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Structure of vocational interests for diverse groups on the 2005 strong interest inventory

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ABSTRACT

This study was designed to examine the structure of vocational interests in a diverse sample of individuals who completed the 2005 revision of the Strong Interest Inventory. We examined the fit of three racial/ethnic groups (African American, Caucasian, and Latino/a), both genders, and three levels of professional status (GRS participant, student, and working adult; $N = 136, 219$) with a less-stringent circular RIASEC ordering as well as a more stringent, equidistant RIASEC ordering. Results from circular unidimensional scaling analyses revealed a circular RIASEC order for all the samples with the exception of African American females in the General Representative Sample and Latinos in the adult sample. Additionally, results indicated gender differences in the adult and student samples suggesting a better fit with Holland's model for males than females.

Examining the applicability of vocational theories and assessments with diverse cultural groups has received a lot of attention in vocational psychology over the last several decades (e.g. Subich, 2005). Vocational psychologists (e.g. Fouad, 2002; Subich, 2005) have long argued that vocational theories, and the assessments derived from these theories, need to be examined for cultural validity. This is of particular importance when considering that career assessments were historically standardized on less diverse, predominantly male samples (Subich, 2005) and that the workforce in the United States continues to become more diverse with close to 30% of the current workforce self-identifying as coming from a non-White racial/ethnic background (Bureau of Labor Statistics, 2009). It is imperative that vocational theories and assessments be examined for cultural relevance, utility, and validity.

Perhaps the theory that has received the most attention in examining its cultural relevance is Holland's (1997) theory of vocational choice. Holland's theory is the most commonly utilized and researched career theory in history (Swanson & Gore, 2000) and is based on the assumption that career choice is primarily an expression of an individual's personality. Holland argued that both people and environments can be categorized into a combination of six interest types. Although research has examined various components of Holland's theory, the most extensive attention within the vocational interest literature has focused on his hexagonal hypothesis and the calculus assumption associated with it. Holland postulated that the six interest types, Realistic, Investigative, Artistic, Social, Enterprising, and Conventional are ordered in a hexagonal model. Interest types are related to one another in a manner in which interest types closer to each other in the hexagonal structure (e.g. Realistic and Investigative) are more similar to one another than those that are opposite from one another (e.g. Realistic and Social). Holland argued that the relationships among interest types are inversely proportional to the distances among the types. Furthermore, Holland's hexagonal hypothesis proposed that interest types are equidistant from one another in the hexagonal pattern.

Though the first investigations of vocational interests with ethnic minorities concentrated on examining mean differences in interests between people from minority backgrounds (e.g. Montoya & DeBlassie, 1985; Sue & Kirk, 1972), recent investigations

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have focused on examining Holland's structural hypothesis with various populations (e.g. Armstrong, Hubert, & Rounds, 2003). Although Holland's hexagonal hypothesis proposed that interest types were equidistant from one another, research has predominantly investigated whether the interest types generally fall in a circular RIASEC order as well as the distances between the types. Overall, researchers have found more support for the circular order than for equidistances between the interest types (Armstrong et al., 2003; Rounds & Tracey, 1993).

Yet, researchers have argued that the distinction between the two variations of Holland's structural hypothesis is important. For example, Rounds and Tracey (1996) distinguished between two separate models that correspond to Holland's structural hypothesis. The first model, the circular order model, corresponds to Holland's calculus assumption and assumes a circular order and an inversely proportional relationship among the interest types; the second, the equidistant hexagonal structure, assumes equidistances among the interest types. The primary difference between the two models is that, in essence, the circular model is less restrictive and only requires for adjacent interest types to be more highly related to one another than opposite interest types whereas the equidistant hexagonal structure requires that interest types be arranged around a hexagon with equal relationships among each of the interest types.

A plethora of research has examined the fit of both of the models to various populations with a particular emphasis placed on examining the fit of these models on the structure of interests for various racial/ethnic samples. For example, research has examined whether interests fall in a circular RIASEC order as well as whether interest types are equidistant from one another. As a whole, studies have supported the circular RIASEC order of interests across ethnicity and gender (Armstrong et al., 2003; Rounds & Tracey, 1993) with a few exceptions. For example, Flores, Spanierman, Armstrong, and Velez (2006) found that adult Latinos did not have a circular RIASEC ordering; instead Artistic interests fell between Realistic and Investigative interests providing a RAISEC ordering of interests.

Studies that have examined Holland's equidistance hypothesis have found mixed results across diverse racial/ethnic groups and between genders (Armstrong et al., 2003). Whereas some researchers have found that Holland's proposed structure of interests was similar across racial/ethnic groups (Fouad, Harmon, & Borgen, 1997; Lattimore & Borgen, 1999), others have found differences between genders and racial/ethnic groups (Armstrong et al., 2003; Fouad, 2002). For example, Armstrong et al. found that more variance was accounted for in all racial-ethnic groups when examining the fit of the circular order model than compared to the hexagonal model. Upon visual inspection of the structural nature of interests, Armstrong et al.'s findings suggested that the circular ordering of the RIASEC interests deviated substantially from a model that requires equal distances between adjacent interest types. Yet, despite these findings highlighting structural differences, vocational psychologists have continued to argue that the circular placement of Holland's themes found in many studies indicates that these structural differences support the validity of the use of the Strong Interest Inventory (SII) with diverse populations (Subich, 2005). Considering the mixed findings in current research, further research is needed to examine structural differences in vocational interests.

Additionally, gender differences in vocational interests, particularly the structural nature of interests, have also received a lot of attention in vocational psychology. Several studies have examined gender invariance in the structure of interests (Darcy & Tracey, 2007) rendering equivocal conclusions on the applicability of Holland's theory for males and females. A meta-analysis by Anderson, Tracey, and Rounds (1997) investigated the structural invariance of Holland's model across gender and found no differences between males and females in the degree of fit with the circular order model or the circumplex model. Yet, Hansen, Collins, Swanson, and Fouad (1993), Fouad et al. (1997), and Flores et al. (2006) found gender differences in the structure of interests of their participants. Specifically, these studies failed to provide support for the calculus hypothesis proposed by Holland (1997) in both males and females; rather, they found that interests were not equidistant from one another. Females perceived Realistic and Investigative themes and Social and Enterprising themes to be more similar to one another than hypothesized by Holland (1997) (Fouad et al., 1997). Furthermore, between group differences in males and females were found in the BISs (Donnay, Morris, Schaubhut, & Thompson, 2005; Harmon et al., 1994) and in the general occupational theme (GOTs) (Fouad, 2002). Thus, despite a multitude of studies focusing on investigating gender differences in vocational interests, the equivocal findings in these studies suggests that the relationship between gender and vocational interests is complicated and also highlights the continued need for research in examining the structure of interests for both men and women.

These aforementioned findings highlight the need for continued research in investigating the structure of interests and between group differences in diverse populations. This is of particular importance as current interest inventories are revised to accommodate the changing workforce in the 21st century. For example, all of the published research examining cultural differences in the Strong Interest Inventory have used the 1994 version of the Strong Interest Inventory. It is necessary for this line of research to be updated with the current revision of the Strong Interest Inventory (Donnay et al., 2005). The 2005 revision included various changes to the item content and item response options of the Strong Interest Inventory. For example, only 193 of the 317 items were maintained in the 2005 revision and an additional 98 new items were added for a total of 291 items. Further, the 3 point response format was changed to a 5 point response format resulting in using a different weighting system to calculate raw scores for each of the GOT themes. In total, these changes resulted in an interest inventory that is fundamentally similar to previous versions yet altered to create a more streamlined inventory that reflects current changes in the world of work. With any adaptation or change, it is important to reexamine the psychometric properties, including validity, of a revised inventory.

Additionally, few studies have examined samples other than the General Representative Sample (GRS) of the SII; although it is important to understand the structure of interests for the GRS, it is also very important to investigate the structure of interests for other samples (e.g. student and adult samples) as a comparison to the GRS. Of the few that have studied other samples, much of the research has focused on student samples with very little empirical investigations on the structure of interests in working adult/client samples. Considering that adults and college students often complete the SII during the career counseling process, it is