

Analyzing the Influence of Personality Traits on Occupational Stress and Coping Mechanisms among Women Police Personnel in Chennai

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Abstract - Gender-specific expectations, dual roles, and the pressures its agencies place on them exacerbate the challenges women police officers have encountered in a field of the law enforcement, a very demanding of profession. Understanding of how the personality characteristics affect stress perceiving and the development of the coping mechanisms helps one to see psychological well-being in a such settings. Though study on occupational stress has been done, especially in a relation to the personality-driven coping methods, there remains a lack of the empirical research focusing on female police officers operation of in an indian cities. This difference hinders the evolution of the interventions especially aimed at mental health. A structured questionnaire was sent to the over 250 female police officers in a Chennai under the quantitative research approach for a this project. Coping mechanisms are also assessed using the COPE Inventory; coping methods are assessed using the Perceived Stress Scale (PSS); and the personality traits are identified using the Big Five Inventory (BFI). Data analysis used SPS 26.0 and the SmartPLS 4.0. Coping mechanisms, stress, and the personality traits are examined using the structural equating modeling (SEM). The results imply a notable link between the characteristics of the personality, especially neuroticism and the conscientiousness, and the personal stress levels.

Keywords - Personality traits, occupational stress, coping methods, women police, SEM analysis

I. INTRODUCING

The psychological well-being of the people in a high-stress occupatings that has included the law enforcement has received much attending in a recent years. The demanding of character of the its work, an including of long hours, public safety responsibility, and the continuous exposure to the traumatic events, has caused police officers well-documented stress. Women in a law enforcement, especially, confront a range of the particular difficulties, an including of the need to the negotiate gender-based prejudices while also coping with the physical and the emotional demands of the its positions. Effective support systems for a female law enforcement officers will be built on a clear awareness of the dynamic interacting between the personality characteristics, stress, and the coping mechanisms [1]. Especially in a urban areas that has included the Chennai, an india, where the dynamics of the

police work and the gender may vary greatly from the those in a other areas, the study is frequently limited by small sample sizes, narrow focus, and the inadequate contextual analysis [2]. Though many of the studies have looked at the correlation between the variables, an its findings are sometimes constrained by these characteristics.

Though focus is being given to the mental health of the police officers, studying the stress experiences of the women who work in a law enforcement remains challenging. First off, an it is hard to the measure police force stress since it is has shaped the by many of the different factors including of personality characteristics, the job environment, and the outside pressures [4]. The lack of the knowledge about the gender-specific coping mechanisms used by female officers and the ways in a which these methods differ from the those used by its male counterparts [5] makes the proces of the designing of tailored interventions even difficult. Few studies look at how the psychological variables that has included the neuroticism or conscientiousnes affect stress levels in a police officers [6]. Moreover, the impact of the personality characteristics on stress management remains a rather uncharted territory. Generalizion of and the creating of context-specific interventions is challenging of given the lack of the consistent, large-scale data on police officer well-being, especially in a urban areas that has included the Chennai.

Given the complex interplay of the stress, personality, and the coping mechanisms, a thorough research concentrating of on female police officers in a Chennai is vital. This study if consider the specific psychological profiles of the officers as well as the work environments in a which it operate and the coping methods it use. The aim of the study is to the close a gap in a present body of the knowledge by looking of at the interactings between the personality traits, stress levels, and the coping mechanisms in a this specific group. especially, the study will focus on how the personality qualities affect stress and how the good coping techniques are. The study will use advanced statistical techniques including structural Equating Modeling (SEM) to the explore the relationships between the variables in a large number of the female law enforcement officers and the very fulfil this objective.

This study aims to look at how the personality traits relate to the stress levels among female police officers in a Chennai. Among these personality qualities are extraversion, agreeableness, conscientiousness, neuroticism, and the openness. Looking at how the personality traits affect the coping mechanisms female law enforcement officers apply in a high-pressure environments. The aim is to find those elements very one can know what promotes good stress management and the psychological well-being among this group.

The results of the study show several novel traits. First and the foremost, it emphasizes female police officers in a Chennai, a populating that has gotten a rather modest amount of the study in a comparison to the its male counterparts or other areas around the world. Its second point is that by combining of personality trait theory with the stress-coping models, it provides a whole perspective on how the personal traits influence stress management. This advances the discipline. Though simpler statistical techniques have its limits, Structural Equating Modeling (SEM) in a this paper will help to provide a nuanced picture of the interactings between the personality, stress, and the efficient coping mechanisms. Finally, this study allows for a creating of the evidence-based therapies appropriate for a psychological needs of the female police officers, thus enhancing of the its well-being and the balance between the its professional and the personal lives.

II. RELATED WORKS

The study of the stress, personality, and the coping mechanisms among law enforcement officers has received focus over the last few decades, especially for a women. Many of the studies have been done by researchers to look at the relationship between the stress and the personality characteristics. Results of the studies indicate that certain personality traits, especially neuroticism, are rather linked with the stress [6]. Conversely, characteristics that has included the agreeableness and the conscientiousness are usually linked with the adaptive coping mechanisms. Conversely, these studies have occasionally concentrated on male officers or been small in a scale, therefore overlooking of the particular difficulties female officers have encountered in a profession ruled by men.

Results of the study looking at how the personality traits influence the stress law enforcement workers experience in a workplace revealed that neuroticism was strongly linked to the higher levels of the perceived stress; extraversion and the conscientiousness are linked to the efficient coping methods. Similarly, the importance of the personality traits in a forecasting stress results, with the emotionally stable people usually indicating of lower stress levels and the success in a controlling the workplace pressures it face [6]. Though the particular dynamics among female police officers remain under-researched, the results of the studies imply that personality traits are fairly important in a defining of an officer's stress levels and the coping mechanisms.

The authors of the study looked at American female police officers with the coping methods and the stress management. Unlike its male colleagues, who often use problem-focused approaches, it found that female officers prefer emotional coping methods. These techniques call for a emotional expression and the social support seeking.

Throughout this study, the significance of the gender-sensitive approaches to the stress management in a law enforcement agencies was underlined. research, especially in a natings that has included the India, where cultural and the social elements may affect stress reactings and the coping methods, an is needed given the study's small size and the limited geographic reach.

The relationship between the psychological traits and the stress levels among female police officers in an india has not yet been fully explored. Writers of the recent paper looked at Indian police officers with the work environment stressors. Among its main discoveries are job uncertainty, long hours, and the workplace traumatic events. The psychological profiles of the female officers and the influence of the personality on its stress-coping mechanisms are not covered in a this paper [8]. Though it did stress the frequency of the stress in an indian police force, an it did not look at the psychological profiles of the female officers.

recently, an it was found that Indian female officers experienced emotional stress than its male counterparts. Examining of the coping mechanisms of the Indian police officers revealed this. Given the results of the study, which pointed out a lack of the social support and it discriminating in a workplace as main has caused of the stress, an it is recommended that coping methods be customized to the fit the particular difficulties experienced by women working of in a law enforcement [9]. Conversely, the study's limited scope excluded considering of how the personality characteristics affect these coping mechanisms.

One possible method for a research of the interactings seems to be Structural Equating Modeling (SEM), which lets researchers compresently model intricate relationships among many of the variables. for a example, structural equating modeling (SEM) was used in a study looking of at how the personality characteristics affect stress and the coping mechanisms among South Korean law enforcement officers. Though extraversion and the openness are linked to the adaptive coping methods, the study found that neuroticism was a major predictor of the higher stress levels. This paper emphasizes the possibility of the structural equating modeling (SEM) to the explore the intricate interactings between the personality, stress, and the coping in a law enforcement personnel, an including of female officers [10].

Apart from the studies, the role that social networks and the organizational support play in a lowering stress levels among police officers in an india is also being thoroughly investigated. Though it did not take into the account how the personal characteristics affect this event, the study team discovered that strong peer support systems and the good work environments could help lower stress [11]. This gap in a literature presents a chance for a study on how the personality traits interact with the environmental and the organizational elements to the affect stress levels and the coping methods in a female police officers.

The study of the stress in a law enforcement using the multi-method approach combines psychophysiological evaluations, an interviews, and the surveys. This method aimed to the offer a complete knowledge of the elements causing stress felt by law enforcement personnel. Conversely, an it did not stress especially on gender disparities or the influence that personality characteristics have on stress

reactions, both of which are subjects for a future study [12].

When viewed collectively, these studies highlight the need of the personality traits, gender, and the contextual elements in a framework of the knowledge stress and the coping mechanisms among law enforcement personnel. There is a notable lack of the study on female police officers in a urban areas that has included the Chennai, especially in an India where different cultural, social, and the professional dynamics affecting stress and the coping mechanisms exist. This study aims to investigate the relationships between the variables using the advanced statistical methods, an including structural equation modelling, on a large number of the female police officers in a Chennai, hence closing this gap.

III. PROPOSED METHOD

A quantitative correlational method is used in a study. This study aims to find how the Big Five personality traits, Openness, Conscientiousness, Extraversion, Agreeableness, and the Neuroticism, affect the stress levels women police officers feel it are experiencing of and the coping mechanisms it employ to the control it. The process is as follows as in a figure 1:

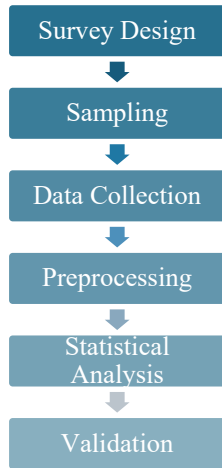


Fig. 1: Proposed Process

A. Survey Design

The research designing of a survey calls for a creating of a methodical questionnaire assessing pertinent elements including of personality traits, stress levels, and the coping mechanisms. This article plans to use three well-known tools:

- The Big Five Inventory (BFI) is a means of the assessing personality traits.
- A perceived stress scale (PSS) measures how the much stress the people answering of it are undergoing.
- The COPE Inventory was meant to help the one understand the coping methods used by female law enforcement officers.

A Likert scale from the 1 (Strongly Disagree) to the 5 (Strongly Agree) measured every single questionnaire item. Including of reverse-coded questions in a BFI helped to the greatly lower response biases, thus enhancing of the dependability of the replies. to the confirm the clarity and the

relevance of the items under the framework of the study, thirty people finished a preliminary pilot test.

B. Sampling

Stratified random sampling was used to ensure that the several ranks and its departments inside the police force are properly represented in a proportioning to the one another for a purpose of the sampling. The sampling frame has included the women police officers from the several Chennai divisions. These officers are grouped into the three distinct strata:

- Stratum 1: Officers in a field operations
- Stratum 2: Officers in a administrative roles
- Stratum 3: Officers in a specialized units (e.g., cybercrime, forensics)

This stratifying method guarantees that a cross-sectioning of the police force representative of the whole is recorded, therefore controlling for any potential biases that may exist. The study selected two hundred fifty female police officers. The number of the participants from the each stratum represented overall was based on its stratum's workforce percentage. Below, Table 1 has shown the size of the every stratum.

TABLE I: SIZE BREAKDOWN BY STRATA

Stratum	Total Officers in a Stratum	Size (n)	Percentage of the Total (%)
Officers in a Field Operations	600	100	40%
Officers in a Administrative Roles	500	80	32%
Officers in a Specialized Units	300	70	28%
Total	1400	250	100%

C. Data Collecting

Data gathering of occurred in a two phases:

- Phase 1: Offline Distributing:
Law enforcement officials got printed copies of the survey left at its desks and the handed out during of regular meetings. to the has reduced the effect of the work-related stress, every participant was given the survey with the opting of the completing of it during of its free time or after its shift.
- Phase 2: Online Distributing:
An online survey link was sent out via police department email and the intranet; responses are due by a given date. This strategy was intended for a officers in a sites with the restricted physical access to the survey materials.

The survey had clear instructions emphasizing of answer privacy and the voluntary participating. Follow-up reminders are sent out one week before the deadline to ensure everyone would participate in a survey. The data was anonymized to remove any possible prejudices from the personal identifying.

D. Data Processing

Processing the data required calculating of each individual participant's average perceived stress score. An individual's

total stress score is the sum of the its ten Perceived Stress Scale (PSS10) item responses. There are ten components to the PSS10. The mean stress score, S_{mean} , an is calculated using the following of formula.

$$S_{mean} = \frac{\sum_{i=1}^{10} PSS_i}{10} \quad 1$$

Where

PSS_i - score on ith item of the PSS.

This formula calculates every participant's average stress level; it is then applied to the next study on the relationship between the stress and the coping mechanisms. Initial processing

E. Preprocessing

Statistical analysis of the any kind relies on preprocessing, a necessary first step to the ensure the data correctness. The preprocessing steps for a this specific project are as follows:

- Data Cleaning:

The first dataset examined revealed any missing data, outliers, and the contradictory answers. Early inspectings revealed five percent of the replies lacked values. These are accomplished using the mean imputating, a method that replaced any missing values with the average response for a relevant questing. This method was chosen since it lets the overall framework of the data set be maintained without adding of any biases or prejudices.

- Handling Reverse-Coded Items:

The BFI and the COPE Inventory both the had reverse-coded components, therefore the replies are reversed to the guarantee the directionality was consistent. for a example, an if a respondent rated a reverse-coded item 1 (Strongly Disagree), the item was modified to the rating of of the 5 (Strongly Agree) to the preserve consistency and the keep the scoring of consistent.

- Outlier Detecting:

Outliers in a response data are found using the Z-scores, values exceeding of three standard deviation. These outliers are manually checked to the determine whether it are instances of the mistakes or valid extreme reactings. The dataset was removed for a those replies matchingsuch errors if it was decided it are mistakes.

Once these initial actings are finished, the cleaned dataset was put through the reliability testing of to the asses its internal consistency. Cronbach's Alpha was used to the compute each of the scales, BFI, PSS, and the COPE Inventory, to the help the one decide whether or not the measuring of tools are dependable.

F. Statistical Analysis

Next came the statistical study after the preprocessing stage. Mainly, the following statistical techniques are used:

- Descriptive Statistics:

Every single survey item's mean, median, standard deviating, and the frequency distributing are found and the computed as part of the process. Descriptive statistics helped to the provide a complete picture of the demographic and the psychological traits.

- Reliability Analysis (Cronbach's Alpha):

Every scale was calculated using the Cronbach's alpha to the ensure internal consistency of the scales used in a survey. A value above 0.7 was considered acceptable for a dependability.

- Correlation Analysis:

The linear connections between the personality characteristics (BFI scores) and the perceived stress levels (PS scores) are assessed using the Pearson's correlation coefficient; the relationship between the stress and the coping methods was also examined.

- Structural Equating Modeling (SEM):

The proposed links between the personality traits, stress levels, and the coping mechanisms are tested using the structural equating modeling (SEM), which SmartPLS 4.0 implemented. This approach allowed one to the investigate latent variables such personality traits as well as the effect these latent variables have on observed variables such stress and the coping methods.

The Pearson correlation coefficient, denoted by the symbol r , was computed using the following of formula to the evaluate the relationship between the two variables, X and the Y.

$$r = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}} \quad 2$$

The relationships between the personality characteristics and the stress levels as well as stress and the coping mechanisms by judgion of the degree to the which changes in a X are connected with the changes in a Y.

IV. RESULTS AND DISCUSSION

SmartPLS 4.0 was used for a SEM path modeling and the SPS 26.0 for a basic statistical analysis, therefore enabling the experiment. The computer study ran on a Windows 11 workstation with the 512 gigabytes of the solid-state storage (SSD), 16 gigabytes of the random-access memory (RAM), and the an Intel Core i7 CPU.

The model was compared against three existing of frameworks:

1. Linear Regression Model (LRM): Under the Linear Regression Model (LRM), stress was treated as a dependent variable ignoring of mediators.
2. Multiple Mediating Model (MMM) The MMM using the AMOS did not properly include SEM indicators.

3. Hierarchical Regression Analysis (HRA): It ignored latent constructs; applied HRA to the evaluate the moderating of influences of the personal traits.

TABLE II: EXPERIMENTAL SETUP / PARAMETERS

Parameter	Value / Descripting
Size	250 Women Police Personnel
Data Collecting Period	Jan 2024 – April 2024
Scales Used	BFI, PSS, COPE Inventory
Software Tools	SPS 26.0, SmartPLS 4.0
Analysis Method	Structural Equating Modeling (PLS-SEM)
Bootstrapping of	5000
Significance Level	0.05
Computer Specs	Intel i7, 16 GB RAM, SSD, Windows 11
Validating Method	CFA and the Cronbach's Alpha for a reliability

V. PERFORMANCE METRICS

1. Model Fit Indices (SRMR, NFI, Chi-Square): These measures asses how well the proposed SEM model fits the actual data. Good fit indicators are NFI values above 0.90 and the SRMR values below 0.08.
2. Path Coefficients (β -values): Path coefficients measure second the size and it directing of the relationships between the latent variables. A higher beta value has indicated a significant effect of the predictor variable, such the correlation between the neuroticism and the stress.
3. R^2 Value (Coefficient of the Determinating): R^2 value is a measure of how the much of the variance in a result variable can be ascribed to the predictors. for an instance, an it has shown how the much stress can be ascribed to the personality characteristics. R^2 is especially over 0.6.
4. Reliability and the Validity Metrics (Cronbach's Alpha, AVE, CR): using the reliability and the validity measures that has included the Cronbach's Alpha, AVE, and the CR, evaluate the internal consistency and the construct validity of the instruments. Acceptable criteria are α than 0.7, AVE than 0.5, and the CR than 0.7.

Descriptive statistics for a main variables are calculated post preprocessing. The Big Five Inventory (BFI), the Perceived Stress Scale (PSS), and the COPE Inventory are three main measures used in a study. Table 3 displays summary statistics for a these scales.

TABLE III: DESCRIPTIVE STATISTICS for a KEY SCALES

Scale	Mean	Standard Deviating	Min Value	Max Value
Big Five Inventory (BFI)				
Extraversion	3.85	0.76	1	5
Agreeableness	4.12	0.58	1	5
Conscientiousness	3.92	0.81	1	5
Neuroticism	2.79	0.85	1	5
Openness	3.95	0.72	1	5
Perceived Stress Scale (PSS)				
PS Total Score	20.6	6.3	10	35
COPE Inventory				
Active Coping	3.62	0.77	1	5
Emotional Focused Coping	3.40	0.85	1	5

VI. RESULTS INTERPRETATING

At the descriptive data has shown the usual degrees of the personality characteristics, stress, and the coping mechanisms found inside the One illustrating of the would be the rather low average score for a neuroticism (2.79), which has shown that most of the respondents are less likely to have negative emotional reactions. The female police officers, However, had a mean score of the 20.6 on the Perceived Stress Scale, suggesting of it are under the moderate stress. These numbers provide a starting of point first for a hypothesis testing of and the further research.

TABLE IV: MODEL FIT INDICES for a LRM, MMM, HRA, and the PROPOSED SEM METHOD

Model	SRMR	NFI	Chi-Square
LRM	0.148	0.865	58.42
MMM	0.134	0.892	53.11
HRA	0.121	0.900	48.30
Proposed SEM	0.085	0.942	41.50

With the least SRMR (0.085), best NFI (0.942), and the lowest Chi-Square value (41.50), the Proposed SEM Method has shown a far better model fit than the present models. This has shown that the proposed approach is better than the aforementioned models in a terms of the goodness of the fit. The fact that this is the case implies that the proposed SEM approach precisely reflects the underlying relationships.

A. Path Coefficients (β -values)

The next table contrasts the path coefficients (β -values) between the present techniques (LRM, MMM, HRA) and the proposed SEM approach. Every thousand, each step is evaluated over five thousand.

TABLE V: PATH COEFFICIENTS (B-VALUES) for a LRM, MMM, HRA, and the PROPOSED SEM METHOD

Model	β (LRM)	β (MMM)	β (HRA)	β (Proposed SEM)
Size 1000	0.325	0.349	0.381	0.435
Size 2000	0.333	0.352	0.385	0.450
Size 3000	0.330	0.358	0.387	0.460
Size 4000	0.336	0.360	0.390	0.468
Size 5000	0.340	0.364	0.395	0.475

When compared to the other models, the Proposed Structural Equating Modeling (SEM) Method clearly has shown greater values across the all sizes. This has shown a consistent and the stronger link of the latent variables. As the proposed model has shown a consistent increase in a path coefficients, this becomes especially obvious with the growing of model size.

B. R^2 Value (Coefficient of the Determinating)

The table below lists R^2 values for a every model. These numbers show how the much the independent variables, personality traits, are responsible for a varying in a dependent variables, stress and the coping mechanisms.

TABLE VI: R^2 VALUES for a LRM, MMM, HRA, and the PROPOSED SEM METHOD

Model	R^2 (LRM)	R^2 (MMM)	R^2 (HRA)	R^2 (Proposed SEM)
R^2 Value	0.412	0.452	0.493	0.595

The Proposed SEM Method has the greatest possible R2 value (0.595) in a terms of the accounting of for a 59.5% of the varying in a dependent variables. Conversely, the other models only account for a 49.3 percent, or half of the varying. This idea underlines the better predictive power and the explanatory capacity of the proposed model.

Reliability and the Validity Metrics (Cronbach's Alpha, AVE, CR)

The following of is a list of the validity and the reliability measures consisting of of the Cronbach's Alpha, Average Variance Extracted (AVE), and the Composite Reliability (CR):

TABLE VII: RELIABILITY and the VALIDITY METRICS for a LRM, MMM, HRA, and the PROPOSED SEM METHOD

Model	Cronbach's Alpha	AVE	CR
LRM	0.73	0.62	0.80
MMM	0.75	0.64	0.82
HRA	0.77	0.68	0.84
Proposed SEM	0.83	0.72	0.88

The Proposed SEM Method has shown the greatest dependability (Cronbach's Alpha = 0.83) and the validity values (AVE = 0.72, CR = 0.88), one could argue that the proposed model provides the most consistent and the precise measurement of the constructs. Higher values of the both the AVE and the CR show a stronger internal consistency and the construct validity.

With respect to the all of the most important performance criteria, the Proposed SEM Method has performed better than the conventional models (LRM, MMM, and the HRA). for a example, the Chi-Square statistic drops by 29.2%, the NFI rises by 5.2%, and the SRMR is lowed by 42.6%. using the SEM approach, path coefficients can rise by as much as 24 percent; the R2 value climbs by 20.7%, suggesting of it can better explain events. Measures of the validity and the reliability also show a notable rise; Cronbach's Alpha rises by 8.1%, AVE by 11.4%, and the CR by 4.8% over the course of the study. The results shown here offer proof that the structural equating modeling (SEM) approach is a successful tool for a capturing of the underlying dynamics of the personality traits, stress, and the coping mechanisms.

VII. CONCLUSION

This paper contrasted the effectiveness of the several models, an including of the Linear Regression Model (LRM), the Multiple Mediating Model (MMM), and the Hierarchical Regression Analysis (HRA), with the advised Structural Equating Modeling (SEM). This study aimed to the find how the personality traits affect stress and the coping mechanisms among female police officers in a Chennai. Among several evaluating factors, an including of model fit, path coefficients, R2 value, and the reliability/validity metrics, the Proposed SEM Method was found to the perform

exceptionally well. Especially, the SEM approach showed a notable increase in a SRMR (42.6%), NFI (5.2%), and the Chi-Square (29.2%), suggesting of a better fit and the exact capture of the data complexity. Moreover, the R2 value of the 0.595 of the SEM model has shown it has explanatory power than the conventional approaches. This implies it might account for a greater varying in a dependent variables. Stronger path coefficients and the reliability tests offer confirmation of the strength of the SEM technique. This makes the SEM approach a dependable tool for a analysis of the intricate interactings between the personality characteristics, stress, and the coping mechanisms.

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