

Moderation role of Extraversion and Conscientiousness on the Relationship Between Stressors and Creativity in the Private Sector Universities of Khyber Pakhtunkhwa,

Pakistan

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Abstract

Purpose of this research is to explore the relationship between stressors and creativity of employees whereby extraversion and conscientiousness are assumed as moderators. The relationship of stress and creativity is always considered significant by researchers in organizational psychology. The researcher has endeavored to cite sufficient literature about the main issue of research and this depicts the comprehension of the issue by the researcher. Moderation by extraversion and conscientiousness in context of the private sector universities of Khyber Pakhtunkhwa has brought novelty to the work. The researcher has effectively deployed deductive methods and quantitative approach to test the model. This research selected 338 respondents from various private higher education institutions of Khyber Pakhtunkhwa, Pakistan using stratified sampling techniques and Krejcie & Morgan (1970) formula. Data for this study was collected from Lecturers, Assistant Professors, Associate Professors and Professors. Data was analyzed through reliability analysis, correlation analysis, Exploratory Factor analysis (EFA), confirmatory factor analysis (CFA) and structural equation modeling (SEM) techniques to assess the formulated hypotheses. Result of the study reveals that stressors such as role conflict and role ambiguity have significant negative relationship with creativity while, moderated by extraversion and conscientiousness. Current research conveys both theoretical and practical contributions. Therefore, higher education institution should develop suitable strategies for the retaining of their creative teams.

Key words: Stressors, Role Conflict, Role Ambiguity, Creativity, Extraversion, Conscientiousness, Private Universities

Introduction

In currently dynamic and demanding environment of the universities individuals often encounter various challenges that can impact creativity and over all academic performance (Nelms, 2019; Rahman & Hussain, 2022). Among these challenges role ambiguity and role conflict have been identified as significant stressors that can impede creative thinking and problem solving abilities in the workplace (Hughes et al., 2018; Khalil et al., 2020). Role ambiguity refers to the lack of clarity or uncertainty about one's job responsibilities and expectations (Ahmad et al., 2018). Similarly, role ambiguity also explains deficiency of information needed by an individual for his/her character achievement in an association like approaches and directions of the organization, limit of expert and responsibilities, evidence and ways of performance estimation (Khalil et al., 2020). Additionally, role conflict happen when experience of people mismatched to the demands or potentials from diverse persons that inhabit with in organization (Ahmad et al., 2018). Moreover, conflict is consisted on specific group where individuals preserve theirs attention, activist their involvement to the group, stimulating capability of third one, contest in group debates or assign information by way of self-service (Pai & Bendersky, 2020).

The word "creativity" performs essential role in several setting like, teaching, painting, education and business and it has established excessive consideration in the area of theoretical and academic literature (Runco, 2014). However, the term creativity describes the philosophies which are original and appreciated connected to the product or procedures (Anderson, Potocnik, & Zhou, 2014). Finally, the recent research has begun to explore how individual differences in personality trait may moderate the relationship of role ambiguity and role conflict with creativity (Amabile, 2012; Baluku et al., 2016). Two personality traits that have garnered particular interest in this context are extraversion and conscientiousness (Boland & Klotz, 2014). Extraversion characterized by sociability, assertiveness and positive affectivity may influence how individuals respond to role ambiguity and role conflict in their creative environment (Kaufman & Beghetto, 2013). Additionally, extravert employees have the ability to get their energy from coordination with others while, on the other hand introverts individuals from within themselves and have ability to assertive, active, sociable and talkative (Kassin, 2022; Shah & Yu, 2023). Similarly, on the other hand conscientiousness reflects traits such as self-discipline, organization and goal directed behavior which may also shape individuals reactions to role ambiguity and role conflict (Kaufman & Beghetto, 2013). Furthermore, conscientiousness personality types of people are responsible, careful, organized and hardworking (Kassin, 2022; Shah & Yu, 2023).

Problem statement

Review of literature describes that there is a mixed connection between role conflict, role ambiguity and creativity in everyday life. Some researchers demonstrated positive effect of role ambiguity and role conflict on creativity (Martinez-Diaz et al., 2020; Amin et al., 2023). While additional scholars illustrated negative effect of role ambiguity and role conflict on creativity (Ceyda, 2019; Clercq, 2019; Chein, 2021; Rahman & Hussain, 2022; Rahman & Hussain, 2024). Thus, it is imperative to investigate the true impact of stressors on employees' creativity in Pakistan context generally and KPK, particularly. Similarly, Studies find that several moderating factors may be applicable to the positive link of conflict and creativity (Zhang et al., 2017) and negative link of conflict and creativity (Li et al., 2018). For instance, researchers have used single or other traits of personality as moderator while limited their

research domain to a few aspects of the model, especially in the developed world (e.g., Shum et al., 2019, Muhammad & Usman 2019; Lauren, 2021; Hendarsjah, 2023; Shah & Yu, 2023). Hence, it is necessary to use extraversion and conscientiousness as moderator in the context of Pakistan commonly while, particularly in Khyber Pakhtunkhwa.

Literature Review

Stressors

The word stress originates from “Stringer” word which is Latin and meaning suffering pain and emotional or physical pressure. The idea of stress has been famous from the eras however newly it initiated to grip systematically. Additionally, the terminology of stress used by Selye (1982) in 19th century which meaning to apply power and pressure (Jamal, 2007). Several researchers did work further on the negative influence of stress (Muse, et al., 2003). Moreover, researchers demonstrated that job stress have different dimension like role ambiguity and role conflict etc., (Rahman & Hussain, 2024). Researcher stated that circumstances where employees face two or more than two problems and burden at same time known as role conflict (Bakar, 2015). Furthermore, recommended that role conflict occurs when people perform different role concurrently and the conflict each other (Yasa, 2017). On the other hand role ambiguity is the indicator of hesitation of individuals with uncertain public (Fried et al., 1998). Moreover, during job role ambiguity occurs when individuals have no strong information around what to suppose during job (Luthans & Fred, 2006). Lastly, the grade to how uncertainty one’s individual expectation is known as role ambiguity (Cicero, et al., 2015).

Creativity

Sadeghi and Ofoghi (2011), stated that the ability of an individual character to gain risk and to develop perfect ideas which will make the task easy in a multifaceted condition posture to creativity. Additionally, researchers suggest that creativity denotes to persons’ capability of joining concepts completely or to create sympathetic between thoughts (Doshmanziari, 2018). Also, the capacity to approaching up with modern procedure of connection leads to creativity (Alhajri, 2018). However, organizations today progressively need staff to be original and can solve problems (Gong et al., 2020). Researchers further note that creativity is not only a matter of having original abilities, but also a substance of opening provision from community setting (Zhou & Su, 2021). Moreover, research of Syed et al., (2021) recommended that creativity is important for an organization endurance, invention, and growth.

\\Role conflict and creativity

Hu et al., (2017) did research in China concerning role conflict and creativity while, for data collection they performed survey method and theirs study results reveals that role conflict and creativity are negatively connected with each other’s. Besides, Maden-Eyiusta (2019), performed research about role conflict and creativity in Turkey and the result of his research recommended negative connection of role conflict and creativity. Also, study of Antwi (2019), sustenance the adverse association of role conflict and creativity. Similarly, on the other side in the hotel industry of Taiwan research was performed and postulated that role conflict effect negatively on creativity (Khalil et al., 2020; Chien et al., 2021). Moreover, another research was performed in China concerning students’ conflict and creativity and data was collected from students while, results of theirs research postulated that role conflict of students effect creativity negatively (Xie & Jiang, 2022). Furthermore, the results of other researchers also postulated and supported the negative relation of creativity and role conflict (Imam et al., 2022; Rahman & Hussain, 2022).

Finally, other study reveals that role conflict negatively associated with creativity (Martinez-Diaz et al., 2020; Amin et al., 2023).

Role ambiguity and creativity

Usman and Xiao (2017), studied concerning the effect of role ambiguity on creativity in Pakistan industrial sector. The outcomes of their research indicate that there is negative association of role ambiguity and creativity. Also, another research was performed in the USA about creativity and role ambiguity while, collected data from the schools and universities of USA and the outcome of their research reveals that role ambiguity effect negatively on creativity (Robinson et al., 2019). Besides, in Taiwan hotel industry research was performed and also supported the negative connection of role ambiguity and creativity (Chien et al., 2021). Though, another research explained that role ambiguity is positively related to creativity at extreme level which may provide help to the employees of an organization to make several understanding and as per employees abilities adopt their job role (Martinez-Diaz et al., 2020). Similarly, the results of another research describe that higher education institutions require to make a suitable planning to maintain and attract staffs which are creative in an organization (Muhammad et al., 2021). In addition, a study was conducted regarding examining creativity and role ambiguity in the commercial bank of Ethiopia. The data was conducted from 184 employees working in a commercial bank. The results reveal that role ambiguity negatively connected to creativity (Kassa, 2021). Additionally, other research too postulated the negative influence of role ambiguity on creativity (Rahman & Hussain, 2022).

Moderation Role of Extraversion

Extraversion denotes to existence responsive, energetic, and looking for imprint (Wiesche & Krcmar, 2014; Gulati et al., 2015). Moreover, extraversion can be characterized as a tendency to be excited, dominant, seeking, self-confidence, and active (Wihler et al., 2017). Furthermore, highly extravert individuals are often regarded as being attentive and dominant, while low extraversion creates a served, reflective character that can be viewed as being aloof. In the creative environment, extravert individuals may seem more dominant than introvert individuals (Maqsood et al., 2021). Similarly, individuals at advanced extraversion grooves are respectable talkers and inhabit a leading situation in the societal setting (Zuraik et al., 2020). However, people at equal time scores energetically along higher extraversion print material and information and are decent at creation networks by common systems (Jiang et al., 2022).

In addition, literature postulates a high correlation of extraversion with stressors and creativity (Fonteyne et al., 2015). Furthermore, an integrative model of personality and creativity is proposed, and the result of the study notes that extraversion predicts the relation between creativity and role ambiguity (Furst et al., 2016). Researchers state that extraversion significantly affects novelty and originality (Wihler et al., 2017). Moreover, another study reveals that extraversion is a personality trait that is significantly related to stressors and creativity (Krumm et al., 2018). Moreover, another study also reveals that extraversion weakens the relation between role ambiguity and creativity (Mitchal et al., 2021). In addition, other studies also suggest that extraversion is a dimension of personality that moderates role ambiguity, role conflict, and creativity (Wittegenstein, 2013; Parent et al., 2015; Syed et al., 2018). Moreover, the study notes that during stress extraversion personality moderates novelty and innovation of employees (Zhou & Tang, 2022; Amin et al., 2023; Shaw & Choi, 2023; Shaw & Yu, 2023).

Moderating Role of Conscientiousness

Wolfradt and Pretz (2001) find a positive relation between conscientiousness and creativity based on self-reporting measures of creativity. Other scholars also support the positive relation of conscientiousness and creativity (Fonteyne et al., 2015; Furst et al., 2016; Abdullah, 2016; Wihler et al., 2017; Krumm et al., 2018; Puryear et al., 2019; Yao & Li, 2020; Maqsood et al., 2021; Rahman et al., 2024). Past studies suggest that conscientiousness may buffer against the harmful effects of stressors like role ambiguity and role conflict (Joseph, 2013). Similarly, other studies also find that conscientiousness weakens the harmful effect of stressors like role ambiguity and role conflict on creativity (Grant & Langan-Fox, 2007). Moreover, conscientiousness moderates the effect of stressors and creativity (Khan, 2015). Guo et al., (2017) postulate that conscientiousness harms an individual's creativity. Similarly, other studies postulate that when role ambiguity and role conflict increase, as a result, creativity of employees reduces. While conscientiousness trait of personality moderates this effect of stressors and creativity (Syed et al., 2018; Shum et al., 2019).

Usman and Xiao (2019) state that employees with high conscientiousness maintain creativity at higher challenges and hindrance stress. Zuraik et al., (2020) state that conscientiousness positively impacts on creativity of employees' behavior during stressors like role ambiguity and role conflict. In addition, another study has been conducted in the police department of Pakistan regarding the moderation role of conscientiousness and employee's behavior toward creativity. Results of their study postulate that conscientiousness trait of personality moderates employees' behavior during stress towards creativity (Maqsood et al., 2021). Moreover, conscientiousness trait of personality minimizes stressors like role ambiguity and role conflict among employees in an organization (Chen et al., 2022; Amin et al., 2023; Shaw & Choi, 2023; Shaw & Yu, 2023).

Hence, below hypotheses are developed:

H1: Role conflict effect negatively on creativity.

H2: Role ambiguity negatively on creativity.

Hypothesis 3: Extraversion personality moderates role conflict and creativity relationship.

Hypothesis 4: Extraversion personality moderates role ambiguity and creativity relationship.

Hypothesis 5: Conscientiousness personality moderates role conflict and creativity relationship.

Hypothesis 6: Conscientiousness personality moderates role ambiguity and creativity relationship.

Conceptual Framework

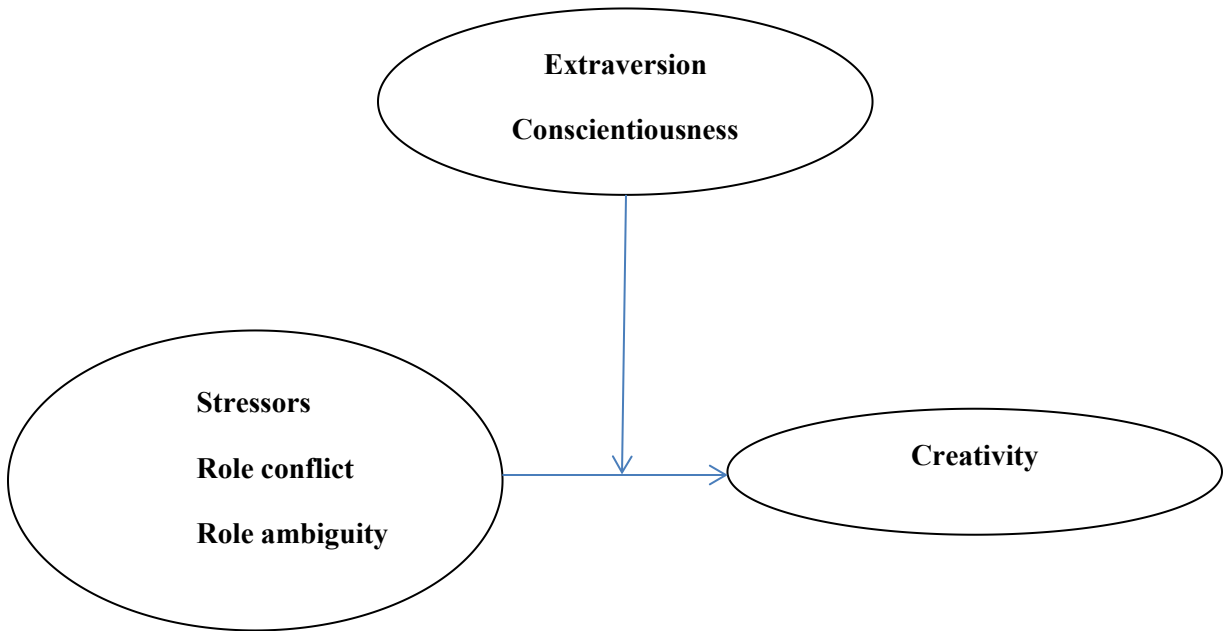


Figure 1: Conceptual Model

Method

The teaching faculty members working in the private sector universities of Khyber Pakhtunkhwa, Pakistan are the target population of current research. Additionally, geographically Universities are situated in the two federally administered units and four provinces. Moreover, these two federally administered units are containing on Azad Jammu & Kashmir and Gilgit-Baltistan while, the four provinces are Khyber Pakhtunkhwa, Sindh, Baluchistan, and Punjab. Furthermore, in the Private sector Universities of Khyber Pakhtunkhwa, Pakistan the data were conceded forming the current research population. These private sector universities are Northern University Nowshera, Abasyn University Peshawar, Gandhara University Peshawar, Sarhad University of Science & Information Technology Peshawar, Iqra National University Peshawar, City University of Science & Information Technology Peshawar, Qurtaba University of Science and Information Technology Peshawar and CECOS University of Information Technology & Emerging Sciences Peshawar. Questionnaires were circulated in the teaching faculty like Lecturers, Assistant Professors, Associate Professors and Professors of the nominated Universities and through stratified sampling techniques data were collected. However, Kregcie & Morgan table (1970) were used in current research for the purpose of sample size. Additionally, in the first phase proportionate sampling method were performed for the purpose to collect sample from the target population while in the second phase Probability sampling techniques were performed to draw sample from the universities employees. Lastly, through structured questionnaire from 338 respondents data were collected working in the private sector universities of Khyber Pakhtunkhwa, Pakistan. Moreover, after data collection the data were analyzed by reliability analysis, exploratory factory

analysis (EFA) and confirmatory factory analysis (CFA). For the analysis of data SPSS 26 and AMOS-24 software's were used.

Analysis

Exploratory factor analysis (EFA) was performed by structural equation modeling (SEM) and confirmatory factor analysis (CFA) through AMOS-24 for explaining the data in SPSS-26. A series of comparison were performed lastly to examine the dependent, independent and moderate variables relationship. For evaluation moderation role of extraversion and conscientiousness between stressors and creativity two step-based approaches was applied proposed by (Anderson & Gerbing, 1988). Moreover, CFA, validator's evaluation were performed for convergent and discriminant. Furthermore convergent validity was assessed to ensure the items measurement which is connected with each other's. Additionally, to assess the confirmation of measures discriminant validity was performed which are not linked with each other in a construct (Hair et al., 2009). Similarly, for the assessment of χ^2 value, goodness of fit (GFI), non-normed fit index (NNFI or TLI), goodness of fit (GFI), the root mean squared error of approximation (RMSEA) and comparative fit index (CFI) the SEM was used (Hair et al., 2010). Lastly, structural path was analyzed to assess the hypotheses (Hair et al., 2010).

Exploratory Factor Analysis:

By the way of Principal Components and varimax rotation exploratory factor analysis was performed. The resulted value of Kaiser-Meyer-Olkin (KMO) that explain adequacy is (0.943) and the resulted value of Bartlett's test of Sphericity is significance at (.000) which defines that the underlying items are appropriate significantly for the running of factor analysis. Moreover, in exploratory factor analysis, there are total of five variables one dependent variable which is creativity while, the two are independent variables and are stressors and the remaining two are moderate variables such as extraversion and conscientiousness.

The value of table 1 result recommended that all the five factors are loading on their respective construct and its ensuring into a clear structure. Moreover the value of all communalities are greater than 0.3 as suggested by Hair et al. (2018). Also, the values of total variance for the five factors are 86.59% and are greater than 50% recommended threshold. Finally, the value of eigenvalues is above than 1 for all the three factors. Additionally, the reliability analysis result explain that the value of Cronbach alpha is higher than 0.70 for all three variables which recommend that the scales of internal consistency is verified significantly.

Table 1: EFA Analysis

| Constructs/Indicators | F 1 | F 2 | F 3 | F4 | F5 | Commonalities |
|-----------------------|------|-----|------|----|----|---------------|
| RA1 | | | .832 | | | .903 |
| RA2 | | | .835 | | | .864 |
| RA3 | | | .832 | | | .906 |
| RA4 | | | .808 | | | .870 |
| RA5 | | | .796 | | | .901 |
| RA6 | | | .730 | | | .896 |
| RC1 | .931 | | | | | .896 |
| RC2 | .936 | | | | | .888 |
| RC3 | .923 | | | | | .869 |
| RC4 | .918 | | | | | .892 |
| RC5 | .931 | | | | | .881 |

| | | | | | | |
|--------------------------|-------|-------|-------|-------|-------|------|
| RC6 | .913 | | | | | .868 |
| RC7 | .927 | | | | | .893 |
| RC8 | .924 | | | | | .865 |
| Creativity1 | | .923 | | | | .877 |
| Creativity2 | | .917 | | | | .823 |
| Creativity3 | | .927 | | | | .825 |
| Creativity4 | | .924 | | | | .841 |
| Creativity5 | | .924 | | | | .831 |
| EXT1 | | | | | .843 | .850 |
| EXT2 | | | | | .844 | .877 |
| EXT3 | | | | | .875 | .846 |
| EXT4 | | | | | .856 | .832 |
| EXT5 | | | | | .869 | .818 |
| CON1 | | | | .881 | | .831 |
| CON2 | | | | .888 | | .850 |
| CON3 | | | | .924 | | .871 |
| CON4 | | | | .891 | | .873 |
| CON5 | | | | .862 | | .834 |
| Eigen Values | 8.53 | 4.49 | 3.76 | 3.17 | 1.67 | |
| Total Variance Explained | 34.15 | 52.14 | 67.20 | 79.88 | 86.59 | |
| Cronbach's Alpha | .927 | .911 | .920 | .916 | .913 | |

Common method bias (CMB)

According to Podsakoff et al., (2012) common method bias (CMB), could be offered against the responses of cross-sectional data while, researcher in this research collected cross-sectional data through means of single instrument. Similarly, to examine the important threats of CMB researcher performed multipronged approach in this study. Moreover, the scholar planned the instrument in a way having ability to minimize the CMB significantly at participant level. Hence, reverse item have performed for securing the focus of respondent to the respond survey. Additionally, to assess the conceptual variables researcher used Harman's single-factor test in this study. So, in this process a single factor any CMB problem has not exposed as described in below table 2 with respect to total variance as 28.54% and is less than significantly the maximum limit of 50% recommended by (Podsakoff et al., 2012).

Table 2: Harman's single-factor test

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 12.561 | 28.548 | 28.548 | 12.561 | 28.548 | 28.548 |
| 2 | 7.212 | 16.391 | 44.939 | | | |
| 3 | 4.378 | 9.951 | 54.890 | | | |
| 4 | 3.232 | 7.346 | 62.236 | | | |
| - | - | - | - | | | |
| - | - | - | - | | | |

| | | | |
|----|------|------|---------|
| 26 | .080 | .182 | 99.548 |
| 27 | .074 | .168 | 99.717 |
| 28 | .069 | .158 | 99.874 |
| 29 | .055 | .126 | 100.000 |

Extraction Method: Principal Component Analysis.

Measurement model

In this research work measurement model was calculated for the constructs, by reliability and consistency test. Though, the reliability and validity of goodness of fit (GoF) indices were assessed before examining the measurement model. Moreover, the indices of GoF were not in the suggested threshold value hence, model modification was performed. Additionally, during the model modification, RC5 and RC6 were deleted from the model because of low factor loading (i.e., RC5 = .492, RC6 = .550) than the recommended threshold value of .70 by Hair et al. (2018) and due to high modification indices attached with error term of item creativity₂ was deleted. Similarly, after the procedure of modification, the model was again run and provided a good GoF indices values results as shown in table 3 below.

Table 3: GoF indices

| Measure | Estimate | Threshold | Interpretation |
|---------|----------|-----------------|----------------|
| CMIN | 174.349 | -- | -- |
| DF | 101.000 | -- | -- |
| CMIN/DF | 1.913 | Between 1 and 3 | Excellent |
| CFI | 0.991 | >0.95 | Excellent |
| SRMR | 0.040 | <0.08 | Excellent |
| RMSEA | 0.051 | <0.06 | Excellent |
| Pclose | 0.612 | >0.05 | Excellent |

Table #04 below explains information concerning factors loading, combined reliability and average variance extracted. The resulted values of all factors loading are in the range of 0.64- 0.91, and are greater than 60% the recommended threshold limit (Carmines & Zeller, 1979). Similarly, the values of average variance extracted are detected above than the recommended cut-off 50% and is between 68% and 82% (Fornell & Larcker, 1981). Additionally, the resulted values of composite reliability (CR) are in the range of 0.92 to 0.95 and are above than 0.70 the recommend standardized threshold. Hence, in the processed model good convergent validity was found. Researcher also evaluated square root of AVE and pair wise relationship to explore discriminant validity. Moreover, MacKenzie and Podsakoff (2012), recommended the high correlation range among variables between 0.57 by <0.71. Similarly, table #05 below explains the association of off-diagonal values to the square root of AVE in diagonal position. Lastly, heterotrait-monotrait (HTMT) is applied for assessing the discriminant validity recommended by (Henseler et al., 2015). The value of HTMT seen significantly lowers than the recommended threshold of 0.85 hence, in table #06 discriminant validity has repeated. Though, researcher also

confirmed the goodness of fit through chi-square (χ^2), percentage of variance 42.94% in this model.

Table 4: Reliabilities and Factor loadings

| | Constructs | CR | AVE | Loadings Range |
|---|-------------------|-------|-------|----------------|
| 1 | Role Ambiguity | 0.922 | 0.685 | .641-.872 |
| 2 | Role Conflict | 0.928 | 0.730 | .891-.881 |
| 3 | Creativity | 0.950 | 0.820 | .883-.901 |
| 4 | Extraversion | 0.911 | 0.710 | .701-.826 |
| 5 | Conscientiousness | 0.910 | 0.778 | .813-.911 |

The above table #04 explains values of factor loading and results of Reliabilities. The values of reliability for each variable seem greater than 0.70 which postulate that internal consistency is present for each scale in this model. Moreover, in contrast the range of factor loading for each factor in model describes results in rang of .641 as minimum and .916 as maximum which postulate that in research tool acceptance of items being employed and clarified its validity.

Table 5: Correlation and square root of AVE

| | Role conflict | Role ambiguity | Extraversion | Conscientiousness | Creativity |
|-------------------|---------------|----------------|--------------|-------------------|--------------|
| Role conflict | 0.849 | | | | |
| Role ambiguity | 0.583*** | 0.834 | | | |
| Extraversion | 0.622*** | 0.621*** | 0.901 | | |
| Conscientiousness | 0.657*** | 0.610*** | 0.690*** | 0.871 | |
| Creativity | 0.623*** | -0.623*** | -0.670*** | -0.680*** | 0.830 |

The values of table #05 above (0.849, 0.834, 0.901, 0.871 and 0.830) shows that there is significant relationship among role conflict, role ambiguity, creativity, extraversion and conscientiousness.

Table 6: HTMT analysis

| | Role conflict | Role ambiguity | Extraversion | Conscientiousness | Creativity |
|-------------------|---------------|----------------|--------------|-------------------|------------|
| Role conflict | | | | | |
| Role ambiguity | 0.566 | | | | |
| Extraversion | 0.013 | 0.016 | | | |
| Conscientiousness | 0.019 | 0.025 | 0.274 | | |

Creativity 0.650 0.624 0.124 0.147

Table 7: Hypothesis testing results

| Hypotheses and paths | | Estimates | S.E | CR | Sig. | Results |
|----------------------|--------------------------------|-----------|------|--------|------|-----------|
| H1 | Creativity <--- Role Conflict | -.427 | .064 | -7.616 | *** | Supported |
| H2 | Creativity <--- Role Ambiguity | -.378 | .055 | -6.892 | *** | Supported |

The testing of hypothesis is shown in above table #07. The hypothesis no #01 result is (-.427) which clarifies the significantly negative relationship of role conflict and creativity. So, the hypothesis no #01 is accepted. Similarly, the result of hypothesis no #02 is (-.378) which posture that role ambiguity and creativity are negatively connected with each other. So, hypothesis no #02 is also accepted.

Analysis of the moderation effect:

Table 8: GoF indices for measurement model

| Measure | χ^2 | P | Df | X ² /df | SRMR | RMSEA | CFI | PClose |
|--|----------|-------|-----|--------------------|-------|-------|-------|--------|
| Recommended values | | <.000 | | < 5 and >1 | <.08 | <.08 | >.90 | >0.05 |
| GoF values for Measurement model for Low Extraversion group | | | | | | | | |
| Hypothesized Model for LowExt group | 162.577 | 0.000 | 101 | 1.610 | 0.050 | 0.063 | 0.973 | 0.113 |
| GoF values for Measurement model for High Extraversion group | | | | | | | | |
| Hypothesized Model for HighExt group | 141.359 | 0.000 | 101 | 1.400 | 0.059 | 0.047 | 0.931 | 0.607 |
| GoF values for Measurement model for Low Conscientiousness group | | | | | | | | |
| Hypothesized Model for LowCon group | 173.561 | 0.000 | 101 | 1.718 | 0.065 | 0.095 | 0.944 | 0.003 |
| GoF values for Measurement model for High Conscientiousness group | | | | | | | | |
| Hypothesized Model for HighCon group | 158.005 | 0.000 | 101 | 1.564 | 0.053 | 0.047 | 0.973 | 0.626 |

The measurement models for extraversion and conscientiousness exhibit a strong fit with the data, according to the GoF index values shown in table 8.

The table no #09 below explain results of the structural model. The findings illustrate that extraversion moderates the relationship between role conflict and creativity (accepting H3) with a beta weight of -.343 for the high extraversion group and -.629 for the low extraversion group; and a significant critical ratio of difference value of -1.997 (not within the range of +1.96) for the high extraversion group; and between role ambiguity and creativity (accepting H4)

through a beta weight of 0.367 for the high extraversion group. Furthermore, the findings depict that conscientiousness moderates the relationship between role conflict and creativity (i.e., accepting H5), with a beta weight of -.207 for the high conscientiousness group and -.371 for the low conscientiousness group, and a significant critical ratio of difference value of -2.066 (outside the range of +1.96). However, contrary to our expectations, the result for hypothesis 6 recommended that conscientiousness has no effect on the relationship of role ambiguity and creativity (i.e., not supported H6).

Table 9: Results of hypotheses related to moderation role of extraversion and conscientiousness.

| Paths | High Extra Group | | Low Extra Group | | Critical ratio | Results |
|-------------------------------|------------------|-----------|-----------------|-----------|----------------|-----------|
| | R square | Path Est. | R square | Path Est. | | |
| Creativity <-- Role Conflict | | -.343 | | -.629 | -1.997 | Supported |
| Creativity <-- Role Ambiguity | .170 | 0.367 | .286 | -.325 | 2.595 | Supported |
| Paths | High Con Group | | Low Con Group | | Critical ratio | Results |
| | R square | Path Est. | R square | Path Est. | | |
| Creativity <-- Role Conflict | | -.207 | | -.371 | -2.066 | Supported |
| Creativity <-- Role Ambiguity | .366 | -.187 | .095 | -.309 | -1.066 | Not Supp. |

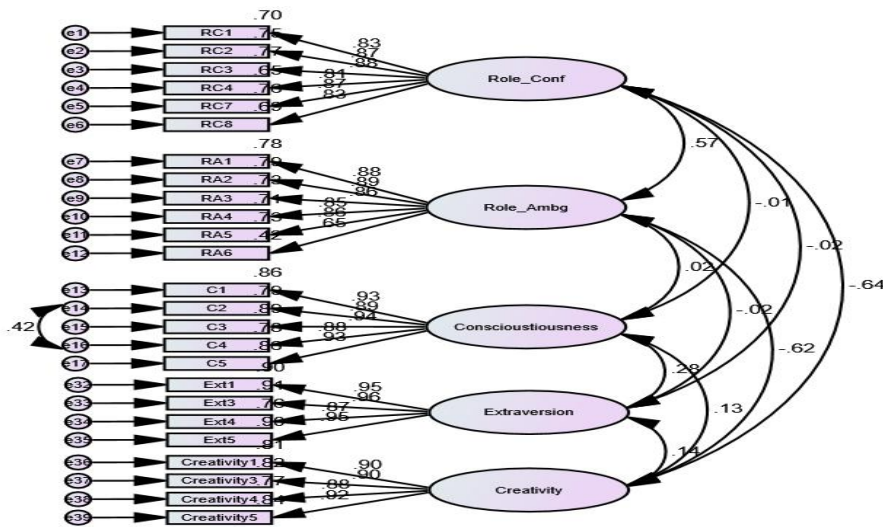


Figure 2 Structural model

Discussions

Purpose of this investigation is to evaluate moderation role of extraversion and conscientiousness on the link between stressors and creativity in the private sector universities of KP, Pakistan. Hypothesis no #1 analytical results posture that role conflict is negatively and directly related to creativity in the private sector universities of Pakistan, particularly in Khyber Pakhtunkhwa. Hence the result of hypothesis no #01 is related to the research of Hu et al., (2017) and Maden-Eyiusta (2019) whose research postulated that role conflict is negatively related to creativity. Additionally, this study results is also similar with the results of Rahman and Hussain (2022), and Xie and Jiang (2022), whose research concluded that the effect role conflict and creativity is negative. Similarly, these researchers also stated that creative employees have the ability to solve problem and to achieve the goal of organization. Finally, outcome of this research is also similar to the notation of Han et al., (2022) who research posture that individuals having creative behavior are able to minimize the harmful effect of conflict in an institution.

In the current research work, role ambiguity was recommended to have negative effect on creativity, and as per hypothesis number 2, employees in Pakistani higher education institutions were less creative when their duties are unclear. Hypothesis no #02 results describes that there

is significantly and negatively connection of role ambiguity and creativity in the private sector Universities of Pakistan generally while particularly in Khyber Pakhtunkhwa. Hence, this research finding is directly related to the research of Robinson et al., (2019) who research work described that the effect of role ambiguity and creativity is negative. Moreover, the research work of Clercq (2019), Chien et al., (2021) and Rahman and Hussain (2022), are also related to the current research which opinion that people having creative ideas are able to minimize the harmful effect like negative effect of role ambiguity and are able to leads creativity.

In the current research, hypothesis 3 proposed that extraversion personality moderated role conflict and creativity relationship and the outcome of this research also confirmed that high and low extraversion employees moderated role conflict and creativity relationship. So, results of this study are consistent with the research of Syed, Rehman, and Kitchlew (2018) who state that extraversion is a dimension of personality that moderates role conflict and creativity relationship. Additionally, the finding of the study is also connected to past study of Farfan et al. (2020) who state that extraversion moderates stress, particularly role conflict environment in the organization. Moreover, the study suggests that extraversion trait of personality moderate behavior of employees in organization during unclear role at job (Maqsood et al., 2021). Hence, this notation confirms this association.

Hypothesis 4 proposed that extraversion personality moderated role ambiguity and creativity relationship and the finding of the study revealed that extraversion group of personality moderated the connection between role ambiguity and role conflict. The finding of this research work is consistent with the study of Zhou and Tang (2022), who state that during unclear role about duties, authorities, and allocation of time, extraversion personality moderate novelty and innovation of employees. Additionally, these researchers also believe that people who are highly extravert may lead to high levels of creativity, even in role ambiguity.

In hypothesis 5, it was proposed that conscientious personality moderated role conflict and creativity relationship. The foregoing outcome of the hypothesis depicted that conscientiousness moderated the connection between role conflict and creativity. Current result is related to the past study of Joseph (2013) who suggests that conscientiousness can buffer against the harmful effects of stress like role ambiguity towards creativity. Similarly, the result is also consistent with the study of Usman and Xiao (2019) and Zuraik et al. (2020) who recommend that conscientiousness trait of personality moderate employees' behavior during unclear role and duties towards creativity.

Hypothesis 6 suggested that conscientious personality moderated role ambiguity and creativity relationship. However, the finding of this study postulated that results were contrary to our expectations. Conscientiousness had no effect on the association between role ambiguity and creativity. Hence, these outcomes entail considerable importance for future research work.

Conclusion

Employees having ability of creativity are considered as important and valuable source of wealth for an organization. Aims of current study is to investigate moderation role of extraversion and conscientiousness for the relationship between stressors and creativity in the private sector Universities of Pakistan generally, and particularly in Khyber Pakhtunkhwa.

Results of this research postulated that stressors like role conflict and role ambiguity are significantly negatively connected to the creativity. Similarly, results of this research also summarized that role conflict and role ambiguity are real challenge in private sector Universities of KP, Pakistan. Moreover, for an institution it is necessary to monitor work environment concerning role conflict and role ambiguity to minimize the harmful consequences of these stressors toward creativity to keep valuable and creative staff for an institutions.

Additionally, in creative form role conflict and role ambiguity have several consequences like weak performance, minimum productivity, tension, absenteeism and drug addiction. Similarly, an administration should need to provide acceptable provision and assistance to minimize the negative consequences of stressors on employees. Consistently, suitable training and advising is also crucial for the development of individual and satisfaction of employees in the organization. Hence, the employment situation should be elastic, and the staff should be maintained expressively. The employees should comprehend completely the responsibilities and their work establishment. Creative supervisors need to motivate their subordinates in their job.

Additionally, this study also explains the moderation role of extraversion and conscientiousness for the relationship between stressors and creativity. Similarly, this research also provides answers to the questions that how high and low levels traits affect role conflict, role ambiguity, and creativity relationship. The results of moderation postulate that the majority of moderate hypotheses effect of role conflict, role ambiguity and creativity. Additionally, as this research work was conducted in the private sector universities of KP, Pakistan, especially in context of developing country and eastern culture, so the results of hypothesis 6 were diverse from the results of developing countries and western culture. Moreover, this research explored the new association that will contribute to literature which may be further used to improve in future related study in this area. Finally, it can be said that the validity, reliability, and procedure of this research will add value to the methodology, and literature.

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