

LONGITUDINAL CHANGES IN VOCATIONAL INTERESTS IN MIDDLE ADOLESCENCE

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Abstract

Numerous studies have examined vocational interests, finding strong cross-cultural equivalence for the Spherical model. This model explains variability in interests toward different work fields, like People versus Things, and Ideas versus Data, as well as interests in occupations with varying educational levels or Prestige. Croatia has a rich history of vocational interest research in early and middle adolescence, with cross-sectional studies suggesting interest structures emerging around age 14. This study adds to the literature by longitudinally investigating vocational interest changes during adolescence. The sample included middle adolescents followed for three years (ages 16, 17, and 18; N=360), using the Croatian version of the Personal Globe Inventory-Short to measure vocational interests. The data confirm the hypothesized hexagonal RIASEC structure across all three time points. Girls scored higher on People-Things and Prestige dimensions, with no gender differences in Data-Ideas. A moderate drop in Prestige dimension was observed, while the other dimensions remained stable. Interest profile elevation remained consistent, with slight decreases in differentiation. Moderation effects were discussed, aligning with theoretical expectations and prior studies, offering implications for career counseling practices.

Keywords: *Vocational interests, RIASEC, adolescence, vocational choices, career counseling.*

1. Introduction

Career development during adolescence involves different key tasks related to constructing one's career path, with self-concept crystallization being one of them (Savickas et al., 2018). The development of a clear vocational self-concept hinges on development of vocational interests. Hence, this study seeks to explore development of vocational interests among middle adolescents, aiming to uncover significant patterns of change across the three dimensions of vocational interests (People-Things, Ideas-Data, and Prestige) as well as the two characteristics of vocational interest profiles (Interest Differentiation and Profile Elevation).

The three vocational interest dimensions, namely People-Things, Ideas-Data, and Prestige, correspond to the underlying structure of the Spherical model of interests (Tracey, 2002), which has been strongly supported across various cultures. The People-Things dimension reflects an individual's inclination towards interpersonal interactions over working with objects, tools, or machinery, whereas the Ideas-Data dimension pertains to a preference for generating novel procedures and solutions rather than adhering to established rules when dealing with information. Both of these dimensions were previously identified within the Hexagonal model of interests (Holland, 1997; Prediger, 1982). The Prestige dimension represents an individual's inclination towards pursuing extended educational training, assuming greater responsibilities in work, and seeking out prestigious occupations. Addition of Prestige presents an expansion of the model as the concept of prestige was traditionally situated within the realm of values, making its incorporation into the measurement of vocational interests a notable advancement.

The two characteristics of vocational interest profile encapsulate the clear directedness (Interest Differentiation) and overall height (Profile Elevation) of an individual's interest profile. Interest Differentiation signifies the degree to which an individual's interests are clearly focused on specific occupational activities. Holland (1985) proposed that individuals with more differentiated interest profiles possess a clearer understanding of their likes and dislikes, leading them to more informed career decisions and favorable career outcomes such as job satisfaction and performance, as evidenced in prior research (e.g., Hirschi & Läge, 2007). Conversely, Profile Elevation refers to the overall level of interests across all domains, indicating either a high preference for various occupational activities (high profile) or a lack of interest in multiple domains (low profile). Studies have provided methodological explanations for its

nature, but have also substantiated its significance in terms of its association with traits such as general curiosity, openness, enthusiasm, optimism, or interest flexibility, which are, in turn, linked to better adaptation to work tasks and environments, as indicated in research findings (e.g., Tracey, Allen & Robbins, 2012).

During middle adolescence, a distinct spherical structure of vocational interests has been consistently observed across various cultures, as evidenced by research (e.g. Darcy, 2005; Hedrih, 2008; Long, Adams, & Tracey, 2005; Tracey, 2002; Tracey, Watanabe, Schneider, 1997, Wilkins et al., 2013), including studies conducted in Croatia (Šverko, 2008; Šverko et al., 2014). However, there has been relatively less emphasis on examining the developmental changes in interest endorsement and the specifics of interest profiles during this period. Studies which tapped into longitudinal changes in interests mainly evidenced different pattern of change in early and late adolescence. While early adolescence is characterized by general drop in interest scores, the contrary is true for the late adolescence (Hoff et al, 2018). When considering particular interest scales, it was observed that interests for working with people tended to increase during adolescence, while interests for working with things showed reverse pattern of change.

Given that adolescence is a crucial stage for the crystallization of one's career self-concept, we wanted to explore changes in vocational interests during high school as this is the time when individuals strongly reflect upon their personal goals, strengths, and opportunities. Therefore, the main goal of this study is to longitudinally explore stability and change in vocational interests in middle adolescence.

2. Objectives

This paper focuses on the change in vocational interests during middle adolescence by empirically exploring temporal changes in vocational interest dimensions and characteristics of vocational interest profiles.

3. Methods

3.1. Study design

A longitudinal research design was utilized, starting with a cohort of high school students from the 2nd grade (around 16 years old), who were then tracked for three consecutive years. This study is part of a broader research project funded by the Croatian Science Foundation titled "Free Career Choice" (Project No. IP-2019-04-7537), which focuses on examining the career development of young and middle adolescents.

3.2. Instruments

The Croatian version of the Personal Globe Inventory Short (PGI-Short; Tracey, 2010) was applied to assess vocational interests. The PGI provides scores on 10 interest scales (Social Facilitating, Managing, Business Detail, Data Processing, Mechanical, Nature/Outdoors, Artistic, Helping, High Prestige, and Low Prestige), six RIASEC scores, and dimensions including People-Things, Ideas-Data, and Prestige. Originally, the instrument comprises 40 vocational activities rated for liking and competence on a 7-point Likert scale. However, in this study, only the liking scales were employed. Prior research has consistently supported the structural validity of the PGI across various cultural contexts (e.g., Tracey, 2010; Zhang, Kube, Wang & Tracey, 2013), including in the Croatian context (Šverko & Babarović, 2016). The reliability of the interest scales in this study, measured by Cronbach alpha coefficients at T1, ranged from .59 to .86, with a median of .77, indicating satisfactory reliability of the short interest scales ($k=4$). Additionally, the circular ordering of the six PGI RIASEC scales was strongly supported ($CI_{2nd\ grade} = .94$, $CI_{3rd\ grade} = .93$, $CI_{4th\ grade} = .90$).

3.3. Sample

The sample comprised 360 adolescents, including 128 boys and 232 girls, who were tracked over a three-year period at ages 16, 17, and 18. Assessments were conducted three times during the spring seasons of 2021, 2022, and 2023, while the participants were in their second, third, and fourth years of secondary school, respectively. The assessments were administered in the participants' schools using computerized tools.

4. Results

To explore longitudinal shifts in vocational interest dimensions and characteristics of interest profiles, we employed five Repeated Measures ANOVA Models, with gender acting as the between-group factor. Our findings, detailed in Table 1 and depicted in Figures 1 and 2, shed light on the evolving nature of vocational interests during middle adolescence.

Findings indicate that girls displayed a markedly higher interest in working with people compared to boys, as indicated by a very large and expected gender effect on the People-Things dimension ($\eta^2 = .368$). No temporal changes were observed in the People-Things dimension, but a small interaction effect ($\eta^2 = .023$) suggested that boys and girls exhibited different pattern of change in interest towards people vs. things during adolescence. As depicted in Figure 1, girls tended to decrease their interest in people while boys tended to decrease their interest in things, thereby both reducing gender-typical interest endorsements over time. Dimension Ideas-Data remained stable across adolescent years, with no gender nor interaction effect. We observed a small decline in the Prestige dimension ($\eta^2 = .045$). Also, girls generally exhibited a stronger inclination towards more prestigious occupations, as evidenced by a strong gender effect ($\eta^2 = .185$).

Furthermore, a slight decrease in Interest Differentiation was observed over time ($\eta^2 = .021$), with similar trends observed for both boys and girls. However, girls exhibited greater interest differentiation overall ($\eta^2 = .052$) compared to high-school boys. Lastly, no main effects of time and gender on Profile Elevation were observed, but a small interaction effect ($\eta^2 = .030$) revealed distinct gender patterns of changes during adolescence: while both genders started at similar profile elevations, boys raised their interests towards all occupational domains, whereas girls decreased their interests in general (Figure 2).

Table 1. Longitudinal differences in vocational interests during middle adolescence: temporal and gender effects and their interaction (N = 360).

	Temporal effect				Gender effect				Interaction			
	F	df1, df2	p	η^2	F	df1, df2	p	η^2	F	df1, df2	p	η^2
People-Things	1.00	2, 716	.367	.003	208.07	1, 358	.000	.368	8.25	2, 716	.000	.023
Ideas-Data	.461	2, 716	.631	.001	1.38	1, 358	.241	.004	.839	2, 716	.433	.002
Prestige	17.02	2, 716	.000	.045	81.50	1, 358	.000	.185	.71	2, 716	.494	.002
Differentiation	7.863	2, 716	.000	.021	19.59	1, 358	.000	.052	1.55	2, 716	.213	.004
Elevation	1.43	2, 716	.241	.004	4.53	1, 358	.034	.012	10.98	2, 716	.000	.030

Figure 1. The pattern of changes in vocational interest dimensions during middle adolescence (N = 360, boys-solid line, girls-dotted line).

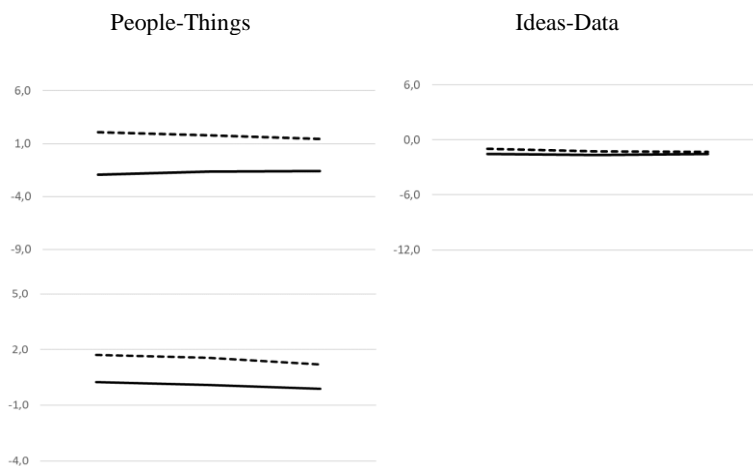
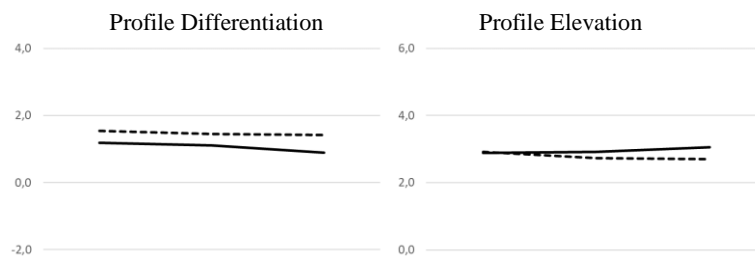


Figure 2. The pattern of changes in vocational interest profiles during middle adolescence (N = 360, boys-solid line, girls-dotted line).



5. Discussion & conclusion

The findings suggest that vocational interests tend to remain relatively stable throughout middle adolescence, with minimal changes occurring between the ages of 16 and 18. Although there was a slight decline noted in Prestige over time, overall vocational interests showed consistency during this period. Prior research on longitudinal shifts in prestige or occupational aspirations from early adolescence to young adulthood has yielded somewhat inconclusive findings, with some studies hinting at possible curvilinear trends (Lee & Rojewski, 2012; Lee, 2009; Miyamoto & Wicht, 2020; Tracey et al., 2005). Moreover, studies have consistently shown a stronger inclination among girls toward activities with higher prestige (e.g., Korlat et al., 2023; Tao et al., 2022), a trend also observed in our study.

Expected gender differences emerged prominently in the People-Things dimension, with girls exhibiting a greater preference for people-oriented activities, aligning with established literature (e.g., MacDonald et al., 2023; Su et al., 2009; Tao et al., 2022). However, a somewhat divergent trend was noted regarding the People-Things dimension, with both boys and girls displaying a tendency to reduce their gender-typical interests over time, resulting in smaller gender disparities as adolescence progresses. This trend also aligns with established literature (e.g., Gfrörer et al., 2021; Hoff et al., 2018; Hoff et al., 2022). Hence, while interests generally remain stable throughout adolescence, the observed changes suggest that there is still potential for career interventions. These interventions could involve targeted programs aimed at broadening adolescents' exposure to diverse career options and providing opportunities for hands-on exploration in various fields. Additionally, efforts to mitigate career gender stereotyping could play a crucial role in fostering more autonomous career choices. By promoting interest differentiation and challenging traditional gender norms, adolescents may feel empowered to explore a wider range of career paths and make decisions that align more closely with their individual strengths and aspirations. Such initiatives not only contribute to the development of a more diverse and skilled workforce but also enhance the overall well-being and fulfillment of young individuals as they navigate their career trajectories.

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References

- Darcy, M. U. A. (2005). Examination of the structure of Irish students' vocational interests and competence perceptions. *Journal of Vocational Behavior*, 67, 321-333.
- Gfrörer, T., Stoll, G., Rieger, S., Trautwein, U., & Nagengast, B. (2021). The development of vocational interests in early adolescence: Stability, change, and state-trait components. *European Journal of Personality*, 35(5), 1-23.
- Hedrih, V. (2008). Structure of vocational interests in Serbia: Evaluation of the spherical model. *Journal of Vocational Behavior*, 73, 13-23.
- Hoff, K. A., Briley, D. A., Wee, C. J., & Rounds, J. (2018). Normative changes in interests from adolescence to adulthood: A meta-analysis of longitudinal studies. *Psychological Bulletin*, 144(4), 426.

- Hoff, K. A., Chu, C., Einarsdóttir, S., Briley, D. A., Hanna, A., & Rounds, J. (2022). Adolescent vocational interests predict early career success: Two 12-year longitudinal studies. *Applied Psychology, 71*(1), 49-75.
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.
- Hirschi, A. & Läge, D. (2007). Holland's secondary constructs of vocational interests and career choice readiness of secondary students: Measures for related but different constructs. *Journal of Individual Differences, 28*, 205-218.
- Lee, I. H. & Rojewski, J. W. (2009). Development of occupational aspiration prestige: A piecewise latent growth model of selected influences. *Journal of Vocational Behavior, 75*, 82-90.
- Lee, I. H. & Rojewski, J. W. (2012). Development of occupational aspirations in early Korean adolescents: a multiple-group latent curve model analysis. *International Journal for Educational and Vocational Guidance, 12*, 189-210.
- Long, L., Adams, R. S., & Tracey, T. J. G. (2005). Generalizability of interest structure to China: Application of the Personal Globe Inventory. *Journal of Vocational Behavior, 66*, 66-80.
- Korlat, S., Schultes, M., Schober, B., Spiel, C., & Kollmayer, M. (2023). Gender Typicality and Prestige of Occupational Aspirations in Adolescents: The Relevance of Agency and Communion. *Journal of Career Development, 50*(2), 405-424.
- MacDonald, K. B., Benson, A., Sakaluk, J. K., & Schermer, J. A. (2023). Pre-occupation: A meta-analysis and meta-regression of gender differences in adolescent vocational interests. *Journal of Career Assessment 0*(0), 1-24.
- Miyamoto, A., & Wicht, A. (2020). Developmental trajectories of the socioeconomic status of occupational aspirations during adolescence. *Journal of Adolescence 84*, 26-35.
- Prediger, D.J. (1982). Dimensions underlying Holland's hexagon: Missing link between interest and occupations? *Journal of Vocational Behavior, 21*, 259-287.
- Savickas, M. L., Porfeli, E. J., Lara Hilton, T., & Savickas, S. (2018). The Student Career Construction Inventory. *Journal of Vocational Behavior, 106*, 138-152.
- Su, R., Rounds, J., & Armstrong, P. I. (2009). Men and things, women and people: a meta-analysis of sex differences in interests. *Psychological bulletin, 135*(6), 859.
- Šverko, I. (2008). Spherical model of interests in Croatia. *Journal of Vocational Behavior, 72*, 14-24.
- Šverko, I., Babarović, T., & Međugorac, V (2014). Pictorial assessment of interests: Development and evaluation of Pictorial and Descriptive Interest Inventory. *Journal of Vocational Behavior, 84*, 356-366.
- Šverko, I. & Babarović, T. (2016). Integrating Personality and Career Adaptability into Vocational Interest Space. *Journal of Vocational Behavior, 94*, 89-103.
- Tao, C., Glosenber, A., Tracey, T., Blustein, D. L., & Foster, L. L. (2022) Are Gender Differences in Vocational Interests Universal?: Moderating Effects of Cultural Dimensions. *Sex Roles 87*(4), 327-349.
- Tracey, T. J. G. (2002). Personal Globe Inventory: Measurement of the spherical model of interest and competence beliefs [Monograph]. *Journal of Vocational Behavior, 60*, 113-172.
- Tracey, T. J. G. (2010). Development of an abbreviated Personal Globe Inventory using item response theory: The PGI-short. *Journal of Vocational Behavior, 76*(1), 1-15.
- Tracey, T. J. G., Allen, J., & Robbins, S. B. (2012). Moderation of the relation between person-environment congruence and academic success: Environmental constraint, personal flexibility and method. *Journal of Vocational Behavior, 80*, 38-49.
- Tracey, T. J. G, Robbins, S. B., & Hofsess, C. D. (2005). Stability and change in interests: A longitudinal study of adolescents from grades 8 through 12. *Journal of Vocational Behavior, 66*(1), 1-25.
- Tracey, T. J. G., Watanabe, N., & Schneider, P. L. (1997). Structural invariance of vocational interests across Japanese and American cultures. *Journal of Counseling Psychology, 44*(4), 346-354.
- Wilkins, K. G., Ramkissoon, M., & Tracey, T. J. G. (2013). Structure of Interest in a Caribbean Sample: Application of the Personal Globe Inventory. *Journal of Vocational Behavior, 83*(3), 367-372.
- Zhang, Y., Kube, E., Wang, Y., & Tracey, T.J.G. (2013). Vocational interests in China: An evaluation of the Personal Globe Inventory-Short. *Journal of Vocational Behavior, 83*(1), 99-105.