Exploring the Relationships between Proactive Personality and Work Engagement: The Mediating Effects of Emotional Intelligence

Jin-Chuan Lee[1], Hsiao-Hui Tai[2]*, Mei-Hung Chen[3], Hsu-Ya Cheng[4]

[1] College of Humanities and Social Sciences, Southern Taiwan University of Science and Technology, Tainan, Taiwan.

[2]* Department of Labor and Human Resources, Chinese Culture University, Taipei, Taiwan.

[3] Department of Industrial Education, National Taiwan Normal University, Taipei, Taiwan.

[4] Institute of Human Resources, Southern Taiwan University of Science and Technology, Tainan, Taiwan.

*Corresponding Author: dxh@ulive.pccu.edu.tw

DOI: https://doi.org/10.30209/IJMO.202402.004

ABSTRACT

Employers expect their employees to deliver top-notch work in today's competitive business world. However, there is a lack of research exploring the connection between emotional intelligence, proactive personality, and work engagement. We thoroughly reviewed relevant literature and theories and developed a data collection tool to fill this gap. Our survey of 347 practitioners in the manufacturing industry of Southern Taiwan was analyzed using hierarchical linear regression and mediator effect tests. The results indicate that emotional intelligence is crucial in mediating the relationship between proactive personality and work engagement. We also discovered that emotional regulation is a critical factor in these connections. This study highlights that individuals with a highly proactive personality tend to exhibit more frequent behaviors of vigor, dedication, and absorption, emphasizing the importance of considering a proactive personality when selecting employees to enhance their effectiveness. Additionally, providing emotional regulation training can help employees improve their emotional intelligence, work engagement, and overall performance.

Keywords: Proactive personality, Work engagement, Emotional intelligence, Human resources, Decision Analysis

1. Introduction

1.1 The Emotional Intelligence Associated with Individual's Achievement Positively

Effectively enhancing the work performance and productivity of organizational employees has inherently been the topic of interest among experts and scholars of human resource development [1][2][3][4]. Scholars argued that several factors influence individual identification in a workplace, yet the emotional intelligence and personality to be identified and the links with the performance [5][6][7][8][9][10]. Studies supported that personality is also a principal determinant of interpersonal relationships and intention to stay on a job [7][8][9][11]. People with different personalities are unique

in the extent to which they can accept other people (colleagues or supervisors), execute an event (job content, tasks, or duties), or adapt to an object (location, instrument, or equipment). It represents a person's characteristics, determining their response to a situation and the response method [9][11]. Thus, leadership, personality and behavior are closely related [12]. Those factors influence basic individual behavior because of its enduring nature, and personal behavior results from the mutual influence between personality and the surrounding environment [11]. Hence, determining the effects of personality traits on emotional intelligence and linking it to working engagement can facilitate boosting interpersonal relationships and communications and enhancing work engagement in employees [7][8]. Meanwhile, the proactive personality refers to an individual who is more able to adopt proactive strategies to respond to environmental changes without being subject to the limitations and interference of environmental changes [13]. The discussions above show that "emotional intelligence" and "success" are closely related factors for academic achievements or career development.

1.2 The Work Engagement Associated with Productivity

Ganguly [14] indicated that a highly engaged (i.e. involved) employee has a drive for efficiency, a talent for building strong relationships with work partners, and a natural flair for innovation. May, Gilson, and Harter [15] also agreed that a high level of work engagement increases individual identification with work, which implies that work engagement represents a company's overall performance. Analyzing employee behavior using the theoretical framework of proactive personality can be connected to various personality scales and predict job satisfaction [11]. Moreover, how an organization enhances its performance depends on the productivity of individuals, which has emerged as an essential issue in the modern era. As per the reviewed literature, the external factors that influenced individuals were focused on personality, emotional intelligence, and job satisfaction [16][17][18][19].

1.3 The Industry Development Relay on High-Quality Talent

The manufacturing industry was going through the revolution of Industry 4.0. It demands high-level workers equipped with technical skills and professional knowledge to join the advanced production line and cooperate with automatic machines to enhance the productivity of a nation [20]. The industry expects excellent talents to contribute their efforts to their duty without over-monitoring and managing. However, there is still no appropriate solution to deal with this issue. Further, inspiring talent's potential and positive attitude toward combined career development is a significant issue both for management and human resources [5][7][11][16]. Based on the support of related research, this study focuses on analyzing the relationships among proactive personality, emotional intelligence, and work engagement of employees in the manufacturing industry. The findings can aid employers in recruiting talented, competent employees who are enthusiastic about their work.

As mentioned before, the issue of relationships between work performance and employee productivity caught scholars' attention, and some research identified vital factors such as emotional intelligence and personality [5][21]. Further, studies pointed out that the individual's work

engagement was the source of high organizational performance [11][15]. Yet, due to the Industry 4.0 new automation manufacturing era, workers such as engineers, managers, staff, and frontline operators were dramatically downsized in modern factories [22]. Thus, the mental quality of the members in the intelligent factory was essential [23] because high-quality talents showed their proactive behavior without being monitored by the management system or supervisor in practice. Therefore, the operation of the organization will go more smoothly and effectively. In general, when facing the future demands of talents and organizational performance, it is essential to discover future talents' traits and potential behavior to ensure the enterprise's productivity.

2. Literature Review

2.1 Concept and Definition of Work Engagement

Work engagement, a concept proposed by Kanungo [24], is focused on the extent to which a working person integrates work into activities of daily living and on the degree of enthusiasm about and involvement in their work. In other words, work engagement is the attitude and behavior that a working person is committed to completing a task irrespective of the difficulties and hardships the task entails. Kahn [25] introduced personal engagement, defining it as the behavior by which people commit fully to their work and harness themselves in work roles. Personal engagement can thus be extended to work engagement, which considers whether a person's interaction with others, behavioral performance, role identity, and job performance stimulates the person to achieve improved personal performance at work. Employees can be further motivated to improve their job performance if the organization provides satisfactory work conditions. From a psychological perspective, work engagement can arouse positive emotions and feelings of satisfaction and induce reactions such as vigor, dedication, energy, and involvement [26][27][28][29]. Maslach, Schaufeli and Leiter [30] regarded work engagement as the opposite of job burnout. They classified job burnout into emotional exhaustion, cynicism, and reduced professional efficacy depending on the "Maslach Burnout Inventory-General Survey", proposing three dimensions of work engagement: energy, involvement, and efficacy. Furthermore, they indicated that engaged employees do not slack off in their busy work schedule; they engage entirely in work duties and effectively complete work-related tasks. Schaufeli et al. [31] defined work engagement as an employee's positive and active attitude toward any decisions made within the organization and the organization's values. Engaged employees can work with their peers and willingly commit their state of mind and energy to their work to improve job performance and enhance the benefit of the organization. Adopting the concept of Kahn [25], May et al. [15] defined work engagement as organizational members' psychological identification with themselves regarding their behavior, cognition, and emotion. Macey and Schneider [28] asserted that work engagement is a focus on personal goals, an enthusiasm for the organization's goals, and a willingness to commit to and persist in achieving these goals.

Based on the discussions above, work engagement is the degree of involvement at work and the extent to which employees harness themselves in work roles. According to Schaufeli and Bakker's [29] definition of work engagement, this study divides work engagement into the dimensions of vigor,

dedication, and absorption, reflecting individual employees' positive feelings, sense of accomplishment, and intention to achieve goals at work. Work engagement is also defined as the experience following a person's expression of enthusiasm, including aspects of vigor, cognition, and emotion.

Attributable to the concerted efforts of previous researchers, work engagement is now a fully developed concept in both academic fields and industries [13][26][29][32][33][34][35][36][37]. Work engagement exerts a profound influence on individual job performance and organizational performance. Therefore, work engagement is a topic of discussion among scholars of human resource development and provides an effective solution to reducing job burnout, enhancing job performance, and strengthening organizational productivity.

2.2 The Effect of Proactive Personality (X) to Emotional Intelligence (M)

2.2.1. Personality and Proactive Personality

Personality traits are an enduring disposition influencing all organizational members' thinking, feelings, and behaviors, including managerial employees [27]. When personality variables were introduced first, they involved more than 1,000 trait-descriptive terms. Although multiple studies had been conducted successively after that, the number of personality traits proposed remained high. Later, Cattell [38] eliminated a few traits, thus designing the Sixteen Personality Factor Questionnaire based on his result. Fiske [39] verified the repeatability of Cattell's [38] research, obtaining also five personality factors. In 1963, Norman [40] validated Cattell's [38] procedures, claiming that the five-factor model is a reasonable approach to personality classification. Subsequently, Goldberg [41] officially named the five-factor model the "Big Five." The classification method of Costa and McCrae [42] is currently the most widely accepted approach, which established the following five major personality traits through in-depth research.

(a) Neuroticism: The number and strength of stimuli to stimulate negative emotions. It means that the more stimuli a person can accept, the more emotionally stable they are.
(b) Extraversion: The extent to which a person feels comfortable with their relationship with others and favors social activities.
(c) Openness to Experience: The variety and depth of interests. If a person has diverse interests but only superficially, the person is characterized by high openness.
(d) Agreeableness: The degree of compliance with regulations set by others. It means a high level of compliance denotes high agreeableness.
(e) Conscientiousness: The degree to which a person is serious about achieving goals. High conscientiousness is reflected in the tendency to be careful and vigilant when achieving a goal.

Shen and Sun [43] indicated that amusement park service personnel's personality traits and emotional intelligence significantly influenced their job performance. Of the Big Five personality traits, conscientiousness, neuroticism, and extraversion positively influenced job performance, whereas agreeableness and openness to experience exerted a non-significant influence on job performance.

Regarding proactive personality, Buss [44: 1220] emphasized, “People are not passive recipients of environmental presses.” They take actions to change the environment. Bateman and Crant [45: 103] defined proactive personality as “the relative stable tendency to effect environmental change.” In other words, people with proactive personality, under any circumstances, demonstrate proactive involvement and a tendency to change themselves and the environment around them [44][46]. Research points out that individuals with a proactive personality will not passively accept pressure from the environment [47]. On the contrary, individuals have the ability to choose situations, actively avoid certain social situations, and will also behave in favorable situations [48]. These people hold onto opportunities, take action, and persevere until they bring about change to the overall condition [48][49]. Bakker, Tims and Derks [48] reviewed studies of the past 20 years and found that proactive personality is a critical factor that explains the unique variables not considered in the five-factor model. In other words, proactive personality, in addition to the Big Five personality traits, can influence behavioral performance and learning effectiveness through individual motivation [50][51]. These studies indicate that a proactive personality is a disposition characterized by proactivity, perseverance, goal orientation, and stability; proactive people have standards and approaches to handling a situation.

Most studies on work engagement have focused on its relationships with employee retention, organizational performance, and job burnout, including the emotional effects on managerial employees. Demerouti et al. [52] found that work engagement is positively correlated with positive affectivity and organizational commitment. May et al. [15] noted that engaged employees are more likely to stay in their jobs. Salanova, Agut, and Peiró [37] indicated that organizational resources predict work engagement, which in turn influences service climate. Kapil and Rastogi [53] showed that work engagement enhances task performance and organizational citizenship behavior (OCB). Babcock-Roberson and Strickland [54] observed a strong positive correlation between charismatic leadership, work engagement, and OCB. Schaufeli et al. [31] emphasized work engagement as a positive concept, opposite to job burnout. Schaufeli, Bakker, and Salanova [55] highlighted that while job burnout is well-studied, work engagement requires more attention, noting that the absence of burnout does not imply engagement. Patrick and Bhat [56] confirmed that work engagement is linked to proactive behavior, initiative, and responsibility, with psychological states playing a crucial role in personal outcomes. Proactive personality can mitigate the negative relationship between family-work conflict and life satisfaction. That is, for people with high proactive personality, the greater the work pressure or family-work conflict they face, the higher their life satisfaction will be [37,52,54]. Based on these discussions, this study proposed the following hypotheses:

H1: The more prominent the employees’ proactive personality, the higher their work engagement.

2.2.2. Emotional Intelligence

The term "emotion" was defined in the Oxford dictionary as "an agitation or disturbance of mind, feeling, or passion and any vehement or excited state" [57]. Salovey, Hess, and Mayer [58] asserted that emotion influences individual thoughts and behaviors, and is closely related to work efficiency, physical and mental health, and interpersonal relationships. Hatfield, Cacioppo, and Rapson [59]

maintained that emotional intelligence encompasses three abilities: (a) the ability to understand and express one's emotions and identify emotions in others, (b) the ability to regulate emotions in oneself and others, and (c) the ability to manage emotions in oneself to elicit appropriate behaviors.

Chen [60] investigated the relationship between supervisors' leadership style, emotional competence, and employees' work engagement. The findings were: (a) employees perceived moderate to high levels of supervisors' transformational leadership and emotional competence; (b) supervisors' emotional competence and transformational leadership were significantly positively correlated; and (c) the interaction between supervisors' transformational leadership and emotional competence significantly affected employees' work engagement. Erkutlu and Chafra [61] verified the moderating effects of emotional intelligence on the relationship between proactive personality and empowerment. This study applied the Five-Factor Model, which is based on the theoretical foundation of the Big Five personality traits [62][63], to measure proactive personality. A similar characteristic of a proactive personality in the Big Five model is "Conscientiousness".

In addition, based on the relevant research, it positively supported by the relationships in the practical data. They emphasized that the higher proactivity was exhibited, the higher emotional intelligence was reflected [59,61,62]. Therefore, this study proposed the following hypothesis according to the literature above:

H2: The higher the employees' proactive personality, the higher their emotional intelligence.

2.3 The Effect of Emotional Intelligence (M) on Work Engagement (Y)

Ravichandran et al. [64] maintained that emotional intelligence plays a pivotal role in aiding managers and employees in coping with dynamic changes in a business environment. For employees, emotional intelligence is an integral part of work-related techniques and skills for enhancing productivity [65][66][67]. [68][69][70]. For managers, emotional intelligence is crucial to motivating employees to engage in work. The argument that emotional intelligence influences work engagement has not been directly proved by evidence [71]. However, Rothbard [72] investigated gender differences regarding work, work engagement, and family. Her study revealed evidence for significant gender differences in engagement in family roles and engagement in work. Men had higher engagement in work than women, whereas women had higher engagement in family roles than men. From the results, the effect of emotion was identified as well.

Wu and Cheng [77] indicated that both the expression of positive and suppression of negative emotions was correlated significantly and positively with work engagement and the ability to regulate others' emotions. They also found that work engagement and the ability to regulate others' emotions were correlated significantly and negatively with emotional exhaustion, suggesting that a high level of work engagement and ability to regulate others' emotions predicts a low level of emotional exhaustion. Both the expression of positive and suppression of negative emotions were significantly correlated positively with work engagement and the ability to regulate others' emotions. Further, Aulia [78] provided practical evidence from Indonesian soldiers that shows participants' emotional intelligence will influence their work engagement positively and powerfully. Based on these discussions, the following hypothesis is to be proposed:

H3: The higher the employees' emotional intelligence, the higher their work engagement.

Subsequently, Bakker et al. [73] studied Finnish teachers, identifying that job resources such as supervisor support, job control, and appreciation can enhance work engagement and create a supportive climate to sustain employee engagement and enthusiasm. They also identified emotion as a critical factor influencing work engagement by establishing the causal relationship between emotional intelligence and work engagement and examining scholars' surveys of employees working in high-technology industries. The analysis results supported emotional intelligence as a positive predictor of work engagement [64][72][73]. Gagnon and Michael [74] found that employees who perceived coworker involvement and supervisor support tended to have higher job performance, job satisfaction, organizational commitment and lower turnover intention.

George and Zhou [75] also indicated that mood is the key factor determining the effort people are willing to put at work. Therefore, supervisors' emotional contagion will likely influence employees' work engagement and job burnout and further affect their innovation behavior. Wu and Hu [76] revealed that when employees' negative emotions are evoked by inadequate supervision, employees with high susceptibility to emotional contagion are easily influenced by supervisors' negative emotions, which places them in a bad mood and, in turn, at risk of job burnout. Conversely, employees with low susceptibility to emotional contagion were resilient against supervisors' negative emotions. Wong and Law's [83] study investigates the effects of emotional intelligence (EI) on the performance and attitudes of leaders and followers. The study underscores the critical role of EI in leadership and employee performance, suggesting that both leaders and followers benefit from high levels of emotional intelligence. The findings advocate for EI training to enhance job satisfaction, performance, and organizational commitment, particularly in emotionally demanding jobs. Standkov and Roberts [84] outlines the components and mechanisms of emotional intelligence, emphasizing the balance between emotion and reason, as well as the cultivation of intrapersonal and interpersonal skills, providing a theoretical foundation for enhancing personal and interpersonal effectiveness.

Moreover, Zhu et al. [79] proposed a model of emotional intelligence on work engagement from selected registered nurses of public hospitals. The analyzed results demonstrated that emotional intelligence affects nurses' work engagement and involves a tendency for proactive attitude. Depending on the supported study, the following hypothesis is to be proposed:

H4: Emotional intelligence mediates the relationship between proactive personality and work engagement.

3. Research Design

3.1 The Research Framework

This study investigated the effects of proactive personality and emotional intelligence on employee work engagement. Figure 1 shows the mediation model. To evaluate the impacts accurately, employees' gender, age, marital status, and education level (years of study experience) were controlled for before performing hierarchical regression analysis. Proactive personality is to be used as the predictor variable, emotional intelligence as the mediator variable, and work engagement as

the outcome variable.

3.2 Sample Selection

The participants were employees from manufacturing industries in Taiwan. Formal questionnaires were distributed and retrieved over one month. The questionnaires were distributed to traditional manufacturers in Taiwan. A total of 372 formal questionnaires were distributed through convenience sampling. It contained missing answers, and more than half of the questions in the three scales were left unanswered or presented overly consistent response patterns were treated as invalid responses. A total of 25 invalid questionnaires were to be eliminated, yielding 347 valid responses. It shows an effective recovery rate of 93.27%.

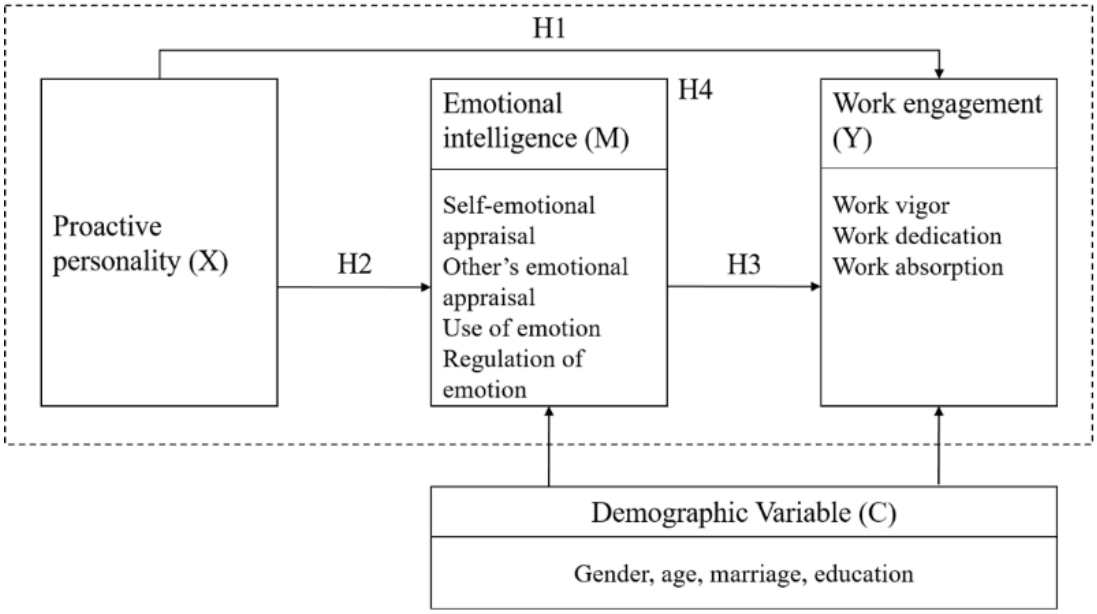

Figure 1. The proposed framework of the study

Source: By authors.

3.3 The Instrument

This study employed a survey approach [80], using quantitative questionnaires for data collection to test the proposed hypotheses. The questionnaire was composed of four domains: "demographic information", "proactive personality", "emotional intelligence", and "work engagement".

3.3.1. Scale Development

A. Demographic Variables

This study's developed domain comprised four items: gender, year of birth, education level, and marital status.

B. Proactive Personality Scale

This scale was referred to the "Big Five Personality Traits" theory and developed a ten Personality Factor Questionnaire items [38]. Thus, the proactive personality was measured via

translated items [62][63][81]. It contained eight items. Those items were adapted from developed instruments [82]. The scale employed Likert's 5-point style for the participants to rate the item's description from 1=unalike me to 5=alike me.

C. Emotional Intelligence Scale

The 16-item self-report Wong and Law's [83] Emotional Intelligence Scale was adopted in this study. This scale is based on the definition and four dimensions of emotional intelligence proposed by Davies, Stankov and Roberts [84]: self-emotional appraisal, others' emotional appraisal, expression of emotion, and emotion regulation.

D. Work Engagement Scale

This study reviewed related studies [46][48][85][86][87], then finally selected and employed the Utrecht Work Engagement Scale [88], which consists of 17 items in three sections: vigor, dedication, and absorption.

3.3.2 Reliability and Validity Test

The reliability and validity of the scales in this study were established through item analysis, factor analysis, and reliability analysis. As shown in Table 1, all the scales and factors had Cronbach's α ranging from 0.867 to 0.950 and explained variance was performed by exploratory factor analysis, ranging from 64.276% to 73.486%. These analysis results indicate that the scales of this study exhibited favorable construct validity and reliability.

Table 1. The summary of reliability and validity test results

Scales and dimensions	Items	Reliability Cronbach's α	Validity Variance Explained (%)
Proactive personality	**10**	**0.869**	**64.276**
Emotional intelligence	**16**	**0.904**	**73.486**
Self-emotional appraisal	4	0.849	
Others' emotional appraisal	4	0.900	
Use of emotion	4	0.851	
Regulation of emotion	4	0.895	
Work engagement	**17**	**0.950**	**70.087**
Work vigor	6	0.893	
Work dedication	6	0.918	
Work absorption	5	0.876	

Source: By authors.

The reliability test (increase in Cronbach's α after item elimination), internal consistency test (corrected correlation coefficients of item scores and the total score), and critical ratio test (t-test of mean item scores from high-score and low-score groups) were first conducted in the pretest phase. It serves as item elimination criteria for item analysis [80][89] to improve the quality of scale items. Second, exploratory factor analysis (EFA) was performed to establish the construct validity of the scales. Principal component analysis was used for factor extraction; common factors with an

eigenvalue greater than 1.0 were retained. The Varimax method was employed for orthogonal rotation, and items with factor loadings greater than 0.45 were adopted [90]. The reliability coefficient of Cronbach's α was adopted to analyze the reliability of the scales, which in general must be at least greater than 0.70 [91][92].

Further, the confirmatory factor analysis (CFA) was performed to double-check the model fit and discriminant validity by following Killer et al. [93] suggestions. The result shows χ^2= 132.891 ($p<.05$); df= 2.606; GFI= .937; AGFI= .903; NFI= 0.917; NNFI= 0.918; CFI= 0.946; RMSEA= 0.068; SRMR= .0478, that the model-fit-indices pass the criteria. Further, using the mean score of sub-domain items as a measure variable to calculate the first-order CFA and applying a competing model strategy to test the discriminant validity [94]. Results demonstrate that survey data supported the discriminant validity. The summarized information is in Table 2.

Table 2. The summary of discriminant validity test results

Domain	Constrain model (φ_{ij}=1)		Standard model (φ_{ij}=free)		$\Delta\chi^2$
Comparison	χ^2	*df*	χ^2	*df*	
ei vs. pe	407.213***	51	301.552***	52	168.661
ei vs. we	228.321***	51	180.606***	52	47.715
we vs. pe	402.578***	51	267.735***	52	134.843

Note: ei=emotional intelligence; pe=proactive personality; we=work engagement; *** $p<.001$.
Source: By authors.

Further, the correlation matrix is presented in Table 3. All variables reached the significant level for positive correlation, except the "emotional stability/neuroticism" with "emotion awareness".

Table 3. The Pearson correlation matrix of variables

Items	e1	e2	e3	e4	w1	w2	w3	p1	p2	p3	p4
e2	.400**	1									
e3	.486**	.416**	1								
e4	.357**	.381**	.493**	1							
w1	.300**	.269**	.454**	.421**	1						
w2	.252**	.237**	.455**	.472**	.738**	1					
w3	.286**	.264**	.411**	.450**	.729**	.754**	1				
p1	.191**	.043	.226**	.253**	.201**	.212**	.165**	1			
p2	.190**	.270**	.155**	.299**	.313**	.318**	.306**	.116*	1		
p3	.196**	.218**	.228**	.201**	.323**	.306**	.343**	.158**	.454**	1	
p4	.393**	.287**	.381**	.362**	.352**	.327**	.388**	.328**	.516**	.461**	1
p5	.313**	.262**	.390**	.316**	.440**	.361**	.426**	.347**	.343**	.407**	.613**

Note: * p<.05; ** p<.01; e1= Self-emotional appraisal; e2= Other's emotional appraisal; e3= Express of emotion; e4= Regulation of emotion; w1= Work vigor; w2= Work dedication; w3= Work

absorption; p1= Emotional stability/neuroticism; p2= Extraversion; p3= Openness to experience; p4= Agreeableness; p5= Conscientiousness.
Source: By authors.

3.3.4. Common Method Variance

To prevent the comment method variance biases, the design approach of instrument development was employed in this study [95][96][97]. We ordered the items randomly and one reversed coded item in each factor at first. Second, we masked the variables on the questionnaire. Third, anonymity was required in the survey. Fourth, the demographic variables were then put as control variables into a regression analysis to eliminate the CMV. Regarding the CMV of the single source, the Likert scale style and the psychical effects will be considered limitations.

3.4 Data Analysis

Mediator variables play a vital role in behavioral science. Different mediation conditions convey different meanings. A single mediator variable existing between independent and dependent variables is known as simple mediation [98]. To investigate the causal relationship between independent and dependent variables, the effect of the mediator variable must be considered, namely the total effect (c'+a*b) obtained from the sum of direct (X→Y, c) and indirect effects (X→M, a; M→Y, b) [98][99]. Mediation is tested using the standard error and is determined using the Sobel test [99][100][101][102]:

$$\text{z-value} = a*b/\text{SQRT}(b^2*s_a^2 + a^2*s_b^2) \quad \text{[Formular 1]}$$

s_a = standard error of a
s_b = standard error of b

This study conducted statistical analysis on the data of valid questionnaires by using SPSS 18.0. According to Baron and Kenny's [100] method of using regression analysis to test mediating effects, the mediating effect was tested using three steps to determine the predictor variable (X) and predict the criterion variable (Y) through the mediator variable (M). Step 1 was a regression analysis of X predicting Y to test for path c; Step 2 was a regression analysis of X predicting M for path a; and Step 3 was a regression analysis of X and M predicting Y to test for paths b and c'. When one or more of these path coefficients (a, b, and c) are non-significant, researchers generally conclude that no mediation exists. In the model of Step 3, if M is controlled for, rendering X (i.e., path c') no longer significant, complete mediation is observed; if X (i.e., path c') remains significant, partial mediation is observed [98].

4. Results and Discussion

4.1 The Background of Participants

Descriptive statistics of participants' demographic information were collected on the 347 valid questionnaires of this study. As shown in Table 4, most participants were male (n = 208, 59.9%), aged 31-40 years (n = 154, 44.3%), married (n = 218, 62.8%), and with university/college degree or above (n = 135, 39.5%). In summary, this study's samples were male, aged under 40 years, married, with

bachelor's degrees and above-educated employees.

Table 4. Summary of descriptive statistics of demographic variables (N=347)

Demographic Variables	Groups	Frequency	Percentage
Gender	Male	208	59.9
	Female	139	40.1
Age	Under 30 years old	38	11.0
	31 to 40 years old	154	44.3
	41 to 50 years old	111	32.0
	Over 51 years old	44	12.7
Marital status	Single	129	37.2
	Married	218	62.8
Education	Junior high school	62	17.9
	Senior high school	80	23.1
	Some college	67	19.5
	Bachelor's degree and above	135	39.5

Source: By authors.

4.2 Proactive Personality (X) Affected Work Engagement (Y) Positively

This study performed hierarchical regression analysis to verify the mediating effect, with demographic variables (C) as control variables, proactive personality (X) as a predictor variable, the dimensions of emotional intelligence (M) as mediator variable, and the dimensions (dedication, vigor, and absorption) of work engagement (Y) as outcome variables. Before regression analysis, demographic variables must be converted into dummy variables: for gender, 1 = male, and 0 = female; for marital status, 1 = married, and 0 = unmarried. The actual age of the participants represented age and education level was calculated by the years of education received, with junior high school being 9 years, senior high and vocational high school 12 years, junior college 14 years, university/college 16 years, and graduate institute 18 years.

To verify the effect of employee proactive personality on work engagement, regression analysis was performed with demographic variables as control variables and the dimensions of work engagement as outcome variables. Model 1-1 in Table 5 shows that only age ($\beta = 0.332$, $p < .001$) significantly influenced vigor. Model 2-1 reveals that gender ($\beta = 0.119$, $p < .05$) and age ($\beta = 0.286$, $p < .001$) significantly influenced work engagement. Model 3-1 shows that age ($\beta = 0.343$, $p < .001$) significantly influenced work engagement.

After the demographic variables were controlled, a hierarchical regression analysis was performed with proactive personality as the predictor variable and the dimensions of work engagement as outcome variables. Model 1-2 shows that proactive personality ($\beta = 0.464$, $p < .001$) significantly and positively influenced vigor (Y1). Models 2-2 and 3-2 separately reveal that proactive personality significantly and positively influenced dedication (Y2) ($\beta = 0.483$, $p < .001$) and absorption (Y3) ($\beta = 0.482$, $p < .001$). Overall, proactive personality significantly and positively influenced each dimension of work engagement. Therefore, H1 was supported.

4.3 Proactive Personality (X) Affected Emotional Intelligence (M) Positively

To verify the effect of employee proactive personality (X) on emotional intelligence (M),

regression analysis was performed with demographic variables (C) as control variables and the dimensions of emotional intelligence (M) as outcome variables. Model 4-1 in Table 6 shows that gender (β = -0.166, $p < .01$) and education level (β = 0.191, $p < .01$) significantly influenced self-emotion appraisal. Model 5-1 reveals that education level (β = 0.164, $p < .05$) significantly influenced others' emotional appraisal. Model 6-1 shows that age (β = 0.210, $p < .01$) and education level (β = 0.127, $p < .05$) significantly influenced the expression of emotion. Model 7-1 shows that age (β = 0.157, $p < .05$), marital status (β = 0.130, $p < .01$), and education level (β = 0.184, $p < .01$) significantly influenced the regulation of emotion. After the demographic variables were controlled, a hierarchical regression analysis was performed with proactive personality as the predictor variable and the dimensions of emotional intelligence as outcome variables. Model 4-2 shows that proactive personality (β = 0.326, $p < .001$) significantly and positively influenced self-emotion appraisal (M1). Model 5-2 reveals that proactive personality (β = 0.421, $p < .001$) significantly and positively influenced others' emotional appraisal (M2). Models 6-2 and 7-2 separately show a significantly positive effect of proactive personality on the expression of emotion (M3) (β = 0.519, $p < .001$) and regulation of emotion (M4) (β = 0.364, $p < .001$). Overall, proactive personality significantly and positively influenced each dimension of emotional intelligence. Therefore, H2 was supported.

4.4 Proactive Personality (X) and Emotional Intelligence (M) Affected Work Engagement (Y) Positively

To verify the effect of employee proactive personality (X) and emotional intelligence (M) on work engagement (Y), after the demographic variables (C) were controlled for, hierarchical regression analysis was performed with proactive personality and emotional intelligence as predictor variables and the dimensions of work engagement as outcome variables. Model 1-3 in Table 5 shows that express of emotion (M3) (β = 0.123, $p < .05$) and regulation of emotion (M4) (β = 0.226, $p < .001$) significantly and positively influenced vigor (Y1); therefore, emotional intelligence significantly and positively influenced vigor, indicating that H3 was supported. The effect of proactive personality (β = 0.285, $p < .001$) on vigor in Model 1-3 was smaller than that in Model 1-2 (β = 0.464). Still, the effect remained significant, implying that expressing and regulating emotion partially mediated the relationship between proactive personality and vigor.

Model 2-3 shows a significantly positive influence of expression of emotion (β = 0.144, $p < .05$) and regulation of emotion (β = 0.250, $p < 0.001$) on dedication (Y2); therefore, emotional intelligence significantly and positively influenced dedication, indicating that H3 was supported. The effect of proactive personality (β = 0.323, $p < .001$) on dedication in Model 2-3 was smaller than that in Model 1-2 (β = 0.483). Still, the effect remained significant, implying that expressing and regulating emotion partially mediated the relationship between proactive personality and dedication.

Model 3-3 shows a significantly positive influence of regulation of emotion (β = 0.226, $p < .05$) on absorption (Y3); therefore, emotional intelligence significantly and positively influenced absorption, indicating that H3 was supported. The effect of proactive personality (β = 0.351, $p < .001$) on absorption in Model 3-3 was smaller than that in Model 3-2 (β = 0.482). Still, the effect remained significant, implying that emotion regulation partially mediated the relationship between proactive

personality and absorption.

4.5 The Mediation Effective Test

4.5.1. Verifying the Mediating Effect of Employee Emotional Intelligence on the Relationship between Proactive Personality and Dedication

Table 8 presents the result of the mediation test. Because self-emotion appraisal and others' emotion appraisal did not influence dedication, these two variables did not exhibit a mediating effect. express of emotion (a*b = .159) and regulation of emotion (a*b = .193) played a partial mediating role. The overall mediating effect of emotional intelligence on the relationship between proactive personality and dedication was 1.052, with an overall effect size of 33.29%. In particular, although others' emotion appraisal had no predictive ability, it was a negative predictor and offset the 4.49% overall mediation effect size of emotional intelligence.

4.5.2. Verifying the Mediating Effect of Employee Emotional Intelligence on the Relationship between Proactive Personality and Absorption

Table 9 presents the result of the mediation test. Because self-emotion appraisal, others' emotion appraisal, and expression of emotion did not influence absorption, these three variables did not exhibit a mediating effect. However, self-emotion appraisal and expression of emotion contributed 6.45% and 3.98% of the overall mediation effect size, respectively. Although others' emotional appraisal had no predictive ability, it was also a negative predictor, as described before. And offset the 0.25% overall mediation effect size of emotional intelligence on the relationship between proactive personality and absorption. REGULATION OF EMOTION (a*b = .169) played a critical partial mediating role. The overall mediating effect of emotional intelligence was 0.992, with an overall effect size of 27.23%.

4.6 Discussions

According to Schaufeli and Bakker's [29] definition of work engagement, this study divided work engagement into the dimensions of vigor, dedication, and absorption, reflecting individual employees' positive feelings, sense of accomplishment, and intention to achieve goals at work. Three hypotheses were proposed in this study based on an extensive literature review. First, Schaufeli, Bakker and Salanova [55] focused their research on work engagement, emphasizing that the absence of job burnout does not necessarily indicate the presence of work engagement. Both terms are not two opposite absolutes but differ in extent. Individual work engagement can increase overall corporate output and enhance job performance. Accordingly, the present study hypothesized that the more prominent employees' proactive personalities, the higher their work engagement. The survey and analysis results indicated that employees' proactive personality significantly and positively influenced their vigor, dedication, and absorption at work, thus supporting the hypothesis that employees with high proactivity are more engaged (i.e., vigorous, dedicated, and absorbed) with their work. Conversely, Li et al. [103] said a proactive personality may change due to work experiences. However, this opinion was not included in this study's research design. Therefore, this point was a limitation of this study, and it shall be proven by new studies in the future. Additionally, a proactive

personality significantly and positively influences self-emotion appraisal, others' emotion appraisal, expression of emotion, and emotion regulation, supporting the hypothesis that proactive employees can assess, use, and regulate their feelings.

Second, Hatfield, Cacioppo and Rapson [59] maintained that emotional intelligence should comprise three types of abilities: (a) the ability to understand and express one's emotions and to identify emotions in other people, (b) the ability to regulate emotions in oneself and others, and (c) the ability to manage emotions in oneself to instigate appropriate behaviors. Chen [60] tested the relationship between supervisors' leadership style, emotional competence, and employees' work engagement. He then obtained the following findings: (a) employees exhibited moderate to high levels of perception regarding supervisors' transformational leadership and emotional competence; (b) the levels of supervisors' emotional competence and transformational leadership demonstrated a significant positive correlation; and (c) the interaction between supervisors' transformational leadership and emotional competence significantly affected employees' work engagement. Wu and Cheng [77] indicated that both the expression of positive and suppression of negative emotions were significantly correlated positively with work engagement and the ability to regulate others' emotions. They also found that work engagement and the ability to regulate others' emotions were significantly correlated negatively with emotional exhaustion, implying that a high level of work engagement and ability to regulate others' emotions leads to low emotional exhaustion. Both the expression of positive and suppression of negative emotions were significantly correlated positively with work engagement and the ability to regulate others' emotions.

Based on these studies, the present study hypothesized that the higher the employees' proactive personalities, the higher their emotional intelligence. The results revealed that of emotional intelligence dimensions, only emotion regulation significantly and positively influenced the three dimensions of work engagement (i.e., vigor, dedication, and absorption). Express of emotion was a significant and positive predictor of vigor and commitment but did not influence absorption. Both self-emotion appraisal and others' emotion appraisal did not generate a significant effect on work engagement. Therefore, it was inferred that self-emotion and others' emotional appraisal could not stimulate work engagement; emotion regulation is a crucial factor motivating work engagement, and expression of emotion can evoke employees' vigor and dedication to work. To consider deeply, however, scholars argue that the proactive personality may be a personality trait with a genetic basis [104][105]. The refereed opinions of the literature review would be a limitation of this study, and it shall be proven by new studies in the future.

Lastly, based on scholars established the causal relationship between emotional intelligence and work engagement and conducted a survey of employees working in high-technology industries; their analysis results supported emotional intelligence as a positive predictor of work engagement [64][72][73][106]. Gagnon and Michael [74] found that employees who perceived coworker involvement and supervisor support tended to have higher job performance, job satisfaction, organizational commitment and lower turnover intention.

Table 5. Hierarchical regression coefficients summary of Proactive personality (X) and emotional intelligence (M) to work engagement (Y)

Dependent variables / Independent variables	Work engagement (Y)								
	Work vigor (Y1)			Work dedication (Y2)			Work absorption (Y3)		
	Model 1-1 (β)	Model 1-2 (β)	Model 1-3 (β)	Model 2-1 (β)	Model 2-2 (β)	Model 2-3 (β)	Model 3-1 (β)	Model 3-2 (β)	Model 3-3 (β)
Control variables (C)									
Gender (male=1)	-0.006	-0.032	-0.021	0.119 *	0.092	0.087	0.033	0.006	0.012
Age (years)	0.332 ***	0.170 **	0.162 ***	0.286 ***	0.117	0.101	0.343 ***	0.175 **	0.169 **
Marriage (married=1)	-0.056	-0.038	-0.089	-0.023	-0.004	-0.052	-0.043	-0.025	-0.065
Education (years)	-0.022	-0.160 **	-0.183 ***	0.001	-0.143 *	-0.161 **	0.032	-0.112 *	-0.137 *
Proactive personality (X)		0.464 ***	0.285 ***		0.483 ***	0.323 ***		0.482 ***	0.351 ***
Emotional intelligence (M)									
Self-emotional appraisal (M1)			0.098			0.052			0.095
Other's emotional appraisal (M2)			0.001			-0.052			-0.003
Express of emotion (M3)			0.123 *			0.144 *			0.037
Regulation of emotion (M4)			0.226 ***			0.250 ***			0.226 ***
R^2	0.101	0.293	0.386	0.099	0.307	0.398	0.100	0.307	0.373
$\triangle R^2$		0.192	0.093		0.208	0.090		0.207	0.066
F	8.979 ***	26.324 ***	21.935 ***	8.764 ***	28.221 ***	23.036 ***	8.838 ***	28.128 ***	20.756 ***
$\triangle F$		86.121 ***	11.927 ***		95.646 ***	11.775 ***		94.884 ***	8.309 ***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: By authors.

Table 6. Hierarchical Regression coefficients summary of proactive personality (X) to emotional intelligence (M)

Dependent variables / Independent variables	Emotional intelligence (M)							
	Self-emotional appraisal (M1)		Other's emotional appraisal (M2)		Express of emotion (M3)		Regulation of emotion (M4)	
	Model 4-1 (β)	Model 4-2 (β)	Model 5-1 (β)	Model 5-2 (β)	Model 6-1 (β)	Model 6-2 (β)	Model 7-1 (β)	Model 7-2 (β)
Control variables (C)								
Gender (male=1)	-0.166 **	-0.185 ***	-0.107	-0.131 *	-0.013	-0.042	0.073	0.053
Age (years)	0.095	-0.019	0.046	-0.101	0.210 **	0.028	0.157 *	0.030
Marriage (married=1)	0.032	0.045	0.114	0.131 *	0.094	0.114 *	0.130 *	0.144 *
Education (years)	0.191 **	0.094	0.164 *	0.039	0.127 *	-0.027	0.184 **	0.076
Proactive personality (X)		0.326 ***		0.421 ***		0.519 ***		0.364 ***
R^2	0.053	0.147	0.041	0.199	0.055	0.296	0.062	0.180
$\triangle R^2$		0.095		0.158		0.241		0.118
F	4.429 **	10.985 ***	3.452 **	15.811 ***	4.666 **	26.718 ***	5.295 ***	13.977 ***
$\triangle F$		35.305 ***		62.584 ***		108.629 ***		45.733 ***

Note: *p < .05, ** p < .01, *** p< .001.

Source: By authors.

Table 7. Verification summary of mediation effect for emotional intelligence between proactive personality and work vigor

Independent variable to dependent variable[a]	X→M	M→Y1	Indirect effect	Confidence Interval [2]		Confidence Interval [3]		Confidence Interval [4]		Mediation effect (%)
	Path a	Path b	a*b	LCL	UCL	LCL	UCL	LCL	UCL	a*b/c
Self-emotional appraisal (M1)	0.492 ***	0.122	0.060	-0.008	0.141	-0.008	0.140	-0.010	0.137	6.88%
Other's emotional appraisal (M2)	0.766 ***	0.001	0.001	-0.083	0.082	-0.086	0.079	-0.086	0.079	0.08%
Express of emotion (M3)	0.828 ***	0.146 *	0.121	-0.004	0.253	-0.002	0.256	-0.003	0.255	13.81%
Regulation of emotion (M4)	0.676 ***	0.229 ***	0.155	0.081	0.249	0.081	0.250	0.077	0.242	17.71%
Total emotional intelligence			0.336	0.203	0.476	0.206	0.477	0.204	0.476	38.48%

Note: [a]The path c of Proactive personality (X)→Work vigor (Y1): 0.874*** and path c': 0.538***; [b]95% Bias Corrected and Accelerated Confidence Intervals; [c]95% Bias Corrected Confidence Intervals; [d]95% Percentile Confidence Intervals.

*p < .05, *** p< .001.

Source: By authors.

Table 8. Verification summary of mediation effect for emotional intelligence between proactive personality and work dedication

Independent variable to dependent variable[a]	X→M	M→Y2	Indirect effect	Confidence interval[b]		Confidence interval[c]		Confidence interval[d]		Mediation effect (%)
	Path a	Pat b	a*b	LCL	UCL	LCL	UCL	LCL	UCL	a*b/c
Self-emotional appraisal (M1)	0.492 ***	0.073	0.036	-0.032	0.118	-0.032	0.118	-0.034	0.115	3.49%
Other's emotional appraisal (M2)	0.766 ***	-0.060	-0.046	-0.148	0.050	-0.156	0.047	-0.160	0.044	-4.49%
Express of emotion (M3)	0.828 ***	0.192 *	0.159	0.030	0.306	0.033	0.309	0.033	0.309	15.48%
Regulation of emotion (M4)	0.676 ***	0.285 ***	0.193	0.097	0.317	0.098	0.319	0.094	0.313	18.81%
Total emotional intelligence			0.341	0.207	0.495	0.208	0.496	0.203	0.489	33.29%

Note: [a]The path c of Proactive personality (X)→Work dedication (Y2): 1.025*** and path c': 0.684***; [b]95% Bias Corrected and Accelerated Confidence Intervals; [c]95% Bias Corrected Confidence Intervals; [d]95% Percentile Confidence Intervals.

*p < .05, *** p< .001.

Source: By authors.

Table 9. Verification summary of mediation effect for emotional intelligence between proactive personality and work absorption

Independent variable to dependent variable[a]	X→M	M→Y3	Indirect effect	Confidence interval[b]		Confidence interval[c]		Confidence interval[d]		Mediation effect (%)
	Path a	Path b	a*b	LCL	UCL	LCL	UCL	LCL	UCL	a*b/c
Self-emotional appraisal (M1)	0.492 ***	0.130	0.064	-0.008	0.148	-0.008	0.148	-0.012	0.144	6.45%
Other's emotional appraisal (M2)	0.766 ***	-0.003	-0.002	-0.099	0.097	-0.103	0.092	-0.104	0.091	-0.25%
Express of emotion (M3)	0.828 ***	0.048	0.039	-0.102	0.176	-0.101	0.178	-0.100	0.179	3.98%
Regulation of emotion (M4)	0.676 ***	0.250 ***	0.169	0.086	0.287	0.086	0.287	0.080	0.279	17.05%
Total emotional intelligence			0.270	0.125	0.424	0.126	0.428	0.123	0.423	27.23%

Note: [a]Path c of proactive personality (X)→Work absorption (Y3): 0.992*** and path c': 0.722***; [b]95% Bias Corrected and Accelerated Confidence Intervals; [c]95% Bias Corrected Confidence Intervals; [d]95% Percentile Confidence Intervals.

*** p< .001.

Source: By authors.

George and Zhou [75] also indicated that mood is the key factor determining the effort people are willing to put at work. Therefore, supervisors' emotional contagion will likely influence employees' work engagement and job burnout and further affect their innovation behavior. Wu and Hu [76] revealed that when employees' negative emotion was evoked by inadequate supervision, employees with high susceptibility to emotional contagion were easily influenced by supervisors' negative emotions, putting themselves in a bad mood and, in turn, at risk of job burnout. Conversely, employees with low susceptibility to emotional contagion were resilient against supervisors' negative emotions. According to these studies, the present study hypothesized that the higher employees' emotional intelligence, the higher their work engagement, and that emotional intelligence mediates the relationship between proactive personality and work engagement. The analysis results indicated that emotional intelligence was a partial mediating factor. Proactive personality significantly influenced work engagement, and this relationship was mediated partially by emotional intelligence. Specifically, emotion regulation exhibited the most substantial mediating effect, followed by the expression of emotion, self-emotion appraisal, and others' emotion appraisal, which generated no mediating effect.

5. Conclusions and Suggestions

5.1 Conclusions

The analysis revealed that employees' proactive personality significantly and positively influenced their vigor, dedication, and absorption at work, supporting the hypothesis that highly proactive employees are more engaged in their work. Additionally, proactive personality was significantly and positively associated with self-emotion appraisal, others' emotion appraisal, emotional expression, and emotion regulation, supporting the hypothesis that proactive employees can effectively assess, utilize, and manage their own and others' feelings.

Regarding the effect of emotional intelligence on work engagement, only emotion regulation significantly and positively influenced all three dimensions of work engagement (vigor, dedication, and absorption). Emotional expression was a significant positive predictor of vigor and dedication but did not influence absorption. Self-emotion appraisal and others' emotion appraisal did not have a significant effect on work engagement. These findings suggest that self-emotional and others' emotional appraisal do not stimulate work engagement, while emotion regulation is a crucial factor in promoting work engagement, and emotional expression can evoke employees' vigor and dedication.

The results also indicated that emotional intelligence partially mediated the relationship between proactive personality and work engagement. Specifically, emotion regulation exhibited the most substantial mediating effect, followed by emotional expression, self-emotion appraisal, and others' emotion appraisal, which did not have a mediating effect.

5.2 Suggestions

5.2.1. For Management

Corporate managers can enhance employees' work efficacy using two approaches: (a)

administering relevant scale tests to potential job applicants and selecting those who scored high points on proactive personality; and (b) organizing training courses on the use and regulation of emotions for in-house employees. These courses can help employees manage emotional responses and enhance emotional intelligence, thereby strengthening employees' work engagement and job performance.

5.2.2. For Employees

In a competitive job market, employees must stay passionate and enhance their work efficiency. Emotional intelligence's impact on work outcomes has been overlooked but is crucial as managerial tasks grow more complex. Employees should not only be proactive but also take courses on emotional regulation and expression. These courses help them understand and manage their emotions in various work situations, leading to better attitudes and outcomes. This approach reduces work stress and improves job quality.

5.2.3. For Future Researchers

Regarding the sample size, the participants in this study were employees of various firms. These employees were unable to provide their full support during the survey. In future, more samples (e.g. >1,000) can be collected to obtain near-normative data, which can give a stronger foundation for the generalization of behavioral models. Concerning analytical techniques, large sample size can be used to conduct structural equation modeling for model verification. Moreover, qualitative interviews and literature reviews can be undertaken to ascertain the mediations among the three factors, thereby obtaining higher explained variance and more accurate behavioral models. In addition, the proactive personality may be a personality trait with a genetic basis [104][105], and the proactive personality may change due to work experiences [103] and needs further exploration.

Acknowledgements

The authors are grateful to all participants and scholars who have assisted in this study.

References

[1] Guthrie, J.P. High-involvement work practices, turnover, and productivity: evidence for New Zealand. Academy of Management Journal, 2017, 44(1), 180-190.

[2] Hill, R. and Stewart, J. Human resource development in small organizations. Journal of European Industrial Training, 2000, 24(2/3/4), 105-117.

[3] Kesti, M. Organization human resources development connection to business performance. Procedia Economics and Finance, 2012, 2, 257-264.

[4] Okoye, P.V.C. and Ezejiofor, R.A. The effect of human resources development on organizational productivity. International Journal of Academic Research in Business and Social Sciences, 2013, 3(10), 250-268.

[5] Gardner, A.K. and Dunkin, B.J. Evaluation of validity evidence for personality, emotional intelligence, and situational judgment tests to identify successful residents. JAMA Surgery, 2018, 153(5), 409-416.

[6] Krishnakumar, S., Hopkins, K., Szmerekovsky, J.G. and Robinson, M.D. Assessing workplace emotional intelligence: development and validation of an ability-based measure. The Journal of Psychology, 2015, 150(3),

371-404.

[7] Raman, P., Sambasivan, M. and Kumar, N. Counterproductive work behavior among frontline government employees: Role of personality, emotional intelligence, affectivity, emotional labor, and emotional exhaustion. Revista de Psicología del Trabajo y de las Organizaciones, 2016, 32(1), 25-37.

[8] Rosete, D. and Ciarrochi, J. Emotional intelligence and its relationship to workplace performance outcomes of leadership effectiveness. Leadership and Organization Development Journal, 2005, 26(5), 388-399.

[9] Schutte, N.S. and Loi, N.M. Connections between emotional intelligence and workplace flourishing. Personality and Individual Differences, 2014, 66, 134-139.

[10] Wynn, M.E., Winston, C.E. and Freeman, K.E. The cultural historical complexity of human personality adaptation: what is the nature of African American adolescents' implicit theories of intelligence? SAGE Open, 2012, 2(4), 1-11.

[11] Papazoglou, K., Koskelainen, M. and Stuewe, N. Examining the relationship between personality traits, compassion satisfaction, and compassion fatigue among police officers. SAGE Open, 2019, 9(1), 1-13.

[12] Joo, B.K. and Nam, K.A. The effects of transformational leadership, learning goal orientation, and psychological empowerment on career satisfaction. New Horizons in Adult Education and Human Resource Development, 2019, 31(3), 47-64.

[13] Yan, X., Yang, K., Su, J., Luo, Z. and Wen, Z. Mediating role of emotional intelligence on the associations between core self-evaluations and job satisfaction, work engagement as indices of work-related well-being. Current Psychology, 2018, 37(3), 552-558.

[14] Ganguly, D. Married to the job. The Economic Times, 2003, 7(1), 23-34.

[15] May, D.R., Gilson, R.L. and Harter, L.M. The psychological conditions of meaningfulness, safety, availability, and the engagement of the human spirit at work. Journal of Occupational and Organizational Psychology, 2004, 77(1), 11-37.

[16] Di Fabio, A. and Saklofske, D.H. The relationship of compassion and self-compassion with personality and emotional intelligence. Personality and Individual Differences, 2021, 169, 110109.

[17] Kiarie, M.A.W., Maru, L C. and Cheruiyot, T.K. Leader personality traits and employee job satisfaction in the media sector, Kenya. The TQM Journal, 2017, 29(1), 133-146.

[18] Lee, H.J. How emotional intelligence relates to job satisfaction and burnout in public service jobs. International Review of Administrative Sciences, 2018, 84(4), 729-745.

[19] Lindeman, B., Petrusa, E., McKinley, S., Hashimoto, D.A., Gee, D., Smink, D.S. and Phitayakorn, R. Association of burnout with emotional intelligence and personality in surgical residents: can we predict who is most at risk? Journal of Surgical Education, 2017, 74(6), e22-e30.

[20] Vrchota, J., Mařiková, M., Řehoř, P., Rolínek, L. and Toušek, R. Human resources readiness for Industry 4.0. Journal of Open Innovation: Technology, Market, and Complexity, 2020, 6(1), 1-20. DOI: 10.3390/joitmc6010003.

[21] Urquijo, I., Extremera, N. and Azanza, G. The contribution of emotional intelligence to career success: Beyond personality traits. International Journal of Environmental Research and Public Health, 2019, 16(23), 1-13. DOI: 10.3390/ijerph16234809.

[22] Macurová, P., Ludvík, L. and Žwaková, M. The driving factors, risks and barriers of the Industry 4.0 concept. Journal of Applied Economic Sciences, 2017, 7(53), 2003-2011.

[23] Afdal, A., Wulandari, E., Alizamar, A. and Sukmawati, I. Premarital counseling: opportunities and challenges in

industrial revolution 4.0 era. Advances in Social Science, Education and Humanities Research, 2019, 372, 295-299.

[24] Kanungo, R.N. Measurement of job and work involvement. Journal of Applied Psychology, 1982, 67(3), 341-349.

[25] Kahn, W. A. Psychological conditions of personal engagement and disengagement at work. Academy of Management Journal, 1990, 33, 692-724.

[26] Bakker, A.B. and Geurts, S.A.E. Toward a dual-process model of work-home interference. Work and Occupations, 2004, 31, 345-366.

[27] Barrick, M.R. and Mount, M.K. Autonomy as a moderator of the relationships between the big five personality dimensions and job performance. Journal of Applied Psychology, 1993, 78, 111-118.

[28] Macey, W.H. and Schneider, B. The meaning of employee engagement. Industrial and Organizational Psychology, 2008, 7(1), 3-30.

[29] Schaufeli, W. and Bakker, A.B. Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. Journal of Organizational Behavior, 2004, 25(3), 293-315.

[30] Maslach, C., Schaufeli, W.B. and Leiter, M. P. Job burnout. Annual Review of Psychology, 2001, 52, 397-422.

[31] Schaufeli, W B., Salanova, M., Gonzalez-Roma, V. and Bakker, A. B. The measurement of engagement and burnout: a two sample confirmatory analytic approach. Journal of Happiness Studies, 2002, 3, 71-92.

[32] Bakker, A.B. and Demerouti, E. Towards a model of work engagement. Career Development International, 2008, 13(3), 209-223.

[33] Bakker, A. B. and Demerouti, E. The crossover of work engagement between working couples. Journal of Managerial Psychology, 2009, 24, 220-236.

[34] Bakker, A.B., Demerouti, E. and Schaufeli, W.B. The crossover of burnout and work engagement among working couples. Human Relations, 2005, 58, 661-689.

[35] Barrick, M., Stewart, G. and Piotrowski, M. Personality and job performance: test of the mediating effects of motivation among sales representatives. Journal of Applied Psychology, 2002, 87, 43-51.

[36] Cooper-Thomas, H.D., Paterson, N.L., Stadler, M.J. and Saks, A.M. The relative importance of proactive behaviors and outcomes for predicting newcomer learning, well-being, and work engagement. Journal of Vocational Behavior, 2014, 84(3), 318-331.

[37] Salanove, M., Agut, S. and Peiró, J.M. Linking organizational resources and work engagement to employee performance and customer loyalty: the mediation of service climate. Journal of Applied Psychology, 2005, 90(6), 1217-1227.

[38] Cattell, R.B. Description and Measurement of Personality, New York: World Book, 1946.

[39] Fiske, D.W. Consistency of the factorial structures of personality ratings from different sources. Journal of Abnormal Social Psychology, 1949, 44, 329-344.

[40] Norman, W.T. Toward an adequate taxonomy of personality attributes: replicated factor structure in peer nomination personality ratings. Journal of Abnormal and Social Psychology, 1963, 66, 574–583.

[41] Goldberg, L.R. Language and individual differences: the search for universals in personality lexicons. Review of Personality and Social Psychology, 1981, 2, 141-165.

[42] Costa, P.T. Jr. and McCrae, R.R. The NEO Personality Inventory: Manual Form S and Form R, Odessa, FL: Psychological Assessment Resources, 1985.

[43] Shen, J.C. and Sun, Y.J. The Study on the Influence of Personality Traits and Emotional Intelligence on Performances of Amusement Park Workers - An Example of Janfusun Company. Paper presented at the 2nd Asia

Pacific Alliance on Tourism and Hospitality Education and the 10th Annual Conference in Hospitality and Tourism, May 20-21, 2010, National Kaohsiung University of Hospitality and Tourism, Kaohsiung, Taiwan.

[44] Buss, D.M. Selection, evocation, and manipulation. Journal of Personality and Social Psychology, 1987, 53, 1214-1221.

[45] Bateman, T.S. and Crant, M.J. The proactive component of organizational behavior: a measure and correlates summary. Journal of Organizational Behavior, 1993, 14, 103-119.

[46] Bakker, A.B. and Heuven, E. Emotional dissonance, burnout, and in-role performance among nurses and police officers. International Journal of Stress Management, 2006, 13, 423-440.

[47] Bakker, A.B., van Emmerik, H. and Euwema, M.C. Crossover of burnout and engagement in work teams. Work and Occupations, 2006, 33, 464-489.

[48] Bakker, A.B., Tims, M. and Derks, D. Proactive personality and job performance: the role of job crafting and work engagement. Human Relations, 2012, 65(10), 1359-1378.

[49] Crant, J.M. The proactive personality scale and objective job performance among real estate agents. Journal of Applied Psychology, 1995, 80, 532-537.

[50] Crant, J.M. and Bateman, T.S. Charismatic leadership viewed from above: the impact of proactive personality. Journal of Organizational Behavior, 2000, 21, 63-75.

[51] Major, D.A., Turner, J. E. and Fletcher, T. D. Linking proactive personality and the Big Five to motivation to learn and development activity. Journal of Applied Psychology, 2006, 91, 927-935.

[52] Demerouti, E., Bakker, A.B., de Jonge, J., Janssen, P.P.M. and Schaufeli, W. B. Burnout and engagement at work as a function of demands and control. Scandinavian Journal of Work Environment and Health, 2001, 27(4), 279-286.

[53] Kapil, K., and Rastogi, R. The relationship between leader-member exchange, work engagement and organizational citizenship behaviour. Journal of Indian Business Research, 2020, 12(2), 191-214.

[54] Babcock-Roberson, M.E. and Strickland, O.J. The relationship between charismatic leadership, work engagement, and organizational citizenship behaviors. Journal of Psychology, 2010, 144(3), 313-326.

[55] Schaufeli, W.B., Bakker, A.B. and Salanova, M. The measurement of work engagement with a short questionnaire: a cross-national study. Educational and Psychological Measurement, 2006, 66, 701-716.

[56] Patrick, H.A., and Bhat, V.A. Moderating influence of critical psychological states on work engagement and personal outcomes in the telecom sector. SAGE Open, 2014, 4(2), 1-9.

[57] Wu, W.C. The influence of workplace stress to job vigor on administrative staff of private universities and colleges in Tainan area-Using emotional intelligence as moderating variables [Master's thesis]. Southern Taiwan University of Science and Technology, Tainan, Taiwan, 2007.

[58] Salovey, P., Hess, C. and Mayer, J.D. Emotional intelligence and the self-regulation of affect. In D. M. Wegner and J. W. Pennebaker (Eds.), Handbook of Mental Control (Century Psychology Series). New Jersey: Prentice-Hall, 1993.

[59] Hatfield, E., Cacioppo, J.T. and Rapson, R.L. Emotional Contagion. New York, NY: Cambridge, 1994.

[60] Chen, J. H. The Study on the Relationship of Supervisor's Leadership, Emotional Ability, and Employees' Work Engagement [Master's thesis]. National Chung Cheng University, Chiayi, Taiwan, 2004.

[61] Erkutlu, H. and Chafra, J. The impact of team empowerment on proactivity: the moderating roles of leader's emotional intelligence and proactive personality. Journal of Health Organization and Management, 2012, 26(5),

560-577.

[62] Shchebetenko, S., Kalugin, A.Y., Mishkevich, A.M., Soto, C.J. and John, O.P. Measurement invariance and sex and age differences of the Big Five Inventory-2: evidence from the Russian version. Assessment, 220, 27(3), 472-486.

[63] Soto, C. J. and John, O.P. Short and extra-short forms of the Big Five Inventory-2: the BFI-2-S and BFI-2-XS. Journal of Research in Personality, 2017, 68, 69-81.

[64] Ravichandran, K., Arasu, R. and Kumar, S. A. The impact of emotional intelligence on employee work engagement behavior: an empirical study. International Journal of Business and Management, 2011, 6(11), 157-169.

[65] Ashforth, B.E. and Humphrey, R. H. Emotion in the workplace: a reappraisal. Human Relations, 1995, 48, 97-125.

[66] Avey, J.B., Wernsing, T.S. and Luthans, F. Can positive employees help positive organizational change? Impact of psychological capital and emotions on relevant attitudes and behaviors. Journal of Applied Behavioral Science, 2008, 44, 48-70.

[67] Bass, B.M. and Avolio, B. Transformational Leadership Development: Manual for the Multifactor Leadership Questionnaire. Palo Alto, CA: Consulting Psychologist Press, 1990.

[68] Beckers, D.G.J., van der Linden, D., Smulders, P.G.W., Kompier, M.A.J., van Veldhoven, M.J.P.M. and van Yperen, N. W. Working overtime hours: relations with fatigue, work motivation, and the quality of work. Journal of Occupational and Environmental Medicine, 2004, 46, 1282-1289.

[69] Bono, J.E. and Judge, T.A. Self-concordance at work: toward understanding the motivational effects of transformational leaders. Academy of Management Journal, 2003, 46, 554-571.

[70] Borman, W.C. and Motowidlo, S. Expanding the criterion domain to include elements of contextual performance. In N. Schmitt and W. Borman (Eds.), Personnel Selection in Organizations (Vol. 71, pp. 71-98), San Francisco, CA: Jossey-Bass, 1993.

[71] Andreassen, C.S., Ursin, H. and Eriksen, H.R. The relationship between strong motivation to work, “workaholism”, and health. Psychology and Health, 2007, 22(5), 615-629.

[72] Rothbard, N.P. Enriching or depleting? The dynamics of engagement in work and family roles. Administrative Science Quarterly, 2001, 46(A), 655-684.

[73] Bakker, A.B., Hakanen, J.J., Demerouti, E. and Xanthopoulou, D. Job resources boost work engagement, particularly when job demands are high. Journal of Educational Psychology, 2007, 99, 274-284.

[74] Gagnon, M.A. and Michael, J.H. Outcomes of perceived supervisor support for wood production employees. Forest Products Journal, 2004, 54(12), 172-177.

[75] George, J M. and Zhou, J. Dual tuning in a supportive context: joint contributions of positive mood, negative mood, and supervisory behaviors to employee creativity. Academy of Management Journal, 2007, 50, 605-622.

[76] Wu, T.Y. and Hu, C. Abusive supervision and employee emotional exhaustion dispositional antecedents and boundaries. Group and Organization Management, 2009, 34(2), 143-169.

[77] Wu, T.Y. and Cheng, B.S. The effect of interactions among job involvement, ability of regulating other's emotion, and emotional labor on emotional exhaustion. Chinese Journal of Psychology, 2006, 48(1), 69-87.

[78] Aulia, A. Emotional intelligence, work engagement, and organizational commitment of Indonesian army personnel. ANIMA Indonesian Psychological Journal, 2016, 31(3), 124-131.

[79] Zhu, Y., Liu, C., Guo, B., Zhao, L. and Lou, F. The impact of emotional intelligence on work engagement of registered nurses: the mediating role of organizational justice. Journal of Clinical Nursing, 2015, 24(15-16), 2115-2124.

[80] Chou, H.J. Quantitative Research and Statistical Analysis in Social and Behavioral Sciences, Taipei: Wu Nan Books, 2006.

[81] Rammstedt, B., Danner, D., Soto, C.J. and John, O.P. Validation of the short and extra-short forms of the Big Five Inventory-2 (BFI-2) and their German adaptations. European Journal of Psychological Assessment, 2018, 36(1), 149-161.

[82] Donnellan, M.B., Oswald, F.L., Baird, O.B.M. and Lucas, R.E. The mini-IPIP scales: tiny-yet-effective measures of the big five factors of personality. Psychological Assessment, 2006, 18(2), 192-203.

[83] Wong, C.S. and Law, K.S. The effect of leader and follower emotional intelligence on performance and attitude: an exploratory study. The Leadership Quarterly, 2002, 13(3), 243-274.

[84] Davies, M., Stankov, L. and Roberts, R. D. Emotional intelligence: in search of an elusive construct. Journal of Personality and Social Psychology, 1998, 75, 989-1015.

[85] Alarcon, G. The Development of the Wright Work Engagement Scale. [unpublished PhD dissertation]. Wright State University, 2009.

[86] Bakker, A.B. and Bal, M. Weekly work engagement and performance: a study among starting teachers. Journal of Occupational and Organizational Psychology, 2010, 83, 189-206.

[87] Bakker, A.B. and Xanthopoulou, D. The crossover of daily work engagement: test of an actor-partner interdependence. Journal of Applied Psychology, 2009, 94, 1562-1571.

[88] Schaufeli, W. and Bakker, A. UWES Utrecht Work Engagement Scale. Preliminary Manual [Version 1, November 2003], Utrecht University: Occupational Health Psychology Unit, 2003.

[89] Lee, J. C. Easy Learning and Easy Use: The SPSS Statistical Analysis Practice. Taipei: Chuan Hwa Book, 2010.

[90] Comrey, A.L. and Lee, H.B.A First Course in Factor Analysis (2nd Ed.), Hillsdale, NJ: Erlbaum, 1992.

[91] George, D. and Mallery, P. SPSS for Windows Step by a Step: A Simple Guide and Reference. 11.0 Update (4th Ed.), Boston, MA: Allyn and Bacon, 2003.

[92] Nunnally, J.C. Psychometric Theory, New York, NY: McGraw Hill, 1978.

[93] Keller, S.D., Ware Jr., J.E., Bentler, P.M., Aaronson, N.K., Alonso, J., Apolone, G., BjornerJ. B., Brazier, J., Bullinger, M., Kaasa, S., Leplège, A., Sullivan, M. and Gandek, B. Use of structural equation modeling to test the construct validity of the SF-36 health survey in ten countries: results from the IQOLA project. Journal of Clinical Epidemiology, 1998, 51(11), 1179-1188.

[94] Robins, R.W., Fraley, R.C. and Krueger, R.F. Handbook of Research Methods in Personality Psychology, New York, NY: The Guilford Press, 2009.

[95] Peng, T.K., Kao, Y.T. and Lin, C.C. Common method variance in management research: its nature, effects, detection, and remedies. Journal of Management, 2006, 23(1), 77-98.

[96] Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. Common method biases in behavioral research: a critical review of the literature and recommended remedies. Journal of Applied Psychology, 2003, 88, 879-903.

[97] Williams, L.J. and Anderson, S.E. An alternative approach to method effects by using latent-variable models: applications in organizational research. Journal of Applied Psychology, 1994, 79, 323-331.

[98] Preacher, K.J. and Hayes, A.F. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behavior Research Methods, 2008, 40(3), 879-891.

[99] MacKinnon, D.P., Warsi, G. and Dwyer, J.H. A simulation study of mediated effect measures. Multivariate Behavioral Research, 1995, 30, 41-62.

[100] Baron, R.M. and Kenny, D.A. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 1986, 51, 1173-1182.

[101] Goodman, L.A. On the exact variance of products. Journal of the American Statistical Association, 1960, 55, 708-713.

[102] Sobel, M.E. Asymptotic intervals for indirect effects in structural equations models. In S. Leinhart (Ed.), Sociological Methodology (pp. 290-312). San Francisco, CA: Jossey-Bass: 1982.

[103] Li, W.D., Fay, D., Frese, M., Harms, P.D. and Gao, X. Reciprocal relationships between proactive personality and work characteristics: a latent change score approach. Journal of Applied Psychology, 2014, 99(5), 948-965.

[104] Li, W.D. Proactive Personality and Work Success: Disentangling Genetic and Environmental Influences. The 2011 Annual Academy of Management Meeting, 2011, San Antonio, Texas.

[105] Li, W.D., Wang, N., Arvey, R., Soong, R., Saw, S.M. and Song, Z.A mixed blessing? Dual mediating mechanisms in the relationship between dopamine transporter gene DAT1 and leadership role occupancy. The Leadership Quarterly, 2015, 26(5), 671-686.

[106] Bakker, A.B., Demerouti, E. and Verbeke, W. Using the job demands-resources model to predict burnout and performance. Human Resource Management, 2004, 43, 83-104.