



## The other side of the coin: Vocational interests, interest differentiation and annual income at the occupation level of analysis<sup>☆</sup>

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### ABSTRACT

This research examined the effects of vocational interest levels and differentiation on annual income. Following the environmental perspective, we investigated whether relationships existed at the occupation level of analysis. Using data from 665 occupations in the U.S. obtained from U.S. Bureau of Labor Statistics and O\*Net, we demonstrated that certain vocational interests – namely investigative, enterprising, and realistic interests – were most critical in predicting annual income for occupations. Controlling for interest levels, differentiation not only positively predicted annual income but also moderated each interest's relationship with income. In addition, occupations' education and training requirement partially mediated the effects of interest profiles on income. Our findings reveal the need for a better understanding of how characteristics of an occupation's interest profile may shape the experiences of its workers.

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Vocational interest assessment has been widely used for many years to gauge and guide one's career path and match individuals to jobs (Perdue, Reardon, & Peterson, 2007; Savickas, 2011). Not only can vocational interests predict vocational choices (Austin & Hanisch, 1990; Humphreys, Lubinski, & Yao, 1993), but they also serve as a critical lens to understand issues in various areas of psychology, including individual differences (Lubinski, 2000), individual development (Low, Yoon, Roberts, & Rounds, 2005), sex difference in work preference (Su, Rounds, & Armstrong, 2009), and more recently, job performance and turnover (Nye, Su, Rounds, & Drasgow, 2012; Van Iddekinge, Putka, & Campbell, 2011; Van Iddekinge, Roth, Putka, & Lanivich, 2011).

As the predominant approach to measuring and understanding vocational interests, Holland's (1997) framework identifies six general interest dimensions: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC). The RIASEC enables comprehensive assessment of interests for an individual or an occupation. Much of the research on vocational interests has focused on the RIASEC at the individual level, as indicated by meta-analyses linking individuals' RIASEC levels to personality traits (Barrick, Mount, & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002), self-efficacy (Rottinghaus, Larson, & Borgen, 2003), and performance and turnover (Van Iddekinge, Roth, et al., 2011). In contrast, occupations' RIASEC levels are often assessed peripherally, primarily examined on route to studying person-occupation congruence. A lacuna in research exists regarding how the RIASEC interests of an occupation may affect occupational outcomes. In particular, it remains unknown whether an occupation's RIASEC profile predicts annual income, which represents the value and importance that organizations and society as a whole attach to employee productivity and performance (Abowd, Kramarz, & Margolis, 1999; Smeeding, 1983). The study of the interest-income relationship at the occupation level is practically important: it not only affords individuals additional considerations for career decision and development, but also provides key information for job seekers as unemployment hovers at a high rate and job searching remains

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difficult and challenging (Parker, 2012; Uchitelle, 2009). Theoretically, an explication of the interest–income association may provide occupational interests as a lens to understanding income-related psychological phenomena, such as occupational attainment (Judge, Klinger, & Simon, 2010), perceived job stress at work (DeVoe & Pfeffer, 2011), financial strain (Judge, Hurst, & Simon, 2009), and pay satisfaction (Berkowitz, Fraser, Treasure, & Cochran, 1987).

Thus, the goal of this paper is to cast new light on the understanding of an occupation's interest profile by linking that profile to annual income. Aside from focusing on the levels of RIASEC interests associated with a given occupation's interest profile, we also aim to measure and involve the *differentiation* across interest dimensions as an important characteristic that indicates how well-defined an interest profile is (Holland, 1997). Simply put, a differentiated interest profile has high interest scores on some dimensions and low interest scores on other dimensions, whereas an undifferentiated interest profile has interest scores that are similar across RIASEC dimensions. Despite its theoretical relevance, differentiation remains “a weak construct” (p. 148) with a “checkered research career” (p. 172, Holland, 1997). Inconsistent findings regarding the main effects of interest differentiation on certain outcomes have led to a decline in research in this area in recent years (Nauta, 2010). Instead of continuing the search for the main effects of differentiation on vocational outcomes, we focus on the extent to which differentiation *moderates* the effects of the RIASEC.

In the sections that follow, we provide the theoretical foundations for four core hypotheses and introduce three general research questions. We test for the hypotheses and research questions with data pooled from the U.S. Bureau of Labor Statistics and O\*Net for 665 different occupations in the U.S., and discuss the implications of those results as well as avenues for future research.

## 1. Vocational interests and occupational outcomes

Over the past two decades, Holland's (1985, 1997) RIASEC framework has become the most popular tool used to study the vocational interests of people as well as work environments (Woods & Hampson, 2010). The underlying assumption of this framework is that people and work environments can be described with regard to their level of interest in six dimensions, each of which are associated with certain types of work tasks and requirement. The six interest dimensions are: Realistic (R), investigative (I), artistic (A), social (S), enterprising (E), and conventional (C). Holland suggested that people with certain levels of these interests tend to seek out work environments with parallel tasks and requirements. For example, people with strong interests in realistic, investigative, and enterprising categories fit well into engineering positions characterized by practical, hands-on work (R); problem-solving (I), and project management (E).

Much research supports the importance of RIASEC profiles for individuals, particular in the domain of career decision-making. For example, a number of studies have evidenced the ability to predict an individual's occupational choice from their RIASEC scores (e.g., Betz, Borgen, & Harmon, 2006; Hansen & Dik, 2005). However, relatively less is known about the potential value of RIASEC profiles at the occupation (work environment) level of analysis (Nauta, 2010). If occupations' interest profiles are of theoretical and practical import, the RIASEC characteristics of occupations should enable the prediction of occupational outcomes. In the current research, we seek to directly address this issue by examining relationships among levels of RIASEC interests – as well as differentiation across interests – and a clear indicator of the value placed on occupations: annual income.

To date, little research has investigated this issue. Reardon, Bullock, and Meyer (2007) conducted one relevant study, in which they applied the Holland occupational codes to occupations in the U.S. census to describe annual income at the occupation level. The occupations were categorized based on their highest interest dimension (i.e., the first letter of a Holland code). For instance, if an occupation's realistic interest score is higher than the other five interest scores, this occupation will be categorized into the Realistic type. According to Reardon et al. (2007), the Investigative type received the highest income (\$48,592) in the year 2000, followed by Conventional (\$33,223), Artistic (\$32,724), Social (\$32,506), with Realistic (\$27,215) and Enterprising (\$26,109) types receiving the lowest income. However, no inferential statistical test was conducted to discern the difference across types of occupations. More importantly, occupations were coarsely characterized with the primary Holland interest category, while the actual level on each RIASEC dimension was ignored. A comprehensive evaluation is in order to understand the effects of occupations' RIASEC interest levels.

Among the RIASEC dimensions, investigative interests appear to have the most clear positive influence on income. First, research evidence suggests that investigative interests correlate positively with cognitive ability (Ackerman & Heggestad, 1997). Indeed, investigative interests positively predicted the performance of army soldiers even when the jobs did not require such interests (Van Iddekinge, Roth, et al., 2011). At the occupation level, occupations that emphasize investigative interests have a stronger need for cognitive processing and trained skills (Anthony & Armstrong, 2010) and thus can be quite selective in filling the jobs. Individuals with greater investigative interests may be driven to acquire greater subject matter knowledge through education (Rottinghaus, Lindley, Green, & Borgen, 2002; Schmitt, Oswald, Friede, Imus, & Merritt, 2008) and thus become well qualified for the jobs.

Second, the development of the information economy has led to an increased focus on talented and highly skilled workers (Castells, 2000). In such an economy, workers who are curious, problem-driven, and investigative are more likely obtain higher levels of knowledge and skills and thus receive greater opportunity to advance, and subsequently afford to acquire more knowledge in return (Garicano & Rossi-Hansberg, 2006). With the aid of computers, workers nowadays are faced with increased demand to perform nonroutine cognitive tasks (Autor, Levy, & Murnane, 2003). Investigative interests can predispose individuals to pursue the nonroutine cognitive tasks that are valued in the information economy. Therefore,

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