

THE ROLES OF VOCATIONAL INTERESTS AND GOAL ORIENTATION IN THE
PARTICIPATION IN AND APPLICATION OF CONTINUING PROFESSIONAL
EDUCATION: A PERSPECTIVE FROM THE HEALTHCARE INDUSTRY

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ABSTRACT

THE ROLES OF VOCATIONAL INTERESTS AND GOAL ORIENTATION IN THE PARTICIPATION IN AND APPLICATION OF CONTINUING PROFESSIONAL EDUCATION: A PERSPECTIVE FROM THE HEALTHCARE INDUSTRY

by Valerie A. Johnson

This study examined the relevance of vocational interest theory and goal orientation (GO) theory in predicting the perceptions, engagement, and application of continuing professional education for a variety of healthcare professionals ($N = 183$) that spanned physicians, nurses, and allied health professionals. The study was conducted using a survey, and hospitals and state-wide healthcare organizations located in the Midwest United States were sent requests for participation.

Results were analyzed using Pearson correlation coefficients and regression analyses, and mediation effects were examined using Sobel and bootstrapping tests as well as Baron and Kenny's (1986) method. The results indicated that vocational interests positively predicted the number of courses and hours of participation in continuing education beyond what was required for professionals to maintain their licensure/certification to practice. In addition, the congruence between individuals' respective vocational interests and professions predicted the application of what was learned in continuing education at work.

GO was also an effective predictor of continuing education in that a mastery GO positively predicted both additional participation in and application of continuing education, a performance-approach GO positively predicted only additional participation, and a performance-avoid GO negatively predicted participation in and application of continuing education. Most interestingly, it was found that a mastery GO mediated the relationship between vocational interests and participating in additional continuing education. The implications of the current

study's findings and the potential usefulness of vocational interests and GO in regard to professional continuing education indicate that vocational interest theory and GO theory are important in predicting how healthcare professionals engage in and apply continuing professional education.

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CHAPTER I

INTRODUCTION

One of the primary ways in which vocational interests have been examined is through person-environment (P-E) fit. Person-environment (P-E) fit is the extent to which an individual and their environment match. Generally speaking, the P-E fit of employees and their workplaces has been constructed around two primary types of fit: supplementary and complementary. That is, supplementary fit emphasizes the degree to which an individual is similar to other people who comprise an organization, and complementary fit emphasizes the degree to which an individual adds something of value to the organization that it needs (Muchinsky & Monahan, 1987).

In line with these two primary concepts of fit, P-E fit also has been divided into several subcategories of fit including person-vocation (P-V) fit, person-job (P-J) fit, person-organization (P-O) fit, person-group (P-G) fit, and person-individual (P-I) fit (e.g., how well someone is matched with their supervisor). P-O and P-I fit are usually studied as supplementary because they focus on the match of individuals' personal attributes (e.g., values) with those of other individuals or organizations. P-V and P-J types of fit, on the other hand, are considered to be complementary in that they focus on a match between individuals' needs or abilities with what an organization provides or demands. Finally, P-G fit can be considered either supplementary or complimentary, depending on the traits of an individual to that of their group (cf. Edwards, 2008; Kristof, 1996; Kristof-Brown & Guay, 2011; Kristof-Brown, Zimmerman, & Johnson, 2005).

Holland's (1997) theory of vocational choice is considered to be a P-V type of fit (Kristof, 1996). This theory posits that both individuals and work environments can be organized into six different categories that represent individuals' interests and abilities as well as the types

of tasks that dominate a work environment. Fit, then, is determined by how closely a person's type matches the type of the environment, with the ideal fit being that both types are the same.

The current study pulls together research on Holland's P-E fit theory in relation to individuals' engagement and learning in both academic and work contexts in order to postulate how P-V fit could be used to predict the motivational processes that employees utilize in their work. Specifically, it is proposed that employees will adopt different GOs (motivational processes) toward their work depending on how congruent their types are with their respective work environments, and that those goal orientations are related to the employees' use of work-related continuing education.

CHAPTER II

LITERATURE REVIEW

Holland's P-E Fit Theory

Conceptualization

Holland's (1997) vocational interest theory (also called RIASEC theory) posits that individual interests as well as work environments can be categorized as one of six types: Realistic, Investigative, Artistic, Social, Enterprising, or Conventional. Realistic types prefer working with practical, structured tasks that often involve the use of machines/tools. Investigative types prefer to work with ideas and abstract tasks that require more intense problem-solving skills. Artistic types prefer to work creatively in ways that include self-expression. Social types prefer working with others on interpersonal tasks. Enterprising types prefer working with others as a leader/director. Conventional types prefer to work with data in a systematic and structured way. Each of these types, then, can also be used to describe a work environment by the majority type of tasks it poses. For instance, the majority of the tasks required in an investigative environment would be primarily unstructured, abstract problems that required more thought-intensive solutions.

Vocational behavior, then, is posited to be predicted from the fit between an individual's type and their work environment. Specifically, aspects of behavior such as persistence, achievement, and satisfaction at work can be predicted by how well individuals' types and their respective environments match. As each type has similarities and differences with the other types, they have been organized onto a hexagonal diagram that depicts their relation with each

other (commonly referred to as Holland's RIASEC model; 1997) (see Figure 1). Congruence is used to describe how well individuals' interests match with their respective work environments.

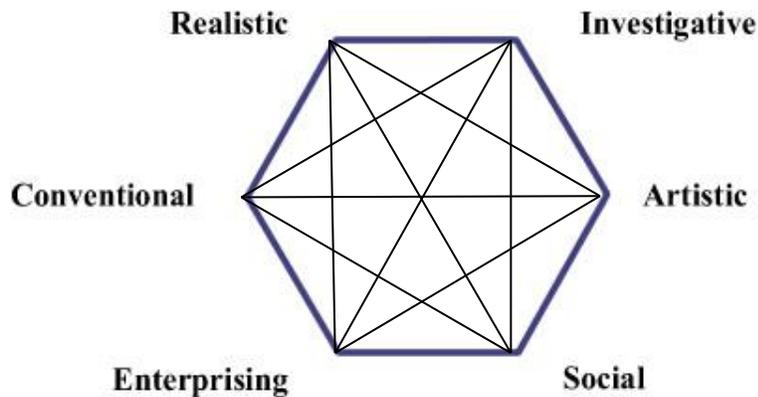


Figure 1. *Holland's (1997) RIASEC Model*

The model implies, for example, that a Realistic type is more similar to Investigative and Conventional types, less similar to Artistic or Enterprising types, and least similar to a Social type. The best match for those with Realistic interests would be in a Realistic environment where they could work most on tasks that appeal to them and for which they had the abilities to complete successfully. The worst match, then, would be for those with these interests to be in a Social environment where they would have to deal with tasks they did not prefer as well as be required to use abilities they did not possess. Support for the use of this model is shown in validation tests that have been conducted across different population groups accounting for differences such as gender, ethnicity, and employed versus student groups (e.g., Armstrong, Hubert, & Rounds, 2003; Gupta, Tracey, & Gore, 2008; Kantamneni & Fouad, 2011).

Interests and Self-Efficacy

Holland (1997) proposed that the development of individuals' RIASEC interests is the result of an interaction of activities, interests, and competencies. It begins with involvement in

activities, which can then lead to both interests and competencies. If interest develops for certain activities, this can lead to further attraction to and engagement in those activities, further developing competence. Similarly, the more competent an individual becomes, the more likely they will be interested in those activities and will seek them out. Thus, these three aspects (competence, interest, and activity-seeking) are reciprocally and continuously related. The reverse is also true in that if interests do not develop from activities, those activities will not be sought out, resulting in competencies for those activities not being developed. Likewise, if the individual does not possess competence in certain activities, they will not only be uninterested in them but they will also actively avoid them (Gottfredson, 2002). Although self-efficacy is not mentioned in Holland's (1997) model of interest development, it is related to competence (part of Holland's theory; Gottfredson, 2002), in that it is considered to be the recognition of and belief in one's own competence in a specific area.

Fairly recently, arguments have even been made that Holland's RIASEC model could be used as an alternative to social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) (Armstrong & Vogel, 2009; 2010). SCCT (Lent et al., 1994) is based on social cognitive theory (SCT; Bandura, 1986) and proposes that self-efficacy—developed through learning experiences—predicts vocational behavior directly as well as indirectly through outcome expectations and interests. However, given the evidence of a reciprocal relationship between interests and self-efficacy (Nauta, Kahn, Angell, & Cantarelli, 2002; Tracey, 2002), a modified SCCT model was developed that depicted a direct reciprocal relationship between self-efficacy and interests. Thus, interests and self-efficacy (or competence) co-occur. Armstrong and Vogel (2009; 2010) argued that due to this reciprocal relationship, a RIASEC type could be used to replace the variables of interest and self-efficacy (as the RIASEC type is the result of these

reciprocally-related variables) and that type would then, in turn, directly predict outcome expectations as well as vocational behavior. Correspondingly, both interests and self-efficacy are captured in Holland's (1994) *Self-Directed Search* (Gottfredson, 2002). This aspect of RIASEC theory is important to the current study as both the variables of interest and self-efficacy are significantly related to goal orientation and will be discussed in more detail later.

RIASEC Theory in the Work Environment

RIASEC theory is thought to predict behavior by motivating the choices individuals make regarding the amount of involvement and effort they put into certain tasks and activities (Ackerman & Heggestad, 1997; Holland, 1997; Mount, Barrick, Scullen, & Rounds, 2005; Sullivan & Hansen, 2004). In relation to the work environment, this can mean that individuals will be drawn to and persist in work that reflects their abilities and interests. The following sections will review the research conducted regarding congruence and its relation to job performance via its link with knowledge and abilities as well as its influence on individuals' engagement in and commitment to their work.

Performance. One of the more recent studies examining the relation of P-E fit and job performance was conducted by Van Iddekinge, Putka, and Campbell (2011). The authors examined the role of RIASEC interests in predicting types of knowledge possessed by U.S. soldiers as well as their job performance and continuance intentions. Interestingly, the least supported type in this environment (artistic) had direct and significant negative relations with not only technical and interpersonal knowledge, but also overall job performance. Although their hypotheses of realistic and social types being directly and positively related to job performance (as the job of U.S. soldier is strongly comprised of both realistic- and social-typed tasks) were mostly unsubstantiated by their findings, they did find corresponding links of types with job

knowledge. That is, realistic types possessed more technical knowledge, and social types possessed more interpersonal knowledge. Both types of knowledge, in turn, were positively related to job performance. From this, the authors suggested that "...interests are likely to have the strongest and most direct effect on performance determinants such as knowledge and skills" (Van Iddekinge et al., 2011, p. 27).

This could be a possibility, considering other research conducted linking RIASEC theory with knowledge and abilities. In terms of the links found between interests and abilities, research has indicated that Realistic interests are related to numerical, mechanical, nonverbal, and spatial reasoning, perceptual speed, form perception, and manual dexterity; investigative interests are related to abilities in critical thinking, perceptual speed, form perception, and spatial, verbal, numerical, and mechanical reasoning; artistic interests are related to abilities in music, verbal reasoning, and motor coordination; social interests are related to interpersonal and motor coordination abilities; enterprising interests are related to leadership abilities; and conventional interests are related to numerical reasoning abilities (Ackerman, Kanfer, & Goff, 1995; Lowman & Ng, 2010; Lowman, Williams, & Leeman, 1985; Randahl, 1991).

In addition to abilities, vocational interests have also been connected to different types of knowledge individuals possess. In an academic setting, Rolfhus and Ackerman (1996) found that student interests were significantly related to different types of knowledge students thought themselves to possess. That is, Realistic interests were related to self-reported knowledge in math, physical science, and technology subjects; Investigative interests were most strongly related to math, physical science, and non-people-oriented bio-social science (e.g., ecology) subjects; Artistic interests were related to arts and humanities subjects; Social interests were most strongly related to people-oriented bio-social sciences (e.g., psychology) and interpersonal-

oriented humanities (e.g., theater) and social science (e.g., education) subjects; Enterprising interests were most strongly related to economics subjects as well as societal-based bio-social (e.g., sociology) and social science (e.g., political science) subjects; and Conventional interests were most strongly related to economics subjects. When the authors later examined interests in relation to tested knowledge, they found similar results. That is, Realistic interests were related to knowledge in math- and technology-oriented sciences and mechanical subjects; Investigative interests were most strongly related to knowledge in science subjects; and Artistic interests were most strongly related to knowledge in humanities subjects (Rolfhus & Ackerman, 1999).

Other research examining RIASEC theory and job performance also indicate a relation of interests with knowledge and abilities with findings linking P-E fit with these aspects of job performance. For instance, Fritzsche, Powell, and Hoffman (1999) focused on the job performance aspects of conduct, quality, and productivity of a customer service representative. They found that although neither conduct nor productivity was significantly related to congruence, quality (which encompassed the variables of job knowledge, communication skills, and error rates) was positively related. Another study by Meir and Navon (1992) examined the congruence of bank tellers in two different types of banks whose positions varied somewhat: one bank dealt primarily with other businesses (typed CE) and the other bank catered mainly to individuals with personal accounts (typed CS). Both types of tellers who were more congruent with their respective positions had higher performance ratings as well as higher overall ratings of their work than did incongruent tellers. Additionally, congruent tellers in the CS-typed position also received higher ratings in their interpersonal relations with customers, which makes sense considering the social aspect of their interests and the environment.

Further evidence of this possibility can be seen in that although links between P-E fit and productivity on the job have been somewhat dubious (Fritzsche et al., 1999; Heesacker, Elliot, & Howe, 1988), a more promising relation has been found when productivity included a stronger knowledge/skills component. For instance, a longitudinal study by Richards (1993) examined the career path of a group of population scientists. He found that congruence between scientists' types and the field of population science related significantly with productivity in that congruent scientists had more active participation in national population association conferences as well as held more authorships and editorial consultantships in main population science publications than incongruent scientists. As knowledge is such a major component of this field to the point that one's productivity tends to be measured by the development and publication of it, it may be the reason there were direct congruence links found; whereas with other jobs that didn't contain a strong knowledge/skills component to aspects of productivity, the findings were less promising.

Engagement and commitment. More evidence that congruent individuals not only possess but also exercise knowledge and abilities that are important aspects of job performance can be seen in research that examines how they engage in their work. Some of this evidence comes from research examining RIASEC interests and job involvement (i.e., psychological identification with one's job, Kanungo, 1982).

Gottfredson and Holland (1990) examined the congruence of individuals who held the position of bank teller. They found that congruent individuals were more likely to report that their position allowed them more opportunities to utilize their competencies and they were also more likely to report higher levels of job involvement than incongruent individuals. A more diverse sample of employed adults in various occupations was examined by Dik and Hansen (2011). Their findings also found a positive relation between congruence and job involvement.

Professional commitment (i.e., commitment to one's work) has also been shown to be related to RIASEC interests. Aranya, Barak, and Amernic (1981) examined the professional and organizational commitment of accountants in the U.S. as well as Canada in relation to their P-E fit. As accountants tend to be typed according their respective areas of specialization (e.g., taxes, property, business consulting) the types tend to vary somewhat. However, the primary code remains fairly consistent as conventional. In terms of fit and commitment, a primary type of conventional was positively related to professional commitment for both samples and was also positively related to organizational commitment for the U.S. sample. Conversely, a negative relation existed with professional commitment for both groups when they had a primary type of artistic (least suitable of all types for accounting).

In addition to congruent individuals engaging and committing themselves more deeply in their work, there is also evidence of active attempts to further develop their professional competencies. For instance, De Fruyt (2002) examined employed college graduates in various professions one year after their graduation. They found that congruence between individuals' types and their work environments positively predicted skill development. That is, individuals who were more congruent with their chosen professions were more likely to report making efforts to improve their performance and skills than incongruent individuals.

In sum, there is a decent amount of evidence of the relation between individuals' knowledge and abilities and RIASEC fit in terms of job performance indicators. This relationship is further evinced in that those who are congruent with their work environments are more likely to not only utilize their knowledge and skills in ways that enhance job performance but they are also more likely to engage themselves more deeply and be more committed to their work and improving their knowledge and abilities. Because of this focus on using and developing abilities,

another form of motivation—namely, goal orientation—may be related to the way in which congruent and incongruent individuals approach their work.

Goal Orientation Theory

Conceptualization

Goal orientation (GO) is considered to be the manner in which individuals pursue goals in an achievement context. The concept originated with a focus on how children approached learning tasks in an educational environment and consisted of learning (mastery) and performance orientations (Dweck, 1986; Nicholls, 1984). That is, individuals who adopted a mastery GO approached tasks with the intention of enhancing their own abilities, knowledge, and skills. Those who adopted a performance GO, on the other hand, approached tasks with the intention of gaining favorable judgments and avoiding failure.

As GO became more prevalent in the research literature, focus moved away from younger children and toward college-aged students as well as adults in work organizations. During this time, the concept of GO underwent a change from a 2-dimension framework to a 3-dimension framework. As a performance GO encompassed both the desire for favorable judgments and the avoidance of failure, this dimension was split into two separate dimensions: performance-approach and performance-avoid. A performance-approach GO was considered to be an orientation of demonstrating competence and gaining favorable judgments from others, whereas a performance-avoid GO sought to avoid failure and negative judgments from others (Elliot & Harackiewicz, 1996; VandeWalle, 1997).

The most recent change to this theory has been the introduction of one more dimension, transforming the 3-dimension construct into 4-dimensions. Mastery-avoid GO was introduced as

a second avoidance type of GO (Elliot & McGregor, 2001). But instead of being focused on the avoidance of failure due to not wanting unfavorable judgments, those with a mastery-avoid GO want to avoid failure that would be the result of inadequate knowledge, skill, or ability. They want to know/learn everything they possibly can and fear not learning enough or losing knowledge or ability and would result in them performing less well on a task. As this last dimension is fairly new and research is still being gathered for it, the current study will focus on a 3-dimension construct of GO: mastery, performance-approach, and performance-avoid.

Linking GO and Interest with Performance and Performance-Related Behaviors

The person aspect of P-E fit in RIASEC theory includes the person's interests, and there has been a good deal of research conducted on the role of interest in relation to GO. Research on the relationship between these variables has examined its role in both job and academic contexts. The findings of interest and GO in job performance most commonly relate to how individuals engage themselves in their work in an attempt improve their own knowledge and abilities which, in turn, improves their performance. Other research has also examined this link and its relation with learning in academic contexts.

Work-related behaviors. In terms of job performance, although the literature relating interests to GO and job performance is scarce, a recent article examined how the adoption of different GOs of school teachers was related to variables such as an interest in teaching and instructional practices (Retelsdorf, Butler, Streblow, & Schiefele, 2010). The authors found that teachers who had a mastery GO towards their work were more likely to have an interest in teaching and foster a classroom environment that both encouraged and challenged students to learn; whereas neither a performance-approach nor avoid GO was significantly related to an interest in teaching. However, there was some evidence that teachers with higher levels of

performance- approach and avoid GOs were more likely to foster a classroom environment that encouraged competitiveness and the importance of grades.

Another study by Capa-Aydin, Sungur, and Uzuntiryaki (2009) examined teacher performance in terms of their self-regulation. They also found that an interest in teaching positively predicted a mastery GO but was unrelated to a performance-approach GO. Further, both interest and a mastery GO were positively related to all forms of teaching self-regulation that were tested which included goal setting, self-instruction (e.g., adapting instructional style to different classroom demands and situations), emotional control, self-evaluation, self-reaction (e.g., reactive to instructional performance), and help-seeking. However, a performance-approach GO was only positively and weakly related to two forms of self-regulation: self-reaction and help-seeking.

Learning performance. The majority of the research on the role of interest and GO in learning has focused on how the adoption of different types of GOs can affect individuals' levels of situational interest (i.e., short-term interest that is spurred by the environment outside the individual; Hidi, 1990). However, there has also been some focus on how individual interest (i.e., long-standing, trait-like interest held by an individual; Hidi, 1990) can affect individuals' adoption of a GO.

Research on interest and GO that more closely examines their influence on learning tends to focus on how students learn by the grades they earn as well as how they engage themselves in studying. Further, it is suggested that the adoption of a mastery GO versus a performance-approach or avoid GO will predict interest in certain topics. For instance, Harackiewicz, Barron, Tauer, Carter, and Elliot (2000) found that undergraduate students in an introductory psychology class who reported a mastery GO were more likely to report interest in the topic of psychology as

well as enjoyment of the class (intrinsic motivation). Although a mastery GO did not directly predict either class academic performance or semester GPA (whereas a performance-approach GO positively predicted both), it did predict interest in psychology which, in turn, predicted not only the grade for the class but also the number of subsequent psychology courses taken (whereas a performance-approach GO was unrelated to either an interest in psychology or the number of subsequent psychology courses taken). Further, those with a mastery GO were more likely to engage in deeper learning strategies (e.g., elaboration) whereas those with a performance-approach GO were more likely to engage in more shallow learning strategies (e.g., simple memorization). Finally, students with an avoid GO were less likely to be interested in psychology and more likely to report lacking any type of learning strategy.

Harackiewicz, Barron, Tauer, and Elliot (2002) later extended these findings by examining the same students throughout the rest of their undergraduate career. Their findings of the relations between GO and academic performance, interest, and subsequent psychology courses taken over the span of four years were similar to their previous findings (Harackiewicz et al., 2000). In addition to these variables, the authors also included choice of major. In doing so, they found that those with a mastery GO were also more likely to major in psychology, whereas neither a performance-approach nor avoid GO was related to choosing a psychology major.

Fairly recently, focus has turned more toward the role of an initial (individual) type of interest students possess when they first enroll in a course. Harackiewicz, Durik, Barron, Linnenbrink-Garcia, and Tauer (2008) examined the role of initial interest in the adoption of a GO as well as in the further development of interest. In doing so, the authors found that initial interest positively predicted adopting a mastery GO, was unrelated to adopting a performance-approach GO, and negatively predicted adopting a performance-avoid GO. Further, those who

had higher levels of initial interest were also more likely to hold positive feelings toward and personally value the course material. They were also more likely to react positively to course lectures due to their increased likelihood of adopting a mastery GO (a mastery GO directly predicted both valuing course material as well as positive reactions to lectures). Additionally, initial interest also positively predicted the number of subsequent psychology courses taken as well as a major in psychology.

Hulleman, Durik, Schweigert, and Harackiewicz (2008) also examined initial interest of undergraduate students in yet another introductory psychology course. However, this study also integrated utility (i.e., relevance to other aspects of life outside of course) and intrinsically rewarding value. Similar to the previously mentioned studies, an initial interest in psychology predicted a mastery GO, but contrary to previous findings interest also positively predicted a performance-approach GO (although the relation was considerably weaker). Further, they found students with higher levels of a mastery GO and initial interest in psychology were also more likely to hold both intrinsic and utility values for what they were learning, whereas a performance-approach GO was unrelated to holding either type of value for the course topic.

Lastly, a qualitative study by Horowitz (2010) examined the academic interests of a group of pre-med students and whether or not interests they held for particular subject areas influenced their GOs for courses in those subjects. A primary interview question asked these students which courses they chose knowing they would be more challenging but took them specifically because of their interest in them. Horowitz's (2010) findings indicated that interest was indeed an indicator of the type of GO students would adopt in that if they were particularly interested in a subject area, they tended to adopt a mastery GO and focus most on what it was they could learn from that class. But if they were not really interested in the subject and only

took a course because they were required to do so, they tended to have a more extrinsic focus (one particular aspect of performance GO) on how they would be graded.

In addition to the findings of initial interest predicting GO in the classroom, a laboratory study found similar relations in task performance. In their experiment, Barron and Harackiewicz (2001) gave undergraduate participants the activity of learning a new technique to solve math problems. In doing so, they first assessed participants' initial interest in math as well as the GO they intended to use. Interestingly, they found that initial interest in math positively predicted both mastery and performance GOs. However, only a mastery GO predicted interest and engagement in the activity, whereas a performance-approach GO predicted the number of problems solved in the allotted time period.

Linking GO and Self-Efficacy with Performance and Performance-Related Behaviors

The other key aspect of RIASEC theory that has also been linked with GO is self-efficacy. Self-efficacy has been linked to GO as both an antecedent and outcome of GO (Payne, Youngcourt, & Beaubien, 2007). Similar to the research conducted with interest and GO, research on self-efficacy and GO has also examined and found links with the extent to which individuals engage in their work and also how well they learn via work-related training.

Work-related behaviors. Different GOs have been shown to be differentially related to performance outcomes. Generally speaking, both mastery and performance GOs have positively related to job performance (Payne et al., 2007). And although there is scarcer evidence of a relation between a performance-avoid GO and job performance, there has been indication of a negative relationship (Porath & Bateman, 2006). However, more differences arise among the types of GOs when researchers look more closely at specific job behaviors individuals engage in when adopting different GOs.

That is, occupation-typed self-efficacy in particular has been linked with GO in relation to several kinds of behaviors that individuals will engage in at work. Some of this research has focused on the manner in which employees engage in work activities. For instance, Sujan, Weitz, and Kumar (1994) examined the job performance of salespeople in relation to a mastery and performance GO. They found self-efficacy in sales to be positively related to a mastery GO and unrelated to a performance GO. Further, a mastery GO positively predicted how hard individuals worked (via their persistence in work tasks and hours spent working) as well as their use of strategies and the adaptability of their selling approaches, whereas a performance GO positively predicted how hard individuals worked but only if they also had higher levels of self-efficacy.

Other research has shown evidence of employees actively learning on the job as a way to improve their performance. Runhaar, Sanders, and Yang (2010) utilized an occupation-typed self-efficacy when examining how a group of post-secondary teachers engaged in learning on the job. The authors also found a positive relationship between self-efficacy and a mastery GO. A mastery GO, in turn, positively predicted teachers' level of reflection (i.e., self-regulation of their teaching behaviors and how they could improve them) as well as how often they sought feedback on their performance from students and other faculty.

Other job performance-related behaviors have also been detected. Chen, Gully, and Eden (2004) examined customer service representatives and claim examiners in a health maintenance organization and also found an occupation-typed self-efficacy to be positively related to a mastery GO. A mastery GO, in turn, was positively related to constructive workplace behavior such as interpersonal facilitation and job commitment (e.g., working overtime to complete job-related tasks). Another finding included the variable of role ambiguity at work (Li & Bagger, 2008). It was found that an occupation-typed self-efficacy positively related to a mastery GO but

was unrelated to a performance- approach or avoid GO. Those with a mastery GO, in turn, were less likely to report experiencing role ambiguity at work.

Learning performance. In the training literature, there has been a good deal of research on self-efficacy beliefs and GO in terms of learning. Self-efficacy has been found to be both an antecedent and outcome of GO. For instance, Gerhardt and Brown (2006) examined both pre- and post-training self-efficacy for a group of undergraduate students who participated in a self-management training program. They found that students with higher levels of self-efficacy were more likely to adopt a mastery GO as well as report higher levels of post-training self-efficacy. However, both pre- and post-training self-efficacy were unrelated as either an antecedent or outcome of a performance GO. In addition to the direct relation of self-efficacy and GO, other aspects of training have also been linked with both of these variables such as use of learning strategies, training performance, learning outcomes, and application of training.

In terms of the types of learning strategies utilized in training, two studies examined trainees' metacognitive activity (i.e., self-regulated learning) as well as how much time they spent practicing training tasks. Ford, Smith, Weissbein, and Gully (1998) examined trainees' performance in a laboratory training task. Both a mastery GO and self-efficacy were positively related to the level of metacognitive activity that individuals engaged in while training, whereas a performance GO was unrelated to metacognitive activity. Orvis, Horn, and Belanich (2009) found similar relations when examining the usefulness of using videogames to train U.S. soldiers. As they used two separate dimensions to assess a performance GO (performance-approach and avoid), they found self-efficacy positively predicted a mastery and performance-approach GO and was unrelated to a performance-avoid GO. However, only a mastery GO predicted the level of metacognitive activity individuals engaged in while training. Further, they

found a negative relation between a performance-avoid GO and the amount of time individuals spent practicing training tasks.

In terms of training performance and learning outcomes, Dierdorff, Surface, and Brown (2010) investigated adults enrolled in a training program to teach a foreign language. They found that self-efficacy for learning positively predicted a mastery GO, negatively predicted a performance-avoid GO, and was unrelated to a performance-approach GO. Further, GO had significant relationships with training performance and outcomes. Specifically, a mastery GO positively predicted both training performance and application, whereas a performance-approach GO positively predicted learning outcomes but was unrelated to training application. Lastly, a performance-avoid GO was negatively related to both learning outcome and application.

Finally, in applying what is learned in training, Tziner, Fisher, Senior, and Weisberg (2007) examined male employees working in a power company who attended a company training program. Transfer of training was measured by supervisors' ratings of the extent to which employees applied what they learned in training to their work. Self-efficacy positively predicted a mastery GO and negatively predicted a performance GO. GO, in turn, predicted transfer of training in that those who reported having a mastery GO in training received higher supervisor ratings. Conversely, a performance GO was inversely related to supervisor ratings.

CHAPTER III

HYPOTHESES

The Present Study

Van Iddekinge et al. (2011) proposed that RIASEC interests are related to job performance primarily through the knowledge and abilities associated with each type. Due to their and others' findings of RIASEC congruence with the knowledge/abilities aspect of job performance, it is suggested that P-E fit may predict the likelihood of individuals engaging in certain motivational processes that facilitate utilizing and developing their knowledge and abilities in their respective work environments. Specifically, as a person's interests and competencies will lead them to either be attracted to or avoid certain activities depending on whether or not those activities are congruent with their interests and feelings of self-efficacy, these factors will, in turn, be related to the manner in which they approach typical situations and tasks at work, including GO. Therefore, the level at which an individual is congruent with their work environment will predict the type of GO they adopt.

This study attempted to contribute evidence to the idea that vocational interests could be useful as selection tools in the workplace, especially for those in which professional knowledge and abilities are important aspects of performance. There is evidence that RIASEC congruence predicts work-related behaviors such as job commitment, further development of skills/abilities, job involvement, and job performance. Recent evidence has shown a more specific type of relationship that interests have with performance in that different interests are related to congruent types of knowledge and abilities which, in turn, predict performance in environments where they are most useful. Additional evidence for the relationship between vocational interests and performance will be shown by further expounding on how individuals approach their work

by indicating the types of work behaviors (i.e., motivational processes) they engage in that serve to further develop their knowledge and abilities and contribute to performance.

As Van Iddekinge et al. (2011) suggested that the link between interests and knowledge and abilities may be most evident in a work environment in which continuing education and training was a must in order to keep up with constant change, the vocational field chosen was healthcare. This is an environment that undergoes continuous change in order to keep up with a persistent influx of medicinal knowledge, technology, procedures, and even laws (American Medical Association Council on Long Range Planning and Development, 2011). Because of this constant demand, continuing education and training is an absolute must for any and all healthcare professionals who treat patients in order to maintain their licensure/certification to practice. This study took into account the relation of the congruence of RIASEC interests and the type of GO individuals adopt in two ways: 1) how they approach everyday work tasks in general, and 2) their attitudes toward continuing education relevant to their field.

Holland (1997) described the development of RIASEC interests involving activities, interests, and competencies as continuing throughout an individual's lifetime. So, when in the workforce, individuals who are in environments that are congruent with their interests are more likely to engage themselves in their work, as its tasks capture their interest and allow them to utilize their competencies. This, in turn, serves to further develop both individuals' interests and competencies. Evidence of this can be seen in the P-E fit literature described in the previous sections indicating higher levels of engagement and performance for those who are more congruent with their environment. As Holland's (1997) theory emphasizes that better job performance is due to the level at which congruent individuals engage in their work, other research (e.g., Gottfredson & Holland, 1990) has also shown further support indicating congruent

individuals tend to show more involvement and commitment to their work as well as have more interest in further developing their abilities than incongruent individuals.

Congruence and Mastery GO

GO may be tied to how congruent/incongruent individuals engage in their work. Like Holland's P-E fit, which emphasizes the reciprocal relationship and continual development of individuals' interests and competencies, both of these factors have also been shown to be antecedents and outcomes of GO. For instance, for undergraduate students, initial interest in certain topics has been shown to predict further interest development both directly and indirectly through GO when those students were attending a class that focused on their topic of interest (Harackiewicz et al., 2008; Hulleman et al., 2008). For employees, interest has been shown to be directly and indirectly related through GO to the level at which they engage themselves in their work and further develop their competencies (Capa-Aydin et al., 2009; Retelsdorf et al., 2010).

Self-efficacy has also shown a similar relationship with GO. That is, self-efficacy has been related to the development of further self-efficacy, both directly and indirectly, through GO in training situations involving undergraduate students (Gerhardt & Brown, 2008) as well as employees (Dierdorff et al., 2010). Further, self-efficacy has also shown relationships with the level at which individuals engage in behaviors that are conducive to job performance (Chen et al., 2004; Sujan et al., 1994) as well as their attempts to further develop their competencies (Runhaar et al., 2010) through the GO they adopt.

Based on the theoretical and empirical evidence given, it is posited that the more congruent a person's type is with their corresponding work environment, the more likely they are to fully engage in situations that will allow them to not only utilize their knowledge and skills but also further develop them. Especially in an environment that experiences frequent change

and emphasizes the need for continual learning, it is suggested that individuals who are more congruent with their environment will be more deeply engaged in their work as it reflects their interests and competencies, and they will also be more interested in further developing their knowledge and skills. Because of this, congruent individuals will be more likely to adopt a mastery GO toward their work.

H₁: The congruence of individuals' vocational interests and their work environments will be positively related to the adoption of a mastery GO.

Congruence and CE

It is also posited that both congruence and GO will be related to how individuals perceive, participate in, and apply the material presented in continuing education (termed CE). That is, as RIASEC fit predicts the level of engagement in and the further competency development of individuals who are congruent with their environment, it is posited that congruent individuals will be more likely to engage in CE activities to the extent that they will view them more positively, participate in them more actively, and apply what is learned from them more frequently than incongruent individuals.

One issue with attempting to predict the number of CE hours a person will complete beyond what requirements is that there may not be adequate variance in the number of courses or hours participants take in order to compare it with any other variable. That is, participants may only take what they are required or just a small amount more. However, there has been some research that suggests intrinsic motivation may play a larger part in predicting interest and participation in CE, which suggests that many healthcare professionals may take more than the minimum. For instance, a desire to improve one's knowledge/competency has been shown to consistently predict participation in CE for physicians (Bower, Choi, Becker, & Girard, 2007;

Freed, Dunham, & Althouse, 2011), nurses (Lee, Tiwari, Hui Choi, Yuen, & Wong, 2005; Prater & Neatherlin, 2001), and other allied health professionals (Tassone & Heck, 1997).

Looking more closely into some of these studies, Lee et al. (2005) found a decent amount of variance in their sample regarding the actual number of CE hours nurses took when participation was voluntary (i.e., CE was not required for relicensure) in that about 21% took between 0-30 hours, about 20% took between in 31-45 hours, and about 59% took over 45 hours within three years. Prater and Neatherlin (2001) also found a positive relation between a positive attitude toward CE and participants' being motivated to take more hours than were required.

H_{2a}: The congruence of individuals' vocational interests and their work environments will be positively related to the perceived usefulness of CE.

H_{2b}: The congruence of individuals' vocational interests and their work environments will be positively related to their participation in CE beyond requirements.

H_{2c}: The congruence of individuals' vocational interests and their work environments will be positively related to how frequently they apply CE.

Mastery GO as a Mediator between Congruence and CE

A mastery GO will also have a relationship with these three CE outcomes. GO influenced by both interest and self-efficacy has been related consistently and strongly with learning. That is, a mastery GO influenced by interest has been positively related to self-regulated learning in professional contexts (Capa-Aydin et al., 2009) as well as engagement in and the pursuance of areas of study in academic contexts (Horowitz, 2010; Harackiewicz et al., 2008). Additionally, a mastery GO influenced by self-efficacy has been related to engagement in (Ford et al., 1998; Orvis et al., 2009) and application of training to actual work (Tziner et al., 2007).

As it is posited that congruent individuals will be more likely to engage in processes that facilitate the utilization and further development of their interests and competencies, and a mastery GO has shown consistent relationships with engagement in learning in both work and academic contexts, the adoption of a mastery GO may be responsible for the relationship congruence has with the CE outcomes. That is, congruent individuals will be more likely to adopt a mastery GO toward their work that will, in turn, result in their engagement in learning.

H_{3a}: A mastery GO will mediate the relationship between individuals' congruence and the perceived usefulness of CE to their work.

H_{3b}: A mastery GO will mediate the relationship between individuals' congruence and the number of CE courses and hours taken beyond what is required.

H_{3c}: A mastery GO will mediate the relationship between individuals' congruence and how frequently they apply CE to their work.

Congruence and Performance-Approach GO

Unlike a mastery GO, a performance-approach GO has shown differential relationships with engagement and learning indices in both job and academic contexts. Although a performance-approach GO has been positively related to performance (Payne et al., 2007), there have been generally less favorable findings with engagement and learning. For instance, in an academic context, a performance-approach GO adopted by students in certain classes has been positively related to grades and GPA; however, it has also been positively related to shallow learning strategies and unrelated to the enjoyment, valuing of course material, and pursuance of further study in classes related to the course topic for which they adopted their GO (Harackiewicz et al., 2000; Harackiewicz et al., 2002; Harackiewicz et al., 2008; Hulleman et al., 2008). In a job context, a performance-approach GO has been found to be related to fewer and

more shallow forms of self-regulation (Capa-Aydin et al., 2009) and unrelated to engagement in strategic thinking in performing work (Sujan et al., 1994) or engagement in metacognitive activity in work-related training (Orvis et al., 2009).

In addition to the general findings of a performance-approach GO being unrelated to engagement in or learning in academic or job contexts, the variables of interest and self-efficacy have shown varying relationships with this type of GO. For instance, in a job context, the level of interest one has in their work has been shown to be unrelated to either a two-dimension (mastery and performance GO) or three-dimension (mastery, performance-approach, and performance-avoid GO) version of performance goals (Capa-Aydin et al., 2009; Retelsdorf et al., 2010). Additionally, in a learning context, the level of interest one initially has in a topic of study or eventually develops by engaging in it (i.e., being in the class that focuses on the topic) was also shown to be unrelated to a performance-approach GO (Harackiewicz et al., 2000; Harackiewicz et al., 2002; Harackiewicz et al., 2008).

Interestingly, self-efficacy has had a more mixed relationship with performance goals. In relation to job performance, there has been indication of a nonsignificant relationship between job-typed self-efficacy and a two-dimension version of performance goals (Sujan et al., 1994). However, when performance goals are split creating a three-dimension framework and an occupation-typed self-efficacy is compared to performance-approach GO, the relationship is positive (Porath & Bateman, 2006). Additionally, in relation to learning (in terms of work-related training), a performance-approach GO has also shown positive relationships with task-specific types of self-efficacy prior to engaging in those tasks (Dierdorff et al., 2010; Orvis et al., 2009). However, in both laboratory task and work-related learning, performance goals have had a

generally nonsignificant relationship with the development of further self-efficacy after completing a task (Dierdorff et al., 2010; Gerhardt & Brown, 2006).

Because of the findings of a null relationship between interest in one's work and having a performance-approach GO along with some indication of a positive relationship between occupation-typed self-efficacy and a performance-approach GO, it is suggested that there may be a small positive relation between P-E fit and a performance-approach GO.

H₄: The congruence of individuals' vocational interests and their work environments will be positively related to a performance-approach GO but to a lesser extent than to a mastery GO.

Congruence and Performance-Avoid GO

In general, a performance-avoid GO has shown to have deleterious relationships with performance (Payne et al., 2007). Further, there are generally negative relationships between a performance-avoid GO and engagement and learning in both school and work contexts. In academia, avoidance goals have shown to negatively relate to performance variables such as course grades and GPA, engagement in classes in terms of possessing learning strategies or enjoying classes, and pursuing majors or more classes related to the topic of the class for which they adopted that GO (Harackiewicz et al., 2000; Harackiewicz et al., 2002; Harackiewicz et al., 2008). In relation to work, a performance-avoid GO has a negative relation with engaging in forms of self-regulation such as feedback-seeking (Porath & Bateman, 2006). In job-related training, it has negatively predicted performance and knowledge outcomes (Dierdorff et al., 2010). Further, when engaged in training, a performance-avoid GO has shown to be unrelated to engaging in metacognitive activity while training and to negatively predict the amount of time individuals will spend practicing (Orvis et al., 2009).

Along with avoidance goals' negative relationships with performance and engagement variables are its negative relationships with interest and self-efficacy as well. Although these goals have shown nonsignificant relationships with work interest in one's work (Retelsdorf et al., 2010), a more consistent negative relationship exists of avoidance goals with initial interest in certain academic topics as well as with the further development of interest in those topics (Harackiewicz et al., 2000; Harackiewicz et al., 2002; Harackiewicz et al., 2008). Regarding self-efficacy, a performance-avoid GO has shown to either be unrelated or negatively related to individuals' initial or developed sense of self-efficacy (Dierdorff et al., 2010; Orvis et al., 2009).

Holland's (1997) P-E fit theory suggests that the more congruent individuals are with their work environments the more engaged they will be in their work and the better they will perform their jobs. However, the empirical evidence on GO indicates that a performance-avoid GO has a deleterious relationship with engagement and performance, and either a nonsignificant or negative relationship with interest and self-efficacy. Because of these findings, it is posited that the less congruent an individual is with their environment, the more likely they will be to adopt a performance-avoid GO in which their motivational focus at work consisted of avoiding displaying a lack of ability, which would lead them to avoid situations that may afford opportunities to enhance their skills for fear of appearing incompetent or foolish.

H₅: The congruence of individuals' vocational interests and their work environments will be negatively related to a performance-avoid GO.

Performance-Avoid GO as a Mediator between Congruence and CE

Additionally, because of the generally adverse effect of avoidance goals on engagement and learning in both work and academic contexts, it is also thought that the adoption of a performance-avoid GO will create a negative relationship between congruence and the CE

variables. Similar to a mastery GO, a performance-avoid GO will also serve as a mediator. However, instead of mediating the positive relationship between congruence and engagement in learning (represented by CE), a performance-avoid GO will affect the relationship between congruence and the CE variables in that those who are less congruent will be more likely to adopt a performance-avoid GO. That GO, in turn, will negatively influence the degree to which individuals perceive the usefulness of, engage in, and apply CE.

H_{6a}: A performance-avoid GO will mediate the relationship between individuals' congruence and the perceived usefulness of CE, in that congruence will negatively predict the adoption of a performance-avoid GO which will, in turn, negatively predict the perceived usefulness of CE.

H_{6b}: A performance-avoid GO will mediate the relationship between individuals' congruence and the number of CE courses and hours taken beyond what is required, in that congruence will negatively predict the adoption of a performance-avoid GO which will, in turn, negatively predict participation in additional CE courses and hours.

H_{6c}: A performance-avoid GO will mediate the relationship between individuals' congruence and how frequently they apply CE to their actual work, in that congruence will negatively predict the adoption of a performance-avoid GO which will, in turn, negatively predict individuals applying CE.

The model illustrated in Figure 2 demonstrates the hypothesized mediating effects of a mastery and performance-avoid GO between congruence and participation in, perceived usefulness of, and application of CE.

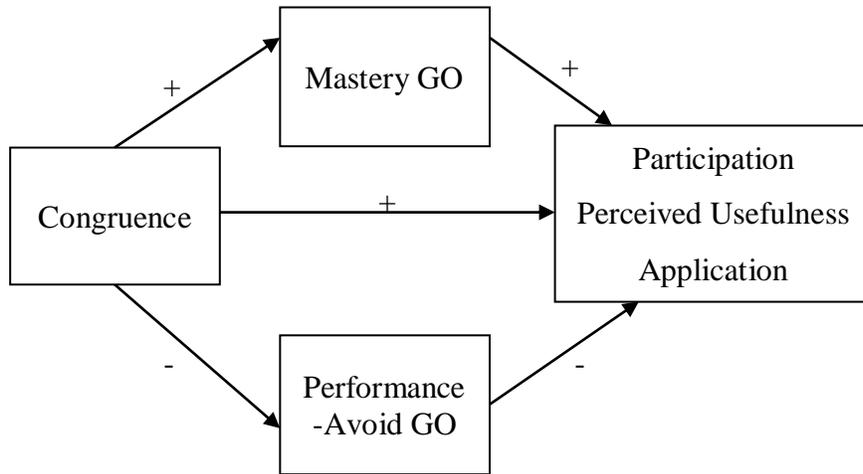


Figure 2. *Hypothesized Mediating Effect of a Mastery and Performance-Avoid GO between Congruence and Participation in, Perceived Usefulness, and Application of Continuing Education*

CHAPTER IV

METHODOLOGY

Participants

Participants consisted of individuals who worked in the healthcare field in professions that included different types of physicians ($n=45$), nurses ($n=60$), and allied health professionals ($n=78$). Of the 183 participants who participated in the study, a total of 174 (95.1%) responded to the demographic questions. Participants consisted of 122 women (66.7%) and 51 men (27.9%), with only one (.5%) participant choosing not to indicate their gender. Participants varied in age with nine (4.9%) participants between the ages of 25-29 years old; 15 (8.2%) participants between the ages of 30-34 years old; 21 (11.5%) participants between the ages of 35-39 years old; 20 (10.9%) participants between the ages of 40-44 years old, 26 (14.2%) participants between the ages of 45-49 years old; 12 (6.6%) participants between the ages of 45-49 years old; 35 (19.1%) between the ages of 50-54 years old; 35 (19.1%) participants between the ages of 55-59 years old; 19 (10.4%) participants between the ages of 60-64 years old; and 17 (9.3%) participants 65 years or older. Although the sample contained individuals with different ethnicities, the vast majority of the sample was White (161; 88.0%), with only three (1.6%) participants reporting to be Black and seven (3.8%) participants reporting to be Asian. Finally, three (1.6%) participants reported Other (which was unspecified).

Participants' education levels ranged from a high school degree/equivalent to a graduate-level degree/certificate. Two (1.1%) participants had a high school diploma or equivalent; 16 (8.7%) of participants had an associate-level degree or certificate; 24 (13.1%) participants had a bachelor-level degree or certificate; 130 (71.0%) participants had a graduate-level degree or certificate; and two (1.1%) participants chose not to indicate their education level. In terms of

annual income; 10 (5.5%) participants earned between \$20,000-39,999; 34 (18.6%) participants earned between \$40,000-59,999; 37 (20.2%) participants earned between \$60,000-79,999; 18 (9.8%) participants earned between \$80,000-99,999; 24 (13.1%) participants earned between \$100,000-149,999; 24 (13.1%) earned between \$150,000-199,999; 29 (15.8%) participants earned \$200,000 or more; and three (1.6%) participants chose not to report their annual income.

Participants were solicited by emailing requests to various state-wide medical associations (e.g., Wisconsin Association of Nurse Anesthetists, Indiana Neurological Society) located in the Midwest United States that explained the purpose of the study and asked if they would be interested in participating by making the survey link that was provided available to their members to complete if they were interested in doing so. Participants were also recruited from hospitals in Michigan and Wisconsin by sending emails explaining the purpose of the study and a link to complete the survey to the human resources departments, asking to make the survey link available for employees to complete if they were interested in doing so.

Measures

Self-Directed Search

The *Self-Directed Search* (SDS; Holland, 1994) contains a total of 228 items organized into four categories: Activities (what participants enjoy doing; 66 items), Competencies (activities participants can do well; 66 items), Occupations (professions that interest participants; 84 items), and Ability Self-Estimates (the level at which each ability reflects participants' own abilities; 12 items). Each of the four categories includes six interest areas: Realistic ($\alpha = .87$), Investigative ($\alpha = .85$), Artistic ($\alpha = .85$), Social ($\alpha = .68$), Enterprising ($\alpha = .80$), and Conventional ($\alpha = .68$) interests.

Activities and Competencies each contain eleven items that reflect each of the six RIASEC types. For activities, participants indicate whether or not they like a certain activity by selecting either *like* (1 point) or *dislike* (0 point) each one. For competencies, participants indicate whether or not they can perform an activity well by selecting *yes* (1 point) or *no* (0 point). Occupations consist of fourteen items for each of the six RIASEC types, and participants indicate whether or not they are interested in certain occupations by selecting *yes* (1 point) or *no* (0 point). Lastly, Ability Self-Estimates contain two generalized ability items for each of the six RIASEC types (e.g., math ability) and participants indicate on a scale of 1 (*low*) to 7 (*high*) their own level of ability for each item. For this category, the points assigned are the numbers chosen for each rating. Scores are then calculated by adding the points accumulated for each RIASEC-typed item group in all four categories. From this, a three-letter code is derived that reflects the three highest scoring vocational interests an individual received.

Dictionary of Holland Occupational Codes

The *Dictionary of Holland Occupational Codes* (DHOC; Gottfredson & Holland, 1996) was used to assess participants' working environments. This is a reference book that assigns a three-letter code to reflect the strongest RIASEC-typed aspects of a given profession.

Congruence

Congruence is the degree to which individuals' vocational interests match their work environment. This was calculated using Brown and Gore's (1994) *C-Index*. This method relies on using an individual's three highest scoring interests on the SDS and then compares them with the three-letter interest code that the DHOC assigned to an occupation. Congruence is then calculated using the following equation:

$$C = 3(x_i) + 2(x_i) + (x_i)$$

Each of the x_i variables is determined by how close an individual's first (primary), second (secondary), and third (tertiary) interests are to the primary, secondary, and tertiary interests the DHOC assigns to an occupation based on the RIASEC model (see Figure 1). Specifically, a score of 3, 2, 1, or 0 is given depending on where on the RIASEC model an individual's interest lies and how far away it is from where the DHOC-assigned interest is located. So, if the DHOC-assigned primary interest code is R (Realistic) for a certain occupation and an individual's primary interest code is also R, then a score of three is plugged into to the equation as the value of the first x_i variable. If the individual's primary interest is one away from R (i.e., either C or I), then a score of 2 is given. If the individual's primary interest is two away from R (i.e., either E or A), then a score of 1 is given. Finally, if the individual's primary interest is opposite from R (i.e., S), then a score of 0 is given. This same method of comparing an individual's interest code with the DHOC-assigned code, then, is also used for assigning a numerical value for the secondary and tertiary codes as well. Congruence scores can range from 0 to 18 with higher scores indicating a higher level of congruence.

Goal Orientation

GO was measured using a 3-dimension GO scale developed for a work environment (VandeWalle, 1997). This is a 13-item scale that includes mastery GO (e.g., "I enjoy challenging and difficult tasks at work where I'll learn new skills"; 5 items; $\alpha = .83$), performance-approach GO (e.g., "I'm concerned with showing that I can perform better than my coworkers"; 4 items; $\alpha = .73$), and performance-avoid GO (e.g., "I prefer to avoid situations at work where I might perform poorly"; 4 items; $\alpha = .80$).

Continuing Education

In addition to completing the SDS (Gottfredson & Holland, 1996) and GO (VandeWalle, 1997) measures, participants also answered how many CE hours per year they were required to complete in order to maintain their licensure/certification to practice as healthcare professionals. If participants had to complete so many hours that were not in a time frame of a year, they were asked to convert their answer to be within the time frame of one year (e.g., if a participant had to complete 12 hours every 2 years, they would respond with 6 hours per year). Participants' perceptions of the usefulness of, participation in, and application of CE were also examined.

Perceived usefulness of CE. Participants answered three questions regarding the perceived usefulness of CE. Participants were first asked to rate on a scale from 1 (*not at all useful*) to 5 (*extremely useful*) how useful the material taught in CE activities was to their actual work. Participants were then asked to what extent they thought CE contributed to improving their performance at work. Lastly, participants were asked to what extent they thought CE contributed to the overall quality of their work. The last two questions were rated on a scale from 1 (*not at all*) to 5 (*a great deal*). When all three items were combined, the alpha was .87.

Participation in CE. Participants answered four questions regarding their participation in CE beyond what was required of them in order to maintain licensure/certification to practice. The first question asked them to rate on a scale from 1 (*never*) to 5 (*almost always*) how often they attended additional CE courses (e.g., conferences, workshops, etc.) each year. If participants responded that they at least rarely attended additional CE courses, two more open-ended questions were asked regarding, on average, how many additional CE courses they attended per year as well as how many hours the additional CE courses amounted to each year (as the number of hours granted per course can vary depending on course time length). Finally, in case

participants would like to participate more in CE but could not due to restrictions/barriers (e.g., too expensive, children at home), they were also asked if they had the time or were otherwise able, would they participate in CE more than they already do. For this last participation question, participants could answer that they would not participate any more than they already do, they might participate more than they already do, or they would definitely participate more than they already do. As the alpha of the combined items when combined was well below the recommended .70 level ($\alpha = .26$), the items were not combined to form a scale.

Application of CE. Participants answered three questions that examined the degree to which they applied what they learned in CE in their work. Specifically, participants were asked to rate on a scale from 1 (*never*) to 5 (*a great deal*) how frequently they applied the knowledge they gained from CE in their work activities, how frequently they attempted to change existing work procedures/practices based on what was learned in CE, and how frequently participants' attempted to improve their own performance by applying what they have learned in CE. When the three questions were combined, the alpha of this scale was .81.

Procedure

Participants were recruited from hospitals and healthcare associations. Participants were provided a website link that directed them to a survey posted on a website called SurveyMonkey®. Once participants accessed the survey, they were first asked to read and then agree or disagree to the consent form displayed on the screen before the actual survey began. Once they agreed, participants were asked to select their profession from one of three drop-down boxes: Physician, Nursing, Allied Health Professional. An open text box was also available for participants to indicate their profession if they did not see it listed in any of the three categories. Participants were then asked to indicate how many CE hours per year they were required to

complete in order to maintain their licensure/certification to practice as a healthcare professional as well as a total of ten questions that assessed their attitudes toward, participation in, and application of their CE. After completing the CE questions, participants were then asked to complete all four categories (Activities, Competencies, Occupations, Ability Self-Estimates) of the SDS (Holland, 1994) as well as VandeWalle's (1997) 13-item GO questionnaire. Lastly, participants were asked for demographic information such as the state they were licensed to practice their profession, gender, age, ethnicity, education level, and annual income.

Data Analysis

After congruence scores were calculated using Brown and Gore's (1994) *C-Index*, the first and fifth hypotheses concerning the relations between individuals' congruence scores and the adoption of different goal orientations were tested using correlation coefficients. Similarly, the second hypothesis concerning the relations that congruence would have with individuals' perceptions of and use of CE were also tested using correlation coefficients. The third hypothesis, which proposed a mastery GO to mediate the relationship between individuals' congruence and their perceptions of and use of CE, was tested using the Sobel test (Preacher & Hayes, 2004). As the fourth hypothesis predicted that there would be a positive relation between congruence and a performance-approach GO but it would be weaker than the relation between congruence and a mastery GO, a *t*-test was conducted to assess if the two correlations were significantly different. Finally, the sixth hypothesis, which proposed a performance-avoid GO to mediate the relationships between individuals' congruence scores and their perceptions and use of CE, was also tested using Preacher and Hayes' (2004) Sobel test.

CHAPTER V

RESULTS

Continuing Education Scales

Although the alphas for each of the two scales developed for CE were acceptable (usefulness $\alpha = .87$; application $\alpha = .81$), they were somewhat highly correlated, $r = .69$, which brought into question how distinct the two measures were.

These items were developed to assess two related but different aspects of CE. One aspect assesses how useful healthcare professionals perceive CE to be for their work, and the other assesses how frequently they actually apply CE material to their work. It would make sense that these two aspects would be strongly related (i.e., individuals view CE as more useful because they frequently apply it to work, or individuals are more likely to apply CE to their work because they perceive it as more useful).

To further explore the issue of the high correlation between the items for the perceived usefulness and application of CE, a principal axis factor (PAF) was conducted, and two factors were extracted. Two factors were extracted due to the theoretical reasons stated above (i.e., there were usefulness and application items). Due to the conceptual and empirical relationship between usefulness and application ($r = .72$ between the two factors), oblique rotation (using direct oblimin) was used. Factor loadings from both the structure and pattern matrices are presented in Table 1. The two-factor solution accounted for 76.33% of the variance in the items after rotation. For the structure matrix that contains zero-order correlations between the items and the factors, all the primary loadings were .69 or greater, and the cross-loadings were .66 or lower; thus, although the higher loading for each item was always in the appropriate factor, the size of most of the cross-loadings was also substantial. For the pattern matrix that contains

(partialled) regression coefficients, all the items loaded on their respective factors .52 or greater, and the cross-loadings were .29 or lower. The discrepant pattern of factor loadings across both matrices is not surprising due to high correlations between the two factors.

Although the correlation between the two factors indicate a substantial conceptual overlap between them, due to the a priori theoretical reasons noted earlier, it was decided to use the scales as two variables. As will be noted in the Results section, slightly different conclusions would be reached depending on which of the two variables is considered.

Table 1. *Descriptive Statistics for Structure and Factor Matrix Loadings for Perceived Usefulness and Application of Continuing Education Using Exploratory Factor Analysis*

| Scales with Corresponding Items | <i>M</i> | <i>SD</i> | Structure Loadings | | Pattern Loadings | | <i>h</i> ² | Item-total <i>r</i> |
|---|----------|-----------|--------------------|-----|------------------|------|-----------------------|---------------------|
| | | | 1 | 2 | 1 | 2 | | |
| <i>Usefulness of CE</i> | | | | | | | | |
| 5. How useful do you think the material taught in continuing education is to your work? | 3.53 | .76 | .93 | .64 | .98 | -.07 | .45 | .83 |
| 6. To what extent does continuing education contribute to improving your work performance? | 3.72 | .83 | .88 | .65 | .85 | .03 | .70 | .92 |
| 7. To what extent does continuing education contribute to the overall quality of your work? | 3.71 | .82 | .69 | .57 | .58 | .16 | .69 | .91 |
| <i>Application of CE</i> | | | | | | | | |
| 8. How frequently do you apply the knowledge you have gained from continuing education in your work activities? | 3.86 | .73 | .56 | .83 | .10 | .90 | .51 | .84 |
| 9. How frequently do you attempt to change existing work procedures/practices based on what you learned in continuing education? | 3.49 | .82 | .63 | .75 | .18 | .61 | .48 | .87 |
| 10. How frequently do you attempt to improve your own work performance by applying what you have learned in continuing education? | 3.87 | .77 | .66 | .73 | .29 | .52 | .49 | .85 |
| Eigenvalue ^a | 3.53 | .43 | | | | | | |
| Cumulative % variance explained ^a | 58.86 | 65.95 | | | | | | |

Note. *N* = 183. *h*² = communalities. ^aValues obtained before rotation

Hypothesis Testing

Congruence and GO

Hypotheses 1, 4, and 5 posited that the congruence of individuals' vocational interests and their work environments would be positively related to the adoption of a mastery GO (hypothesis 1) and a performance-approach GO (hypothesis 4), and negatively related to the adoption of a performance-avoid GO (hypothesis 5). When examining the correlation between congruence with a mastery GO, the relationship was nonsignificant and in the opposite direction than predicted ($r = -.07, p > .05$). Therefore, hypothesis 1 was not supported (see Table 2).

When examining the relation between congruence and a performance-approach GO, it was found that although the correlation was in the positive direction, it did not reach significance ($r = .04, p > .05$). Therefore, hypothesis 4 was not supported (see Table 2). Similar to the findings of the relation between congruence and a mastery GO, the relation between congruence and a performance-avoid GO went in the opposite direction predicted, and it was not significant ($r = .11, p > .05$). Therefore, hypothesis 5 was not supported (see Table 2).

Congruence and CE

Hypotheses 2a, 2b, and 2c posited congruence to be related to individuals' perceived usefulness of (hypothesis 2a), participation in (hypothesis 2b), and application of (hypothesis 2c) CE. Hypothesis 2a stated that congruence would be positively related to how individuals perceived the usefulness of CE. Although the relationship went in the hypothesized positive direction, it did not reach significance ($r = .12, p > .05$). Therefore, hypothesis 2a was not supported (see Table 2).

Participation in CE was examined by asking participants to indicate how often they participated in CE beyond what was required for them to maintain their licensure/certification to practice, the average number of additional courses and hours of CE they participated in each year, and if they would participate more in CE if able. The only significant relationship between congruence and participation in additional CE was a positive correlation between congruence and participants indicating they would participate more in CE if they had time or were otherwise able ($r = .15, p < .05$). Therefore, hypothesis 2b was only partially supported (see Table 2).

Hypothesis 2c stated that congruence would be positively related to how frequently healthcare professionals applied what they learned in CE to their work. The scale developed to measure this contained items assessing how frequently individuals exhibited certain behaviors: applied knowledge gained from CE to work activities, attempted to change existing work procedures/practices based on what they learned in CE, and attempted to improve their own performance by applying what they learned in CE. There was a significant positive relation between participants' application of CE and congruence ($r = .17, p < .05$) (see Table 2). Therefore, hypothesis 2c received full support.

Table 2. Means, Standard Deviations, Intercorrelations, and Reliabilities for Examined Variables

| | <i>M</i> | <i>SD</i> | Demographic Variables | | | | Vocational Interests | | | | | |
|-----------------------------|----------|-----------|-----------------------|------|------|------|----------------------|-------|-------|-------|-------|-------|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| <i>Demographics</i> | | | | | | | | | | | | |
| 1. Gender | .71 | .46 | - | | | | | | | | | |
| 2. Age | 7.37 | 2.35 | -.14 | - | | | | | | | | |
| 3. Education | 3.64 | .70 | -.17 | -.06 | - | | | | | | | |
| 4. Income | 5.07 | 1.97 | -.54 | .21 | .37 | - | | | | | | |
| <i>Vocational Interests</i> | | | | | | | | | | | | |
| 5. Realistic | 19.99 | 11.55 | -.45 | .15 | -.12 | .18 | (.87) | | | | | |
| 6. Investigative | 25.53 | 11.42 | -.45 | .03 | .13 | .39 | .46 | (.85) | | | | |
| 7. Artistic | 18.16 | 10.46 | -.06 | .25 | .12 | .24 | .32 | .40 | (.85) | | | |
| 8. Social | 31.59 | 7.74 | .24 | .03 | .16 | -.07 | -.03 | .12 | .29 | (.68) | | |
| 9. Enterprising | 24.06 | 8.55 | -.14 | .06 | .14 | .16 | .24 | .31 | .30 | .42 | (.80) | |
| 10. Conventional | 22.23 | 7.39 | .09 | -.18 | -.08 | -.12 | .14 | .16 | .05 | .22 | .51 | (.68) |
| 11. C-Index | 10.52 | 3.70 | .02 | .15 | -.02 | .05 | -.10 | .01 | .12 | .11 | -.06 | -.26 |
| <i>GO</i> | | | | | | | | | | | | |
| 12. MGO | 4.92 | .65 | -.16 | .03 | .10 | .15 | .17 | .31 | .15 | .18 | .29 | .16 |
| 13. PGO | 4.07 | .77 | -.13 | .06 | -.03 | .08 | .09 | .26 | .08 | .11 | .09 | .12 |
| 14. AGO | 2.86 | .97 | .15 | -.00 | .01 | -.00 | -.16 | -.16 | .02 | -.07 | -.15 | -.15 |
| <i>Additional CE</i> | | | | | | | | | | | | |
| 15. Frequency | 3.57 | .99 | -.10 | .06 | .18 | .15 | -.07 | .11 | .03 | -.08 | .14 | -.06 |
| 16. Courses | 3.24 | 3.98 | -.16 | .08 | .06 | .22 | .01 | .33 | .16 | .06 | .12 | .04 |
| 17. Hours | 16.99 | 18.57 | -.25 | -.03 | .15 | .33 | .11 | .34 | .01 | .06 | .27 | .16 |
| 18. More if Able | 2.22 | .65 | .12 | .02 | -.01 | -.05 | .04 | -.06 | .10 | .09 | -.00 | .04 |
| 19. Usefulness | 3.65 | .71 | .05 | .04 | .11 | -.04 | -.10 | -.09 | -.10 | .03 | .02 | -.05 |
| 20. Application | 3.74 | .66 | .06 | -.06 | .18 | -.02 | -.15 | -.01 | -.05 | .08 | -.03 | -.10 |

Note. *N* values ranged from 165 to 183. Scores on the C-Index ranged from 0 to 18. Values greater than $\pm .14$ have a *p* value $< .05$. Values greater than $\pm .18$ have a *p* value $< .01$. Reliabilities of scales are presented on the diagonal. MGO = mastery goal orientation. PGO = performance-approach goal orientation. AGO = performance-avoid goal orientation. For gender, males were coded as 0 and females were coded as 1.

Table 2. Means, Standard Deviations, Intercorrelations, and Reliabilities for Examined Variables (continued)

| | | Goal Orientation | | | Additional CE | | | | | |
|-----------------------------|------|------------------|-------|-------|---------------|------|-----|-----|-------|-------|
| | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| <i>Demographics</i> | | | | | | | | | | |
| 1. Gender | | | | | | | | | | |
| 2. Age | | | | | | | | | | |
| 3. Education | | | | | | | | | | |
| 4. Income | | | | | | | | | | |
| <i>Vocational Interests</i> | | | | | | | | | | |
| 5. Realistic | | | | | | | | | | |
| 6. Investigative | | | | | | | | | | |
| 7. Artistic | | | | | | | | | | |
| 8. Social | | | | | | | | | | |
| 9. Enterprising | | | | | | | | | | |
| 10. Conventional | | | | | | | | | | |
| 11. C-Index | - | | | | | | | | | |
| <i>GO</i> | | | | | | | | | | |
| 12. MGO | -.07 | (.83) | | | | | | | | |
| 13. PGO | .04 | .38 | (.73) | | | | | | | |
| 14. AGO | .11 | -.44 | .19 | (.80) | | | | | | |
| <i>Additional CE</i> | | | | | | | | | | |
| 15. Frequency | -.04 | .16 | -.00 | -.09 | - | | | | | |
| 16. Courses | .06 | .27 | .27 | -.05 | .31 | - | | | | |
| 17. Hours | -.03 | .18 | .14 | -.18 | .48 | .45 | - | | | |
| 18. More if Able | .15 | .10 | .03 | -.13 | .07 | -.01 | .02 | - | | |
| 19. Usefulness | .12 | .12 | .08 | -.14 | .17 | .08 | .20 | .22 | (.87) | |
| 20. Application | .17 | .23 | .09 | -.19 | .17 | .12 | .14 | .26 | .69 | (.81) |

As there were significant correlations between the demographic variables and congruence (i.e., age) and application of CE (i.e., education), the relationship between congruence and application of CE was further examined. Regression analyses were conducted that examined the predictive ability of congruence scores in the application of CE controlling for gender, age, education, and income (see Table 3). Hierarchical regression was conducted that tested the various relationships that congruence scores and control variables had with the application of CE. The control variables of gender, age, education, and income were entered into the first step of the regression analysis and congruence score was entered into the second step.

The model indicated that age, gender, education, and income jointly did not predict a significant amount of the variance (3%) of the application of CE, $R^2 = .03$, $F(4, 160) = 1.38$, $p = .25$. Of the four control variables, only education significantly predicted the application of CE in that for every degree level increase (e.g., from a high school diploma to an associate degree, from a bachelor's degree to a graduate-level degree), there was a .17 unit increase in the application of CE which was significant, $t(160) = 2.14$, $p < .05$, when all other control variables were held constant. The second model that included the congruence score predicted a significant amount of variance (3%) of the application of CE over and above the four control variables, $\Delta R^2 = .03$, $\Delta F_{1, 159} = 4.92$, $p < .05$ (see Table 3).

Table 3. *Hierarchical Regression Analysis of Control Variables and Congruence Scores in the Prediction of the Application of Continuing Education*

| | R^2 | F | ΔR^2 | β | B | SE | 95% CI | |
|------------|-------|------|--------------|---------|------|-----|--------|-------|
| | | | | | | | Lower | Upper |
| Step 1 | .03 | 1.38 | .03 | | | | | |
| Gender | | | | .07 | -.00 | .14 | -.17 | .36 |
| Age | | | | -.00 | .10 | .02 | -.05 | .04 |
| Education | | | | .18* | .17* | .08 | .01 | .33 |
| Income | | | | -.06 | -.02 | .03 | -.09 | .05 |
| Step 2 | .06 | 2.11 | .03* | | | | | |
| Gender | | | | .06 | .08 | .13 | -.18 | .35 |
| Age | | | | -.04 | -.01 | .02 | -.06 | .03 |
| Education | | | | .18* | .17* | .08 | .02 | .33 |
| Income | | | | -.07 | -.02 | .03 | -.09 | .04 |
| Congruence | | | | .17* | .03* | .01 | .00 | .06 |

Note. $N = 165$. * $p < .05$. ** $p < .01$. For gender, males were coded as 0 and females were coded as 1.

GO as a Mediator

Hypotheses 3a, 3b, and 3c posited a mastery GO to mediate the relationship between professionals' congruence and their perceived usefulness of, participation in additional CE courses and hours, and application of CE, respectively. Additionally, hypotheses 6a, 6b, and 6c posited a performance-avoid GO to also act as a mediator between professionals' congruence and these three aspects of CE. To test for mediation, a significant relationship between the predictor (congruence) and the criterion (usefulness perceptions, participation in additional CE courses and hours, and application of CE) should be present. There was not a significant relationship between congruence and the perceived usefulness of CE or participation in additional CE courses and hours. As there was a significant relationship between a mastery GO (mediator) and participation in additional CE courses and hours, hypothesis 3b was tested for an indirect effect using Preacher and Hayes' (2004) Sobel and bootstrap tests. However, as neither types of GO was significantly related to the perceived usefulness of CE, hypotheses 3a and 6a were not tested for mediating or indirect effects.

When examining the indirect effect of a mastery GO between congruence and participation in additional CE courses, the Sobel test indicated the indirect effect was not significant ($z = -.96, p > .05$), with the bootstrap results showing the value of the indirect effect to include zero (-.10 to .02) when using a 95% CI. Further, when examining the indirect effect of a mastery GO between congruence and participating in more CE hours than was required, the Sobel test indicated that the indirect effect was also not significant ($z = -.75, p > .05$), with the bootstrap results showing the value of the indirect effect to include zero (-.21 to .06) when using a 95% CI. Therefore, hypothesis 3b was not supported.

Because a performance-avoid GO was significantly negatively related to participation in additional CE hours, hypothesis 6b was tested for an indirect effect. That is, an indirect effect of a performance-avoid GO between congruence and participation in additional CE hours was tested. The Sobel test indicated that the indirect effect was not significant ($z = -1.14, p > .05$), with the bootstrap results showing the value of the indirect effect to include zero (-.30 to .05) when using a 95% CI. Therefore, hypothesis 6b was not supported.

When testing mediation for hypotheses 3c and 6c in terms of the relationship between congruence and the frequency in which participants applied CE, Preacher and Hayes' (2004) Sobel and bootstrap tests were both used to test for mediation. The Sobel test indicated the indirect path from congruence to participants' application of CE was not significantly mediated by a mastery GO, ($z = -.92, p > .05$), with the bootstrap test indicating the value of the indirect effect to include zero (-.01 to .002) when using a 95% CI. The Sobel test that was run for the performance-avoid GO mediation model also showed there to be no significant indirect effect ($z = -1.06, p > .05$), with the bootstrap test indicating the value of the indirect effect to include zero (-.01 to .001) when using a 95% CI. Therefore, hypotheses 3c and 6c were not supported.

Exploratory Analysis

Vocational Interests and Participation in Additional CE

Outside of the hypothesized relationships, there were several relationships that emerged among the variables of interest. Although congruence was not significantly related to participants actively participating in more CE courses and hours beyond requirements, the Investigative interest type itself was significantly and positively related to both the number of additional courses ($r = .32, p < .01$) and hours ($r = .34, p < .01$) of CE (see Table 1). Further, this was the only vocational interest that was significantly related to both the number of courses and hours individuals participated in beyond requirements. As the correlations between Investigative interests and participation in additional CE courses/hours were somewhat larger, they were further analyzed by professional subgroup (i.e., physicians, nurses, allied health professionals). Even though the subgroups contained considerably smaller sample sizes, significant relationships still emerged for all three groups. For physicians, the positive relationship between Investigative interests and participation in additional CE courses maintained significance ($r = .36, p < .05$). For nurses, the positive relationships between Investigative interests and participation in additional CE courses ($r = .43, p < .01$) and hours ($r = .29, p < .05$) maintained significance. For allied health professionals, the positive relationship between Investigative interests and participation in additional CE hours ($r = .36, p < .01$) also maintained significance.

The relationship between Investigative interests and participation in additional CE was further examined by controlling for demographic variables (i.e., control variables) for both CE courses and CE hours. This was done due to several of the demographic variables being significantly related to both Investigative interests as well as the items assessing participation in additional CE. As can be seen in Table 4, the regression analysis for additional CE courses

indicated that a combination of gender, age, education, and income did not jointly predict a significant amount of the variance of participation in additional CE courses, $R^2 = .03$, $F(4, 145) = 1.29$, $p = .28$. The second model that included the variable of Investigative interests explained a significant amount of the variance of participation in additional CE over and above what was explained by the control variables, $\Delta R^2 = .08$, $\Delta F_{1, 144} = 12.71$, $p < .01$.

Table 4. *Hierarchical Regression Analysis of Control Variables and Investigative Interest in the Prediction of Additional Number of Continuing Education Courses Taken Each Year*

| | R^2 | F | ΔR^2 | β | B | SE | 95% CI | |
|------------------------|-------|--------|--------------|---------|-------|-----|--------|-------|
| | | | | | | | Lower | Upper |
| Step 1 | .03 | 1.29 | .03 | | | | | |
| Gender | | | | -.03 | -.27 | .84 | -1.93 | 1.40 |
| Age | | | | .00 | .00 | .14 | -.28 | .28 |
| Education | | | | -.02 | -.14 | .50 | -1.12 | .84 |
| Income | | | | .17 | .34 | .21 | -.07 | .75 |
| Step 2 | .11** | 3.66** | .08** | | | | | |
| Gender | | | | .08 | .66 | .85 | -1.02 | 2.34 |
| Age | | | | .03 | .05 | .14 | -.22 | .32 |
| Education | | | | -.02 | -.12 | .48 | -1.06 | .82 |
| Income | | | | .10 | .20 | .20 | -.19 | .62 |
| Investigative Interest | | | | .32** | .11** | .03 | .05 | .17 |

Note. $N = 150$. * $p < .05$. ** $p < .01$. For gender, males were coded as 0 and females were coded as 1.

When using hierarchical regression to examine the relationship between Investigative interests and participation in additional CE hours while controlling for demographic variables (i.e., gender, age, education, and income), the demographic variables were entered into the first model and Investigative interests were entered into the second model. As can be seen in Table 5, the regression analysis showed that a combination of gender, age, education, and income jointly significantly predicted a significant amount of the variance of participation in additional CE hours, $R^2 = .12$, $F(4, 147) = 4.80$, $p < .01$. However, the second model indicated that including the variable of Investigative interests explained a significant amount of the variance of

participation in additional CE hours over and above what was explained by the control variables, $\Delta R^2 = .05$, $\Delta F_{1, 146} = 8.40$, $p < .01$.

Table 5. *Hierarchical Regression Analysis of Control Variables and Vocational Interest in the Prediction of the Additional Number of Continuing Education Hours Taken Each Year*

| | R^2 | F | ΔR^2 | β | B | SE | 95% CI | |
|------------------------|-------|--------|--------------|---------|--------|------|--------|-------|
| | | | | | | | Lower | Upper |
| Step 1 | .11** | 4.80** | .06** | | | | | |
| Gender | | | | -.10 | -3.61 | 3.58 | -10.68 | 3.47 |
| Age | | | | -.08 | -.63 | .60 | -1.82 | .57 |
| Education | | | | .03 | .72 | 2.13 | -3.50 | 4.93 |
| Income | | | | .27** | 2.40** | .90 | .62 | 4.18 |
| Step 2 | .16** | 5.71** | .05** | | | | | |
| Gender | | | | .00 | .04 | 3.71 | -7.29 | 7.37 |
| Age | | | | -.07 | -.52 | .59 | -1.69 | .65 |
| Education | | | | .03 | .72 | 2.08 | -3.39 | 4.83 |
| Income | | | | .23* | 2.04* | .89 | .29 | 3.80 |
| Investigative Interest | | | | .25** | .38** | .13 | .12 | .63 |

Note. $N = 152$. * $p < .05$. ** $p < .01$. For gender, males were coded as 0 and females were coded as 1.

GO as a Mediator between Vocational Interest and CE

Also examined in this relationship was a possible mediation effect. It may be that one of the reasons Investigative interests appear to lead to participation in additional CE may be that those with higher levels of this interest may be more likely to adopt a learning-oriented approach toward their work (i.e., a mastery GO), which would help to explain why they are more likely to participate in additional CE. Therefore, a mediating effect of a mastery GO was examined. The Sobel test indicated the indirect path from Investigative interests to participation in additional courses was significantly mediated by a mastery GO ($z = 2.02$, $p < .05$), with the bootstrap test showing the value of the indirect effect did not include zero (.002 to .043) when using a 95% CI. As can be seen in Figure 3, the inclusion of the mediating effect of a mastery GO resulted in a

significant reduction of the direct relationship between Investigative interests and participation in additional CE courses, indicating that a mastery GO may serve as a partial mediator.

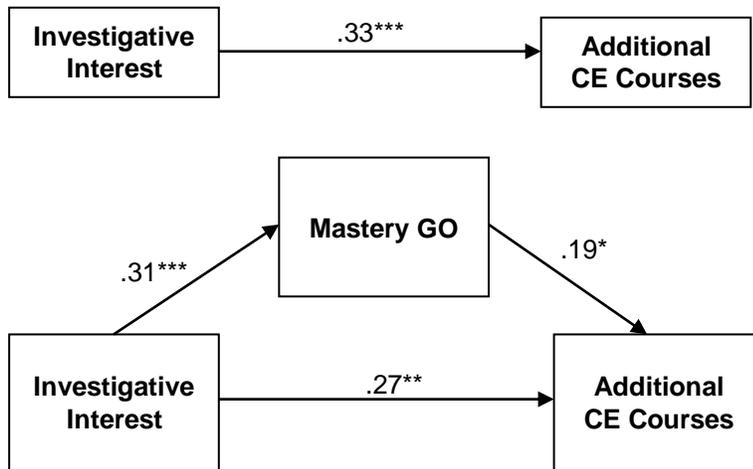


Figure 3. *Mediating Effect of a Mastery GO between Investigative Vocational Interests and the Number of Additional Continuing Education Courses Taken Each Year Using Standardized Betas*

Vocational Interests and Perceived Usefulness and Application of CE

Another relationship that emerged regarding vocational interests and CE showed Realistic interests to be significantly negatively related to the application of CE, $r = -.15, p < .05$. As this relationship was a somewhat weaker one, each of the three profession subtypes was analyzed to further examine this relationship. Surprisingly, although stronger Realistic interests were unrelated to the application of CE for either nurses ($r = -.07, p > .04$) or allied health professionals ($r = -.06, p > .05$), it was significantly negative for physicians ($r = -.39, p < .05$). Because of this, although perceptions of the usefulness of CE were not significantly related to any of the vocational interests when analyzing all healthcare professionals, usefulness perceptions were also analyzed by profession subgroup. In doing so, a similar pattern was evident. Specifically, the correlations between Realistic interests and the perceived usefulness of

CE was not significant for either nurses ($r = .08, p > .05$) or allied health professionals ($r = -.06, p > .05$). However, a negative relationship was significant for physicians, $r = -.41, p < .01$.

In order to examine a possible cause for this relationship to exist only for physicians, the relationships between Realistic interests and the perceived usefulness and application of CE were further examined in this subgroup. Due to differences between demographic variables between profession subtypes such as there being more men ($n = 31$) than women ($n = 10$) in the physician subgroup along with the stronger correlation between men and Realistic interests ($r = -.45, p < .01$), the relationship was further analyzed using hierarchical regression to determine whether the relationship would still be significant when the control variables were taken into account in predicting both the perceived usefulness (Table 6) and application (Table 7) of CE.

For perceived usefulness of CE, the demographic variables of gender, age, and income were entered into the first step (education could not be included as all participants in this sample reported the highest education option given—graduate-level degree/certificate). Realistic interest was entered into the second step. As can be seen in Table 6, all three of the demographic variables jointly did not predict a significant amount of the variance of the perceived usefulness of CE, $R^2 = .08, F(3, 32) = .90, p = .45$. Further, none of these variables exhibited a significant relationship with the criterion when the other variables were held constant. However, including the variable of Realistic interests explained a significant amount of the variance of the perceived usefulness of CE over and above the demographic variables, $\Delta R^2 = .22, \Delta F_{1, 31} = 9.86, p < .01$.

Table 6. *Hierarchical Regression Analysis of Control Variables and Vocational Interest in the Prediction of the Perceived Usefulness of CE for Physicians*

| | R^2 | F | ΔR^2 | β | B | SE | 95% CI | |
|--------------------|-------|-------|--------------|---------|--------|-----|--------|-------|
| | | | | | | | Lower | Upper |
| Step 1 | .08 | .90 | .08 | | | | | |
| Gender | | | | .09 | .17 | .33 | -.50 | .83 |
| Age | | | | .07 | .02 | .06 | -.10 | .14 |
| Income | | | | .27 | .16 | .10 | -.06 | .37 |
| Step 2 | .30* | 3.33* | .22** | | | | | |
| Gender | | | | .10 | .18 | .29 | -.42 | .77 |
| Age | | | | .11 | .03 | .05 | -.07 | .14 |
| Income | | | | .30 | .17 | .09 | -.02 | .36 |
| Realistic Interest | | | | -.47** | -.03** | .01 | -.05 | -.01 |

Note. $N = 36$. * $p < .05$. ** $p < .01$. For gender, males were coded as 0 and females were coded as 1. Education could not be evaluated as all participants in this sample reported the highest education option given (graduate-level degree/certificate).

For the application of CE, the demographic variables of gender, age, and income were entered into the first step (education could not be included as all participants in this sample reported the highest education option given—graduate-level degree/certificate). Realistic interest was entered into the second step. As can be seen in Table 7, all three of the demographic variables jointly did not predict a significant amount of the variance of the application of CE, $R^2 = .03$, $F(3, 32) = .32$, $p = .81$. However, including the variable of Realistic interests explained a significant amount of the variance of the application of CE over and above the demographic variables, $\Delta R^2 = .19$, $\Delta F_{1,31} = 7.75$, $p < .01$.

Table 7. Hierarchical Regression Analysis of Control Variables and Vocational Interest in the Prediction of the Application of CE for Physicians

| | R^2 | F | ΔR^2 | β | B | SE | 95% CI | |
|--------------------|-------|------|--------------|---------|------|-----|--------|-------|
| | | | | | | | Lower | Upper |
| Step 1 | .03 | .32 | .03 | | | | | |
| Gender | | | | .05 | .07 | .28 | -.49 | .63 |
| Age | | | | .17 | .05 | .05 | -.06 | .15 |
| Income | | | | .03 | .01 | .09 | -.16 | .19 |
| Step 2 | .22 | 2.23 | .19** | | | | | |
| Gender | | | | .05 | .07 | .25 | -.44 | .59 |
| Age | | | | .21 | .05 | .05 | -.04 | .15 |
| Income | | | | .06 | .03 | .08 | -.14 | .19 |
| Realistic Interest | | | | -.44** | -.02 | .01 | -.04 | -.01 |

Note. $N = 36$. * $p < .05$. ** $p < .01$. For gender, males were coded as 0 and females were coded as 1. Education could not be evaluated as all participants in this sample reported the highest education option given (graduate-level degree/certificate).

CHAPTER VI

DISCUSSION

The primary purpose of this study was to examine the usefulness of RIASEC theory and work-oriented GO as a way of determining how healthcare professionals perceived, engaged in, and applied CE in their respective fields. The following section will discuss the relevant findings regarding hypothesized relationships. Also discussed will be some other findings that—although not hypothesized—were relevant contributions to the purpose of this study.

Goal Orientation and Continuing Education

GO has been most commonly studied by examining individuals' GOs within specific learning/training contexts (e.g., Dierdorff et al., 2010; Mangos & Steele-Johnson, 2001; Tziner et al., 2007). The majority of this literature has found a mastery GO to be related to positive professional learning/training outcomes such as training performance (Dierdorff et al., 2010; Mangos & Steele-Johnson, 2001) and applying what was learned in training (Chiaburu & Marinova; Tziner et al., 2007). However, the literature has also found a performance-approach GO to be positively related to training performance and knowledge outcomes, yet unrelated to the application of learning/training outcomes (Chiaburu & Marinova, 2005; Dierdorff et al., 2010). Lastly, having a performance-avoid GO has shown to be negatively related to training performance, knowledge outcomes, willingness to spend time practicing tasks, and application (Dierdorff et al., 2010; Orvis et al., 2009; Tziner et al., 2007).

When looking specifically at the research regarding healthcare professionals' motivations for participating in CE, although there were findings that the desire to improve one's own knowledge/competency was related to participation in CE, (e.g., Bower et al., 2007; Prater & Neatherlin, 2001; Tassone & Heck, 1997), to my knowledge there has not been any prior

research conducted looking specifically at how healthcare professionals' GOs toward their work predicted their perceptions of/participation in/application of CE. Consistent with previous literature that has shown relationships between GO and outcomes in specific learning/training contexts, GO showed significant relationships with how healthcare professionals applied additional learning/training to their respective professions in the broader context of CE in terms of application being positively related to having a mastery GO and negatively related to having a performance-avoid GO (Dierdorff et al., 2010; Tziner et al., 2007).

Similar to aforementioned research on GO in narrower learning contexts, the present study that examined the relationships between GO and professional education/training in a broader context of generalized CE spanning different healthcare fields, showed GO to have significant relationships with how healthcare professionals engaged in and applied CE to their respective professions. Specifically, professionals with a higher mastery GO reported participating in more additional CE courses and hours each year. These individuals were also more likely to apply what they learned in CE at work. However, a mastery GO was unrelated to the perceived usefulness of CE.

Interestingly, those with a performance-approach GO reported participating in more additional CE courses—but not hours—each year, but they did not perceive greater usefulness of CE. However, unlike those with a mastery GO, higher levels of a performance-approach GO were unrelated to the application of CE.

Lastly, there was some evidence of a performance-avoid GO having a negative impact on the participation in CE in that there was a significant negative relationship between this GO and participation in additional CE hours each year. Similar to past findings which indicated a performance-avoid GO to be negatively related to skill transfer/application of what was learned

in professional training scenarios (Dierdorff et al., 2010; Tziner et al., 2007), higher levels of a performance-avoid GO were negatively related to the application of CE. Like a mastery and performance-approach GO, this GO was also unrelated to the perceived usefulness of CE.

The relationship that emerged between GO and healthcare professionals' participation in and application of CE to their respective fields was interesting. They supplemented similar findings in previous studies that investigated how GO as well as an interest in developing one's knowledge/competencies affected individual and organizational outcomes in professional learning contexts. However, it also added something new to the literature by examining the relationship GO had with three different aspects of CE (i.e., participation, perceived usefulness, and application) for a variety of healthcare professionals spanning different fields (physicians, nurses, allied health professionals).

The relationships GO had with professional learning taken by itself (outside of the relationship it was hypothesized to have with P-E fit) indicated that GO is a potentially useful construct for this specific aspect of performance-related behavior. Specifically, healthcare professionals with higher levels of a mastery GO toward their work will be more likely to take initiative in further developing their professional knowledge and skills by actively engaging in CE beyond what is required of them. This also translates to benefiting the organizations they work for in that they are also more likely to put what they learn in CE to use for their respective organizations. People with a mastery GO are more likely to apply gained knowledge as well as attempt to change existing work practices/procedures and improve their own work performance.

In terms of the other two types of GO, although those with a performance-approach GO were more likely to report participating in more CE courses and hours beyond requirements, they were not more likely to put what they learned to use at work. As those with higher levels of a

performance-approach GO are described as more interested in receiving positive judgments from others, they may actively participate in more CE as a way to make themselves look good to their colleagues, or it may even be to update themselves on new medical procedures/practices in order to stay informed in the most current and acceptable methods so as to maintain an image as knowledgeable and competent in the eyes of their colleagues and patients. However, they are not necessarily interested in using it to benefit others (or their organizations) in terms of actually applying the knowledge they've gained or using it to change existing work practices/procedures or improve their own performance.

A performance-avoid GO, however, seemed to have the most deleterious effects. Along with the evidence that having this GO negatively predicted participating in CE beyond requirements, it was also negatively related to applying what was learned in CE to work. As this type of GO is preoccupied with an aversion to failure and negative judgments from others, the negative relation with application could be interpreted to mean that those with a performance-avoid GO will not take the initiative to benefit others and their organizations by utilizing what they have learned in CE, perhaps due to a fear of failing in these attempts and/or appearing incompetent in the eyes of their colleagues and patients. Professionals with higher levels of this type of GO might wish to avoid altogether applying new practices learned in CE, so that they do not risk failure in their use. Further, because of this orientation, they may be overall less interested in opportunities to further develop their professional knowledge and competencies, and would therefore actually be less likely to attend additional CE beyond what they were required to attend.

RIASEC Theory and Continuing Education

One of the primary aspects of this study was to show how the congruence of healthcare professionals' vocational interests and their respective professions predicted their perceptions of, participation in, and application of CE. Congruence was found to be related to only one aspect of CE (i.e., application), however, and the relationship was not mediated by GO.

The hypothesized relationships between congruence and the CE of healthcare professionals were weaker and less often significant than were the relationships between GO and CE. Specifically, fit was unrelated to healthcare professionals' participation in CE in terms of how frequently they did so beyond requirements and the average number of additional CE courses and hours taken each year. Those who were more congruent with their professions were more likely to report that they would like to participate more in CE if they had time or were otherwise able. However, those who were more congruent with their respective professions were more likely to apply newly acquired knowledge and skills to their work.

Although congruence was not significantly related to participating in additional CE, vocational interests were. Investigative interests were significantly and positively related to the number of CE courses and hours individuals participated in beyond what was required. What makes this particularly interesting was the fact that this relationship that existed when examining all healthcare professionals as one group maintained significance even when examining the different professional subgroups of physicians, nurses, and allied health professionals separately. This suggests that, regardless of profession type, stronger Investigative interests predicted individuals participating in more CE beyond what was required of them. This makes sense considering that Investigative interests are theorized as having the highest level of aspirations and achievement in educational settings compared to the other interests (Holland, 1997).

This finding provides some evidence for suggestions made in the study conducted by Van Iddekinge et al. (2011). That is, these authors suggested that vocational interests may be associated with individuals seeking new knowledge and skills relevant to their respective professions. Further, the authors also pointed out that Investigative interests may be an especially useful predictor of these factors regardless of profession. The present study's findings coincide with the aforementioned authors' findings and suggestions in that having stronger Investigative interests (theorized as being more predictive of educational interest and aspirations than any of the other interests), regardless of profession type, predicted individuals' actively seeking out and participating in more educational opportunities (i.e., professional CE) beyond requirements. If a healthcare organization wants its professionals to stay up-to-date by participating in CE and gaining new knowledge and skills, then hiring people with and encouraging Investigative interests appears to be an important factor that should be taken into consideration.

Interestingly, although GO predicted individuals' participation in and application of CE, there were differential relationships of both vocational interests and congruence in predicting CE variables. Specifically, Investigative interests predicted participating in additional CE; however, neither having an Investigative nor any other type of interest predicted applying CE across profession types. Conversely, although congruence significantly predicted the application of CE, it was not related to participation in additional CE.

Another interest that was found to have a significant relationship with aspects of CE was a Realistic interest. That is, having stronger Realistic interests was negatively related to the application of CE. However, upon closer examination of this relationship by examining the profession subtypes separately, this negative relationship only existed for physicians. Because of this unexpected finding, the perceived usefulness of CE was also analyzed separately by

profession, and it was found that stronger Realistic interests were also negatively related to the perceived usefulness of CE, but again, only for physicians.

As people with Realistic interests are theorized to have the least amount of interest in or aspirations toward education (Holland, 1997), it stands to reason that those with stronger Realistic interests would see education (i.e., CE) as less useful and be less likely to apply what is taught in educational settings to their work. However, what is surprising is that this interest was unrelated to physicians' participating in additional CE courses or hours. Gender, age, and income were also analyzed in the relationships between Realistic interests and the perceived usefulness and application of CE for the physician subsample to determine their influence for this subsample. These variables did not influence the effect of Realistic interests on either of these aspects of CE. This brings into question why Realistic interests negatively influence the perceived usefulness and application of CE only for the physician subsample.

The differential relationships that interests and congruence had in predicting different aspects of behavior toward attaining and using professional knowledge and skills provided some evidence of their abilities to predict different aspects of work-related behavior. Vocational interests may be more strongly related to individuals in the workforce pursuing knowledge and skills based more on their vocational interests and not so much on how well matched their interests are with their professions. Therefore, if an individual's interests are in a specific area, they are more likely to pursue developing their knowledge and abilities in that area regardless of whether or not that type of knowledge or ability is required for their work. However, whether or not they actually seek to attain certain work-related knowledge and abilities does not necessarily mean they are more likely to use them in their work. For instance, their work may not require the

types of knowledge and skills an individual is particularly interested in and/or good at performing (i.e., low congruence between vocational interests and job).

Congruence may be more useful in explaining individuals' behavior of applying their knowledge and skills at work. This may be due to jobs being more congruent with individuals' interests by offering tasks that require the use of interest-related knowledge and skills. Therefore, the more jobs require knowledge and skills that individuals possess (i.e., higher levels of congruence), the more likely they will be to apply their knowledge and skills at work.

RIASEC Theory, Goal Orientation, and Continuing Education

As previously mentioned, the primary aim of this study was to examine the ability of RIASEC theory and goal orientation to predict how healthcare professionals engaged in, perceived the usefulness of, and participated in CE. The secondary aim of this study was to examine a potential relationship between congruence and these aspects of CE to see if their relationship was due, in part, to a tendency of those more or less congruent to adopt certain types of GOs. However, the single relationship found between congruence and CE (in the prediction of application) was not mediated by GO.

Application was the only aspect of CE that was significantly related to both congruence and GO. However, GO did not act as a mediator in the relationship between congruence and the application of CE. Although congruence was not significantly related to participation in additional CE, Investigative vocational interests were related to the number of CE courses and hours taken beyond what was required. Further, this relationship was significantly mediated by GO in that Investigative interests were positively related to adopting a mastery GO which, in turn, predicted participating in additional CE. This suggests that the reason Investigative interests predicted more participation in CE is, in part, explained by individuals with these interests being

more likely to adopt a mastery GO toward their work which, in turn, leads them to more actively participate in additional CE.

Considering that vocational interests are theorized to predict behavior through their influence on the motivational processes that determine the amount of involvement and effort individuals put into certain tasks and activities, it is expected that the higher level of interest in educational activities that is associated with Investigative interests would then lead to individuals' active participation in CE (beyond what they were expected to complete). However, the mediating effect of a mastery GO also suggests that interests may work in not only predicting choice behavior, but also in the adoption of certain strategies that serve to facilitate individuals' engagement in those choice behaviors. In this case, having stronger Investigative interests (associated with stronger learning interests and aspirations) led to the adoption of a learning-oriented goal approach (approaching goals with the intent of improving one's knowledge and abilities) toward work.

Conclusion

This study makes several relevant contributions to its field. One of the contributions made is toward research conducted on the relevance of goal orientation in the workplace. Previous research in this area has shown its use in terms of predicting job performance directly as well as other performance-related behaviors such as training proficiency and application of training to work. This study adds to the growing body of knowledge of learning-related behaviors at work in the context of CE for healthcare professionals. That is, the focus of GO was taken outside of a specific class or training course to a broader level of CE which contains a vast number of different educational contents (e.g., new technology, updated procedures, new treatments) delivered using a variety of different mediums (e.g., workshops, conferences, classes,

online) for varying types of healthcare professions. This study found that GO can be used to predict the extent to which healthcare professionals will not only participate in CE beyond what they are required but also the extent to which they will apply newly acquired knowledge and skills derived from CE to their work in the form of applying it to work activities, attempting to change existing procedures/practices, and improving their own work performance.

Another contribution this study makes concerns its primary focus; specifically, the relevance of RIASEC theory in the participation in and application of CE. The findings from the current research showed a significant relationship between vocational interests and participation in professional learning opportunities (i.e., additional CE beyond requirements). Specifically, the interest associated with the most favorable attitudes and aspirations toward education and learning (i.e., Investigative interests) was consistently positively related to individuals' participation in the number of additional CE courses and/or hours across professions. There was also evidence that interests least associated with favorable attitudes and aspirations toward education (i.e., Realistic interests) were negatively related to individuals' perceived usefulness of and application of CE. However, this was true only for physicians and not the other profession subtypes (nurses and allied health professionals). Congruence, on the other hand, did not predict individuals pursuing the development of knowledge and skills, but rather how individuals used the information they retained from CE in their work. Thus, vocational interests showed to have the strongest potential for influencing individuals' behavior in the form of motivating them to pursue opportunities to further develop professional knowledge and skills, while congruence more strongly influenced the extent to which they applied knowledge and skills on the job.

The final contribution this study makes was in the mediating effects of a mastery GO between vocational interests and the prediction of engagement in CE. Specifically, a mediating

effect was found in that Investigative interests positively predicted a mastery GO which, in turn, predicted participation in additional CE. This suggests that vocational interests may serve to not only predict individuals' choice of and involvement in certain activities, but also the adoption of certain strategies or attitudes that will likewise influence the outcome of their level of involvement in choice activities.

Limitations and Future Directions

There were several limitations in this study that should be addressed. First, although the sample size was acceptable for the overall analyses, they were somewhat small for the analyses that were conducted within the three professional subtypes of physicians, nurses, and allied health professionals. Therefore, it is recommended that future research that seeks to replicate these findings attempt to gather larger samples for each profession subtypes.

Additionally, the goal of the study was to accumulate a variety of different healthcare professionals within the categories of physicians, nurses, and allied health professionals. However, the number of one of the reported professions (i.e., speech/language pathologists) in the allied health professional subtype consisted of more individuals than would have been preferred, taking up a little over half of the professions reported in this category (56.4%). Therefore, it is recommended that future research attempt to achieve more diversity of professions in their research.

Although individual differences such as gender, age, education, and income were taken into account, ethnicity was not. Due to the fact that only about 12% of the total number of participants reported an ethnicity that was not white, it was not taken into account. Therefore, it is recommended that ethnicity be taken into account in future research to determine whether the

effects that were found in the present research will also generalize across differences in ethnicity in addition to differences in gender, age, education, and income.

The final limitation refers to the findings of Investigative interests being positively related to participation in CE. That is, one of the reasons this occurred may be due to the criterion variable of CE being education-oriented. As those with stronger Investigative interests are theorized as being the most involved in and likely to seek out education in general, the criterion may be tailor-made for those with these types of interests. To better gauge the abilities of Investigative interests (as well as the other vocational interests) to influence how individuals will acquire and further develop their professional skills and abilities, different methods they could use to do this (other than educational) should be examined.

The findings of the present study indicate the need for further research regarding how both RIASEC theory and goal orientation can be useful in furthering our understanding of how individuals engage in and utilize work-related learning opportunities. The present study examined individuals' attitudes toward this type of learning in professions that required continued learning throughout their respective careers as practicing healthcare professionals. A suggestion for future research on this topic would be to examine professions outside of the field of healthcare to investigate whether vocational interests and GO have similar or different effects across different professions regarding the engagement in and application of professional education to individuals' work.

A more specific finding in this research that warrants future investigation was the negative relationship of Realistic interests with the perceived usefulness and application of CE. This was a curious finding in that it was found only with physicians and was not explained by demographic variables such as gender, age, or income. This suggests that although Investigative

interests had more universal relationships with participation in CE, there may be other interests that predict aspects of professional education (e.g., application) that are more specific to profession types. However, more research is needed for broader-reaching implications.

Finally, as goal orientation showed significantly differential relationships with different aspects of professional education taken from a broader level of general CE (versus specific learning/training contexts), more research should be conducted to further examine the influence of GO on other broader-based professional education contexts in terms of how those in different professions engage in and apply what is learned from them.

APPENDICES

APPENDIX A

WORK ENVIRONMENTS

Below are three categories of healthcare professions (Physician, Nursing, and Allied Health Professional). Please indicate your profession by selecting from the appropriate category.

| <i>Physician</i> | <i>Nursing</i> | <i>Allied Health Professional</i> |
|-----------------------------------|---|--|
| Allergist/ Immunologist | Acute/Critical Care Nurse | Anesthesia Technician |
| Anesthesiologist | Clinical Nurse | Anesthesia Technologist |
| Cardiologist | Community Health Nurse | Anesthesiologist Assistant |
| Dermatologist | Community Health Nurse (Director) | Athletic Trainer |
| Family Practitioner | Community Health Nurse (Supervisor) | Cardiovascular Technologist |
| Gastroenterologist | Nursing Management/ Administration | Electroneurodiagnostic Technologist |
| General Practitioner | Infection Control Nurse | Emergency Medical Technician |
| Hospitalist | Nurse Anesthetist | Exercise Physiologist |
| Internist | Nurse Assistant | Exercise Science Professional |
| Naturopathic | Nurse Consultant | Kinesiotherapist |
| Neurologist | Nurse Instructor/Educator | Medical Assistant |
| Obstetrician/ Gynecologist | Nurse Midwife | Medical Illustrator |
| Ophthalmologist | Nurse Practitioner | Orthotist/Prosthetist |
| Otolaryngologist | Nurse Supervisor | Paramedic |
| Pathologist | Nurse Supervisor (Evening-or-Night) | Pathologist - Speech/Language |
| Pathologist - Histopathologist | Occupational Health Nurse | Perfusionist |
| Pathologist - Oral | Occupational Health Nurse (Director) | Personal Fitness Trainer |
| Pediatrician | Occupational Health Nurse (Supervisor) | Physician Assistant |
| Podiatrist | Office Nurse | Polysomnographic Technologist |
| Radiologist | Practical Nurse | Respiratory Therapist |
| Surgeon | Practical Nurse (Licensed) | Surgical Assistant |
| Urologist | Private Duty Nurse | Surgical Technologist |
| | Registered Nurse | |

If you do not see your profession in any of the drop-down boxes, please indicate it here.

APPENDIX B

THE SELF-DIRECTED SEARCH (HOLLAND, 1994)

| The following will be a list of activities. Please indicate whether you would like or dislike each activity by checking the appropriate response. | | |
|---|--------------------------|--------------------------|
| Activities | Like | Dislike |
| <i>Realistic</i> | | |
| Fix electrical things | <input type="checkbox"/> | <input type="checkbox"/> |
| Repair cars | <input type="checkbox"/> | <input type="checkbox"/> |
| Fix mechanical things | <input type="checkbox"/> | <input type="checkbox"/> |
| Build things with wood | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Technology Education (e.g., Industrial Arts, Shop) course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Mechanical Drawing course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Woodworking course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take an Auto Mechanics course | <input type="checkbox"/> | <input type="checkbox"/> |
| Work with an outstanding mechanic or technician | <input type="checkbox"/> | <input type="checkbox"/> |
| Work outdoors | <input type="checkbox"/> | <input type="checkbox"/> |
| Operate motorized machines or equipment | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Investigative</i> | | |
| Read scientific books or magazines | <input type="checkbox"/> | <input type="checkbox"/> |
| Work in a research office or laboratory | <input type="checkbox"/> | <input type="checkbox"/> |
| Work on a scientific project | <input type="checkbox"/> | <input type="checkbox"/> |
| Study a scientific theory | <input type="checkbox"/> | <input type="checkbox"/> |
| Work with chemicals | <input type="checkbox"/> | <input type="checkbox"/> |
| Apply mathematics to practical problems | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Physics course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Chemistry course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Mathematics course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Biology course | <input type="checkbox"/> | <input type="checkbox"/> |
| Study scholarly or technical problems | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Artistic</i> | | |
| Sketch, draw, or paint | <input type="checkbox"/> | <input type="checkbox"/> |
| Design furniture, clothing, or posters | <input type="checkbox"/> | <input type="checkbox"/> |
| Play in a band, group, or orchestra | <input type="checkbox"/> | <input type="checkbox"/> |
| Practice a musical instrument | <input type="checkbox"/> | <input type="checkbox"/> |
| Create portraits or photographs | <input type="checkbox"/> | <input type="checkbox"/> |
| Write novels or plays | <input type="checkbox"/> | <input type="checkbox"/> |
| Take an Art course | <input type="checkbox"/> | <input type="checkbox"/> |
| Arrange or compose music of any kind | <input type="checkbox"/> | <input type="checkbox"/> |
| Work with a gifted artist, writer, or sculptor | <input type="checkbox"/> | <input type="checkbox"/> |
| Perform for others (dance, sing, act, etc.) | <input type="checkbox"/> | <input type="checkbox"/> |
| Read artistic, literary, or musical articles | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Social</i> | | |
| Meet important educators or therapists | <input type="checkbox"/> | <input type="checkbox"/> |

| | | |
|--|--------------------------|--------------------------|
| Read sociology articles or books | <input type="checkbox"/> | <input type="checkbox"/> |
| Work for a charity | <input type="checkbox"/> | <input type="checkbox"/> |
| Help others with their personal problems | <input type="checkbox"/> | <input type="checkbox"/> |
| Study juvenile delinquency | <input type="checkbox"/> | <input type="checkbox"/> |
| Read psychology articles or books | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Human Relations course | <input type="checkbox"/> | <input type="checkbox"/> |
| Teach in a high school | <input type="checkbox"/> | <input type="checkbox"/> |
| Supervise activities for mentally ill patients | <input type="checkbox"/> | <input type="checkbox"/> |
| Teach adults | <input type="checkbox"/> | <input type="checkbox"/> |
| Work as a volunteer | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Enterprising</i> | | |
| Learn strategies for business success | <input type="checkbox"/> | <input type="checkbox"/> |
| Operate my own service or business | <input type="checkbox"/> | <input type="checkbox"/> |
| Attend sales conferences | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a short course on administration or leadership | <input type="checkbox"/> | <input type="checkbox"/> |
| Serve as an officer of any group | <input type="checkbox"/> | <input type="checkbox"/> |
| Supervise the work of others | <input type="checkbox"/> | <input type="checkbox"/> |
| Meet important executives and leaders | <input type="checkbox"/> | <input type="checkbox"/> |
| Lead a group in accomplishing some goal | <input type="checkbox"/> | <input type="checkbox"/> |
| Participate in a political campaign | <input type="checkbox"/> | <input type="checkbox"/> |
| Act as an organizational or business consultant | <input type="checkbox"/> | <input type="checkbox"/> |
| Read business magazines or articles | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Conventional</i> | | |
| Fill out income tax forms | <input type="checkbox"/> | <input type="checkbox"/> |
| Add, subtract, multiply, and divide numbers in business or bookkeeping | <input type="checkbox"/> | <input type="checkbox"/> |
| Operate office machines | <input type="checkbox"/> | <input type="checkbox"/> |
| Keep detailed records of expenses | <input type="checkbox"/> | <input type="checkbox"/> |
| Set up a record-keeping systems | <input type="checkbox"/> | <input type="checkbox"/> |
| Take an Accounting course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take a Commercial Math course | <input type="checkbox"/> | <input type="checkbox"/> |
| Take an inventory of supplies or products | <input type="checkbox"/> | <input type="checkbox"/> |
| Check paperwork or products for errors or flaws | <input type="checkbox"/> | <input type="checkbox"/> |
| Update records or files | <input type="checkbox"/> | <input type="checkbox"/> |
| Work in an office | <input type="checkbox"/> | <input type="checkbox"/> |
| For each of the competencies listed, select 'yes' if you can do each activity well or competently and select 'no' if you have never done that activity or cannot do it well. | | |
| Competencies | Yes | No |
| <i>Realistic</i> | | |
| I have used wood shop power tools such as a power saw, lathe, or sander | <input type="checkbox"/> | <input type="checkbox"/> |
| I can make a scale drawing | <input type="checkbox"/> | <input type="checkbox"/> |
| I can change a car's oil or tire | <input type="checkbox"/> | <input type="checkbox"/> |
| I have operated power tools such as a drill press, grinder, or sewing machine | <input type="checkbox"/> | <input type="checkbox"/> |
| I can refinish furniture or woodwork | <input type="checkbox"/> | <input type="checkbox"/> |
| I can make simple electrical repairs | <input type="checkbox"/> | <input type="checkbox"/> |

| | | |
|---|--------------------------|--------------------------|
| I can repair furniture | <input type="checkbox"/> | <input type="checkbox"/> |
| I can use many carpentry tools | <input type="checkbox"/> | <input type="checkbox"/> |
| I can make simple plumbing repairs | <input type="checkbox"/> | <input type="checkbox"/> |
| I can build simple articles of wood | <input type="checkbox"/> | <input type="checkbox"/> |
| I can paint rooms of a house or an apartment | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Investigative</i> | | |
| I can use algebra to solve mathematical problems | <input type="checkbox"/> | <input type="checkbox"/> |
| I can perform a scientific experiment or survey | <input type="checkbox"/> | <input type="checkbox"/> |
| I understand the “half-life” of a radioactive element | <input type="checkbox"/> | <input type="checkbox"/> |
| I can use logarithmic tables | <input type="checkbox"/> | <input type="checkbox"/> |
| I can use a computer to study a scientific problem | <input type="checkbox"/> | <input type="checkbox"/> |
| I can describe the function of the white blood cells | <input type="checkbox"/> | <input type="checkbox"/> |
| I can interpret simple chemical formulae | <input type="checkbox"/> | <input type="checkbox"/> |
| I understand why man-made satellites do not fall to earth | <input type="checkbox"/> | <input type="checkbox"/> |
| I can write a scientific report | <input type="checkbox"/> | <input type="checkbox"/> |
| I can understand the “Big Bang” theory of the universe | <input type="checkbox"/> | <input type="checkbox"/> |
| I understand the role of DNA in genetics | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Artistic</i> | | |
| I can play a musical instrument | <input type="checkbox"/> | <input type="checkbox"/> |
| I can participate in two- or four-part choral singing | <input type="checkbox"/> | <input type="checkbox"/> |
| I can perform as a musical soloist | <input type="checkbox"/> | <input type="checkbox"/> |
| I can act in a play | <input type="checkbox"/> | <input type="checkbox"/> |
| I can do interpretive reading | <input type="checkbox"/> | <input type="checkbox"/> |
| I can do a painting, watercolor, or sculpture | <input type="checkbox"/> | <input type="checkbox"/> |
| I can arrange or compose music | <input type="checkbox"/> | <input type="checkbox"/> |
| I can design clothing, posters, or furniture | <input type="checkbox"/> | <input type="checkbox"/> |
| I write stories or poetry well | <input type="checkbox"/> | <input type="checkbox"/> |
| I can write a speech | <input type="checkbox"/> | <input type="checkbox"/> |
| I can take attractive photographs | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Social</i> | | |
| I find it easy to talk with all kinds of people | <input type="checkbox"/> | <input type="checkbox"/> |
| I am good at explaining things to others | <input type="checkbox"/> | <input type="checkbox"/> |
| I could work as a neighborhood organizer | <input type="checkbox"/> | <input type="checkbox"/> |
| People seek me out to tell me their troubles | <input type="checkbox"/> | <input type="checkbox"/> |
| I can teach children easily | <input type="checkbox"/> | <input type="checkbox"/> |
| I can teach adults easily | <input type="checkbox"/> | <input type="checkbox"/> |
| I am good at helping people who are upset or troubled | <input type="checkbox"/> | <input type="checkbox"/> |
| I have a good understanding of social relationships | <input type="checkbox"/> | <input type="checkbox"/> |
| I am good at teaching others | <input type="checkbox"/> | <input type="checkbox"/> |
| I am good at making people feel at ease | <input type="checkbox"/> | <input type="checkbox"/> |
| I am much better at working with people than with things or ideas | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Enterprising</i> | | |
| I know how to be a successful leader | <input type="checkbox"/> | <input type="checkbox"/> |
| I am a good public speaker | <input type="checkbox"/> | <input type="checkbox"/> |
| I can manage a sales campaign | <input type="checkbox"/> | <input type="checkbox"/> |

| | | |
|--|--------------------------|--------------------------|
| I can organize the work of others | <input type="checkbox"/> | <input type="checkbox"/> |
| I am an ambitious and assertive person | <input type="checkbox"/> | <input type="checkbox"/> |
| I am good at getting people to do things my way | <input type="checkbox"/> | <input type="checkbox"/> |
| I am a good salesperson | <input type="checkbox"/> | <input type="checkbox"/> |
| I am a good debater | <input type="checkbox"/> | <input type="checkbox"/> |
| I can be very persuasive | <input type="checkbox"/> | <input type="checkbox"/> |
| I have good planning skills | <input type="checkbox"/> | <input type="checkbox"/> |
| I have some leadership skills | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Conventional</i> | | |
| I can file correspondence and other papers | <input type="checkbox"/> | <input type="checkbox"/> |
| I have held an office job | <input type="checkbox"/> | <input type="checkbox"/> |
| I can use an automated posting machine | <input type="checkbox"/> | <input type="checkbox"/> |
| I can do a lot of paperwork in a short time | <input type="checkbox"/> | <input type="checkbox"/> |
| I can use simple data processing equipment | <input type="checkbox"/> | <input type="checkbox"/> |
| I can post credits and debits | <input type="checkbox"/> | <input type="checkbox"/> |
| I can keep accurate records of payment or sales | <input type="checkbox"/> | <input type="checkbox"/> |
| I can enter information at a computer terminal | <input type="checkbox"/> | <input type="checkbox"/> |
| I can write business letters | <input type="checkbox"/> | <input type="checkbox"/> |
| I can perform some routine office activities | <input type="checkbox"/> | <input type="checkbox"/> |
| I am a careful and orderly person | <input type="checkbox"/> | <input type="checkbox"/> |
| For each of the occupations listed, select 'yes' if the occupation interests or appeals to you. Select 'no' for occupations that you dislike or find uninteresting. | | |
| Occupations | Yes | No |
| <i>Realistic</i> | | |
| Airplane Mechanic | <input type="checkbox"/> | <input type="checkbox"/> |
| Auto Mechanic | <input type="checkbox"/> | <input type="checkbox"/> |
| Carpenter | <input type="checkbox"/> | <input type="checkbox"/> |
| Truck Driver | <input type="checkbox"/> | <input type="checkbox"/> |
| Surveyor | <input type="checkbox"/> | <input type="checkbox"/> |
| Construction Inspector | <input type="checkbox"/> | <input type="checkbox"/> |
| Radio Mechanic | <input type="checkbox"/> | <input type="checkbox"/> |
| Locomotive Engineer | <input type="checkbox"/> | <input type="checkbox"/> |
| Machinist | <input type="checkbox"/> | <input type="checkbox"/> |
| Electrician | <input type="checkbox"/> | <input type="checkbox"/> |
| Farmer | <input type="checkbox"/> | <input type="checkbox"/> |
| Helicopter Pilot | <input type="checkbox"/> | <input type="checkbox"/> |
| Electronic Technician | <input type="checkbox"/> | <input type="checkbox"/> |
| Welder | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Investigative</i> | | |
| Meteorologist | <input type="checkbox"/> | <input type="checkbox"/> |
| Biologist | <input type="checkbox"/> | <input type="checkbox"/> |
| Astronomer | <input type="checkbox"/> | <input type="checkbox"/> |
| Medical Laboratory Technician | <input type="checkbox"/> | <input type="checkbox"/> |
| Anthropologist | <input type="checkbox"/> | <input type="checkbox"/> |
| Chemist | <input type="checkbox"/> | <input type="checkbox"/> |

| | | |
|--------------------------------|--------------------------|--------------------------|
| Independent Research Scientist | <input type="checkbox"/> | <input type="checkbox"/> |
| Writer or Scientific Articles | <input type="checkbox"/> | <input type="checkbox"/> |
| Geologist | <input type="checkbox"/> | <input type="checkbox"/> |
| Botanist | <input type="checkbox"/> | <input type="checkbox"/> |
| Scientific Research Worker | <input type="checkbox"/> | <input type="checkbox"/> |
| Physicist | <input type="checkbox"/> | <input type="checkbox"/> |
| Social Science Researcher | <input type="checkbox"/> | <input type="checkbox"/> |
| Environmental Analyst | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Artistic</i> | | |
| Poet | <input type="checkbox"/> | <input type="checkbox"/> |
| Musician | <input type="checkbox"/> | <input type="checkbox"/> |
| Novelist | <input type="checkbox"/> | <input type="checkbox"/> |
| Actor/Actress | <input type="checkbox"/> | <input type="checkbox"/> |
| Free-Lance Writer | <input type="checkbox"/> | <input type="checkbox"/> |
| Musical Arranger | <input type="checkbox"/> | <input type="checkbox"/> |
| Journalist | <input type="checkbox"/> | <input type="checkbox"/> |
| Artist | <input type="checkbox"/> | <input type="checkbox"/> |
| Singer | <input type="checkbox"/> | <input type="checkbox"/> |
| Composer | <input type="checkbox"/> | <input type="checkbox"/> |
| Sculptor/Sculptress | <input type="checkbox"/> | <input type="checkbox"/> |
| Playwright | <input type="checkbox"/> | <input type="checkbox"/> |
| Cartoonist | <input type="checkbox"/> | <input type="checkbox"/> |
| Entertainer | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Social</i> | | |
| Career Counselor | <input type="checkbox"/> | <input type="checkbox"/> |
| Sociologist | <input type="checkbox"/> | <input type="checkbox"/> |
| High School Teacher | <input type="checkbox"/> | <input type="checkbox"/> |
| Substance Abuse Counselor | <input type="checkbox"/> | <input type="checkbox"/> |
| Juvenile Delinquency Expert | <input type="checkbox"/> | <input type="checkbox"/> |
| Speech Therapist | <input type="checkbox"/> | <input type="checkbox"/> |
| Marriage Counselor | <input type="checkbox"/> | <input type="checkbox"/> |
| Clinical Psychologist | <input type="checkbox"/> | <input type="checkbox"/> |
| Social Science Teacher | <input type="checkbox"/> | <input type="checkbox"/> |
| Personal Counselor | <input type="checkbox"/> | <input type="checkbox"/> |
| Youth Camp Director | <input type="checkbox"/> | <input type="checkbox"/> |
| Social Worker | <input type="checkbox"/> | <input type="checkbox"/> |
| Rehabilitation Counselor | <input type="checkbox"/> | <input type="checkbox"/> |
| Playground Director | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Enterprising</i> | | |
| Buyer | <input type="checkbox"/> | <input type="checkbox"/> |
| Advertising Executive | <input type="checkbox"/> | <input type="checkbox"/> |
| Manufacturer's Representative | <input type="checkbox"/> | <input type="checkbox"/> |
| Business Executive | <input type="checkbox"/> | <input type="checkbox"/> |
| Master of Ceremonies | <input type="checkbox"/> | <input type="checkbox"/> |
| Salesperson | <input type="checkbox"/> | <input type="checkbox"/> |

| | | |
|----------------------------|--------------------------|--------------------------|
| Real Estate Salesperson | <input type="checkbox"/> | <input type="checkbox"/> |
| Department Store Manager | <input type="checkbox"/> | <input type="checkbox"/> |
| Sales Manager | <input type="checkbox"/> | <input type="checkbox"/> |
| Public Relations Executive | <input type="checkbox"/> | <input type="checkbox"/> |
| TV Station Manager | <input type="checkbox"/> | <input type="checkbox"/> |
| Small Business Owner | <input type="checkbox"/> | <input type="checkbox"/> |
| Legislator | <input type="checkbox"/> | <input type="checkbox"/> |
| Airport Manager | <input type="checkbox"/> | <input type="checkbox"/> |

Conventional

| | | |
|-----------------------------|--------------------------|--------------------------|
| Bookkeeper | <input type="checkbox"/> | <input type="checkbox"/> |
| Budget Reviewer | <input type="checkbox"/> | <input type="checkbox"/> |
| Certified Public Accountant | <input type="checkbox"/> | <input type="checkbox"/> |
| Credit Investigator | <input type="checkbox"/> | <input type="checkbox"/> |
| Bank Teller | <input type="checkbox"/> | <input type="checkbox"/> |
| Tax Expert | <input type="checkbox"/> | <input type="checkbox"/> |
| Inventory Controller | <input type="checkbox"/> | <input type="checkbox"/> |
| Computer Operator | <input type="checkbox"/> | <input type="checkbox"/> |
| Financial Analyst | <input type="checkbox"/> | <input type="checkbox"/> |
| Cost Estimator | <input type="checkbox"/> | <input type="checkbox"/> |
| Payroll Clerk | <input type="checkbox"/> | <input type="checkbox"/> |
| Bank Examiner | <input type="checkbox"/> | <input type="checkbox"/> |
| Accounting Clerk | <input type="checkbox"/> | <input type="checkbox"/> |
| Audit Clerk | <input type="checkbox"/> | <input type="checkbox"/> |

For each of the abilities listed below, indicate on a scale from 1 (low) to 7 (high) your own level of ability.

Ability Self-Estimates

Realistic

| | | | | | | | |
|--------------------|---|---|---|---|---|---|---|
| Mechanical Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Manual Skills | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Investigative

| | | | | | | | |
|--------------------|---|---|---|---|---|---|---|
| Scientific Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Math Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Artistic

| | | | | | | | |
|------------------|---|---|---|---|---|---|---|
| Artistic Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Musical Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Social

| | | | | | | | |
|-------------------------|---|---|---|---|---|---|---|
| Teaching Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Understanding of Others | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Enterprising

| | | | | | | | |
|-------------------|---|---|---|---|---|---|---|
| Sales Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Managerial Skills | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Conventional

| | | | | | | | |
|------------------|---|---|---|---|---|---|---|
| Clerical Ability | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Office Skills | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

APPENDIX C

GOAL ORIENTATION SCALE (VANDEWALLE, 1997)

Answer each of these questions with how you normally approach tasks at work. Answer each question on a scale from 1 (strongly disagree) to 5 (strongly agree).

Mastery Goal Orientation

| | | | | | |
|---|---|---|---|---|---|
| I am willing to select a challenging work assignment that I can learn a lot from. | 1 | 2 | 3 | 4 | 5 |
| I often look for opportunities to develop new skills and knowledge. | 1 | 2 | 3 | 4 | 5 |
| I enjoy challenging and difficult tasks at work where I'll learn new skills. | 1 | 2 | 3 | 4 | 5 |
| For me, development of my work ability is important enough to take risks. | 1 | 2 | 3 | 4 | 5 |
| I prefer to work in situations that require a high level of ability and talent. | 1 | 2 | 3 | 4 | 5 |

Performance-Approach Goal Orientation

| | | | | | |
|--|---|---|---|---|---|
| I'm concerned with showing that I can perform better than my coworkers. | 1 | 2 | 3 | 4 | 5 |
| I try to figure out what it takes to prove my ability to others at work. | 1 | 2 | 3 | 4 | 5 |
| I enjoy it when others at work are aware of how well I am doing. | 1 | 2 | 3 | 4 | 5 |
| I prefer to work on projects where I can prove my ability to others. | 1 | 2 | 3 | 4 | 5 |

Performance-Avoid Goal Orientation

| | | | | | |
|--|---|---|---|---|---|
| I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others. | 1 | 2 | 3 | 4 | 5 |
| Avoiding a show of low ability is more important to me than learning a new skill. | 1 | 2 | 3 | 4 | 5 |
| I'm concerned about taking on a task at work if my performance would reveal that I had low ability. | 1 | 2 | 3 | 4 | 5 |
| I prefer to avoid situations at work where I might perform poorly. | 1 | 2 | 3 | 4 | 5 |

APPENDIX D

CONTINUING EDUCATION QUESTIONS

How many hours of continuing education are you required to complete each year for your profession?

(If you are required to take so many hours in a time frame other than one year, please convert your answer to be in a time frame of one year. For example, if you had to complete 12 hours every 2 years, you would respond with 6 hours per year. If you had to complete 6 hours every 4 months, you would respond with 18 hours per year.)

How often do you attend additional learning engagements (e.g., conferences, workshops, etc.) for your field beyond the continuing education hours you are required to take each year?

- Never
- Rarely
- Sometimes
- Often
- Almost always

If you attend additional learning engagements beyond what is required...

On average, about how many additional learning engagements do you attend per year?

On average, about how many continuing education hours do the additional learning engagements you attend amount to each year?

If you had the time or were otherwise able, would you participate in more continuing education engagements?

- I would not participate any more than I already do.
- I might participate more than I already do.
- I would definitely participate more than I already do.

How useful do you think the material taught in continuing education activities is to your work?

- Not at all useful
- Slightly useful
- Moderately useful
- Very useful
- Extremely useful

To what extent does continuing education contribute to improving your work performance?

- Not at all
- Very little
- Somewhat
- A moderate amount
- A great deal

To what extent does continuing education contribute to the overall quality of your work?

- Not at all
- Very little
- Somewhat
- A moderate amount
- A great deal

How frequently do you apply the knowledge you have gained from continuing education in your work activities?

- Never
- Rarely
- Occasionally/Sometimes
- A moderate amount
- A great deal

How frequently do you attempt to change existing work procedures/practices based on what you learned in continuing education?

- Never
- Rarely
- Occasionally/Sometimes
- A moderate amount
- A great deal

How frequently do you attempt to improve your own work performance by applying what you have learned in continuing education?

- Never
- Rarely
- Occasionally/Sometimes
- A moderate amount
- A great deal

APPENDIX E

DEMOGRAPHIC QUESTIONS

Please check the following state(s) where you are licensed/certified to practice your profession.

- | | | |
|--------------------------------------|---|--|
| <input type="checkbox"/> Alabama | <input type="checkbox"/> Louisiana | <input type="checkbox"/> Ohio |
| <input type="checkbox"/> Alaska | <input type="checkbox"/> Maine | <input type="checkbox"/> Oklahoma |
| <input type="checkbox"/> Arizona | <input type="checkbox"/> Maryland | <input type="checkbox"/> Oregon |
| <input type="checkbox"/> Arkansas | <input type="checkbox"/> Massachusetts | <input type="checkbox"/> Pennsylvania |
| <input type="checkbox"/> California | <input type="checkbox"/> Michigan | <input type="checkbox"/> Rhode Island |
| <input type="checkbox"/> Colorado | <input type="checkbox"/> Minnesota | <input type="checkbox"/> South Carolina |
| <input type="checkbox"/> Connecticut | <input type="checkbox"/> Mississippi | <input type="checkbox"/> South Dakota |
| <input type="checkbox"/> Delaware | <input type="checkbox"/> Missouri | <input type="checkbox"/> Tennessee |
| <input type="checkbox"/> Florida | <input type="checkbox"/> Montana | <input type="checkbox"/> Texas |
| <input type="checkbox"/> Georgia | <input type="checkbox"/> Nebraska | <input type="checkbox"/> Utah |
| <input type="checkbox"/> Hawaii | <input type="checkbox"/> Nevada | <input type="checkbox"/> Vermont |
| <input type="checkbox"/> Idaho | <input type="checkbox"/> New Hampshire | <input type="checkbox"/> Virginia |
| <input type="checkbox"/> Illinois | <input type="checkbox"/> New Jersey | <input type="checkbox"/> Washington |
| <input type="checkbox"/> Indiana | <input type="checkbox"/> New Mexico | <input type="checkbox"/> West Virginia |
| <input type="checkbox"/> Iowa | <input type="checkbox"/> New York | <input type="checkbox"/> Wisconsin |
| <input type="checkbox"/> Kansas | <input type="checkbox"/> North Carolina | <input type="checkbox"/> Wyoming |
| <input type="checkbox"/> Kentucky | <input type="checkbox"/> North Dakota | <input type="checkbox"/> My license/certification allows me to practice anywhere in the US |

What is your gender?

- Female
- Male
- Prefer not to respond

What is your age?

- Under 20 years old
- 20-24 years old
- 25-29 years old
- 30-34 years old
- 35-39 years old
- 40-44 years old
- 45-49 years old
- 50-54 years old
- 55-59 years old
- 60-64 years old
- 65 years or older
- Prefer not to respond

What is your ethnicity?

- African American
- American Indian/Native American
- Asian
- Caucasian
- Spanish/Hispanic/Latino
- Other
- Prefer not to respond

What is the highest level of education you've completed?

- High school diploma or equivalent
- Associate level degree/certificate
- Bachelor level degree/certificate
- Graduate level degree/certificate
- Prefer not to respond

What is your annual income?

- Less than \$20,000
- \$20,000 – 39,999
- \$40,000 - 59,999
- \$60,000 - 79,999
- \$80,000 - 99,999
- \$100,000 - 149,999
- \$150,000 - 199,999
- \$200,000 or more
- Prefer not to respond

APPENDIX F

HEALTHCARE ORGANIZATIONS THAT RECEIVED REQUESTS TO PARTICIPATE IN STUDY BY STATE AND PROFESSION

| Illinois | | |
|---|--|---|
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| IL Academy of Family Physicians IL Association of Naturopathic Physicians IL Association of Ophthalmology IL Chapter of the American Academy of Pediatrics IL Chapter of the American College of Cardiology IL Psychiatric Society IL Radiological Society IL Society of Anesthesiologists IL Society of Pathologists | IL Association of Nurse Anesthetists Midwives of Illinois | IL Athletic Trainers Association IL EMT Association IL Society of Electroneurodiagnostic Technologists IL Society for Respiratory Care IL Society of Orthotists, Prosthetists, & Pedorthists IL State Perfusion Society IL Surgical Assistant Association |
| Indiana | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| IN Academy of Family Physicians IN Association of Naturopathic Physicians IN Association of Pathologists IN Chapter of the American Academy of Pediatrics IN Chapter of the American College of Surgeons IN Neurological Society IN Podiatric Medical Association IN Psychiatric Society IN Radiological Society IN Society of Anesthesiologists | Coalition of Advanced Practice Nurses of IN IN Association of Nurse Anesthetists IN Chapter of the American Association of Occupational Nurses IN Midwives Association IN Practical Nurses Association | IN Academy of Physician Assistants IN Association of Prosthetist & Orthotist IN Athletic Trainers Association IN Society for Respiratory Care IN Society of Electroneurodiagnostic Technologists & Technicians IN Society of Medical Assistants IN Society of Sleep Professionals |
| Iowa | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| IA Academy of Family Physicians IA Academy of Ophthalmology IA Chapter of the American Academy of Pediatrics IA Chapter of the American College of Cardiology IA Chapter of the American College of Radiology IA Podiatric Medical Society IA Psychiatric Society IA Society of Anesthesiologists | IA Association of Nurse Anesthetists IA Midwives Association IA Nurse Practitioner Society | IA Association of Electroneurodiagnostic Technologists IA Emergency Medical Services Association IA Physician Assistant Society IA Prosthetic, Orthotic, & Pedorthic Association IA Sleep Society IA Society for Respiratory Care IA Society of Medical Assistants |

| Kansas | | |
|---|---|---|
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| KS Academy of Family Physicians KS Association Ambulatory Surgery Centers KS Chapter of the American Academy of Pediatrics KS Psychiatric Society KS Society of Otolaryngology KS Speech-Language-Hearing Association | KS Association of Nurse Anesthetists KS Emergency Nurses Association | KS Academy of Physician Assistants KS Athletic Trainers Society KS Emergency Medical Technicians Association KS Respiratory Care Society |
| Michigan | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| MI Academy of Family Physicians MI Allergy and Asthma Society MI Association of Naturopathic Physicians MI Chapter of the American Academy of Pediatrics MI Chapter of the American College of Cardiology MI Dermatological Society MI Gastroenterology Society MI Neurological Society MI Otolaryngological Society MI Podiatric Medical Society MI Psychiatric Society MI Radiological Society MI Society of Anesthesiologists MI Society of Eye Physicians & Surgeons MI Society of Pathologists MI State Medical Society | MI Association of Clinical Nurse Specialists MI Association of Nurse Anesthetists MI Association of Occupational Health Nurses MI Council of Nurse Practitioners MI Licensed Practical Nurses Association MI Midwives Association MI Nurses Association MI Organization of Nurse Executives Registered Nurses Association in MI | MI Academy of Physician Assistants MI Athletic Trainers Society MI EMS Practitioners Association MI Orthotics & Prosthetics Association MI Perfusion Society MI Society for Respiratory Care MI Society of Electroneurodiagnostic Technologists MI Society of Medical Assistants MI Speech-Language-Hearing Association MI State Assembly of the Association of Surgical Technologists |
| Minnesota | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| MN Academy of Family Physicians MN Academy of Ophthalmology MN Academy of Otolaryngology MN Ambulatory Surgery Center MN Association of Naturopathic Physicians MN Chapter of the American Academy of Pediatrics MN Chapter of the American College of Cardiology MN Dermatological Society MN Psychiatric Society | MN Association of Nurse Anesthetists MN Association of Occupational Health Nurses MN Licensed Practical Nurses Association | MN Academy of Physician Assistants MN Association of Exercise Physiologists MN Athletic Trainers' Association MN Perfusion Society MN Society for Respiratory Care MN Society of Orthotists, Prosthetists, & Pedorthists |

| | | |
|--|--|--|
| MN Radiological Society MN Speech-Language-Hearing Association MN Society of Anesthesiologists MN Urological Society | | |
| Missouri | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| MO Academy of Family Physicians MO Chapter of the American Academy of Pediatrics MO Dermatological Society MO Psychiatric Association MO Society of Anesthesiologists MO Society of Eye Physicians & Surgeons MO Society of Otolaryngology | MO Association of Nurse Anesthetists | MO Academy of Physician Assistants MO Athletic Trainers' Association MO Perfusion Society MO Society for Respiratory Care MO Speech-Language-Hearing Association |
| Nebraska | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| NE Academy of Family Physicians NE Chapter of the American Academy of Pediatrics NE Dermatology Society | Licensed Practical Nurse Association of NE NE Association of Nurse Anesthetists NE Association of Occupational Health Nurses NE Friends of Midwives NE Nurse Practitioners | NE Academy of Physician Assistants NE Association of Exercise Physiologists NE Speech-Language-Hearing Association NE State Athletic Trainers Association |
| North Dakota | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| ND Academy of Family Physicians ND Chapter of the American Academy of Pediatrics | ND Association of Nurse Anesthetists ND Nurse Practitioner Association | ND Athletic Trainers' Association ND Society for Respiratory Care ND Speech-Language-Hearing Association |
| Ohio | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| OH Academy of Family Physicians OH Chapter of the American Academy of Pediatrics OH Chapter of the American Association of Naturopathic Physicians OH Chapter of the American College of Surgeons OH Dermatological Society | Licensed Practical Nurse Association of OH OH Association of Advanced Practice Nurses OH State Association of Nurse Anesthetists OH Association of Occupational Health Nurses | OH Academy of Anesthesiologist Assistants OH Association of Physician Assistants OH Athletic Trainers' Association OH State Society of Medical Assistants |

| | | |
|--|--|--|
| OH Ophthalmological Society OH Psychiatric Physicians Association OH Society of Anesthesiologists OH Society of Pathologists OH State Radiological Society OH Urological Society | | |
| South Dakota | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| SD Academy of Family Physicians SD Society of Pathologists | Nurse Practitioner Association of SD SD Association of Nurse Anesthetists | SD Academy of Physician Assistants SD Athletic Trainers Association SD Emergency Medical Technicians Association SD Society for Respiratory Care SD Speech-Language-Hearing Association |
| Wisconsin | | |
| <i>Physicians</i> | <i>Nurses</i> | <i>Allied Health Professionals</i> |
| WI Academy of Family Physicians WI Academy of Ophthalmology WI Chapter of the American Academy of Pediatrics WI Chapter of the American College of Cardiology WI Dermatological Society WI Naturopathic Physicians Association WI Neurological Society WI Psychiatric Association WI Radiological Society WI Society of Anesthesiologists WI Society of Otolaryngology WI Society of Pathologists WI Society of Podiatric Medicine WI Surgical Society WI Urological Society | WI Association of Clinical Nurse Specialists WI Association of Nurse Anesthetists WI Guild of Midwives WI Nurses Association WI Organization of Nurse Executives WI State Association of Occupational Health Nurses | WI Academy of Anesthesiologist Assistants WI Academy of Physician Assistants WI Athletic Trainers' Association WI EMS Association WI Perfusion Society WI Society for Respiratory Care WI Society of Electroneurodiagnostic Technologists WI Society of Medical Assistants WI Society of Orthotists, Prosthetists, & Pedorthists WI Speech-Language Pathology & Audiology Association |

APPDENDIX G

HEALTHCARE PROFESSIONS WITH THEIR RESPECTIVE DHOC CODES AND THE NUMBER OF PARTICIPANTS WHO PRACTICED EACH PROFESSION WHEN PARTICIPATED IN STUDY

| Physicians | | | Nurses | | | Allied Health Professionals | | |
|------------|-------------------------------|-------------|----------|--|-------------|-----------------------------|--------------------------------|-------------|
| <i>n</i> | <i>Occupation</i> | <i>DHOC</i> | <i>n</i> | <i>Occupation</i> | <i>DHOC</i> | <i>n</i> | <i>Occupation</i> | <i>DHOC</i> |
| 4 | Allergist/ Immunologist | ISE | 3 | Acute/Critical Care Nurse | SIA | 1 | Anesthesiologist Assistant | ISA |
| 3 | Anesthesiologist | IRS | 1 | Clinical Nurse | SIA | 3 | Athletic Trainer | SRE |
| 3 | Family Practitioner | IRE | 14 | Nurse Anesthetist | ISE | 2 | Audiologist | ISR |
| 1 | Hospitalist | IRS | 7 | Nurse Instructor/ Educator | SIE | 1 | Exercise Physiologist | ISR |
| 1 | Internist | IRS | 1 | Nurse Mgr/ Admin | SEI | 1 | Paramedic | RIS |
| 2 | Naturopathic | SIR | 8 | Nurse | ISA | 2 | Perfusionist | ISR |
| 1 | Neonatologist | ISE | 7 | Nurse Practitioner | SEI | 6 | Physician Assistant | ISA |
| 8 | Neurologist | IRS | 7 | Nurse Supervisor | SEI | 10 | Respiratory Therapist | SIR |
| 1 | Obstetrician/ Gynecologist | IRS | 1 | Nurse Supervisor (E-or-N) | SIE | 44 | Speech/Language Pathologist | SAI |
| 2 | Otolaryngologist | IRS | 2 | Occupational Health Nurse | ISE | 2 | Surgical Assistant | ISR |
| 2 | Pathologist | IRE | 2 | Occupational Health Nurse (Director) | SCE | 6 | Surgical Technologist | ISR |
| 8 | Pediatrician | ISE | 3 | Practical Nurse (Licensed) | SAC | | | |
| 2 | Podiatrist | SIR | 11 | Registered Nurse | SIA | | | |
| 2 | Radiologist | IRS | | | | | | |
| 4 | Surgeon | IRA | | | | | | |
| 1 | Urologist | IRS | | | | | | |

Note. *n* = number of participants in each type of profession.

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