

King's Business School, King's College London

Cover Sheet for King's Business School 23/24

| | |
|----------------------|-----------------------------|
| Candidate ID: | AE21440 |
| Module Code: | 7SSMM012 |
| Module Name: | Dissertation Project |
| Word Count: | 11,066 Words |

Please complete the above candidate and module information and attach to the front of your answer sheet/submission or write your answers on the following page(s).

Where applicable students should clearly state the question(s) they are answering (e.g. Question 1, Part A) so it can be clearly identified for markers.

DECLARATION BY STUDENT

I understand what is meant by plagiarism/collusion and have signed at enrolment the declaration concerning the avoidance of plagiarism/collusion.

I understand that plagiarism and collusion is a serious examinations offence that may result in disciplinary action being taken.

I understand that I must submit work BEFORE the deadline, and that failure to do so may result in late submission penalties.

I understand that where a word limit is indicated, I should adhere to the word limit and failure to do so may result in penalties.

I understand that King's requires students to acknowledge any use of generative AI tools in coursework. **Please select and complete the applicable statement, and provide additional information where required.**

1. I declare that no part of this submission has been generated by AI software. These are my own words.

Note. Using software for English grammar and spell checking is consistent with Statement 1.

[or]

2. I declare that parts of this submission have contributions from AI software and that it aligns with acceptable use as specified as part of the assignment brief/ guidance and is consistent with good academic practice. The content can still be considered as my own words. I understand that as long as my use falls within the scope of appropriate use as defined in the assessment brief/guidance then this declaration will not have any direct impact on the grades awarded.

I acknowledge use of software to **[include only the statements which apply, and provide details as appropriate]:**

(i) Generate ideas or structure suggestions, for assistance with understanding core concepts, or other substantial foundational and preparatory activity.

[insert AI tool(s) and links and/or how used]

(ii) Write, rewrite, rephrase and/or paraphrase part of this essay.

[insert AI tool(s) and links]

(iii) Generate some other aspect of the submitted assessment.

[insert AI tool(s) and links] / Include brief details]

By completing this assessment, you acknowledge that you have read and understand the above. Please do not sign your name.



“Exploring the Influence of Skill Variations, Job
Autonomy, and Their Interaction on Changes
in the Big Five Personality Dimensions
Over Time”
by Xingxing Liu

Dissertation MSc Human Resource Management
and Organisational Analysis

Supervisor: Chia-Huei Wu

02.09.2024

Word count: 11,066 Words

Acknowledgments

I would like to express the deepest gratitude to my supervisor, Chia-Huei Wu, whose patience, support and guidance were essential to the writing of this dissertation.

Abstract

Based on the job characteristics model and the Big Five theory of personality, the author proposed a model to suggest that skill varieties and job autonomy can drive changes in Big Five personality traits, particularly openness, conscientiousness, and agreeableness. Hypothesis 1 posited that exposure to diverse skills is associated with increases in these traits over time. Hypothesis 2 suggested that job autonomy similarly leads to increases in openness, conscientiousness, and agreeableness. Hypothesis 3 proposed that job autonomy moderates the relationship between skill variety and personality changes, with individuals experiencing high job autonomy and diverse skills exhibiting the most significant trait changes. Two waves of data from 3,246 employees over a five-year period from the Household, Income and Labour Dynamics in Australia Survey were analyzed. Skill variety, job autonomy, and Big Five personality traits were measured at various points throughout the study. The results showed that both skill variety and job autonomy positively predicted increases in openness, conscientiousness, and agreeableness over time. Additionally, the interaction between high job autonomy and skill variety was found to amplify these personality changes, with the most pronounced increases observed in individuals experiencing both high job autonomy and diverse skills. The implications for personality development and work design research are discussed.

Keywords: personality change, autonomy, skill variety, longitudinal data analysis.

Table of Contents

- 1. Introduction 1
- 2. Literature Review 5
 - 2.1 Big Five Theory 5
 - 2.2 Skill Variety 7
 - 2.3 Autonomy 10
- 3. Method 17
 - 3.1 Employee Sample 19
 - 3.2 Measures 20
 - 3.2.1 Dependent Variable 20
 - 3.2.2 Independent variables 20
 - 3.2.2.a Autonomy 20
 - 3.2.2.b Skill Variety 21
 - 3.2.2.c Control variables 21
- 4. Findings 22
 - 4.1 Results 22
 - 4.1.1 Descriptive Statistics 22
 - 4.1.2 Pair Sample t-Test 25
 - 4.1.3 Correlation Analysis 26
 - 4.1.4 Adjustment Effect Analysis 28
 - 4.1.5 Invariance Analysis 36
 - 4.2 Discussion 41
 - 4.2.1 Theoretical Implications 42
 - 4.2.2 Managerial Implications 45
- 5. Conclusion 47
 - 5.1 Limitations and Future Research 47
 - 5.2 Concluding Thoughts 48
- Bibliography 49
- Appendices 54
 - Appendix 1. Invariance Analysis 54

List of tables and figures

- Figure 1: Proposed research model 16
- Table 1: Descriptive statistics (2017) 23
- Table 2: Descriptive statistics (2021) 24
- Table 3: Pair Sample t-Test..... 26
- Table 4: Correlation Analysis of Hypothesis One 27
- Table 5: Correlation Analysis of Hypothesis Two..... 27
- Table 6: Adjustment Effect Analysis Result One 29
- Table 7: Adjustment Effect Analysis Result Two..... 30
- Table 8: Adjustment Effect Analysis Result Three..... 31
- Table 9: Adjustment Effect Analysis Result Four 32
- Table 10: Adjustment Effect Analysis Result Five 33
- Figure 2: Simple Slope Plot 36
- Table 11: Adjustment Effect Analysis Result Five..... 41

1. Introduction

The study of personality traits, particularly the Big Five dimensions—openness, conscientiousness, extraversion, agreeableness, and neuroticism—has long been a focal point in psychological research due to their profound influence on various life outcomes. It has been demonstrated that these characteristics, which are frequently thought to be fairly stable over time, have an effect on one's health, professional success, resource accessibility, and interpersonal relationships (Ozer & Benet-Martinez, 2006). These qualities produce consistent behavioral patterns, which have the power to dramatically alter a person's course in life. According to recent research, personality traits are not completely unchangeable, though; they can be shaped over time by environmental factors and life experiences (DeYoung, 2015).

The workplace, where people spend a large amount of their lives, is an important topic of investigation in this context. The way personality traits and job characteristics interact can have a significant impact on an organization's effectiveness and on the well-being of its employees. Prior research has looked at the relationship between the Big Five personality traits and different aspects of the job, like employee behavior and job satisfaction (Judge & Locke, 2000; Van & Feij, 2003). These studies highlight the significance of comprehending the ways in which work environments and personality traits interact to affect job outcomes.

The vast majority of previously published research has looked at the independent effects of the Big Five personality traits and job characteristics on employee behavior, job satisfaction, and design rates. A few studies also look into the ways in which these outcomes are influenced by the interaction between the Big Five personality traits and job characteristics. Prominent studies have furnished significant perspectives on the discrete impacts of personality traits and job attributes

on an array of workplace consequences. These studies include "Complex Relationships Among Personality Traits, Job Characteristics, and Work Behaviors" by Van and Feij (2003) and "Personality and job satisfaction: The mediating role of job characteristics" by Judge and Locke (2000). Similarly, the concept of Person-Environment (P-E) fit, extensively studied by Ehrhart (2006), highlights the significance of aligning personal characteristics with job attributes to achieve positive psychological consequences. These theories all emphasize the ways in which individual traits and situational factors interact to influence behavior, job satisfaction, and design rates. Few studies have looked at the long-term relationships between the Big Five personality traits and job characteristics, despite the fact that understanding these relationships is a central focus of organizational research (Judge & Locke, 2000).

A complicated interaction between genetic and environmental factors shapes personality traits. There may be notable changes in these characteristics as people enter adulthood and assume responsibilities in both their personal and professional lives (Hopwood & Burt, 2011). Good experiences, like a variety of educational opportunities, can promote the development of character traits like conscientiousness and openness. On the other hand, detrimental factors like starvation or exposure to pollutants in the environment can have a negative impact on personality development. Crucially, it has been determined that work environments and experiences are strong inducers of personality trait changes via a bottom-up process in which daily experiences compound to yield major long-term impacts (Wu, 2016; Cherry, 2023).

Research on the relationship between personality traits and job characteristics is crucial, with job autonomy emerging as one important factor. It has been demonstrated that job autonomy, which is the degree of discretion and control employees have over their work tasks, has a major impact on both job satisfaction and performance (Kerr & Xu, 2018). The significance of job autonomy

also includes its possible bearing on how personality traits evolve over time. Furthermore, frameworks such as the Occupational Therapy Practice Framework emphasize the value of social interactions in the development of new skills and imply that work environments with a wide range of social and skill sets can promote positive changes in personality (Boop & Lieberman, 2020).

With this background, it is reasonable to speculate that changes in the Big Five personality dimensions over time may be significantly influenced by skill variations and job autonomy, as well as by their interactions. The range and diversity of skills that workers are exposed to and can acquire in their roles are referred to as skill variations. Possessing a varied skill set can foster emotional and cognitive development, which may result in improved agreeableness, conscientiousness, and openness. By giving workers the flexibility to develop and apply these abilities, job autonomy can strengthen this effect and reinforce positive personality changes.

For companies looking to optimize their work environments, knowing the relationship between skill variations, job autonomy, and personality trait changes can be very insightful. Workplace environments and job roles that are tailored to the characteristics of the employees can improve productivity and job satisfaction. These kinds of insights can help people grow both personally and professionally by illuminating the ways in which their work experiences have shaped their personalities. This information helps firms create engaging work environments that increase morale, motivation, and retention, which benefits both workers and employers. The results of this study can also be used to create customized training plans that offer opportunities for specific growth based on the characteristics and preferences of each individual. Organizations can promote long-term success through enhanced employee performance, job satisfaction, and well-being by encouraging positive personality development.

The aim of this research is to contribute to a more comprehensive understanding of how work-related experiences and environmental factors can influence and potentially alter an individual's personality traits over the course of their career. The findings from this study could have significant implications for organizational practices, employee well-being, and personal development strategies within the workplace. By exploring the influence of skill variations, job autonomy, and their interaction on changes in the Big Five personality dimensions over time, this research seeks to provide actionable insights that can enhance both individual and organizational outcomes.

2. Literature Review

2.1 Big Five Theory

Personality is conceived as (a) an individual's unique variation on the general evolutionary design for human nature, expressed as a developing pattern of (b) dispositional traits, (c) characteristic adaptations, and (d) self-defining life narratives, complexly and differentially situated (e) in culture and social context (McAdams & Pals, 2006, p. 204). The five-factor model of personality (FFM) is a set of five broad trait dimensions or domains, often referred to as the “Big Five”: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness (Soto & Jackson, 2013). The theory proposes that five fundamental dimensions of personality capture the core aspects of individual differences in behavior, cognition, and emotion. Openness reflects an individual's preference for novelty, creativity, curiosity, and intellectual engagement. Conscientiousness pertains to one's level of organization, self-discipline, goal-directedness, and reliability. Extraversion captures an individual's sociability, assertiveness, energy level, and positive emotionality. Agreeableness, which reflects one's level of cooperativeness, empathy, altruism, and interpersonal warmth. Neuroticism encompasses traits related to emotional stability, anxiety, moodiness, and vulnerability to stress. All traits have social implications because human beings are an intensely social species, but traits describe patterns of behavior and experience even in situations involving single individuals who are not currently dwelling on social concerns (DeYoung, 2015).

Numerous cultures and demographics have provided substantial empirical support for the Big Five Theory. Studies have indicated that these characteristics are stable in the long run and can be used to predict a range of life outcomes. The Big Five dimensions, for example, have been shown in studies to be accurate indicators of academic performance, job performance, and even physical

health. The Big Five traits are applied in organizational settings to better understand employee behavior and enhance job fit. For instance, extraversion is associated with the emergence and effectiveness of leadership, and conscientiousness is a strong predictor of job performance across a variety of occupations (Barrick & Mount, 1991).

The Big Five Theory has its detractors even though it is widely accepted. One criticism of the model is that by condensing personality into just five dimensions, it may oversimplify personality and possibly ignore other important traits (McAdams, 1995). Furthermore, others contend that because the Big Five ignore contextual and situational influences, they may not adequately represent the complexity of personality (Mischel, 1984). The Big Five framework's primary reliance on self-report measures, which can be biased and influenced by social desirability effects, is another drawback (Paulhus & John, 1998). Furthermore, the Big Five may not be precise enough to capture the subtleties of individual differences, even though they offer a broad overview of personality.

In order to overcome some of these constraints, recent studies have integrated the Big Five with alternative theoretical frameworks. For instance, studies have looked at how situational elements and personality traits interact, as well as how personality affects life stories and personal narratives (McAdams, 2001). Furthermore, the development of psychometric methods and cross-cultural research has improved our comprehension of the ways in which the Big Five dimensions appear in various cultural contexts (McCrae et al., 1998).

Roberts (1997) conducted a study on women to investigate the association between work experiences and personality change across different periods of adulthood. The study found evidence for both correlational consistency of personality in adulthood and the socialization effect of work on personality change. Similarly, Hudson et al. (2012) examined the relationship

between social investment at work and longitudinal and cross-sectional personality trait development in employed individuals. Wille et al. (2014) tracked young professionals over 15 years to explore the maturation of work attitudes and its correlation with Big Five personality traits. The study investigated whether changes in personality traits drive changes in individuals' work attitudes, a mechanism referred to as the maturation of work attitudes. Turiano et al. (2011) utilized a large national sample to examine how personality trait level and change predict health outcomes over a 10-year span, with all trait levels except agreeableness predicting the number of work days limited. Li et al. (2014) focused on the reciprocal relationship between proactive personality and work characteristics, investigating whether work characteristics influence proactive personality over time and vice versa. Caliskan et al. (2016) studied employee readiness for organizational global change and the predictive effect of personality and perception of change. Riley et al. (2017) presented a developmentally integrative model of personality change, focusing on the trait of urgency and the factors that might lead to personality change. Recent work by Wang et al. (2021) and Köhnke (2021) also delves into the impact of work experiences on personality change, emphasizing the socializing pressure of norm demands during work and employment experiences. Wang et al. (2021) specifically review traditions in organizational and social psychology related to the study of work and personality change. Overall, these studies highlight the complex interplay between work experiences and personality change, shedding light on the mechanisms and factors that contribute to individual development in the workplace.

2.2 Skill Variety

Skill variety is a concept that is frequently discussed in the context of job design and motivation. It refers to the range of skills that an individual can utilize in their work tasks. The importance of skill variety lies in the fact that it allows employees to engage in a diverse set of activities that

require different skills, contributing to a more fulfilling work experience. This concept is crucial in understanding job satisfaction, employee motivation, and overall job performance. Rooted in the work of Hackman and Oldham (1976), skill variety is one of the core dimensions in the Job Characteristics Model (JCM), which posits that jobs enriched with diverse skills and tasks can lead to higher levels of employee satisfaction and performance. The Job Characteristics Model developed by Hackman and Oldham in 1976 identifies five key job dimensions: autonomy, feedback, task significance, task identity, and skill variety. These dimensions impact three important psychological states: experienced meaningfulness, experienced responsibility, and knowledge of results. This model suggests that having a diverse skill set improves the sense of purpose and significance of work, which in turn boosts motivation and job satisfaction. Herzberg's 1959 Two-Factor Theory, which separates hygiene factors from motivators in job satisfaction, is closely related to skill variety. Variety in skills is seen as a motivator because it gives workers chances to apply a wide range of skills and participate in a range of activities, which enhances intrinsic satisfaction.

Research has shown that skill variety is positively associated with job satisfaction and motivation (Morf & Staffelbach, 2017). In a study examining the relationship between task variety and counterproductive work behavior, it was found that task variety can lead to the development of competencies necessary for employability (Froehlich & Kremer, 2019). Rosenblatt (2001) investigated the mediating effect of skill flexibility, which includes skill utilization and skill variety, on work attitudes among teachers. Berg et al. (2003) examined the relationship between personality traits, job characteristics, and work behaviors, including skill variety as one of the factors affecting job satisfaction. Furthermore, Noefer et al. (2009) explored the interaction between skill variety, time pressure, and feedback from supervisors on employees' innovative

behavior. Zaniboni et al. (2013) compared the effects of task variety and skill variety on burnout and turnover intentions of older and younger workers, suggesting that skill variety may lead to more positive outcomes for older workers. Additionally, Wang et al. (2018) studied how work design characteristics, including skill variety, affect service employees' work-family conflicts.

Several factors can moderate the impact of skill variety on job outcomes. Work autonomy and skill diversity can interact to greatly affect both performance and job satisfaction. Positions with a high degree of autonomy and skill variety are probably going to produce the best results. According to Parker and Wall's (1998) research, employees who have more autonomy over how they use their skills are more likely to perform better on the job and have higher job satisfaction. This suggests that autonomy can enhance the advantages of skill variety. The effects of skill variety can also be mitigated by the perceived importance of the tasks completed. According to Hackman and Oldham (1976), employees who perceive their work as significant and impactful are inclined to value skill diversity and experience higher levels of job satisfaction. The perceived value of skill variety is increased by task significance, leading to more fulfilling and satisfying work. Individual differences can affect how skill variety affects job outcomes. Examples of these differences include personality traits and career aspirations. For instance, because they are more likely to seek out and benefit from a variety of tasks and responsibilities, employees with high levels of openness to experience may be more receptive to skill variety (Barrick & Mount, 1993). In a similar vein, workers with ambitious career goals could see skill diversity as a chance for advancement and professional development, which would boost their drive and output.

Overall, the literature review indicates that skill variety plays a significant role in job satisfaction, work attitudes, work behaviors, and employee engagement across different professions and age

groups. The inclusion of skill variety in job design strategies can have a positive impact on employee outcomes and organizational performance.

2.3 Autonomy

In the workplace, autonomy is the degree of discretion and freedom that employees have over their work assignments and decision-making procedures. Autonomy is regarded as crucial for improving employee happiness, performance, and well-being and is a fundamental element of job design and motivational theories. The idea of autonomy has been thoroughly researched to determine its effects on employee outcomes and organizational effectiveness. According to Deci and Ryan's (2008) Self-Determination Theory, autonomy is one of the three fundamental psychological needs, along with relatedness and competence. SDT contends that meeting these needs is essential to overall wellbeing and intrinsic motivation. In this context, "autonomy" refers to having free will and the ability to choose how one behaves. Employees are more likely to feel more intrinsically motivated and satisfied when they believe they have control over their work and can make decisions that are in line with their values and interests. One of the primary job characteristics that affects psychological states and work outcomes is autonomy, according to Hackman and Oldham's (1976) Job Characteristics Model. Autonomy, in JCM's opinion, makes workers feel more accountable and in charge of their work, which raises performance and job satisfaction. According to this model, the idea of "task autonomy," which describes how much control workers have over the timing and method of their work, is closely related to autonomy. The JD-R model, which was put forth by Bakker and Demerouti in 2011, emphasizes the value of job resources, such as autonomy, in preventing burnout and acting as a buffer against demands from the workplace. In this model, autonomy functions as a job resource that employees can use

to better manage the demands of their jobs, which enhances work engagement and lowers stress levels.

Job autonomy is a crucial aspect of job design that has been studied in various contexts. Coldwell (1974) highlighted the importance of autonomy as one of the key elements of professionalization, along with service to the public, intellectual activity, and influence. Barrick et al. (1993) explored the moderating role of autonomy in the relationship between personality dimensions and job performance, finding that autonomy had a significant impact on job performance ratings. Morgeson et al. (2005) investigated the relationships between job autonomy, cognitive ability, job-related skill, role breadth, and job performance, emphasizing the importance of autonomy in defining job roles. Kim et al. (2008) examined the effects of role stress, job autonomy, and social support on burnout and turnover intention among social workers, highlighting the role of autonomy in mitigating negative outcomes. Grund et al. (2021) explored the relationship between job autonomy and sickness absence, highlighting the potential implications for managing employees' health based on the level of autonomy provided in their job roles. Overall, the literature suggests that job autonomy plays a significant role in various aspects of job performance, job satisfaction, and employee well-being across different professions and industries.

Research indicates that diverse skill exposure can broaden perspectives and enhance cognitive flexibility, which in turn fosters growth in personality traits such as openness to experience. Engaging in a variety of tasks and learning new skills can lead to an increase in traits like conscientiousness as individuals adapt and become more efficient in handling diverse responsibilities. In the workplace, the Big Five personality traits play a significant role in determining how individuals interact and perform. For example, individuals high in openness

may struggle with changing situations and learning complex skills early on because they tend to focus on their performance rather than the learning process (The Big Five Personality Traits in the Workplace, 2021). Additionally, having a variety of skills and autonomy at work can impact an individual's attitudes and behaviors, as well as their cognitive ability (Personality, Attitudes, and Behaviors – Workplace Psychology, 2021). In a laboratory study involving repeated measures of emotion, researchers examined how to affect variability, specifically spin, and pulse, and explained variance in skill acquisition and adaptive performance as undergraduates learned a complex video game (Richels et al., 2020). Skill varieties necessitate continual adaptation and problem-solving, contributing to personality development. For example, gaining proficiency in various skills can boost confidence and initiative, linking to higher extraversion. The constant learning curve associated with skill variations can also reduce neuroticism by encouraging resilience and stress management.

Job autonomy plays a significant role in influencing changes in the Big Five personality dimensions. Autonomy has been found to moderate the relationships between the Big Five personality dimensions and various aspects of job performance and satisfaction (Barrick & Mount, 1993). For example, autonomy has been negatively linked to job stress, suggesting that individuals with higher levels of autonomy may experience less stress and potentially exhibit changes in their personality traits (Wu, 2016). Additionally, work design factors like job autonomy and complexity have been theorized to influence personality change, further highlighting the importance of autonomy in shaping personality traits (Wu,2016). Studies have also explored the indirect effects of the Big Five traits on changes in work behavior, with significant relationships found between the Big Five traits and job autonomy, developmental opportunities, rewards, and social support (Zheng, 2021). Furthermore, the relationship between

the Big Five personality traits and job performance has been studied in the context of autonomy, with autonomy moderating this relationship (Mooney, 2023).

Job dimensions of autonomy and variety were objectively manipulated to evaluate their effect on perceptions of job characteristics and job outcomes. In a high-variety task, increased autonomy led to increased satisfaction, while in a low-variety task, increased autonomy had a negligible effect on satisfaction. For performance, objective variety and autonomy also interacted, indicating that in a low-variety task, autonomy had little impact, while in a high-variety task, increased autonomy contributed 16 percent to performance (Dodd & Ganster, 1996). Individual differences may have an impact on how autonomy affects job outcomes. For example, workers who have high self-efficacy may gain more from autonomy because they believe they can manage their work and make decisions. Furthermore, the association between autonomy and job satisfaction or performance may be moderated by personality traits like conscientiousness and openness to new experiences (Barrick & Mount, 1991). Other aspects of the job may also have an impact on autonomy. For instance, the advantages of autonomy may be amplified in the presence of task significance and skill variety. Higher job satisfaction and performance are likely to come from jobs that offer both high autonomy and high skill variety (Hackman & Oldham, 1976). Management styles and organizational culture can affect how effective autonomy is. Positive results from granting autonomy are more likely to occur in organizations that cultivate a culture of trust and support. On the other hand, a setting with minimal support or unclear expectations combined with high levels of autonomy can exacerbate stress and role ambiguity (Gagne & Deci, 2005).

Comprehending the function of autonomy in the work environment bears significant consequences for the design of jobs. By creating positions that give workers more autonomy and

discretion, organizations can improve worker performance and job satisfaction. Putting into practice procedures like job enrichment, flexible work schedules, and participatory decision-making can help boost employee outcomes and autonomy. Supervisors and leaders are essential in promoting employee autonomy in the workplace. Managers may foster an environment where employees take ownership of their work and are encouraged to exercise autonomy by modeling a supportive and empowering leadership style. Autonomy and accountability can be balanced by giving employees feedback and direction while still honoring their freedom. Putting money into training staff members can increase the benefits of autonomy. Personalized training programs emphasizing problem-solving, self-management, and decision-making abilities can help staff members maximize their autonomy and perform better on the job.

Overall, the literature suggests that job autonomy plays a crucial role in influencing changes in the Big Five personality dimensions, highlighting the importance of considering autonomy in understanding how personality traits may evolve in response to work experiences. Autonomy is a fundamental aspect of job design that significantly impacts employee satisfaction, performance, and well-being. Drawing from theories like the Self-Determination Theory, the Job Characteristics Model, and the Job Demands-Resources Model, autonomy is a concept that gives workers a greater sense of control and freedom, which in turn boosts motivation, reduces burnout, and increases job satisfaction. Research from empirical studies demonstrates how autonomy improves a number of work-related outcomes, such as engagement, performance, and job satisfaction. Comprehending the moderating and mediating elements that impact the correlation between autonomy and job outcomes can aid organizations in creating more efficient work settings and administration strategies. In the end, promoting employee autonomy at work can enhance their well-being and the success of the company.

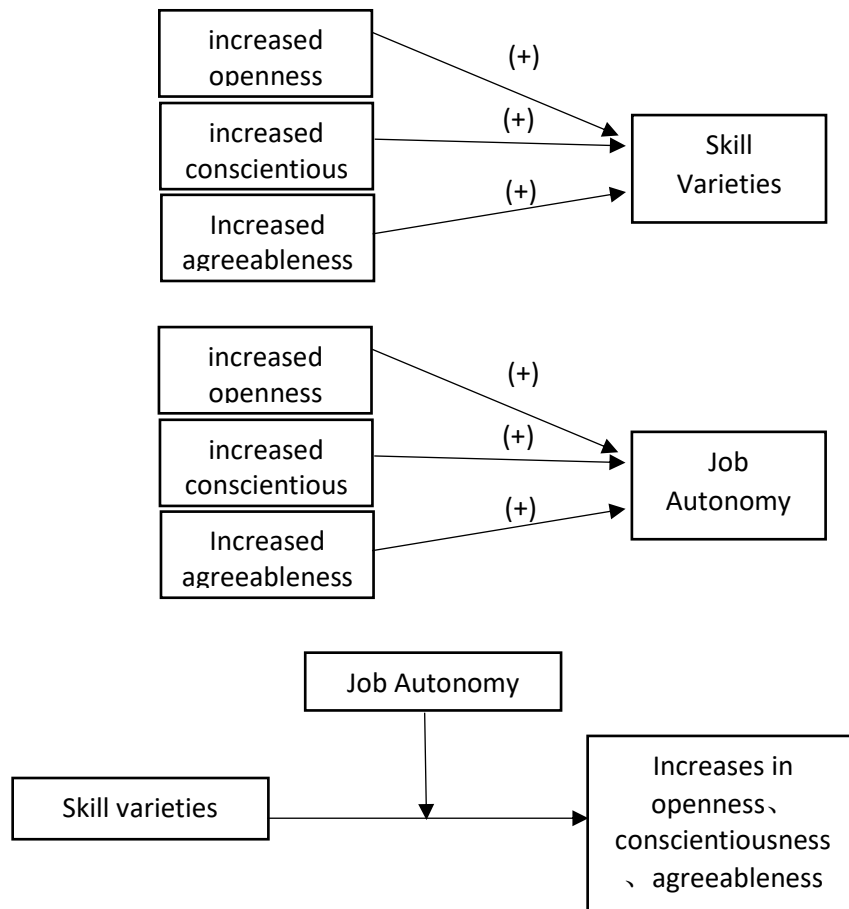
Because skill variations bring a diverse range of viewpoints and ideas to a community, they can foster openness. When individuals with various skill sets collaborate, they inherently bring a variety of perspectives and approaches to problem-solving, which helps foster a more accepting environment. People are more inclined to speak up in such a setting because they feel that their special contributions are appreciated and that others may have opposing but complimentary viewpoints. As team members are introduced to fresh approaches to challenges that they may not have previously explored, this variety of thinking can dismantle silos and challenge preconceived notions. When people are aware of each other's advantages, having a diversity of skills can help promote curiosity and respect for one another. This understanding may result in conversations that are more inclusive and cooperative, where dissenting opinions are not just acknowledged but actively sought out. As a result, the team dynamic as a whole opens up, and team members are more inclined to listen, adjust, and think critically about different viewpoints. This openness can spur innovation because it permits a more thorough investigation of viable solutions and promotes the ongoing sharing of information and experiences. To put it simply, skill differences foster an atmosphere where being transparent is the rule rather than the exception, which promotes better teamwork and results. For example, Farfán et al. (2020) suggested that greater autonomy at work was associated with lower levels of emotional exhaustion, with extroversion playing a significant moderating role in this relationship. According to Wu (2016), an increase in job control predicted an increase in agreeableness, conscientiousness, and openness directly, but did not predict a change in neuroticism and extroversion. So I think the relationship between skill variations and changes in the Big Five personality dimensions will be moderated by job autonomy. Based on the job characteristics model and also on previous findings, I thus expected that higher autonomy and skill varieties would both have positive changes on personality dimensions. I thus proposed the following:

Hypothesis 1: Skill varieties are associated with increased openness, conscientiousness, and agreeableness over time.

Hypothesis 2: Job autonomy is associated with increased openness, conscientiousness, and agreeableness over time.

Hypothesis 3: Job autonomy moderates the relationship between skill varieties and increases in openness, conscientiousness, and agreeableness. Specifically, individuals who have both high job autonomy and exposure to diverse skills will show the most significant changes in these personality traits over time.

Figure 1. Proposed research model



3. Method

The research strategy was to analyze data collected from The HILDA Survey using a quantitative method. I will utilize statistical software SPSS to analyze my data, and I have taken the Quantitative Data Analysis Approach. Specifically, it includes these steps: Descriptive Statistics, Correlation Analysis, Regression Analysis, and Multiple Regression Analysis.

This study focused on several components of skill diversity, job autonomy, and personality traits like agreeableness, conscientiousness, and openness. A range of statistical approaches were used to assess changes over time. Descriptive statistics were first employed to describe core tendencies and dispersions of the variables, enabling an overview of how participants valued their experiences related skill diversity, job autonomy, and personality qualities. This allowed for the assessment of differences between 2017 and 2021. The use of paired sample t-tests, which are useful for comparing two related groups to see if their means differ significantly, came next. In this instance, changes in the scores for conscientiousness, openness, skill diversity, work autonomy, and agreeableness between 2017 and 2021 were assessed using t-tests. The results of these t-tests provided insight into which areas experienced significant shifts and which remained stable over time, offering a statistical basis for interpreting changes in workplace experiences and personal attributes.

Regression models were used for additional study to determine the long-term effects of skill variety and job autonomy on personality traits. In this research, Model 1 had six 2017 control factors (gender, job autonomy, age, employment status, skill variety, and extraversion) in addition to the independent variable (skill variety). This model does not take moderating variables into account in order to investigate the direct effects of skill diversity on the dependent variable (extraversion). In order to investigate the joint impact of skill diversity and work

autonomy on extraversion, the third model incorporated an interaction term. The second model included job autonomy as a moderating variable. The regression analysis revealed significant direct effects of skill variety on extraversion, but no significant interaction effect was found between skill variety and job autonomy. This indicates that while skill variety directly influences extraversion, job autonomy does not significantly moderate this relationship.

An invariance study was also carried out to investigate measurement consistency between groups. In order to guarantee that the constructs being measured—such as personality traits or job characteristics—are interpreted consistently across various populations or historical periods, this kind of analysis is essential in psychometric research. Three levels of invariance analysis—strong (scalar), weak (metric), and configural—were carried out in this investigation. Weak invariance evaluated the consistency of the links between latent components and observed indicators, whereas configural invariance examined if the same constructs were being measured over time. In order to be sure that variations in scores represented real differences in the qualities rather than measurement bias, strong invariance investigated whether participants understood the survey items in the same way throughout time. The findings showed that configural and weak invariance were generally supported across the variables, implying that the constructs' general structure stayed constant from 2017 to 2021. Strong invariance was not always fully supported, though, suggesting that there might have been variations in how some items were understood over time. A thorough knowledge of the dynamics of skill diversity, work autonomy, and personality traits across time was made possible by the combination of these methodologies. Utilizing paired sample t-tests and descriptive statistics, the study was able to measure changes from 2017 to 2021. Regression models show strong direct effects and exclude moderating factors when appropriate, allowing for a fuller investigation of the links between skill variety, work

autonomy, and personality variables. By verifying that the constructs were measured consistently across time and between groups, the invariance analysis guaranteed the validity of these comparisons. This multi-method approach allowed for a thorough investigation of the research issues and yielded insightful knowledge about the ways in which personality traits and workplace characteristics change over time.

3.1 Employee Sample

The HILDA Survey is a broad social and economic longitudinal survey, with particular attention paid to family and household formation, income, and work. As the HILDA Survey has a longitudinal design, most questions are repeated each year. Nevertheless, within each survey wave, scope exists for asking questions on topics that are not covered every year. For example, the Big Five character grid is only available in the 22nd issue of the general release, with waves 5, 9, 13, 17, and 21.

I have chosen the Australian Household, Income, and Labor Dynamics (HILDA) survey, the 22nd issue, and the 17th and 21st waves of data. There were 3,246 respondents in total, all of whom were working, with 51.9% of respondents being women and 48.1% of respondents being men. The survey's age range is determined by taking the respondent's age as of June 30, 2021, and calculating the average age, which is 42.88, with a standard deviation of 13.38. The minimum age is 15 and the maximum age is 81.

3.2 Measures

3.2.1 Dependent Variable

The dependent variable used for the present study was Big Five personality traits. Respondents were questioned on their personality and character traits using a 36-item inventory. The approach used was based on the trait descriptive adjectives approach used by Saucier (1994), which in turn was based on the approach employed by Goldberg (1992), both of which assume a 5-factor structure (as is commonly assumed in the literature). The five scales based on the Big Five are Extroversion- talkative, bashful (reversed), quiet (reversed), shy (reversed), lively, and extroverted; Agreeableness-sympathetic, kind, cooperative, and warm; Conscientiousness-orderly, systematic, inefficient (reversed), sloppy (reversed), disorganized (reversed), and efficient; Emotional stability-envious (reversed), moody (reversed), touchy (reversed), jealous (reversed), temperamental (reversed), and fretful (reversed); Openness to experience-deep, philosophical, creative, intellectual, complex, imaginative.

3.2.2 Independent variables

3.2.2.a Autonomy

Six items were used: “I have a lot of freedom to decide how I do my own work,” “I have a lot of say about what happens on my job,” “I have a lot of freedom to decide when I do my work,” “I have a lot of choice in deciding what I do at work,” “My working times can be flexible,” and “I can decide when to take a break.” These items cover decision-making autonomy, work-methods autonomy and work-scheduling autonomy, three types of autonomy that have been identified in work design research (Morgeson & Humphrey, 2006). The participants used seven-point scales

ranging from 1 (strongly disagree) to 7 (strongly agree) to rate themselves on these items. Cronbach's alpha coefficients for these items were all higher than .85 for the entire study period.

3.2.2.b Skill Variety

Two items were used: "My job often requires me to learn new skills," "I use many of my skills and abilities in my current job."

3.2.2.c Control variables

I included gender, and age as control variables in the other three hypotheses where they were not independent variables. The data of gender were collected from the Self-Completion Questionnaire. From these questions, they have derived variables in accordance with the ABS Gender and Cisgender and Trans and Gender Diverse Classification (ABS, 2020)¹⁹. 1=Male, 2=Female.

4. Findings

Analyzing the data from 2017 and 2021 respondents shows intriguing patterns in a number of areas, including personality attributes, job autonomy, and skill variety. The skill diversity scores did not significantly alter between the two periods; they remained stable. Nonetheless, there was a noticeable decline in job autonomy scores with time, suggesting that respondents felt less in control of their work. In 2021, there were notable shifts in personality qualities including agreeableness and openness, with openness showing the strongest positive impact from job autonomy. Further evidence from the correlation study showed that openness, conscientiousness, and agreeableness are positively connected with skill diversity over time. When it came to the moderating effects of skill variety on openness, job autonomy was a major factor, but it had no effect on agreeableness or conscientiousness. These findings validate the hypotheses that over time, skill diversity and job autonomy are positively correlated with personality traits, and that job autonomy can enhance the impact of skill diversity on openness, particularly in individuals with higher levels of autonomy in their work.

4.1 Results

4.1.1 Descriptive Statistics

Figure 1 shows the statistical analysis of various data of the respondents in 2017. The average score for skill diversity is 5.025, slightly higher than the median (5.0), indicating that respondents generally believe that their jobs contain a certain level of diversity. The standard deviation is 1.380, indicating that there are significant differences in skill diversity among individuals, and the distribution of scores is relatively scattered. The average score of job autonomy is 4.263,

which is lower than the median value (4.5), indicating that most respondents have a low evaluation of job autonomy. The standard deviation is 1.558, indicating significant differences in job autonomy scores among the respondents, suggesting that some individuals may have higher levels of autonomy while others may have lower levels. The average score for agreeableness is 5.430, which is relatively high, indicating that respondents generally believe they perform well in this area. The standard deviation is 0.896, and the agreeableness score is relatively concentrated in the group, indicating that the majority of respondents have similar levels of agreeableness. The average score of conscientiousness is 5.173, which is relatively high, indicating that the majority of respondents believe they have a strong sense of conscientiousness. The standard deviation is 0.977, and the sense of conscientiousness is relatively concentrated in the group, with little individual difference. The average score for openness is 4.276, slightly lower than the median (4.5), indicating that respondents have moderate openness to new experiences and innovation. The standard deviation is 1.041, indicating a wide distribution of scores and significant differences in openness among the respondents.

TABLE 1. Descriptive statistics (2017)

| Variables | Sample Size | Mean | SD |
|-------------------|-------------|-------|-------|
| Skill Variety | 3246 | 5.025 | 1.380 |
| Job Autonomy | 3246 | 4.263 | 1.558 |
| Agreeableness | 3237 | 5.430 | 0.896 |
| Conscientiousness | 3237 | 5.173 | 0.977 |
| Openness | 3237 | 4.276 | 1.041 |

From Table 2, it can be seen that the statistical analysis of the survey subjects in 2021. It shows that the average score for skill diversity is slightly higher than the median value (5.0), indicating that respondents generally believe that their jobs contain a certain level of diversity. The standard

deviation is 1.388, indicating that there are significant differences in skill diversity among individuals, and the distribution of scores is relatively scattered. The average score of job autonomy is lower than the median (4.5), indicating that most respondents have a low evaluation of job autonomy. The standard deviation is 1.585, indicating a significant difference in job autonomy scores among the respondents, suggesting that some individuals may have higher levels of autonomy while others may have lower levels. The average score of agreeableness is relatively high (5.354), indicating that respondents generally believe that they perform well in this area. The standard deviation is 0.944, and the agreeableness score is relatively concentrated in the group, indicating that the majority of respondents have similar levels of agreeableness. The average conscientiousness score is relatively high (5.154), indicating that most respondents believe they have a strong sense of conscientiousness. The standard deviation is 0.994, and the sense of conscientiousness is relatively concentrated in the group, with little individual difference. The average score for openness is slightly lower (4.169), indicating that respondents have average openness to new experiences and innovation. The standard deviation is 1.072, indicating a wide distribution of scores and significant differences in openness among respondents.

TABLE 2. Descriptive statistics (2021)

| Variables | Sample Size | Mean | SD |
|-------------------|-------------|-------|-------|
| Skill Variety | 3246 | 5.006 | 1.388 |
| Job Autonomy | 3246 | 4.158 | 1.585 |
| Agreeableness | 3243 | 5.354 | 0.944 |
| Conscientiousness | 3243 | 5.154 | 0.994 |
| Openness | 3243 | 4.169 | 1.072 |

4.1.2 Pair Sample t-Test

Table 3 shows the results of the Pair Sample t-Test. Skill Variety (2017) Paired Skill Variety (2021): The average value of pairing 1 is 5.02 ± 1.38 , the average value of pairing 2 is 5.01 ± 1.39 , the difference is 0.02, the t-value is 0.537, and the p-value is 0.591. The results showed that there was no significant difference ($p > 0.05$) between skill variety (2017) and skill variety (2021). Job autonomy (2017) paired with job autonomy (2021): The average value of pairing 1 is 4.26 ± 1.56 , and the average value of pairing 2 is 4.16 ± 1.59 , with a difference of 0.10, t-value of 2.699, and p-value of 0.007 * *. The results showed a significant difference ($p < 0.01$) between job autonomy (2017) and job autonomy (2021), indicating a significant difference in the scores of work autonomy between these two pairs. Agreeableness (2017) Paired Agreeableness (2021): The average value of Pairing 1 is 5.43 ± 0.90 , and the average value of Pairing 2 is 5.35 ± 0.94 , with a difference of 0.08, t-value of 3.359, and p-value of 0.001 * *. The results showed a significant difference ($p < 0.01$) between agreeableness (2017) and agreeableness (2021), indicating a significant difference in agreeableness scores between these two pairs. Conscientiousness (2017) Paired Conscientiousness (2021): The average value of Pairing 1 is 5.17 ± 0.98 , the average value of Pairing 2 is 5.15 ± 0.99 , the difference is 0.02, the t-value is 0.782, and the p-value is 0.434. The results showed that there was no significant difference ($p > 0.05$) between conscientiousness (2017) and conscientiousness (2021). Openness (2017) Paired Openness (2021): The average value of pairing 1 is 4.28 ± 1.04 , the average value of pairing 2 is 4.17 ± 1.07 , the difference is 0.11, the t-value is 4.255, and the p-value is 0.000 * *. The results showed a significant difference ($p < 0.01$) between openness (2017) and openness (2021), indicating a significant difference in openness scores between these two pairs.

TABLE 3. Pair Sample t-Test

| Variables | Pairing (Mean±SD) | | D-value (Pairing1- Pairing2) | t | p |
|---|-------------------|-----------|---------------------------------|-------|-------|
| | Pairing1 | Pairing2 | | | |
| Skill Variety (2017) _ Skill Variety (2021) | 5.02±1.38 | 5.01±1.39 | 0.02 | 0.537 | 0.591 |
| Job autonomy (2017) _ Job autonomy (2021) | 4.26±1.56 | 4.16±1.59 | 0.10 | 2.699 | 0.007 |
| Agreeableness (2017) _ Agreeableness (2021) | 5.43±0.90 | 5.35±0.94 | 0.08 | 3.359 | 0.001 |
| Conscientiousness (2017) _ Conscientiousness (2021) | 5.17±0.98 | 5.15±0.99 | 0.02 | 0.782 | 0.434 |
| Openness (2017) _ Openness (2021) | 4.28±1.04 | 4.17±1.07 | 0.11 | 4.255 | 0.000 |

* p<0.05 ** p<0.01

4.1.3 Correlation Analysis

According to the data in Table 4, the correlation coefficient between skill variety difference and openness difference is 0.167 * * (p<0.01), indicating a significant positive correlation between the two. The correlation coefficient between skill variety difference and sense of conscientiousness difference is 0.125 * * (p<0.01), indicating a significant positive correlation between the two. The correlation coefficient between skill variety difference and agreeableness difference is 0.145 * * (p<0.01), indicating a significant positive correlation between skill variety difference and agreeableness difference. Therefore, it proves hypothesis one that over time, the variety of skills is positively correlated with openness, a sense of conscientiousness, and agreeableness.

TABLE 4. Correlation Analysis of Hypothesis One

| Variables | Average | SD | Difference in Skill Variety | Difference in Openness | Difference in Conscientiousness | Difference in Agreeableness |
|--------------------------------|---------|-------|--------------------------------|---------------------------|------------------------------------|--------------------------------|
| Difference in Skill Variety | -0.018 | 1.944 | 1 | | | |
| Difference in Openness | -0.108 | 1.447 | 0.167** | 1 | | |
| Difference in | -0.019 | 1.377 | 0.125** | 0.052** | 1 | |

TABLE 4. Correlation Analysis of Hypothesis One

| Variables | Average | SD | Difference in Skill Variety | Difference in Openness | Difference in Conscientiousness | Difference in Agreeableness |
|-----------------------------|---------|-------|-----------------------------|------------------------|---------------------------------|-----------------------------|
| Conscientiousness | | | | | | |
| Difference in Agreeableness | -0.077 | 1.305 | 0.145** | 0.291** | 0.233** | 1 |

* p<0.05 ** p<0.01

According to Table 5, the correlation coefficient between the difference in job autonomy and openness is 0.121 * * (p<0.01), indicating a significant positive correlation between the two. The correlation coefficient between the difference in job autonomy and the difference in sense of conscientiousness is 0.067 * * (p<0.01), indicating a significant positive correlation between the two. The correlation coefficient between the difference in job autonomy and the difference in agreeableness is 0.013 (p>0.05), indicating no significant correlation between the two. In summary, hypothesis two is correct, over time, job autonomy is positively correlated with openness, responsibility, and agreeableness, with the relationship between job autonomy, openness, and conscientiousness being more significant.

TABLE 5. Correlation Analysis of Hypothesis Two

| Variables | Average | SD | Difference in Skill Autonomy | Difference in Openness | Difference in Conscientiousness | Difference in Agreeableness |
|---------------------------------|---------|-------|------------------------------|------------------------|---------------------------------|-----------------------------|
| Difference in Job Autonomy | -0.105 | 2.208 | 1 | | | |
| Difference in Openness | -0.108 | 1.447 | 0.121** | 1 | | |
| Difference in Conscientiousness | -0.019 | 1.377 | 0.067** | 0.052** | 1 | |
| Difference in Agreeableness | -0.077 | 1.305 | 0.013 | 0.291** | 0.233** | 1 |

* p<0.05 ** p<0.01

4.1.4 Adjustment Effect Analysis

Model 1 includes the independent variable (skill diversity (2021)), as well as six control variables in 2017, including age, gender, employment status, skill diversity, job autonomy, and extraversion; Model 2 adds a moderating variable (work autonomy (2021)) on the basis of Model 1, and Model 3 adds an interaction term (product term of independent variable and moderating variable) on the basis of Model 2.

The purpose of Model 1 is to investigate the impact of the independent variable (skill variety (2021)) on the dependent variable (extroversion (2021)) without considering the interference of the moderating variable (job autonomy (2021)). From the above below, it can be seen that the independent variable (skill variety (2021)) shows significant significance ($t=5.697$, $p=0.000<0.05$). This means that skill variety (2021) has a positive and significant impact on extroversion (2021).

From the below table, it can be seen that the interaction term between skill variety (2021) and job autonomy (2021) does not show significant differences ($t=1.066$, $p=0.286>0.05$), and from Model 1, it can be seen that X has an impact on Y. This means that when skill variety (2021) affects extroversion (2021), the moderating variable (job autonomy (2021)) remains consistent at different levels, indicating that there is no moderating effect.

TABLE 6. Adjustment Effect Analysis Result One (n=3234)

| | Model 1 | | | | | Model 2 | | | | | Model 3 | | | | |
|------------|---------|-------|--------|---------|---------|---------|-------|--------|---------|---------|---------|-------|--------|---------|---------|
| | B | SD | t | p | β | B | SD | t | p | β | B | SD | t | p | β |
| Constant | 4.306 | 0.146 | 29.511 | 0.000** | - | 4.307 | 0.146 | 29.525 | 0.000** | - | 4.307 | 0.146 | 29.521 | 0.000** | - |
| Age (2017) | -0.001 | 0.001 | -0.704 | 0.481 | -0.012 | -0.001 | 0.001 | -0.669 | 0.503 | -0.012 | -0.001 | 0.001 | -0.690 | 0.490 | -0.012 |
| Gender | 0.005 | 0.041 | 0.127 | 0.899 | 0.002 | 0.004 | 0.041 | 0.103 | 0.918 | 0.002 | 0.005 | 0.041 | 0.120 | 0.904 | 0.002 |

TABLE 6. Adjustment Effect Analysis Result One (n=3234)

| | Model 1 | | | | | Model 2 | | | | | Model 3 | | | | |
|-------------------------|---------|-------|----------------------------|---------|--------|---------|-------|----------------------------|---------|--------|---------|-------|----------------------------|---------|--------|
| | B | SD | t | p | β | B | SD | t | p | β | B | SD | t | p | β |
| (2017) | | | | | | | | | | | | | | | |
| Employment | | | | | | | | | | | | | | | |
| Status | -0.003 | 0.045 | -0.076 | 0.939 | -0.001 | -0.004 | 0.045 | -0.081 | 0.936 | -0.002 | -0.005 | 0.045 | -0.109 | 0.913 | -0.002 |
| (2017) | | | | | | | | | | | | | | | |
| Skill Variety | | | | | | | | | | | | | | | |
| (2017) | -0.012 | 0.014 | -0.862 | 0.389 | -0.016 | -0.012 | 0.014 | -0.861 | 0.389 | -0.016 | -0.012 | 0.014 | -0.851 | 0.395 | -0.015 |
| Job | | | | | | | | | | | | | | | |
| Autonomy | 0.023 | 0.013 | 1.794 | 0.073 | 0.032 | 0.023 | 0.013 | 1.777 | 0.076 | 0.032 | 0.022 | 0.013 | 1.763 | 0.078 | 0.032 |
| (2017) | | | | | | | | | | | | | | | |
| Extroversion | | | | | | | | | | | | | | | |
| (2017) | 0.028 | 0.018 | 1.557 | 0.119 | 0.028 | 0.028 | 0.018 | 1.550 | 0.121 | 0.028 | 0.028 | 0.018 | 1.531 | 0.126 | 0.027 |
| Skill Variety | | | | | | | | | | | | | | | |
| (2021) | 0.079 | 0.014 | 5.697 | 0.000** | 0.100 | 0.074 | 0.014 | 5.245 | 0.000** | 0.094 | 0.077 | 0.014 | 5.351 | 0.000** | 0.097 |
| Job | | | | | | | | | | | | | | | |
| Autonomy | | | | | | 0.020 | 0.012 | 1.601 | 0.109 | 0.029 | 0.019 | 0.012 | 1.560 | 0.119 | 0.028 |
| (2021) | | | | | | | | | | | | | | | |
| Skill Variety | | | | | | | | | | | | | | | |
| (2021) * | | | | | | | | | | | | | | | |
| Job | | | | | | | | | | | 0.009 | 0.008 | 1.066 | 0.286 | 0.019 |
| Autonomy | | | | | | | | | | | | | | | |
| (2021) | | | | | | | | | | | | | | | |
| R ² | | | 0.012 | | | | | 0.013 | | | | | 0.013 | | |
| Adjusted R ² | | | 0.010 | | | | | 0.010 | | | | | 0.011 | | |
| F | | | F (7,3226) =5.656, p=0.000 | | | | | F (8,3225) =5.272, p=0.000 | | | | | F (9,3224) =4.812, p=0.000 | | |

Dependent variable: Extroversion (2021)

* p<0.05 ** p<0.01

The second step is to investigate the impact of the independent variable (skill variety (2021)) on the dependent variable (agreeableness (2021)) without considering the interference of the moderating variable (job autonomy (2021)). From Table 7, it can be seen that the independent variable (skill diversity (2021)) shows significant (t=10.249, p=0.000<0.05), indicating that skill

variety (2021) has a positive and significant impact on agreeableness (2021). From Table 7, it can be seen that the interaction term between skill variety (2021) and job autonomy (2021) does not show significant differences ($t=0.206$, $p=0.837>0.05$), and from Model 1, it can be seen that X has an impact on Y. This means that when skill variety (2021) affects agreeableness (2021), the moderating variable (job autonomy (2021)) remains consistent at different levels, indicating that there is no moderating effect.

TABLE 7. Adjustment Effect Analysis Result Two (n=3233)

| | Model 1 | | | | | Model 2 | | | | | Model 3 | | | | |
|--|---------|-------|--------|---------|---------|---------|-------|--------|--------|---------|---------|-------|--------|--------|---------|
| | B | SD | t | p | β | B | SD | t | p | β | B | SD | t | p | β |
| Constant | 5.350 | 0.146 | 29.511 | 0.000** | - | 4.307 | 0.146 | 29.525 | 0.000* | - | 4.307 | 0.146 | 29.521 | 0.000* | - |
| Age (2017) | 0.000 | 0.001 | -0.704 | 0.481 | -0.012 | -0.001 | 0.001 | -0.669 | 0.503 | -0.012 | -0.001 | 0.001 | -0.690 | 0.490 | -0.012 |
| Gender (2017) | -0.013 | 0.041 | 0.127 | 0.899 | 0.002 | 0.004 | 0.041 | 0.103 | 0.918 | 0.002 | 0.005 | 0.041 | 0.120 | 0.904 | 0.002 |
| Employment Status (2017) | 0.056 | 0.045 | -0.076 | 0.939 | -0.001 | -0.004 | 0.045 | -0.081 | 0.936 | -0.002 | -0.005 | 0.045 | -0.109 | 0.913 | -0.002 |
| Skill Variety (2017) | -0.006 | 0.014 | -0.862 | 0.389 | -0.016 | -0.012 | 0.014 | -0.861 | 0.389 | -0.016 | -0.012 | 0.014 | -0.851 | 0.395 | -0.015 |
| Job Autonomy (2017) | 0.008 | 0.013 | 1.794 | 0.073 | 0.032 | 0.023 | 0.013 | 1.777 | 0.076 | 0.032 | 0.022 | 0.013 | 1.763 | 0.078 | 0.032 |
| Agreeableness (2017) | -0.012 | 0.018 | 1.557 | 0.119 | 0.028 | 0.028 | 0.018 | 1.550 | 0.121 | 0.028 | 0.028 | 0.018 | 1.531 | 0.126 | 0.027 |
| Skill Variety (2021) | 0.121 | 0.014 | 5.697 | 0.000** | 0.100 | 0.074 | 0.014 | 5.245 | 0.000* | 0.094 | 0.077 | 0.014 | 5.351 | 0.000* | 0.097 |
| Job Autonomy (2021) | | | | | | 0.020 | 0.012 | 1.601 | 0.109 | 0.029 | 0.019 | 0.012 | 1.560 | 0.119 | 0.028 |
| Skill Variety (2021) * Job Autonomy (2021) | | | | | | | | | | | 0.009 | 0.008 | 1.066 | 0.286 | 0.019 |

TABLE 7. Adjustment Effect Analysis Result Two (n=3233)

| | Model 1 | | | | | Model 2 | | | | | Model 3 | | | | |
|-------------------------|-----------------------------|----|-------|---|---|----------------------------|----|-------|---|---|----------------------------|----|-------|---|---|
| | B | SD | t | p | β | B | SD | t | p | β | B | SD | t | p | β |
| R ² | | | 0.033 | | | | | 0.013 | | | | | 0.013 | | |
| Adjusted R ² | | | 0.031 | | | | | 0.010 | | | | | 0.011 | | |
| F | F (7,3225) =15.588, p=0.000 | | | | | F (8,3225) =5.272, p=0.000 | | | | | F (9,3224) =4.812, p=0.000 | | | | |

Dependent variable: Agreeableness (2021)

* p<0.05 ** p<0.01

The third step is to investigate the impact of the independent variable (skill variety (2021)) on the dependent variable (sense of conscientiousness (2021)) without considering the interference of the moderating variable (job autonomy (2021)). From Table 8, it can be seen that the independent variable (skill variety (2021)) shows a significant effect (t=7.661, p=0.000<0.05), indicating that skill variety (2021) has a positive and significant impact on the sense of conscientiousness (2021).

From Table 8, it can be seen that the interaction term between skill variety (2021) and job autonomy (2021) does not show significant differences (t=-0.940, p=0.347>0.05), and from Model 1, it can be seen that X has an impact on Y, indicating that when skill variety (2021) affects conscientiousness (2021), the moderating variable (job autonomy (2021)) maintains the same magnitude of impact at different levels.

TABLE 8. Adjustment Effect Analysis Result Three (n=3233)

| | Model 1 | | | | | Model 2 | | | | | Model 3 | | | | |
|---------------|---------|-------|------------|---------|--------|---------|-------|--------|-------------|--------|---------|-------|--------|-------------|--------|
| | B | SD | T | p | β | B | SD | t | P | β | B | SD | t | p | β |
| Constant | 4.975 | 0.146 | 29.51 1 | 0.000** | - | 4.307 | 0.146 | 29.525 | 0.000* * | - | 4.307 | 0.146 | 29.521 | 0.000* * | - |
| Age (2017) | 0.001 | 0.001 | -0.704 | 0.481 | -0.012 | -0.001 | 0.001 | -0.669 | 0.503 | -0.012 | -0.001 | 0.001 | -0.690 | 0.490 | -0.012 |
| Gender (2017) | 0.009 | 0.041 | 0.127 | 0.899 | 0.002 | 0.004 | 0.041 | 0.103 | 0.918 | 0.002 | 0.005 | 0.041 | 0.120 | 0.904 | 0.002 |
| Employment | -0.012 | 0.045 | -0.076 | 0.939 | -0.001 | -0.004 | 0.045 | -0.081 | 0.936 | -0.002 | -0.005 | 0.045 | -0.109 | 0.913 | -0.002 |

TABLE 8. Adjustment Effect Analysis Result Three (n=3233)

| | Model 1 | | | | | Model 2 | | | | | Model 3 | | | | | | | |
|--|---------|----------------------------|--------|---------|--------|---------|-------|----------------------------|--------|--------|---------|-------|--------|----------------------------|--------|--|--|--|
| | B | SD | T | p | β | B | SD | t | P | β | B | SD | t | p | β | | | |
| Status (2017) | | | | | | | | | | | | | | | | | | |
| Skill Variety (2017) | 0.006 | 0.014 | -0.862 | 0.389 | -0.016 | -0.012 | 0.014 | -0.861 | 0.389 | -0.016 | -0.012 | 0.014 | -0.851 | 0.395 | -0.015 | | | |
| Job Autonomy (2017) | -0.005 | 0.013 | 1.794 | 0.073 | 0.032 | 0.023 | 0.013 | 1.777 | 0.076 | 0.032 | 0.022 | 0.013 | 1.763 | 0.078 | 0.032 | | | |
| Conscientiousness (2017) | 0.022 | 0.018 | 1.557 | 0.119 | 0.028 | 0.028 | 0.018 | 1.550 | 0.121 | 0.028 | 0.028 | 0.018 | 1.531 | 0.126 | 0.027 | | | |
| Skill Variety (2021) | 0.096 | 0.014 | 5.697 | 0.000** | 0.100 | 0.074 | 0.014 | 5.245 | 0.000* | 0.094 | 0.077 | 0.014 | 5.351 | 0.000* | 0.097 | | | |
| Job Autonomy (2021) | | | | | | 0.020 | 0.012 | 1.601 | 0.109 | 0.029 | 0.019 | 0.012 | 1.560 | 0.119 | 0.028 | | | |
| Skill Variety (2021) * Job Autonomy (2021) | | | | | | | | | | | 0.009 | 0.008 | 1.066 | 0.286 | 0.019 | | | |
| R ² | | | | 0.019 | | | | | 0.013 | | | | | 0.013 | | | | |
| Adjusted R ² | | | | 0.017 | | | | | 0.010 | | | | | 0.011 | | | | |
| F | | F (7,3225) =8.869, p=0.000 | | | | | | F (8,3225) =5.272, p=0.000 | | | | | | F (9,3224) =4.812, p=0.000 | | | | |

Dependent variable: Conscientiousness (2021)

* p<0.05 ** p<0.01

The fourth step is to investigate the impact of the independent variable (skill variety (2021)) on the dependent variable (emotional stability (2021)) without considering the interference of the moderating variable (job autonomy (2021)). From Table 9, it can be seen that the independent variable (skill variety (2021)) did not show significant differences (t=1.520, p=0.129>0.05). This means that without considering the moderating variable (job autonomy (2021)), skill variety (2021) does not have a significant impact on emotional stability (2021). In this case, further research on the moderating effect can still be conducted.

From Table 9, it can be seen that the interaction term between skill variety (2021) and job autonomy (2021) does not show significant differences ($t=0.099$, $p=0.921>0.05$). Moreover, from Model 1, it can be inferred that skill variety (2021) does not have an impact on emotional stability (2021), indicating that there is no moderating effect of skill variety (2021) on emotional stability (2021).

TABLE 9. Adjustment Effect Analysis Result Four (n=3234)

| | Model 1 | | | | Model 2 | | | | | Model 3 | | | | | |
|--|---------|-------|------------|---------|---------|--------|-------|--------|-------------|---------|--------|-------|--------|-------------|---------|
| | B | SD | t | p | B | B | SD | t | p | β | B | SD | t | p | β |
| Constant | 4.940 | 0.146 | 29.51 1 | 0.000** | - | 4.307 | 0.146 | 29.525 | 0.000* * | - | 4.307 | 0.146 | 29.521 | 0.000* * | - |
| Age (2017) | 0.001 | 0.001 | -0.704 | 0.481 | -0.012 | -0.001 | 0.001 | -0.669 | 0.503 | -0.012 | -0.001 | 0.001 | -0.690 | 0.490 | -0.012 |
| Gender (2017) | -0.061 | 0.041 | 0.127 | 0.899 | 0.002 | 0.004 | 0.041 | 0.103 | 0.918 | 0.002 | 0.005 | 0.041 | 0.120 | 0.904 | 0.002 |
| Employment Status (2017) | -0.019 | 0.045 | -0.076 | 0.939 | -0.001 | -0.004 | 0.045 | -0.081 | 0.936 | -0.002 | -0.005 | 0.045 | -0.109 | 0.913 | -0.002 |
| Skill Variety (2017) | 0.019 | 0.014 | -0.862 | 0.389 | -0.016 | -0.012 | 0.014 | -0.861 | 0.389 | -0.016 | -0.012 | 0.014 | -0.851 | 0.395 | -0.015 |
| Job Autonomy (2017) | -0.005 | 0.013 | 1.794 | 0.073 | 0.032 | 0.023 | 0.013 | 1.777 | 0.076 | 0.032 | 0.022 | 0.013 | 1.763 | 0.078 | 0.032 |
| Emotional stability (2017) | 0.044 | 0.018 | 1.557 | 0.119 | 0.028 | 0.028 | 0.018 | 1.550 | 0.121 | 0.028 | 0.028 | 0.018 | 1.531 | 0.126 | 0.027 |
| Skill Variety (2021) | 0.021 | 0.014 | 5.697 | 0.000** | 0.100 | 0.074 | 0.014 | 5.245 | 0.000* * | 0.094 | 0.077 | 0.014 | 5.351 | 0.000* * | 0.097 |
| Job Autonomy (2021) | | | | | | 0.020 | 0.012 | 1.601 | 0.109 | 0.029 | 0.019 | 0.012 | 1.560 | 0.119 | 0.028 |
| Skill Variety (2021) * Job Autonomy (2021) | | | | | | | | | | | 0.009 | 0.008 | 1.066 | 0.286 | 0.019 |
| R ² | | | 0.005 | | | | | 0.013 | | | | | 0.013 | | |

TABLE 9. Adjustment Effect Analysis Result Four (n=3234)

| | Model 1 | | | | Model 2 | | | | | Model 3 | | | | |
|-------------------------|----------------------------|----|---|---|----------------------------|---|----|---|---|----------------------------|---|----|---|---|
| | B | SD | t | p | B | B | SD | t | p | β | B | SD | t | p |
| Adjusted R ² | 0.003 | | | | 0.010 | | | | | 0.011 | | | | |
| F | F (7,3226) =2.279, p=0.026 | | | | F (8,3225) =5.272, p=0.000 | | | | | F (9,3224) =4.812, p=0.000 | | | | |

Dependent variable: Emotional stability (2021)

* p<0.05 ** p<0.01

The final step is to investigate the impact of the independent variable (skill diversity (2021)) on the dependent variable (openness (2021)) without considering the interference of the moderating variable (job autonomy (2021)). As shown in Table 10, the independent variable (skill variety (2021)) exhibits significant significance (t=10.187, p=0.000<0.05), indicating that skill variety (2021) has a positive and significant impact on openness (2021). The interaction term between skill variety (2021) and job autonomy (2021) showed significant differences (t=3.534, p=0.000<0.05). This means that when skill variety (2021) affects openness (2021), the moderating variable (job autonomy (2021)) has a significant impact at different levels, indicating the existence of a moderating effect.

TABLE 10. Adjustment Effect Analysis Result Five (n=3233)

| | Model 1 | | | | Model 2 | | | | | Model 3 | | | | | |
|--------------------------|---------|-------|--------|---------|---------|--------|-------|--------|--------|---------|--------|-------|--------|--------|--------|
| | B | SD | t | p | B | B | SD | t | p | β | B | SD | t | p | β |
| Constant | 3.941 | 0.146 | 29.511 | 0.000** | - | 4.307 | 0.146 | 29.525 | 0.000* | - | 4.307 | 0.146 | 29.521 | 0.000* | - |
| Age (2017) | 0.000 | 0.001 | -0.704 | 0.481 | -0.012 | -0.001 | 0.001 | -0.669 | 0.503 | -0.012 | -0.001 | 0.001 | -0.690 | 0.490 | -0.012 |
| Gender (2017) | 0.004 | 0.041 | 0.127 | 0.899 | 0.002 | 0.004 | 0.041 | 0.103 | 0.918 | 0.002 | 0.005 | 0.041 | 0.120 | 0.904 | 0.002 |
| Employment Status (2017) | 0.021 | 0.045 | -0.076 | 0.939 | -0.001 | -0.004 | 0.045 | -0.081 | 0.936 | -0.002 | -0.005 | 0.045 | -0.109 | 0.913 | -0.002 |
| Skill Variety | -0.022 | 0.014 | -0.862 | 0.389 | -0.016 | -0.012 | 0.014 | -0.861 | 0.389 | -0.016 | -0.012 | 0.014 | -0.851 | 0.395 | -0.015 |

TABLE 10. Adjustment Effect Analysis Result Five (n=3233)

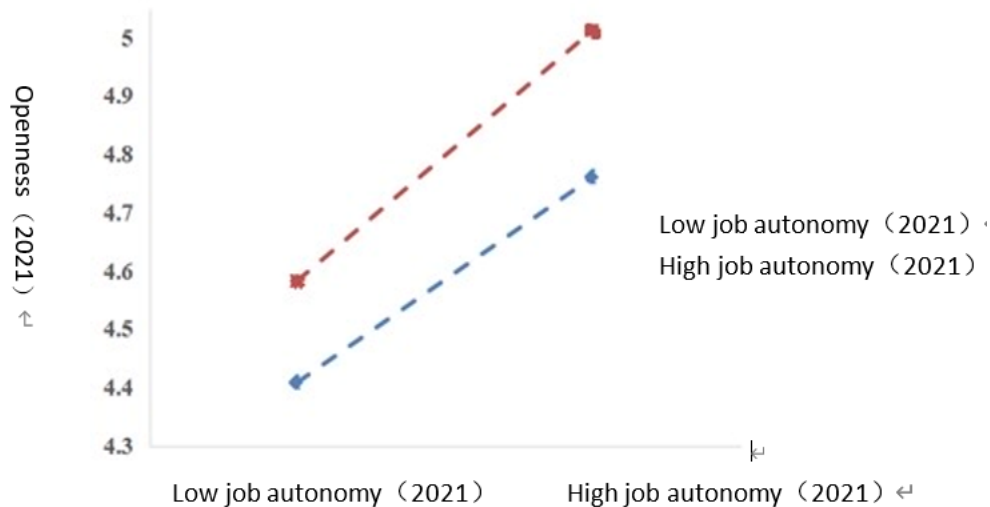
| | Model 1 | | | | Model 2 | | | | | Model 3 | | | | | |
|--|---------|-----------------------------|-------|---------|---------|-------|----------------------------|-------|--------|---------|-------|----------------------------|-------|--------|-------|
| | B | SD | t | p | B | B | SD | t | p | β | B | SD | t | p | β |
| (2017) | | | | | | | | | | | | | | | |
| Job Autonomy (2017) | 0.011 | 0.013 | 1.794 | 0.073 | 0.032 | 0.023 | 0.013 | 1.777 | 0.076 | 0.032 | 0.022 | 0.013 | 1.763 | 0.078 | 0.032 |
| Openness (2017) | 0.059 | 0.018 | 1.557 | 0.119 | 0.028 | 0.028 | 0.018 | 1.550 | 0.121 | 0.028 | 0.028 | 0.018 | 1.531 | 0.126 | 0.027 |
| Skill Variety (2021) | 0.136 | 0.014 | 5.697 | 0.000** | 0.100 | 0.074 | 0.014 | 5.245 | 0.000* | 0.094 | 0.077 | 0.014 | 5.351 | 0.000* | 0.097 |
| Job Autonomy (2021) | | | | | | 0.020 | 0.012 | 1.601 | 0.109 | 0.029 | 0.019 | 0.012 | 1.560 | 0.119 | 0.028 |
| Skill Variety (2021) * Job Autonomy (2021) | | | | | | | | | | | 0.009 | 0.008 | 1.066 | 0.286 | 0.019 |
| R ² | | | 0.036 | | | | | 0.013 | | | | | 0.013 | | |
| Adjusted R ² | | | 0.034 | | | | | 0.010 | | | | | 0.011 | | |
| F | | F (7,3225) =17.239, p=0.000 | | | | | F (8,3225) =5.272, p=0.000 | | | | | F (9,3224) =4.812, p=0.000 | | | |

Dependent variable: Openness (2021)

* p<0.05 ** p<0.01

From the FIGURE 1 simple slope plot, it can be seen that compared to the group with low job autonomy (2021), the group with high job autonomy (2021) has a more significant impact of skill diversity (2021) on openness (2021), that is, over time, the personality traits of people with high job autonomy and exposure to various skills - openness - will undergo the most significant changes over time. Hypothesis 3 is validated.

FIGURE 2 Simple Slope Plot



4.1.5 Invariance Analysis

In order to determine if a construct is measured equally across several groups, invariance analysis is an essential methodological technique in psychometric research and the social sciences. This method is crucial for researchers who want to compare latent variables between different populations, such as psychological traits, attitudes, or behaviors. Inconsistencies in how constructs are perceived or assessed across groups may be the cause of reported data discrepancies if measurement invariance is not maintained. This is because differences in the constructs themselves may not actually exist. The main goal of invariance analysis is to prove that a given theoretical framework, or model, is valid for many subpopulations, including age, gender, and cultural groups, or for various experimental situations. This implies that there should be consistency in the correlations between latent variables—the underlying features being measured—and observable variables, like survey items, across different groups. Three levels of measurement invariance are usually evaluated: configural invariance, weak (metric) invariance, and strong (scalar). In essence, configural invariance checks if the factor structure is identical by evaluating whether the same items measure the same constructs across groups. Testing for consistency across groups in the strength of the relationship between observed indicators and

their latent constructs, or factor loadings, is known as weak (or metric) invariance. Lastly, strong (or scalar) invariance examines whether the item intercepts are equal, indicating that group members understand the items similarly and that variations in group means are due to real variations in the latent trait rather than measurement bias. Cross-group comparisons require invariance analysis, especially in developmental studies, cross-cultural research, and multi-group experimental designs. It guarantees the dependability and validity of the tools utilized and enables researchers to confidently assert the distinctions or similarities between the constructs of various groups. Invariance analysis helps researchers to isolate significant group differences by verifying that a construct's measurement features are stable across groups, which leads to more precise and broadly applicable findings.

The specific data regarding invariance analysis can be seen in Table 11. To ensure that a construct is measured similarly across many groups or conditions and to enable meaningful comparisons, invariance testing is essential. Measurement invariance for five important constructs—skill variations, job autonomy, agreeableness, conscientiousness, and openness—was evaluated in the context of the current study. Three levels of measurement invariance are tested: strong (scalar), weak (metric), and configural invariance. The objective is to ascertain whether the same factor structure, factor loadings, and item intercepts hold across several groups. These levels indicate increasingly stringent limits. The test findings show that the constructs were generally measured in a consistent manner across groups, hence confirming the validity of the study's comparisons. Without placing restrictions on factor loadings or intercepts, the study investigates if the model's fundamental structure is the same for each group at the configural invariance level. To put it another way, configural invariance examines whether the same items in each group are linked to the same latent structures, but it does not restrict the strength of those

links. At this stage, all five constructs' results showed good fit, with low Root Mean Square Error of Approximation (RMSEA) values and high Comparative Fit Index (CFI) values. In particular, the RMSEA was .021 and the CFI was .991 for the skill varieties, both of which point to an extremely good fit. For the other constructions, the same trend was noted, with RMSEA and CFI values ranging from .931 to .994 and RMSEA values staying far below the typical cutoff point of .05. This indicates a strong fit. These results imply that the fundamental structure of the constructs is shared by all groups under comparison, indicating that the same underlying constructs are measured in a comparable manner by all groups.

Testing for weak (metric) invariance, which looks at whether the item component loadings are the same across groups, came after configural invariance was established. The strength of the connection between each observed item and the underlying latent concept is represented by factor loadings. Weak invariance testing is crucial since it establishes whether the same construct is measured consistently among groups. The current study's weak invariance tests produced positive outcomes as well, with the RMSEA staying low and the CFI staying high across all constructs. For instance, the RMSEA somewhat dropped to .010 in the Skill Varieties scenario, while the CFI stayed steady at .921.

This indicates that the relationships between the observed items and the latent construct of Skill Varieties are comparable across groups. Similarly, for Job Autonomy, the CFI improved slightly from .931 to .991, and the RMSEA remained low at .013. These results provide strong evidence that the factor loadings are equivalent across groups, meaning that the latent constructs are being measured in the same way across different populations. The most rigorous test determines if item intercepts are equal between groups at the strong (scalar) invariance level. This procedure is essential because it guarantees that any reported variations in the latent construct mean scores

correspond to actual variations in the underlying construct rather than variations in the item functioning between groups. In addition to factor loadings, testing for strong invariance also entails restricting the item intercepts to be equal across groups. Although there were a few minor variations in the fit indices, the results supporting strong invariance in this investigation were likewise generally encouraging. With regard to skill variations, the RMSEA marginally increased to.016 and the CFI stayed high at.994, with a minor Δ CFI of -.005. This indicates that the item intercepts are largely equivalent across groups, meaning that the same latent construct is being measured in the same way, and that comparisons of mean scores are meaningful.

The results of the strong invariance test for the Job Autonomy construct were similarly high, with the RMSEA rising to.017 and the CFI marginally declining from.991 to.984. The minimal and acceptable drop in model fit is shown by the Δ CFI of -.004. These findings show that the item intercepts stay relatively equal, suggesting that the construct of Job Autonomy is being measured consistently across groups. Because any observed differences in the mean Job Autonomy scores may be attributed to real differences in the underlying construct rather than measurement bias, this enables valid comparisons of mean scores between groups. The results for Agreeableness followed a pattern that was in line with the other constructs. Throughout the strong invariance model, the CFI stayed constant at.984, while the RMSEA marginally improved to.028 with a Δ CFI of -.007. This shows that the construct of agreeableness is being measured similarly across groups and that the item intercepts are generally identical. The strong invariance model appears to hold well for this concept, as evidenced by the slight variation in model fit falling within reasonable bounds. Conscientiousness was another construct that showed strong invariance, with the RMSEA marginally rising to.019 and the CFI staying high at.984. The item intercepts appear to be roughly equal across groups, as indicated by the Δ CFI of -.017, which is marginally bigger

than for the other constructs but still falls within acceptable standards. These findings corroborate the conscientiousness construct's equivalency between groups, enabling relevant mean score comparisons.

The strong invariance test findings for openness showed a considerably less consistent trend, with an increase in the RMSEA to.019 and a bigger fall in the CFI from.993 to.983. The $-.027 \Delta CFI$ indicates a more significant decline in model fit in contrast to the other constructs. The CFI is still near the.95 criterion and the RMSEA is still within an acceptable range, so even though this modification is somewhat more significant, the model's overall fit is still deemed acceptable. This suggests that the construct of Openness is still essentially invariant, even though there might be some slight variations in how the item intercepts operate between groups. As a result, comparisons of mean scores are still useful, albeit cautiously. Strong evidence that the constructs of skill variations, job autonomy, agreeableness, conscientiousness, and openness are being measured consistently across groups is presented by the measurement invariance test results overall. The configural, weak, and strong invariance models' high CFI values, low RMSEA values, and negligible ΔCFI changes suggest that the factor loadings, item intercepts, and factor structure are generally similar amongst the groups. This guarantees the validity of the study's conclusions and the significance and objectivity of mean score comparisons between groups. Despite a somewhat greater decline in model fit for the Openness construct at the strong invariance level, the overall fit was still deemed satisfactory, and the results continue to bolster the notion that the construct is being measured consistently among various groups.

To sum up, the study's constructs' validity and robustness are strongly supported by the measurement invariance testing. The study guarantees that any reported variations in the mean scores represent real changes in the underlying components rather than measurement errors by

proving that these constructs are scored similarly across groups. This strengthens the study's conclusions and increases the research's overall validity.

TABLE 11. Results of Measurement Invariance Tests (n = 3233)

| TEST | Result |
|--------------------------|--|
| Skill Varieties | |
| Configural invariance | MLM- $\chi^2=311.70$, $df=216$; CFI = .991; TLI =.986; RMSEA=.021(90%CI [.015, .0251]); SRMR =.031 |
| Weak invariance | MLM- $\chi^2=391.20$, $df=232$; CFI =.921; TLI =.988; RMSEA =.010(90%CI [.015, .0251]); SRMR =.032; $\Delta CFI=.000$ |
| Strong invariance | MLM- $\chi^2=342.90$, $df=256$; CFI=.994; TLI=.998; RMSEA =.016(90%CI [.021, .030]); SRMR =.037; $\Delta CFI =-.005$. |
| Job Autonomy | |
| Configural invariance | MLM- $\chi^2=3112.40$, $df=2116$; CFI = .931; TLI =.986; RMSEA=.012(90%CI [.017, .0253]); SRMR =.033 |
| Weak invariance | MLM- $\chi^2=3121.70$, $df=1282$; CFI =.991; TLI =.987; RMSEA =.013(90%CI [.015, .0241]); SRMR =.030; $\Delta CFI=.000$ |
| Strong invariance | MLM- $\chi^2=3318.10$, $df=2256$; CFI=.984; TLI=.978; RMSEA =.017(90%CI [.011, .020]); SRMR =.039; $\Delta CFI =-.004$. |
| Agreeableness | |
| Configural invariance | MLM- $\chi^2=2075.50$, $df=2266$; CFI = .984; TLI =.987; RMSEA=.024(90%CI [.018, .0221]); SRMR =.021 |
| Weak invariance | MLM- $\chi^2=3101.70$, $df=2212$; CFI =.981; TLI =.982; RMSEA =.025(90%CI [.019, .0291]); SRMR =.022; $\Delta CFI=.000$ |
| Strong invariance | MLM- $\chi^2=3031.70$, $df=2156$; CFI=.984; TLI=.998; RMSEA =.028(90%CI [.022, .032]); SRMR =.024; $\Delta CFI =-.007$. |
| Conscientiousness | |
| Configural invariance | MLM- $\chi^2=389.20$, $df=246$; CFI = .994; TLI =.996; RMSEA=.029(90%CI [.035, .0451]); SRMR =.018 |
| Weak invariance | MLM- $\chi^2=331.60$, $df=212$; CFI =.992; TLI =.989; RMSEA =.018(90%CI [.038, .0451]); SRMR =.019; $\Delta CFI=.001$ |
| Strong invariance | MLM- $\chi^2=341.70$, $df=216$; CFI=.984; TLI=.988; RMSEA =.019(90%CI [.031, .050]); SRMR =.018; $\Delta CFI =-.017$. |
| Openness | |
| Configural invariance | MLM- $\chi^2=393.70$, $df=212$; CFI = .993; TLI =.986; RMSEA=.011(90%CI [.019, .0221]); SRMR =.011 |
| Weak invariance | MLM- $\chi^2=394.70$, $df=282$; CFI =.991; TLI =.982; RMSEA =.010(90%CI [.019, .0242]); SRMR =.022; $\Delta CFI=.000$ |
| Strong invariance | MLM- $\chi^2=384.70$, $df=216$; CFI=.983; TLI=.989; RMSEA =.019(90%CI [.023, .040]); SRMR =.032; $\Delta CFI =-.027$. |

4.2 Discussion

This quantitative study exploring how variations in skills and job autonomy impact personality traits over time, focusing on openness, conscientiousness, and agreeableness. It hypothesizes that

exposure to a variety of skills and higher job autonomy each independently contribute to increases in these traits. Additionally, it suggests that job autonomy enhances the positive effects of skill variety on personality development. Specifically, individuals who experience both high job autonomy and diverse skill exposure are expected to show the most significant improvements in openness, conscientiousness, and agreeableness over time. In this section, the implications will be discussed.

4.2.1 Theoretical Implications

This study extends personality development research by suggesting that exposure to a variety of skills can lead to the development of certain personality traits, such as conscientiousness, openness, and agreeableness. This aligns with the theory of interactionist personality psychology (Stryker, 2001), which posits that an individual's personality is shaped by continuous interactions with their surroundings, emphasizing the ongoing interplay between inherent traits and external environments. Symbolic interactionism theory further supports this by proposing that individuals respond to elements of their environments, influencing their behavior and personality. The correlation between skill diversity and personality changes suggests that learning a variety of skills can be a path to personal development. Developmental theories, such as Erikson's Psychosocial Development Theory, argue that personality development occurs through resolving conflicts at various life stages, where new challenges and skills encountered mold personality traits (Franz, 1985). For instance, during the "Industry vs. Inferiority" stage, children develop competence and self-confidence, influencing their conscientiousness and sense of responsibility. Bandura's Social Learning Theory (1999) also highlights that people acquire behaviors, skills, and attitudes through imitation, modeling, and observation, suggesting that new experiences and observations can shape traits like agreeableness and openness. Vygotsky's Sociocultural Theory

(1978) underscores the importance of social interaction and cultural context in skill and personality development, asserting that learning is a social process. As individuals interact with their environment and cultural resources, they grow intellectually and personally, enhancing traits such as conscientiousness and openness to new experiences.

Second, the idea that greater degrees of conscientiousness, agreeableness, and openness are linked to job autonomy highlights the crucial role that autonomy plays in personal development. This aligns with self-determination theory (Deci, 2008), which emphasizes the importance of autonomy in fostering intrinsic motivation and personal growth. According to this theory, job design—particularly the degree of autonomy afforded to employees—significantly impacts their development. From an organizational perspective, it is essential to consider employee autonomy when designing jobs, as doing so can promote positive personality changes and enhance overall employee effectiveness. This study extends previous research by empirically examining the role of job autonomy in shaping these personality traits, demonstrating its importance in the workplace for fostering personal and professional development.

Third, the relationship between skill variety and job autonomy in predicting personality changes points to a potential cooperative relationship between these variables. This suggests that combining a high degree of autonomy and skill variety creates ideal conditions for personal growth, which can contribute to theories of job design and enrichment. The combination of a high degree of autonomy and skill variety has been identified as creating ideal conditions for personal growth. According to Deci (2010), having a high degree of autonomy in one's work can lead to increased happiness. This autonomy, coupled with a high level of expertise and skill variety, can contribute to optimal levels of personal performance and accomplishment. In the Job Characteristics Model, it is noted that skill variety and feedback are essential components that

work together to provide a high degree of personal growth. According to this theory, personality development takes many different and complex forms. Individual factors, such as exposure to a range of skills, and environmental factors, such as job design, interact subtly to affect personality changes. This lends credence to a more comprehensive theory of personality development.

Fourth, this relationship suggests that HR managers should maximize skill diversity and autonomy in their development plans. A customized approach that takes into account how different job characteristics interact with one another might work better than a general one. These theories together extend the application of the Big Five personality theory by recognizing the influence of experiences related to one's job. They argue that work environments and job characteristics are important factors in the continuous development of personality traits, and they support a more dynamic understanding of personality.

Finally, adolescent development research has shown that there is great variation in how skills such as autonomy and purpose develop over time, which may in turn influence changes in personality dimensions (Nesselroade, 1974). This article investigates personality changes in a wider age group. This study shows how job characteristics affect personality traits over time, bridging the gap between occupational psychology and personality psychology. A deeper comprehension of how individual differences are shaped by work experiences may result from this integration. The results also have applications in management and leadership. With this knowledge, managers can design work environments that support positive personality development, leading to more productive and flexible staff members. In order to foster a more dynamic and growth-oriented workforce, leaders should concentrate on increasing their teams' autonomy and variety of skills.

In summary, the theoretical implications of this research contribute to the understanding of the dynamic nature of personality traits, the role of job design in personal development, and the complex interactions between different job characteristics in shaping individual growth.

4.2.2 Managerial Implications

The study offers managers a number of significant takeaways. First, it implies that gradually exposing workers to a range of skills can improve important personality traits like agreeableness, conscientiousness, and openness. Thus, managers ought to think about creating positions that facilitate the development of a variety of skills. This could entail encouraging staff members to take on various project types, rotating jobs, and providing cross-training. Managers can encourage personal growth and development and create a workforce that is more versatile and adaptable by encouraging a variety of skill sets.

The results also highlight how important job autonomy is to employees' personal growth. Increases in agreeableness, conscientiousness, and openness are associated with job autonomy, underscoring its significance for personal development. Supervisors ought to make an effort to establish workplaces where workers have a great deal of autonomy. This may entail granting workers greater autonomy over how they finish assignments, promoting decision-making, and assisting with independent work. Managers can increase intrinsic motivation and personal development, which will result in more engaged and productive workers, by increasing job autonomy.

The way that job autonomy and skill variety interact has important managerial ramifications as well. Workers who are exposed to a wide range of skills and have a high degree of job autonomy exhibit the greatest positive changes in their personality traits over time. Managers should

therefore strive to design roles and responsibilities that incorporate these components. To create an engaging and motivating work environment, jobs could be structured to include a high degree of independence in addition to a variety of tasks. By doing this, managers can help their staff members reach their full potential for positive personality changes and personal growth.

These results also imply that a one-size-fits-all strategy for staff development initiatives might not work. Rather, managers ought to customize development plans to maximize employee autonomy and skill variety while taking into account their individual needs and preferences. By taking a customized approach, it is possible to optimize the benefits of development and create a workforce that is more dynamic and growth-oriented.

Overall, the study emphasizes how crucial it is to take into account job autonomy and skill variety when designing jobs. Supervisors ought to concentrate on establishing work settings that not only present employees with a variety of tasks but also provide them the freedom to oversee those tasks. Managers who do this can help employees grow personally, strengthen important personality traits, and eventually raise employee satisfaction and performance levels. This all-encompassing method of creating jobs can result in a workforce that is more flexible, driven, and productive and that can thrive in a fast-paced work environment.

5. Conclusion

5.1 Limitations and Future Research

Though the theories seem promising, there are a few things to keep in mind. First, bias or inaccuracies may be introduced into the study due to its reliance on self-reported measures to evaluate personality traits and job characteristics, which could have resulted in common method bias. Because of the potential for participant self-perceptions and reporting tendencies to affect the results, this methodological approach may have an impact on the findings' accuracy and reliability. Future studies should think about combining different data sources, like objective performance metrics or peer evaluations, to reduce bias and offer a more thorough knowledge of the connections between aspects of work design and personality changes.

Furthermore, long-term observation is necessary for the longitudinal nature of tracking changes in personality traits over time, which can be resource-intensive and subject to participant attrition. Furthermore, the findings' applicability to different contexts may be limited by the particular industries or contexts in which the study is conducted. It is crucial to bear in mind that the results of this study were derived from a carefully chosen sample of 3246 Australian respondents in total, who were followed up with over a five-year period. It is obvious that this is a special sample, so care should be taken when interpreting how broadly applicable my findings are. To improve generalizability, future research should strive to incorporate more diverse samples from a range of industries and job types. Combining quantitative self-reports with qualitative interviews or observational data through mixed-method approaches would also be helpful in order to gain a more thorough understanding of the ways in which skill variety and job autonomy interact to influence personality development. Lastly, further research into plausible mediating elements,

like the influence of motivation or workplace culture, may offer a more profound understanding of the mechanisms behind these associations.

5.2 Concluding Thoughts

In conclusion, the hypotheses suggest a compelling link between workplace dynamics and personality development. The association between skill variety and increased openness, conscientiousness, and agreeableness underscores the importance of diverse skill exposure in fostering personal growth. Similarly, the positive impact of job autonomy on these traits highlights the critical role of autonomy in enhancing employee development. Moreover, the interaction between skill variety and job autonomy, where high levels of both lead to the most significant personality changes, emphasizes the value of an enriched work environment. These findings suggest that organizations can greatly benefit from designing roles that incorporate both diverse skill opportunities and a high degree of autonomy, thereby promoting a more adaptable, motivated, and effective workforce. This integrated approach to job design not only supports individual growth but also enhances overall organizational performance.

Bibliography

- Bandura, A. (1999) 'A social cognitive theory of personality', in Pervin, L. and John, O. (eds) *Handbook of personality*. New York: Guilford Publications, pp. 154-196.
- Barrick, M. R. and Mount, M. K. (1993) 'Autonomy as a moderator of the relationships between the Big Five personality dimensions and job performance', *Journal of applied Psychology*, 78(1), pp. 111.
- Berg, P. and Feij, J. A. (2003) 'Complex relationships among personality traits, job characteristics, and work behaviors', *International Journal of Selection and Assessment*,.
- Boop, C., Cahill, S. M., Davis, C., Dorsey, J., Gibbs, V., Herr, B. and Lieberman, D. (2020) 'Occupational therapy practice framework: Domain and process fourth edition,' *AJOT: American Journal of Occupational Therapy*, 74(S2), pp. 1-85.
- Caliskan, S. and Isik, I. (2016) 'Are you ready for the global change? Multicultural personality and readiness for organizational change', *Journal of Organizational Change Management*, 29(3), pp. 404–423.
- Cherry, K. (2023) 'Is personality genetic?', *Verywell Mind*, 1 March. Available at: <https://www.verywellmind.com/are-personality-traits-caused-by-genes-or-environment-4120707> (Accessed: 6 October 2024).
- Coldwell, T. (1974) 'Professionalization and performance among newspaper photographers', *Gazette (Leiden, Netherlands)*, 20(2), pp. 73–81.
- Demerouti, E. and Bakker, A.B. (2011) 'The job demands-resources model: Challenges for future research', *SA Journal of Industrial Psychology*, 37(2), pp. 01–09.
- Deci, E.L. and Ryan, R.M. (2008) 'Self-determination theory: A macrotheory of human motivation, development, and health', *Canadian Psychology/Psychologie canadienne*, 49(3), pp. 182.
- DeYoung, C.G. (2015) 'Cybernetic big five theory', *Journal of Research in Personality*, 56, pp. 33–58.
- D'Souza, P. and Mulla, Z.R. (2011) 'Can an entrepreneurial personality compensate for a boring job?', *The Journal of Entrepreneurship*.
- Doblas-Reyes, F.J., Pavan, V. and Stephenson, D.B. (2003) 'The skill of multi-model seasonal forecasts of the wintertime North Atlantic Oscillation', *Climate Dynamics*.
- Dodd, N.G. and Ganster, D.C. (1996) 'The interactive effects of variety, autonomy, and feedback on attitudes and performance', *Journal of Organizational Behavior*, 17(4), pp. 329–347.
- Eckhardt, J.T. and Shane, S.A. (2011) 'Industry changes in technology and complementary assets and the creation of high-growth firms', *Journal of Business Venturing*, 26(4), pp. 412–430.
- Ehrhart, K.H. (2006) 'Job characteristic beliefs and personality as antecedents of subjective person–job fit', *Journal of Business and Psychology*, 21, pp. 193–226.

- Franz, C.E. and White, K.M. (1985) 'Individuation and attachment in personality development: Extending Erikson's theory', *Journal of Personality*, 53(2), pp. 224–256.
- Froehlich, D.E., Segers, M., Beusaert, S. and Kremer, M. (2019) 'On the relation between task-variety, social informal learning, and employability', *Vocations and Learning*, 12, pp. 113–127.
- Hackman, J.R. and Oldham, G.R. (1976) 'Motivation through the design of work: Test of a theory', *Organizational Behavior and Human Performance*, 16(2), pp. 250–279.
- Hopwood, C.J., Donnellan, M.B., Blonigen, D.M., Krueger, R.F., McGue, M., Iacono, W.G. and Burt, S.A. (2011) 'Genetic and environmental influences on personality trait stability and growth during the transition to adulthood: a three-wave longitudinal study', *Journal of Personality and Social Psychology*, 100(3), pp. 545.
- Hudson, N.W., Roberts, B.W. and Lodi-Smith, J. (2012) 'Personality trait development and social investment in work', *Journal of Research in Personality*, 46(3), pp. 334–344.
- Johari, J. and Yahya, K.K. (2016) 'Job characteristics, work involvement, and job performance of public servants', *European Journal of Training and Development*.
- Judge, T.A., Bono, J.E. and Locke, E.A. (2000) 'Personality and job satisfaction: The mediating role of job characteristics', *Journal of Applied Psychology*, 85(2), pp. 237.
- Isaac, C., Lee, B. and Carnes, M. (2009) 'Interventions that affect gender bias in hiring: A systematic review', *Academic Medicine*, 84(10), pp. 1440–1446.
- Kerr, S. P., Kerr, W. R., & Xu, T. (2018). Personality traits of entrepreneurs: A review of recent literature. *Foundations and Trends® in Entrepreneurship*, 14(3), 279-356.
- Kim, H. and Stoner, M. (2008) 'Burnout and turnover intention among social workers: Effects of role stress, job autonomy and social support', *Administration in Social Work*, 32(3), pp. 5–25.
- Köhnke, A.M. (2021) 'Work and Personality Change What We Do Makes Who We Are, by Ying Wang and Chia - Huei Wu', *Bristol University Press*, 4 February, 152 pp., ISBN: 978 - 1529207552, Price GBP 32.00.
- Li, W.D., Fay, D., Frese, M., Harms, P.D. and Gao, X.Y. (2014) 'Reciprocal relationship between proactive personality and work characteristics: A latent change score approach', *Journal of Applied Psychology*, 99(5), pp. 948.
- Maden, C. (2015) 'The relationship between job resources, engagement, and proactivity: Does job fit make a difference?', *European Journal of Training and Development*.
- McAdams, D.P. (1995) 'What do we know when we know a person?', *Journal of Personality*, 63, pp. 365–396.
- McAdams, D.P. and Pals, J.L. (2006) 'A new Big Five: Fundamental principles for an integrative science of personality', *American Psychologist*, 61(3), pp. 204.

- McArdle, J.J. (2009) 'Latent variable modeling of differences and changes with longitudinal data', *Annual Review of Psychology*, 60, pp. 577–605. doi:10.1146/annurev.psych.60.110707.163612.
- McArdle, J.J. and Hamagami, F. (2001) 'Advanced studies of individual differences linear dynamic models for longitudinal data analysis', in Marcoulides, G.A. and Schumacker, R.E. (eds.) *New developments and techniques in structural equation modeling*. New York: Psychology Press, pp. 223–266.
- McCrae, R.R., Costa, P.T., de Lima, M.P., Simões, A., Ostendorf, F., Angleitner, A. and Piedmont, R.L. (1999) 'Age differences in personality across the adult life span: Parallels in five cultures', *Developmental Psychology*, 35(2), pp. 466.
- Mischel, W. (1984) 'On the predictability of behaviour and the structure of personality', in Zucker, R.A., Aronoff, J. and Rabin, A. (eds.) *Personality and the Prediction of Behaviour*. New York: Academic Press, pp. 269–305.
- Mooney, R. (2023) *Personality-based drivers of offending behaviour: Trait profiles and beyond* (Doctoral dissertation, Edge Hill University).
- Morf, M., Feierabend, A. and Staffelbach, B. (2017) 'Task variety and counterproductive work behavior', *Journal of Managerial Psychology*, 32(8), pp. 581–592.
- Morgeson, F.P., Delaney-Klinger, K. and Hemingway, M.A. (2005) 'The importance of job autonomy, cognitive ability, and job-related skill for predicting role breadth and job performance', *Journal of Applied Psychology*, 90(2), pp. 399.
- National Scientific Council on the Developing Child (2010) *Early experiences can alter gene expression and affect long-term development: Working Paper No. 10*. Available at: www.developingchild.harvard.edu (Accessed: 6 October 2024).
- Nesselrode, J.R. and Baltes, P.B. (1974) 'Adolescent personality development and historical change: 1970–1972', *Monographs of the Society for Research in Child Development*, pp. 1–80.
- Noefer, K., Stegmaier, R., Molter, B. and Sonntag, K. (2009) 'A great many things to do and not a minute to spare: Can feedback from supervisors moderate the relationship between skill variety, time pressure, and employees' innovative behavior?', *Creativity Research Journal*.
- Parker, S. and Wall, T.D. (1998) *Job and work design: Organizing work to promote well-being and effectiveness*. London: Sage.
- Paulhus, D.L. and John, O.P. (1998) 'Egoistic and moralistic biases in self - perception: The interplay of self - deceptive styles with basic traits and motives', *Journal of Personality*, 66(6), pp. 1025 - 1060.
- Piccinini, E., Hanelt, A., Gregory, R. and Kolbe, L. (2015) 'Transforming industrial business: The impact of digital transformation on automotive organizations', *Journal of Business Strategy*.
- Rhode, D.L. (1988) 'Occupational inequality', *Duke Law Journal*, pp. 1207.

- Richels, K.A., Day, E.A., Jorgensen, A.G. and Huck, J.T. (2020) 'Keeping calm and carrying on: Relating affect spin and pulse to complex skill acquisition and adaptive performance', *Frontiers in Psychology*, 11, 507651.
- Riley, E.N., Peterson, S.J. and Smith, G.T. (2017) 'Towards a developmentally integrative model of personality change: A focus on three potential mechanisms', *Advances in Psychology Research*, 124, pp. 63.
- Roberts, B. W. (1997). Plaster or plasticity: Are adult work experiences associated with personality change in women?. *Journal of personality*, 65(2), 205-232.
- Roberts, B.W. (1997) 'Plaster or plasticity: Are adult work experiences associated with personality change in women?', *Journal of Personality*, 65(2), pp. 205–232.
- Rosenblatt, Z. (2001) 'Teachers' multiple roles and skill flexibility: Effects on work attitudes', *Educational Administration Quarterly*.
- Shujahat, M., Wang, M., Ali, M., Bibi, A., Razzaq, S. and Durst, S. (2021) 'Idiosyncratic job-design practices for cultivating personal knowledge management among knowledge workers in organizations', *Journal of Knowledge Management*, 25(4), pp. 770–795.
- Soto, C.J. and Jackson, J.J. (2013) 'Five-factor model of personality', *Journal of Research in Personality*, 42, pp. 1285–1302.
- Stryker, S. (2001) *Social psychology, sociological*. New York: Academic Press.
- Teichler, U. (2019) 'Higher education and the world of work: Conceptual frameworks, comparative perspectives, empirical findings', in *Higher Education and the World of Work*. Brill.
- Terracciano, A., Costa Jr, P.T. and McCrae, R.R. (2006) 'Personality plasticity after age 30', *Personality and Social Psychology Bulletin*, 32(8), pp. 999–1009.
- Turiano, N.A., Pitzer, L., Armour, C., Karlamangla, A., Ryff, C.D. and Mroczek, D.K. (2012) 'Personality trait level and change as predictors of health outcomes: Findings from a national study of Americans (MIDUS)', *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 67(1), pp. 4–12.
- Van den Berg, P.T. and Feij, J.A. (2003) 'Complex relationships among personality traits, job characteristics, and work behaviors', *International Journal of Selection and Assessment*, 11(4), pp. 326–339.
- Viken, R.J., Rose, R.J., Kaprio, J. and Koskenvuo, M. (1994) 'A developmental genetic analysis of adult personality: Extraversion and neuroticism from 18 to 59 years of age', *Journal of Personality and Social Psychology*, 66(4), pp. 722.
- Vygotsky, L.S. and Cole, M. (1978) *Mind in society: Development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wall, T.D., Clegg, C.W. and Jackson, P.R. (1978) 'An evaluation of the job characteristics model', *Journal of Occupational Psychology*, 51(2), pp. 183–196.
- Wang, E.S.-T. and Lin, C.-L. (2018) 'How work design characteristics affect service employees' work–family conflicts', *The Service Industries Journal*.

- Wang, Y. and Wu, C.H. (2021) 'Implications of personality change at work for research and practice', in *Work and Personality Change*. Bristol: Bristol University Press, pp. 85–105.
- Wang, Y. and Wu, C.H. (2021) 'How work experiences drive personality change: The impact of work, organisational, societal and international environment', in *Work and Personality Change*. Bristol: Bristol University Press, pp. 33–62.
- Wille, B., Hofmans, J., Feys, M. and De Fruyt, F. (2014) 'Maturation of work attitudes: Correlated change with Big Five personality traits and reciprocal effects over 15 years', *Journal of Organizational Behavior*, 35(4), pp. 507–529.
- Wu, C.H. (2016) 'Personality change via work: A job demand–control model of Big-five personality changes', *Journal of Vocational Behavior*, 92, pp. 157–166.
- Wille, B. and De Fruyt, F. (2014) 'Vocations as a source of identity: Reciprocal relations between Big Five personality traits and RIASEC characteristics over 15 years', *Journal of Applied Psychology*, 99(2), pp. 262.
- Zaniboni, S., Truxillo, D.M. and Fraccaroli, F. (2013) 'Differential effects of task variety and skill variety on burnout and turnover intentions for older and younger workers', *European Journal of Work and Organizational Psychology*.
- Zheng, J. (2021) 'Examining the indirect effects of the Big-Five traits on the change in job satisfaction via the change in specific work characteristics', *Journal of Applied Psychology*.

Appendices

Appendix 1. Invariance Analysis

```
DATA: FILE IS "C:\\Users\\Administrator\\Desktop\\lxx\\data.csv";
      FORMAT IS FREE;

VARIABLE:
  NAMES ARE group skill_diversity job_autonomy extraversion agreeableness
            conscientious emotional_stability openness;
  USEVARIABLES ARE skill_diversity job_autonomy extraversion agreeableness
                  conscientious emotional_stability group;
  GROUPING IS group (1 2);

! Configural Invariance
MODEL:
  ! Configural model
  skill_diversity;
  job_autonomy;
  extraversion;
  agreeableness;
  conscientious;
  emotional_stability;

OUTPUT: standardized tech1 tech4;
```

```
DATA: FILE IS "C:\\Users\\Administrator\\Desktop\\lxx\\data.csv";
      FORMAT IS FREE;

VARIABLE:
  NAMES ARE group skill_diversity job_autonomy extraversion agreeableness
            conscientious emotional_stability openness;
  USEVARIABLES ARE skill_diversity job_autonomy extraversion agreeableness
                  conscientious emotional_stability group;
  GROUPING IS group (1 2);

! Metric Invariance
MODEL:
  ! Metric invariance
  skill_diversity (11);
  job_autonomy (12);
  extraversion (13);
  agreeableness (14);
  conscientious (15);
  emotional_stability (16);

OUTPUT: standardized tech1 tech4;
```

```

DATA: FILE IS "C:\\Users\\Administrator\\Desktop\\lxx\\data.csv";
      FORMAT IS FREE;

VARIABLE:
  NAMES ARE group skill_diversity job_autonomy extraversion agreeableness
            conscientious emotional_stability openness;
  USEVARIABLES ARE skill_diversity job_autonomy extraversion agreeableness
                  conscientious emotional_stability group;
  GROUPING IS group (1 2);

MODEL:
  ! Configural model (without constraints)
  skill_diversity;
  job_autonomy;
  extraversion;
  agreeableness;
  conscientious;
  emotional_stability;

  ! Metric invariance (constrain factor loadings to be equal across groups)
  skill_diversity (i1);
  job_autonomy (i2);
  extraversion (i3);
  agreeableness (i4);
  conscientious (i5);
  emotional_stability (i6);

  ! Scalar invariance (constrain intercepts to be equal across groups)
  [skill_diversity job_autonomy extraversion agreeableness conscientious
   emotional_stability] (m1);

OUTPUT: standardized tech1 tech4;
1>

```

```

DATA: FILE IS "C:\\Users\\Administrator\\Desktop\\lxx\\data.csv";
      FORMAT IS FREE;

VARIABLE:
  NAMES ARE group skill_diversity job_autonomy extraversion agreeableness
            conscientious emotional_stability openness;
  USEVARIABLES ARE skill_diversity job_autonomy extraversion agreeableness
                  conscientious emotional_stability group;
  GROUPING IS group (1 2);

! Strict Invariance
MODEL:
  ! Strict invariance
  skill_diversity (s1);
  job_autonomy (s2);
  extraversion (s3);
  agreeableness (s4);
  conscientious (s5);
  emotional_stability (s6);
  [skill_diversity job_autonomy extraversion agreeableness conscientious
   emotional_stability] (m2);
  skill_diversity job_autonomy extraversion agreeableness conscientious
  emotional_stability;

OUTPUT: standardized tech1 tech4;

```