (970) 491-3235. Brandy Eldridge may be contacted at: brandy.eldridge@colostate.edu. You may also contact the Research Integrity and Regulatory Compliance Office at Colorado State University, Janell Barker, Human Research Administrator, (970) 491-1655.

You may print this form to keep for your records.

DO NOT PUT YOUR NAME ON ANY PART OF THE ONLINE SURVEY.

An answer to one of these two choices is required to go on

○ I understand the terms of this consent form and consent to participate. Take me to the next part of the survey.

○ I do not feel comfortable giving my consent at this time. Exit me from this survey.

Table 1

Definitions of Holland's Six RIASEC Interest Types.

Interest Type	Definition	Related Careers
Realistic	Interests in nature, mechanical and repair activities, using practical solutions to concrete problems	Automobile mechanic, farmer, electrician
Investigative	Interests in science and math, analyzing and interpreting data, to solve abstract problems	Geologist, chemist, anthropologist
Artistic	Interests in free and creative expression, aesthetic, observation and participation in fine arts	Stage director, musician, interior decorating
Social	Interests in being with other people, helping others, dilemmas that are ethical or idealistic in nature	Religious worker, clinical psychologist, speech therapist
Enterprising	Interests in leadership and power, persuading and managing others, working toward organizational goals	Salesperson, manager, business executive
Conventional	Interests in organization, data systems, detail, accuracy, using information to solve problems efficiently	Stenographer, banker, financial analyst

Table 2

Percentages of Fields of Study Represented in Sample Across Groups.

Field of Study	Prelim. Est.	First Year		Last Year		All			
		Women	Men	Women	Men	Women	Men	First Year	Last Year
Health-Related Science	12.78	21.11	13.14	0.00	0.00	11.99	8.14	17.67	0.00
Social Science	9.94	10.00	0.73	6.57	0.00	8.52	0.45	5.99	4.07
Natural Resources	2.27	1.11	4.38	0.00	1.19	0.63	3.17	2.52	0.45
Natural Science	15.91	22.22	15.33	8.03	19.05	16.09	16.74	19.24	12.22
Psychology	17.05	11.11	10.95	55.47	30.95	30.28	18.55	11.04	46.15
Art	3.69	6.67	5.84	0.00	0.00	3.79	3.62	6.31	0.00
Communications	7.10	3.89	1.46	0.00	2.38	2.21	1.81	2.84	0.90
Education	4.26	4.44	4.38	0.00	0.00	2.52	2.71	4.42	0.00
Liberal Arts	9.94	6.67	11.68	1.46	2.38	4.42	8.14	8.83	1.81
Fashion and Design	5.68	8.89	1.46	19.71	2.38	13.56	1.81	5.68	13.12
Business	9.38	2.78	8.76	2.92	17.86	2.84	12.22	5.36	8.60
Engineering	1.99	1.11	21.90	5.84	23.81	3.15	22.62	10.09	12.67

Table 3

Difference in Fields of Study Represented Across Groups.

		Health Related Science	Social Science	Natural Res.	Natural Science	Psych.	Art	Comm.	Educ.	Liberal Arts	Fashion and Design	Business	Engr.
First Year Men	Count	18	1	6	21	15	8	2	6	16	2	12	30
	Expected Count	14.3	7.1	2.3	22.4	34.9	5.1	2.8	3.6	8.1	12.0	9.2	15.3
	Residual	3.7	-6.1	3.7	-1.4	-19.9	2.9	-0.8	2.4	7.9	-10.0	2.8	14.7
	Std. Residual	1.0	-2.3*	2.4*	-0.3	-3.4*	1.3	-0.5	1.3	2.8*	-2.9*	0.9	3.8*
First Year Women	Count	38	18	2	40	20	12	7	8	12	16	5	2
	Expected Count	18.7	9.4	3.0	29.4	45.8	6.7	3.7	4.7	10.7	15.7	12.0	20.1
	Residual	19.3	8.6	-1.0	10.6	-25.8	5.3	3.3	3.3	1.3	0.3	-7.0	-18.1
	Std. Residual	4.5*	2.8*	-0.6	1.9	-3.8*	2.1*	1.7	1.5	0.4	0.1	-2.0*	-4.0*
Last Year Men	Count	0	0	1	16	26	0	2	0	2	2	15	20
	Expected Count	8.7	4.4	1.4	13.7	21.4	3.1	1.7	2.2	5.0	7.3	5.6	9.4
	Residual	-8.7	-4.4	-0.4	2.3	4.6	-3.1	0.3	-2.2	-3.0	-5.3	9.4	10.6
	Std. Residual	-3.0*	-2.1*	-0.3	0.6	1.0	-1.8	0.2	-1.5	-1.3	-2.0*	4.0*	3.5*
Last Year Women	Count	0	9	0	11	76	0	0	0	2	27	4	8
	Expected Count	14.3	7.1	2.3	22.4	34.9	5.1	2.8	3.6	8.1	12.0	9.2	15.3
	Residual	-14.3	1.9	-2.3	-11.4	41.1	-5.1	-2.8	-3.6	-6.1	15.0	-5.2	-7.3
	Std. Residual	-3.8*	0.7	-1.5	-2.4*	7.0*	-2.3*	-1.7	-1.9	-2.2*	4.3*	-1.7	-1.9

$* = p < .05$ (Note: statistical significance determined by comparison of the absolute value of the standardized residual to the critical value of ±1.96)

Table 4

Percentage of Ethnic/Racial Identifications Across Participant Groups.

Ethnic/Racial Identification	First Year Women	First Year Men	Last Year Women	Last Year Men
African American	1.1	1.8	1.6	3.6
American Indian/Native American	0.0	0.9	0.8	0.0
Asian American/Pacific Islander	0.0	1.8	2.3	6.0
European American/White	91.1	85.1	77.5	77.4
Latino/Hispanic American	2.2	5.9	10.1	4.8
Other	0.0	0.0	2.3	1.2
More than One Identification Indicated	5.2	4.5	5.4	6.0

Table 5

Summary of Initial Measurement Model Across Groups.

	Group															
	First Year Women				First Year Men				Last Year Women				Last Year Men			
	M	SD	FL	Res	M	SD	FL	Res	M	SD	FL	Res	M	SD	FL	Res
Presence of Calling																
Trans. Sum.	9.77	3.09	.644	.765	8.76	3.19	.638	.770	9.84	3.25	.678	.735	8.37	2.94	.684	.729
Purp/Meaning	10.46	2.89	.991	.132	9.18	3.67	.865	.502	10.52	3.04	.965	.263	9.74	2.98	.849	.528
Other-oriented	11.20	2.83	.626	.780	9.40	3.74	.721	.693	11.70	3.17	.665	.747	9.49	3.14	.597	.802
Search for Calling																
Trans. Sum.	9.99	2.87	.620	.785	9.30	3.70	.593	.805	9.82	3.54	.681	.733	8.88	3.27	.730	.683
Purp/Meaning	11.70	2.79	.946	.324	10.65	3.54	.833	.553	11.83	3.02	1.000	.000	10.45	3.08	1.000	.000
Other-oriented	11.86	2.86	.592	.806	10.44	3.73	.731	.683	12.44	3.02	.476	.880	11.08	3.21	.526	.851
Covariance (*r*)			.744				.934				.753				.734	

Note: M = mean; SD = standard deviation; FL = factor loading; Res = residual

Table 6

Summary of Revised Measurement Model Across Groups.

	Group															
	First Year Women				First Year Men				Last Year Women				Last Year Men			
	M	SD	FL	Res	M	SD	FL	Res	M	SD	FL	Res	M	SD	FL	Res
Presence of Calling																
Trans. Sum.	9.77	3.09	.646	.763	8.76	3.19	.641	.768	9.84	3.25	.686	.728	8.37	2.94	.680	.733
Purp/Meaning	10.46	2.89	.983	.183	9.18	3.67	.873	.488	10.52	3.04	.943	.334	9.74	2.98	.824	.567
Other-oriented	23.06	5.39	.624	.782	19.84	6.81	.763	.646	24.15	5.91	.597	.802	20.57	5.97	.631	.776
Search for Calling																
Trans. Sum.	9.99	2.87	.603	.798	9.31	3.70	.620	.785	9.82	3.54	.681	.733	8.88	3.27	.730	.683
Purp/Meaning	11.70	2.79	1.000	.000	10.65	3.54	.978	.209	11.83	3.02	1.000	.000	10.45	3.08	1.000	.000
Covariance (r)			.707				.796				.774				.759	

Note: M = mean; SD = standard deviation; FL = factor loading; Res = residual

Table 7

Means and Standard Deviations of Presence of Calling Scores, by Gender and Year in School.

	Gender					
	Men			Women		
Year In School	N	Mean	SD	N	Mean	SD
First Year	197	40.04	9.27	246	43.32	9.46
Last Year	73	38.95	9.70	117	44.64	10.24

Table 8

Means and Standard Deviations of Search for Calling Scores, by Gender and Year in School.

	Gender					
	Men			Women		
Year In School	N	Mean	SD	N	Mean	SD
First Year	207	21.02	5.01	256	21.71	5.07
Last Year	76	19.38	5.94	123	21.78	6.00

Table 9

Analysis of Variance Summary Table for Presence of Calling, by Gender and Year In School.

Source	SS	df	MS	F
(A) Gender	2570.06	1	2570.06	28.01*
(B) Year in School	1.68	1	1.68	0.02
A x B	185.08	1	185.08	2.02
Error	57713.09	629	91.75	
Total	1179028.00	633		

* $p < .05$

Table 10

Analysis of Variance Summary Table for Search for Calling, by Gender and Year in School.

Source	SS	df	MS	F
(A) Gender	317.31	1	317.31	11.13*
(B) Year in School	81.50	1	81.50	2.86
A x B	97.53	1	97.53	3.42
Error	18765.96	658	28.52	
Total	317746.00	662		

* $p < .05$

Table 11

Means and Standard Deviations of Calling Scores, by Gender.

	Women		Men	
	Mean	SD	Mean	SD
Presence of Calling				
Trans. Sum.	9.78	3.14	8.90	2.82
Purp/Meaning	10.53	2.934	9.76	2.96
Other-oriented	23.40	5.64	21.00	5.49
Search for Calling				
Trans. Sum.	9.96	3.10	9.63	3.07
Purp/Meaning	11.75	2.87	10.93	2.91

Table 12

One-way Analysis of Variance Summary Table.

		Sum of Squares	df	Mean Square	F
Presence of Calling					
Trans. Sum.	Between Groups	128.38	1	128.38	14.23*
	Within Groups	6091.10	675	9.02	
	Total	6219.48	676		
Purp/Meaning	Between Groups	95.40	1	95.40	10.98*
	Within Groups	5707.56	657	8.69	
	Total	5802.96	658		
Other-oriented	Between Groups	918.62	1	918.62	29.54*
	Within Groups	20242.95	651	31.10	
	Total	21161.57	652		
Search for Calling					
Trans. Sum.	Between Groups	17.60	1	17.60	1.84
	Within Groups	6340.68	664	9.55	
	Total	6358.28	665		
Purp/Meaning	Between Groups	110.79	1	110.79	13.29*
	Within Groups	5610.59	673	8.34	
	Total	5721.39	674		

* = *p* < .05

Table 13

Descriptive Statistics of Presence of and Search for Calling, by Major Field of Study.

	Presence of Calling			Search for Calling		
	N	Mean	SD	N	Mean	SD
Health-Related Science	48	45.79	8.16	50	20.98	4.77
Social Sciences	23	48.26	7.59	24	22.38	4.70
Natural Resources	8	45.50	9.17	8	21.88	5.00
Natural Sciences	76	42.42	10.72	78	20.44	6.11
Psychology	121	45.06	9.94	125	21.23	5.70
Art	13	40.31	12.41	14	21.93	5.17
Communications	9	39.78	9.20	11	20.18	5.60
Education	13	45.54	11.01	12	22.58	6.58
Liberal Arts	26	44.65	10.94	28	20.71	5.62
Fashion and Design	44	40.68	7.51	45	23.22	4.25
Business	29	38.55	9.02	31	20.35	5.64
Engineering	54	37.83	8.62	55	19.00	5.01

Note: *N* is not equivalent between presence and search because of the effect of missing data

Table 14

Tukey Test Post Hoc Comparisons of Means of Presence of Calling, by Major Field of Study.

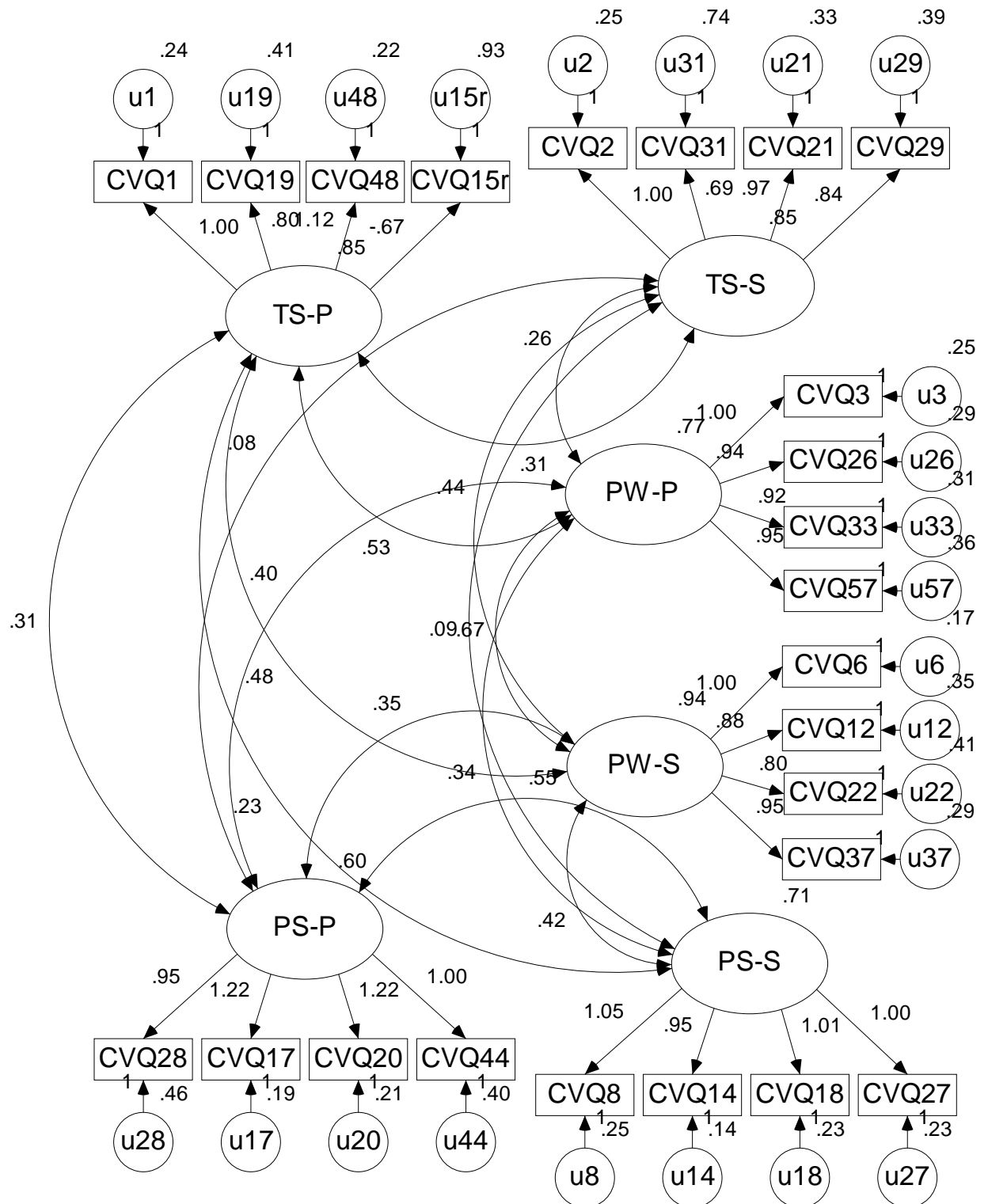|		Health-Related Sci.	Social Sci.	Natural Res.	Natural Sci.	Psych.	Art	Comm.	Educ.	Liberal Arts	Fash. & Design	Bus.
Social Sciences	Diff.	-2.47										
	Std. Err.	2.42										
Natural Res.	Diff.	0.29	2.76									
	Std. Err.	3.64	3.91									
Natural Sciences	Diff.	3.37	5.84	3.08								
	Std. Err.	1.76	2.27	3.54								
Psychology	Diff.	0.73	3.20	0.44	-2.64							
	Std. Err.	1.63	2.17	3.48	1.40							
Art	Diff.	5.48	7.95	5.19	2.11	4.75						
	Std. Err.	2.98	3.31	4.28	2.86	2.78						
Communications	Diff.	6.01	8.48	5.72	2.64	5.28	0.53					
	Std. Err.	3.46	3.75	4.63	3.36	3.29	4.13					
Education	Diff.	0.25	2.72	-0.04	-3.12	-0.48	-5.23	-5.76				
	Std. Err.	2.98	3.31	4.28	2.86	2.78	3.74	4.13				
Liberal Arts	Diff.	1.14	3.61	0.85	-2.23	0.40	-4.35	-4.88	0.88			
	Std. Err.	2.32	2.73	3.85	2.17	2.06	3.24	3.69	3.24			
Fash. & Design	Diff.	5.11	7.58	4.82	1.74	4.38	-0.37	-0.90	4.86	3.97		
	Std. Err.	1.99	2.45	3.66	1.81	1.68	3.01	3.49	3.01	2.36		
Business	Diff.	7.24	*9.71**	6.95	3.87	*6.51**	1.76	1.23	6.99	6.10	2.13	
	Std. Err.	2.24	2.66	3.81	2.08	1.97	3.18	3.64	3.18	2.57	2.28	
Engineering	Diff.	*7.96**	*10.43**	7.67	4.59	*7.22**	2.47	1.94	7.71	6.82	2.85	0.72
	Std. Err.	1.89	2.37	3.61	1.70	1.56	2.95	3.43	2.95	2.28	1.94	2.19

* = $p < .05$ (Note: Significant differences also printed in bold, italicized font)

Table 15

Tukey Test Post Hoc Comparisons of Means of Search for Calling, by Major Field of Study.

		Health-Related Sci.	Social Sci.	Natural Res.	Natural Sci.	Psych.	Art	Comm.	Educ.	Liberal Arts	Fash. & Design	Bus.
Social Sciences	Diff.	-1.40										
	Std. Err.	1.35										
Natural Res.	Diff.	-0.90	0.50									
	Std. Err.	2.07	2.21									
Natural Sciences	Diff.	0.54	1.94	1.44								
	Std. Err.	0.98	1.27	2.01								
Psychology	Diff.	-0.25	1.14	0.64	-0.80							
	Std. Err.	0.91	1.21	1.98	0.78							
Art	Diff.	-0.95	0.45	-0.05	-1.49	-0.70						
	Std. Err.	1.64	1.82	2.40	1.57	1.53						
Communications	Diff.	0.80	2.19	1.69	0.25	1.05	1.75					
	Std. Err.	1.81	1.98	2.52	1.75	1.71	2.19					
Education	Diff.	-1.60	-0.21	-0.71	-2.15	-1.35	-0.65	-2.40				
	Std. Err.	1.74	1.92	2.48	1.68	1.64	2.13	2.26				
Liberal Arts	Diff.	0.27	1.66	1.16	-0.28	0.52	1.21	-0.53	1.87			
	Std. Err.	1.28	1.51	2.17	1.19	1.13	1.78	1.93	1.87			
Fash. & Design	Diff.	-2.24	-0.85	-1.35	-2.79	-1.99	-1.29	-3.04	-0.64	-2.51		
	Std. Err.	1.11	1.37	2.08	1.02	0.94	1.66	1.82	1.76	1.31		
Business	Diff.	0.63	2.02	1.52	0.08	0.88	1.57	-0.17	2.23	0.36	2.87	
	Std. Err.	1.24	1.47	2.15	1.15	1.09	1.75	1.90	1.84	1.41	1.27	
Engineering	Diff.	1.98	3.38	2.88	1.44	2.23	2.93	1.18	3.58	1.71	***4.22*** *	1.35
	Std. Err.	1.06	1.33	2.05	0.96	0.88	1.62	1.79	1.73	1.26	1.09	1.22

* = $p < .05$ (Note: Significant differences also printed in bold, italicized font)

Note: TS = Transcendent summons; PW = Purposeful work; PS = Prosocial Orientation
P = Presence; S = Search

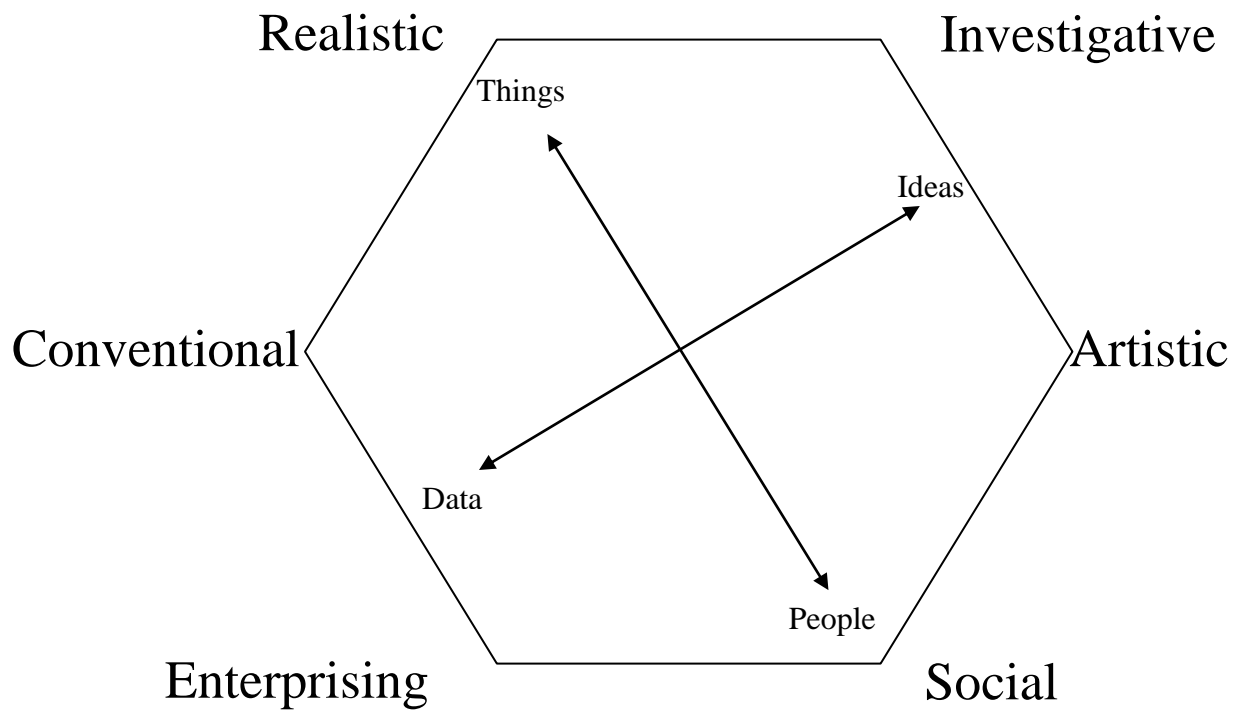*Figure 1*. The CFA measurement model for the CVQ using the second split-half sample.

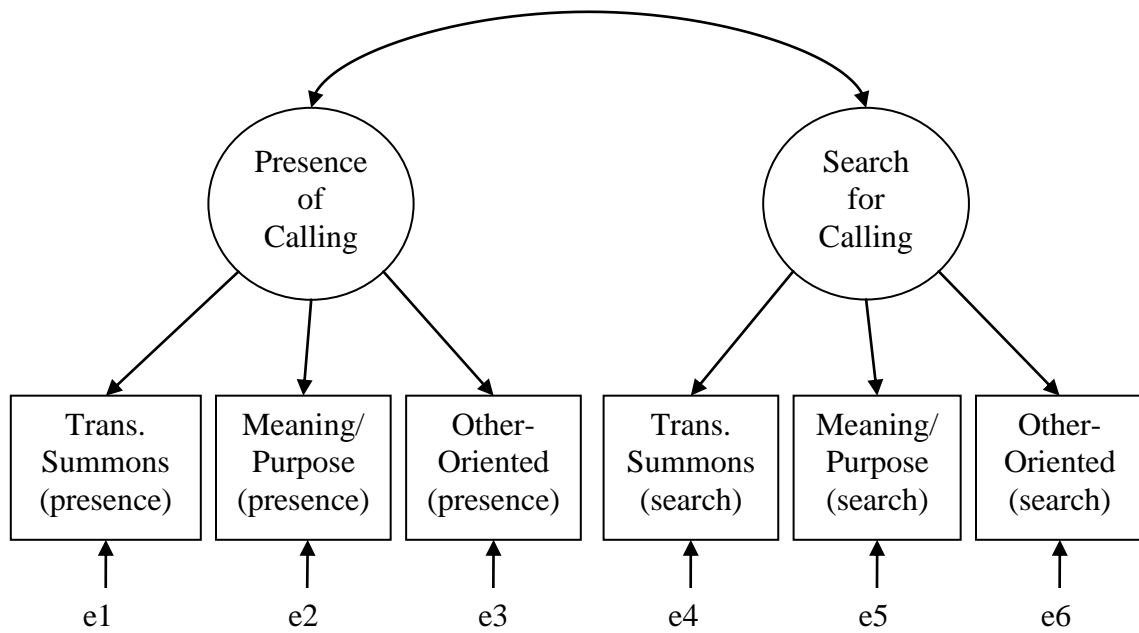*Figure 2*. The structure of interests according to the RIASEC model.
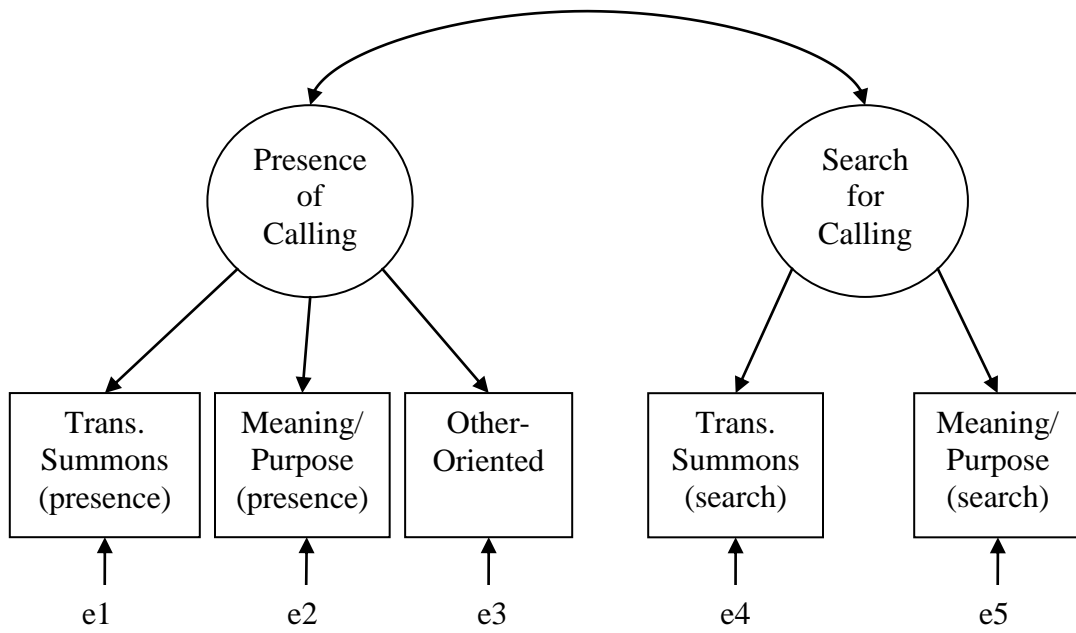
Figure 3. The proposed measurement model for the CVQ.

Figure 4. The revised measurement model for the CVQ.