SURVIVING THE PRESSURE COOKER: HOW HEALTHCARE PRACTITIONERS' MACHIAVELLIANISM AND RESILIENCE INFLUENCE INTERPERSONAL WORKPLACE STRAIN

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Abstract
In healthcare profession, emergency situations, long working hours, high patient volumes, and emotional interactions, leads to burnout, emotional fatigue, and chronic stress. The current research paper aimed to explore the interaction between dark personality traits, resilience, and interpersonal workplace strain (IWS) in healthcare practitioners. Correlational research design was employed to carry out the study. Data was collected by utilizing purposive sampling from a sample of N=300 participants. The measures used included the Urdu translated version of Short Dark Tetrad scale (SD4), Resilience scale (RS), and Interpersonal workplace strain scale (IWSS). Participants were selected from various Govt and private hospitals of Lahore city, Punjab. The study sample consisted of 3 categories, doctors (n=100), nurses (n=100) and paramedical staff (n=100). The results of correlational analysis revealed that Machiavellianism and resilience have significantly negative correlation with IWS. Furthermore, regression analysis also found that both Machiavellianism and resilience are significant negative predictors of IWS. There were no statistical gender differences found, however, private sector showed high IWS. It was also revealed that paramedical staff experience more IWS as compared to other categories. The overall findings highlighted the significant role of Machiavellianism and resilience in mitigating interpersonal strain in professional settings of healthcare professionals depicting that the practitioners having high Mach traits and high resilience will experience low level of interpersonal workplace strain.

INTRODUCTION
The healthcare system, comprising policies, institutions, and resources, is vital for maintaining health by ensuring equitable access to medical services, timely care, and disease prevention, overall, improving life expectancy and quality of life. (Orille et al., 2024) Healthcare professionals include nonmedical clinicians like nurses and allied health professionals, as well as medical clinicians like

doctors, surgeons, specialists, psychiatrists, dentists, and junior physicians. (Ryland, 2020) In Pakistan, healthcare profession is demanding which requires individuals to work in stressful environments, often due to lack of experience, work ability, or personality traits, they face stress issues. (Tabassum et al., 2021) Personality traits significantly influence an individual's perspective, attitudes, and behaviors,

influencing their approach to situations or conflicts. Understanding these traits across health professions can identify strengths and weaknesses, promote mutual understanding, inform professional practice strategies, and enhance inter-professional practice. (Bataweel, 2023)

The phrase "Machiavellianism," derived from Machiavelli's early works, refers to a manipulative personality that is charming, dishonest, and emotionally cold in social situations. According to Kessler et al. (2010), Machiavellianism is the notion that, in the context of the workplace, one should employ manipulation when necessary to accomplish one's goals. According to Musarra et al. (2022), it is a dark side trait that underlies a self-interested gain approach. Research indicates that individuals with Machiavellianism often have an antisocial interpersonal style, are well-liked and skilled, and manipulate others for authority, prestige, and control, but this trait is not a clinical condition or diagnostic tool. (Lang & Birkas, 2015) Machiavellianism was initially seen as a separate concept, has been grouped with Narcissism and Psychopathy under the term "Dark Triad" due to shared characteristics such as aggressiveness, emotional coldness, duplicity, and self-promotion, exhibiting a socially malevolent character. (Paulhus & Williams, 2002) After over ten years, sadism was introduced as a fourth dark personality by Međedović and Petrović, (2015), these four together are known as the Dark Tetrad.

Machiavellianism, a personality trait, is linked to impulsivity, lack of long-term planning, and self-control. (Rauthman & Will, 2011) High Machs are generally intelligent and socially adept, but research indicates they may experience anxiety, depression, anhedonia, poor empathy, and mindreading abilities. (Aïn et al, 2013) The theory of mind suggests that people can influence social circumstances to achieve their own ends, but this may lead to unawareness of their own and others' feelings. (Kowalski et al., 2018) The research by Ináncsi et al., (2015), links ambivalence, aggression, and interpersonal issues to Machiavellianism, suggesting that Machiavellian individuals often display attachment anxiety in close relationships but generally avoid attachment styles. These anxieties and interpersonal issues require adaptability or flexibility to manage the adverse situation.

Resilience is a positive personality trait that allows individuals to adapt to challenging situations, aiding in problem-solving, decision-making, and appropriate actions. Personal resilience focuses on an individual's vital features, resulting in proactive alignment with transforming, contingent, and perilous contexts. Employees with higher psychological resilience can withstand negativity and have greater control over their surroundings. (Nieto et al., 2022) The term "resilience" is now frequently used for psychological concepts. (Ayed et al., 2018) A large number of definitions of resilience encompass both positive outcomes and adversity because there is no universally accepted definition. (Rutter, 2006) The majority of scholars reported that both of these traits are necessary to define resilience. According to Fletcher and Sarkar, (2016) people who can endure risk and adversity are said to be resilient. Exposure to risk and adversity is necessary for the development of resilience. Researches have repeatedly shown that resilience is greatly influenced by individual characteristics (Chen et al., 2017) The factors such as social support, job satisfaction, and psychological well-being were also recognized as critical components in fostering resilience in healthcare settings. (Barnett et al., 2007) "Resilience" is derived from the Latin verb "resilire," which means "to leap back" or "to rebound." (Fletcher & Sarkar, 2013)

Louwen et al., (2023) and Ayed et al., (2018) investigated the potential effects of narcissism and Machiavellianism on healthcare workers' interpersonal connections, decision-making, and stress reactions. It has been demonstrated that these characteristics impact coping strategies, work satisfaction, and emotional intelligence, and these factors in response impact resilience in healthcare settings. (Furnham et al., 2013) Dark personalities, such as narcissistic and Machiavellian individuals, exhibit certain behavioral traits that influence their behavior in various settings, including the workplace. (Schyns et al., 2019) High Machs are prone to being sensitive to justice violations, which can trigger deviant behaviors against the organization or other employees. (Schmitt et al., 2005) Interpersonal strain represents the feeling of discomfort and disengagement in the relationships with people at work resulting from exceeding social requests and pressures. (Borgogni et al., 2011)

High levels of work-related stress negatively impact healthcare professionals' health, wellbeing, and work outcomes. Job strain, burnout, and poor relationship coordination are linked to poor patient safety and medical errors. Healthcare staff experience strain due to high workloads, emotional demands, shift work, or understaffing, while organizations struggle to attract and retain qualified staff. (Broetje et al., 2020) According to Consiglio, (2014) Emotional dissonance is a key variable related to burnout among healthcare professionals, positively related with interpersonal strain, exhaustion, and cynicism. The biopsychosocial model highlights the significant impact of interpersonal relationships in high-stress environments, particularly healthcare, on the health and well-being of professionals. Stressors like workplace conflict, lack of support, and poor communication trigger the body's stress response, leading to health issues like burnout, anxiety, motivation, compassion fatigue, blood pressure, and social isolation. (Odonkor & Frimpong, 2020)

This study investigates the relationship between Machiavellianism traits, resilience, and interpersonal workplace strain in healthcare practitioners. It aims to identify predictors of workplace strain, investigate the association between Machiavellianism and interpersonal workplace strain. Moreover, it also examines the relationship between resilience and Machiavellianism. The findings could have significant implications for healthcare organizations' performance and practitioners' wellbeing. Resilience training and behavioral interventions could reduce stress, burnout, and emotional strain in individuals with higher traits. Understanding these traits can help with staff selection and team structure. Policies providing mental health assistance and fostering a pleasant workplace culture could benefit from the findings.

Literature Review
Machiavellianism in Healthcare Practitioners
According to Shafti, (2023) Machiavellianism is a character trait involving deceit, manipulation, and a pessimistic view of others. It involves rationalizing abuse, misjudgment, and victimization. Machiavellianism is socially, culturally, academically, and pedagogically taboo, but it can be traced in various professions. Although disapproved, it is not entirely prohibited, as it can be traced in various fields. He discussed the misapplication of Machiavellianism for a practical understanding.

A study by Bratek et al., (2015) on medical professionals found that while they exhibit high levels of Machiavellianism, which is associated with business-related careers, it gradually decreases as they progress through their careers. This suggests that medical professionals, who tend to be emotionally detachable, may be less Machiavellianism-prone and more likely to prefer helping professions.

The study found that the mean Mach-IV score among medical candidates, students, and doctors is relatively high, but is gradually decreasing with career progression. Male gender was positively correlated with the mean Mach-IV score, while post-graduate participants had a negative correlation. The highest representation of "high Machs" was found in medical studies candidates, students, and post-graduates. (Bratek et al., 2015)

The study found that 15% of students scored positively on the Machiavellianism scale, with men having higher scores than women. Students with high Machiavellianism scores were more reliant on high-tech medicine, externally controlled, and authoritarian. This suggests that senior students' high scores predicted a negative attributional style towards geriatric and hypochondriac patients, validating the use of Machiavellianism in medical education. (Merrill et al., 1993)

Machiavellianism and Resilience
Barnett et al. (2007) introduced the concept of "wellness" in healthcare professionals, emphasizing self-care as crucial for maintaining resilience. They also highlighted the importance of resilience in preventing burnout and promoting professional satisfaction. Factors such as social support, job satisfaction, and psychological well-being were also recognized as critical components in fostering resilience in healthcare settings.

The study examined the relationship between the Dark Triad traits and Machiavellianism were expected to increase it. The study also found that resilience, which is linked to increased burnout, also reduced burnout levels. However, when combined with Dark Triad traits, resilience increased burnout rather than reduced it, despite the main effect of Primary

Psychopathy being linked to decreased burnout. (Klerks et al., 2024)

Varshney (2022) explored the relationship between self-concept and performance, focusing on resilience as a mediator and Machiavellianism as a moderating variable. It reveals that resilience mediates the relationship between self-concept and performance, while Machiavellianism moderates the relationship between self-concept and resilience. The study highlights the significant impact of personality attributes on employees' perceptions of self and work performance.

Machiavellianism and IWS

Amir and Malik (2016) aimed to identify the leadership style of individuals high in Machiavellianism. It found that those with high Machiavellianism tend to exhibit a different leadership style compared to those with low Machiavellianism. They also examined the relationship between Machiavellianism and counterproductive work behavior in the workplace. The findings suggest that individuals with high Machiavellianism tend to engage in counterproductive work to achieve their goals and interests.

Zhao et al. (2018) investigates how Machiavellianism can mitigate the impact of role conflict on counterproductive work behavior (CWB) in China. Data from three phases showed that role conflict positively impacts CWB through emotional exhaustion. Machiavellianism moderates the relationship between role conflict and emotional exhaustion, weakening it for employees with higher Machiavellianism. This suggests that Machiavellianism can help mitigate CWB.

The study aimed to investigate gender differences in workplace stress perceptions among 231 Greek adults. The main hypothesis was that men would experience more interpersonal conflicts and stress due to organizational constraints. The research findings did not support all of the hypotheses since it was shown that men were more likely than women to express their stress through interpersonal confrontations with coworkers due to organizational constraints. (Stafyla et al., 2013)

Methodology

Research Design and Sample

The cross-sectional correlational research design was used to investigate the relationship between Machiavellianism, Resilience and Interpersonal Workplace Strain in Health Care Practitioners. This design was selected for the purpose to use a survey-based methodology to evaluate the relationships between these variables within a defined population at a certain point in time. The purposive sampling strategy was employed to select a representative sample from the population, ensuring adequate representation of key subgroups. The study involved 300 participants male (n=150) and females (n=150), comprising medical and non-medical healthcare practitioners from public and private hospitals in Lahore, including doctors, surgeons, physicians, psychiatrists, nurses, and physiotherapists, from both public and private sectors.

Inclusion and Exclusion Criteria

This study included healthcare practitioners from Lahore who have completed their mandatory degree for their post and were over 26 years old. This study excluded house-jobs and internees in the healthcare field, unemployed professionals, and those with physical and psychological issues, as well as those not at service at the time of study.

Instruments

Standardized psychometric tools were used to collect data and evaluate the main study variables. Machiavellianism was measured using the Short Dark Tetrad Scale (SD4) translated by Yusuf & Tahir, (2024), first 7 items under *Crafty* portion were chosen in this scale which are rated on 5-point Likert type scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). The Cronbach's alpha internal consistency of adapted SD4 is (.73). The Workplace Resilience scale, developed by Nazir & Bashir, (2018), is a 5-point Likert scale with two factors: personal and social resources and spiritual orientation. The study used the first factor items to assess the resilience of healthcare practitioners in their workplace, including keeping busy, having insight, seeking help, and considering social support. The Cronbach alpha value for factor 1 is 0.96. The Interpersonal Workplace strain scale, developed by

Wahid & Mehmood, (2017), assesses interpersonal strain in healthcare practitioners in Lahore, Pakistan. The scale, based on 54 items, it is a 5-point Likert scale measures the level of strain resulting from criticisms, irresponsibility, and patient disobedience. It also highlights abusive language, aggression, and interpersonal conflict among colleagues. Doctors also experience hopelessness, lack of motivation, headaches, disturbed eating and sleeping habits, and anger control, contributing to their workplace difficulties.

Procedure
The study involved departmental permission, permission from relevant authors, and permission for data collection from government and private hospitals in Lahore city. A small-scale study was conducted to assess comprehension of questionnaire items, with 30 participants from both private and government hospitals in Lahore. The average time for participants to fill the questionnaires was 10 to 15 minutes. After the pilot study, it was confirmed that participants had

no trouble understanding the questionnaire items and no ambiguities were present repeatedly. Purposive sampling was used to gather data from various public and private hospitals in Lahore, including the Iqra complex, Wahid Hospital, General Hospital, Mayo Hospital, and Service Hospital, etc. Permissions were taken from the medical superintendent of the hospitals. The questionnaires were distributed to health staff during data collection, with a gap of 1 to 3 days due to busy schedules.

Statistical Analysis
SPSS was used to conduct the Descriptive and Statistical analysis. Descriptive analysis was used for the demographic variables of participants. Through the Cronbach alpha value, reliability of the scales including SD4, RS, and IWSS were analyzed. T-test and ANOVA were used to find out the mean differences of demographics with the Dark tetrad, Resilience, and Interpersonal workplace strain in health care professionals.

Conceptual Framework
Figure A: Theoretical model

Results
Section I: Sample Description
This section has covered the evaluation of mean and standard deviation of continuous variables, and the frequency and percentages of categorical variables.

Table 1: Frequencies and Percentages of Sociodemographic Characteristics of the Participants (N =300)

Variables	f	%
Gender		
Male	150	50%
Female	150	50%
Religion		
Muslim	252	84%
Non-Muslim	48	16%
Marital Status		
Unmarried	111	37%
Married	189	63%

Current Designation		
Nurse	100	33.3%
Doctor	100	33.3%
Paramedical Staff	100	33.3%
Institute Type		
Govt	150	50%
Private	150	50%

Note. f=Frequency, %=Percentage

Table 2: Means and Standard Deviations of Age, Education and Work Experience (N = 300)

Variables	M	*SD*
Age	32.63	6.02
Education	15.72	2.12
Work Experience	6.04	5.26

Note. M=Mean, SD=Standard Deviation

Section II: Psychometric analyses
Reliability of measures used in this study are assessed in the section.

Table 1: Machiavellianism, Resilience Scale, and Interpersonal Workplace Strain Scale (N =300)

Measures	M	SD	Range	a
Machiavellianism	24.65	4.21	7-35	.582
Resilience scale	61.70	12.90	30-80	.918
Interpersonal workplace strain	142.93	30.63	68-216	.945

Note. M=Mean, SD=Standard Deviation
The reliability of the measures was assessed through Cronbach alpha value. Machiavellianism had acceptable consistency (α=.58) while RS (α=0.92), and IWSS (α=0.95) showed excellent internal consistency.

Section III: Testing the Main Hypotheses
In this section, the study's main hypotheses are assessed by using regression analysis and correlational analysis.

Table 1: Inter-factor Correlations among Machiavellianism, Resilience, and Interpersonal Workplace Strain (N = 300)

Variables	M	SD	1	2	3
1. Machiavellianism	24.68	4.22	-	-	-
2. Resilience	61.52	13.19	.194**	-	-
3. IWS	142.97	31.37	-.153**	-.169**	-

Note. IWSS=Interpersonal Workplace Strain, M=mean, SD=standard deviation
*p < .05, ** p < .01, *** p < .001
The Pearson correlational analysis indicated that Machiavellianism is significantly positively correlated with Resilience (.194**) which shows that if healthcare professionals have high Machiavellianism traits, they will have high resilience. On the other hand, above table also indicated that Mach is significantly negatively correlated with Interpersonal Workplace strain (-.153**). This depicts that Individuals having high Mach traits will experience less interpersonal workplace strain. Furthermore, it was also revealed that Resilience has significant negative correlation with IWS (-.169**), individuals with high resilience will have less IWS.

Regression Analysis

Table 2: Hierarchical Regression Analysis Results for Interpersonal Workplace stain (N=300)

Variables	B	95% CI		SE	β	R²	ΔR²
		LL	UL				
Step 1						.019	0.19*
Constant	147.86	142.576	153.142	2.68	-		
Work experience	-.796	-1.45	-.137	.334	-.137*		
Step 2						.037	.018*
Constant	171.90	150.870	191.93	10.43	-		
Machiavellianism	-.981	-1.808	-.154	.420	-.135*		
Work experience	-.694	-1.352	-.035	.335	-.120*		
Step 3						.053	.017*
Constant	185.79	161.86	209.72	12.16	-		
Work experience	-.602	-1.262	.057	.335	-.104		
Machiavellianism	-.802	.1.638	.033	.425	-.110		
Resilience	-.313	-.586	-.04	.139	-.132*		

Note. UL= upper limit; LL= lower limit; SE= Standardized Error

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

The hierarchical multiple regression showed that work experience is a significant predictor of IWS in step 1 which indicate that the outcome variable is negatively impacted by work experience slightly but significantly ($β = -0.137$, $p < .05$). The second model incorporates Machiavellianism, accounting for 1.8% of variance. This model shows a slight improvement in R2 value with higher Machiavellianism resulting in lower scores. Work experience remains a significant negative predictor. The final model introduces resilience, contributing 1.7% to the prediction, with an additional 5.3% explained variance. Resilience is a significant negative predictor, with higher resilience associated with lower outcome variable scores. Machiavellianism and work experience lose significance, indicating a shift in the model's predictive power.

Section IV: Testing the Secondary Hypotheses
The secondary hypotheses are tested in this part using the independent sample t-test and one way ANOVA analysis.

Table 1: Mean Differences in Dark Tetrad, and Interpersonal Work place strain between Males and Females (N = 300)

	Males (n = 150)		Females (n = 150)		t (300)	P	Cohen's d
Variable	M	SD	M	SD			
Machiavellianism	24.59	4.25	24.72	4.17	.260	.79	.03
Resilience	61.69	13.32	61.69	12.51	-.003	.99	61.69
IWSS Total	141.52	32.85	144.31	28.30	.785	.43	.09

Note. M= Mean, SD= Standard Deviation, IWSS = Interpersonal Workplace Strain Scale

Mean differences of gender in Dark Tetrad, resilience and Interpersonal Work place strain were assessed by using an independent sample t-test. It was revealed that there were no significant gender differences in any of the variable under study.

Table 2: Mean Differences in Machiavellianism, Resilience and Interpersonal Work place strain between Govt and Private sector (N = 300)

	Govt (n = 150)		Private (n = 150)		t (300)	p	Cohen's d
Variable	M	SD	M	SD			
Machiavellianism	24.56	3.98	24.74	4.44	-.370	.71	.04
Resilience	61.68	13.82	61.71	11.95	-.021	.98	.00
IWS	139.02	26.33	146.78	34.00	-2.19	.02	.25

Note. M= Mean, SD= Standard Deviation, IWS = interpersonal Workplace Strain

There were significant mean differences in the private and Govt sector participants regarding IWS. Private participants are found to experience more IWS than Govt ones.

Table 3: Mean Differences in in Machiavellianism, Resilience and Interpersonal Workplace strain in Three Categories of current designation of participants (N = 300)

	Doctors (n = 100)		Nurses (n = 100)		Paramedical Staff (n = 100)		F (2,295)	η^2
Variable	M	SD	M	SD	M	SD		
Machiavellianism	24.50	4.21	25.01	4.19	24.46	4.25	.53	.00
Resilience	60.26	12.52	62.53	14.55	62.31	11.47	.94	.00
IWS	133.62	29.87	145.3	27.9	149.7	31.9	7.68***	.05

Note. M= Mean, SD= Standard deviation, IWS= Interpersonal workplace strain

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

ANOVA was run to determine if occupational groups (physicians, nurses, and paramedical workers) differed significantly on a range of Machiavellianism and IWS. The findings of this analysis demonstrated that there are significant mean differences in IWS in doctors, nurses and paramedical staff. IWSS Total Scores showed the strongest influence with a low to moderate effect size (F = 7.68***, p <.001, η^2 =.05). Individuals with current designation of paramedical staff have high interpersonal workplace strain than doctors and nurses. Furthermore, it also shows that doctors have lowest interpersonal workplace.

Discussion

The study offers a comprehensive understanding of workplace dynamics and potential conflicts in interpersonal interactions, interpreting findings in the context of existing literature. The psychometric properties of the study indicated that the measures of this study have internal consistency ranging from acceptable to excellent. The reliability of the Machiavellianism scale is acceptable with Cronbach's alpha value of 0.58. Indigenous resilience scale has excellent reliability (α=0.92) and Interpersonal Workplace Strain scale (IWSS), also has an excellent internal consistency (α = 0.95). It is very essential to ensure the reliability of the scales for the accuracy of research findings. (Taber, 2017)

The study found a significant negative relationship between key variables and interpersonal workplace strain in healthcare practitioners. The hypothesis was that Dark Tetrad would lead to a positive relationship. However, the study found that Machiavellianism had a significant negative relationship with interpersonal workplace strain. This aligns with existing literature suggesting that Machiavellianism mitigates role conflict and emotional exhaustion, resulting in less emotional tiredness and counterproductive behaviour, resulting in low interpersonal workplace strain. (Zhao et al., 2018) It was also revealed that resilience is also negatively correlated with IWS. The existing literature also aligns with these findings as the study by Cheng et al. (2022) highlights the importance of psychological resilience in healthcare professionals, as it enables them to constructively adapt to adversity or emergency conditions, overcoming obstacles. Furthermore, Personal resilience enhances organizational dynamism, reduces stress, and promotes adaptive coping in crisis situations. It

involves productive conflict resolution and effective interpersonal relationship management. (Moinuddin et al., 2022)

Regression analysis was carried out to find the significant predictors of interpersonal workplace strain. The step wise model of regression has shown predictors in 3 steps. Work experience as separate variable does affect the experience of IWS negatively which depicts that with increase of work experience in healthcare professionals, interpersonal strain decreases. When it combines with Machiavellianism the results indicated that with the increase of work experience, the traits of Machiavellianism increases, and overall perform the negative predictor role with IWS. On the other hand, when it correlates with both Machiavellianism and resilience, then there it predicting nature goes diminished while Machiavellianism and resilience serve as strong negative predictors of IWS.

This study aims to investigate if doctors, nurses, or paramedics with dark personality features experience prolonged interpersonal stress. These individuals are considered empathetic, cooperative, self-directed, and amiable, with low neuroticism. They are stable, calm, and laid-back, making them ideal for healthcare settings. (Louwen et al., 2023) Mach characteristics, on the other hand, are skilled at manipulating people, using resources, and implementing interpersonal techniques. High Machiavellian employees perform logically, controlling emotions, and reacting proactively, making them less prone to emotional exhaustion. Conversely, workers with low Machiavellianism may be more sensitive to conflict and more prone to emotional tiredness. Sendjaya et al. (2014) and Chidi et al. (2024) emphasize the importance of personal resilience in healthcare professionals to manage stress, crises, and critical situations. This resilience prevents fatigue, mental health issues, and emotional pressures, enhancing their capacity to provide compassionate care. Psychological resilience not only protects against burnout but also enhances their ability to deliver quality care, ensuring their professional effectiveness in challenging times.

There were no significant statistical differences between males and females with respect to any of the variable. Muñoz et al. (2008) suggested that there are no significant mean differences in gender in the general patterns of correlations amongst psychopathic characteristics. Additionally, the study also found no significant gender differences in workplace strain, but slight differences in interpersonal strain between males and females. Both genders face equal challenges at the occupational level, making the chances of interpersonal strain almost equal [14].

Through ANOVA analysis, it was revealed that paramedical staff have slightly higher interpersonal strain as compared to nurses while moderately higher IWS than doctors. These findings coincide with the study of Ericsson et al. (2022) which suggests that in order to thrive in a variety of difficult settings, paramedics must possess significant professional expertise as well as emergency medical skill sets. They frequently work 12 to 24 hour shifts which impacts their mental and cognitive capacities significantly. In addition, paramedics must be able to work in a variety of situations while being flexible, not only with regard to the settings in which they operate and the rapidly worsening states of their patients, but also with regard to manage their own and others' emotional reactions. (Ericsson et al., 2022)

Limitations and Recommendations

The research may be influenced by cultural and social biases, affecting the interpretation and application of findings. Comparative studies across different cultural settings could provide a more comprehensive understanding of interpersonal workplace strain. The study only included three categories of healthcare staff, which should be expanded to include other categories like pharmacists and ANAESTHESIA professionals. Additionally, the study lacks mediation and moderation analysis, which could provide better understanding of underlying mechanisms and conditional effects, potentially leading to more targeted interventions for healthcare practitioners.

Conclusion

The study examines the relationship between Machiavellianism, resilience, and interpersonal workplace strain in healthcare professionals. It found significant relationships with cultural impact, with Machiavellianism and resilience having a negative correlation with interpersonal workplace strain (IWS). However, no gender differences were observed in these variables. Personality traits have a growing

impact on healthcare professionals, making it crucial to consider them to avoid prolonged stress. More culture-relevant studies should assess workplace dynamics and their issues on personal, social, and behavioural levels.

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REFERENCES

Aïn, S. A., Carré, A., Fantini-Hauwel, C., Baudouin, J., & Besche-Richard, C. (2013). What is the emotional core of the multidimensional Machiavellian personality trait? *Frontiers in Psychology*, 4. https://doi.org/10.3389/fpsyg.2013.00454

Amir, T. S., & Malik, A. A. (2016). Machiavellianism and counterproductive behaviors at workplace. *Journal of Education & Social Sciences*, 4(1), 12–27. https://doi.org/10.20547/jess0411604102

Ayed, N., Toner, S., & Priebe, S. (2018). Conceptualizing resilience in adult mental health literature: A systematic review and narrative synthesis. *Psychology and Psychotherapy Theory Research and Practice*, 92(3), 299–341. https://doi.org/10.1111/papt.12185

Barnett, J. E., Baker, E. K., Elman, N. S., & Schoener, G. R. (2007). In pursuit of wellness: The self-care imperative. *Professional Psychology Research and Practice*, 38(6), 603–612. https://doi.org/10.1037/0735-7028.38.6.603

Bataweel, A. O. (2023). Personality Traits, Thinking Styles, and Emotional Intelligence in Nursing, towards Healthcare Providers' Characterization and Safer Patient Care. *Open Journal of Nursing*, 13(02), 130–166. https://doi.org/10.4236/ojn.2023.132009

Borgogni, L., Consiglio, C., Alessandri, G., & Schaufeli, W. B. (2011). "Don't throw the baby out with the bathwater!" Interpersonal strain at work and burnout. *European Journal of Work and Organizational Psychology*, 21(6), 875–898. https://doi.org/10.1080/1359432x.2011.598653

Broetje, S., Jenny, G. J., & Bauer, G. F. (2020). The Key Job Demands and Resources of Nursing Staff: An Integrative review of reviews. *Frontiers in Psychology*, 11. https://doi.org/10.3389/fpsyg.2020.00084

Bratek, A., Bonk, W., Tyrała, K., Seweryn, M., & Krysta, K. (2015). "Claw your way" – Machiavellianism among the medical community. *Psychiatria Danubina*, 27(1), 344-347. https://pubmed.ncbi.nlm.nih.gov/26417793/

Chen, Y., McCabe, B., & Hyatt, D. (2017). Impact of individual resilience and safety climate on safety performance and psychological stress of construction workers: A case study of the Ontario construction industry. *Journal of Safety Research*, 61, 167–176. https://doi.org/10.1016/j.jsr.2017.02.014

Consiglio, C. (2014). Interpersonal strain at work: A new burnout facet relevant for the health of hospital staff. *Burnout Research*, 1(2), 69–75. https://doi.org/10.1016/j.burn.2014.07.002

Cheng, C. K. T., Chua, J. H., Cheng, L. J., Ang, W. H. D., & Lau, Y. (2022). Global prevalence of resilience in health care professionals: A systematic review, meta-analysis and meta-regression. *Journal of Nursing Management*, 30(3), 795–816. https://doi.org/10.1111/jonm.13558

Chidi, N. R., Adeniyi, N. a. O., Okolo, N. C. A., Babawarun, N. O., & Arowoogun, N. J. O. (2024). Psychological resilience in healthcare workers: A review of strategies and intervention. *World Journal of Biology Pharmacy and Health Sciences*, 17(2), 387–395. https://doi.org/10.30574/wjbphs.2024.17.2.0088

Ericsson, C. R., Lindström, V., Rudman, A., & Nordquist, H. (2022). Paramedics' perceptions of job demands and resources in Finnish emergency medical services: a qualitative study. *BMC Health Services Research*, *22*(1). https://doi.org/10.1186/s12913-022-08856-9

Fletcher, D., & Sarkar, M. (2016). Mental fortitude training: An evidence-based approach to developing psychological resilience for sustained success. *Journal of Sport Psychology in Action*, 7(3), 135–157. https://doi.org/10.1080/21520704.2016.1255496

Furnham, A., Richards, S. C., & Paulhus, D. L. (2013). The Dark Triad of Personality: A 10year review. *Social and Personality Psychology Compass*, 7(3), 199–216. https://doi.org/10.1111/spc3.12018

Fida, R., Watson, D., Ghezzi, V., Barbaranelli, C., Ronchetti, M., & Di Tecco, C. (2023). Is gender an antecedent to workplace stressors? A systematic review and an empirical study using a Person-Centred approach. *International Journal of Environmental Research and Public Health*, 20(8), 5541. https://doi.org/10.3390/ijerph20085541

Ináncsi, T., Láng, A., & Bereczkei, T. (2015). Machiavellianism and adult attachment in general interpersonal relationships and close relationships. *Europe's Journal of Psychology*, 11(1), 139–154. https://doi.org/10.5964/ejop.v11i1.801

Kessler, S. R., Bandelli, A. C., Spector, P. E., Borman, W. C., Nelson, C. E., & Penney, L. M. (2010). Re-Examining Machiavelli: A Three-Dimensional Model of Machiavellianism in the Workplace. *Journal of Applied Social Psychology*, 40(8), 1868–1896. https://doi.org/10.1111/j.1559-1816.2010.00643.x

Kowalski, C. M., Kwiatkowska, K., Kwiatkowska, M. M., Ponikiewska, K., Rogoza, R., & Schermer, J. A. (2018). The Dark Triad traits and intelligence: Machiavellians are bright, and narcissists and psychopaths are ordinary. *Personality and Individual Differences*, 135, 1–6. https://doi.org/10.1016/j.paid.2018.06.049

Klerks, M., Dumitrescu, R., & De Caluwé, E. (2024). The relationship between the Dark Triad and academic burnout mediated by perfectionistic self-presentation. *Acta Psychologica*, 250, 104499. https://doi.org/10.1016/j.actpsy.2024.104499

Láng, A., & Birkás, B. (2015). Machiavellianism and parental attachment in adolescence. *SAGE Open*, 5(1). https://doi.org/10.1177/2158244015571639

Louwen, C., Reidlinger, D., & Milne, N. (2023). Profiling health professionals' personality traits, behaviour styles and emotional intelligence: a systematic review. *BMC Medical Education*, 23(1). https://doi.org/10.1186/s12909-023-04003-y

Međedović, J., & Petrović, B. (2015). The Dark Tetrad. *Journal of Individual Differences*, 36(4), 228–236. https://doi.org/10.1027/1614-0001/a000179

Merrill, J. M., Camacho, Z., Laux, L. F., Thornby, J. I., & Vallbona, C. (1993). Machiavellianism in medical students. *The American Journal of the Medical Sciences*, 305(5), 285–288. https://doi.org/10.1097/00000441-199305000-00003

Musarra, G., Robson, M. J., & Katsikeas, C. S. (2022). Machiavellianism in alliance partnerships. *Journal of Marketing*, 87(2), 168–189. https://doi.org/10.1177/00222429221100186

Muñoz, L. C., Kerr, M., & Besic, N. (2008). The peer relationships of youths with psychopathic personality traits. *Criminal Justice and Behavior*, 35(2), 212–227. https://doi.org/10.1177/0093854807310159

Moinuddin, Raza, H., Shah, N., Nazir, N., & Ali, N. (2022, December 30). Assessing Resilience in Healthcare setups of Karachi using Connor Davidson Resilience Scale. https://ojs.njhsciences.com/index.php/njhs/article/view/339

Nieto, M., Visier, M. E., Silvestre, I. N., Navarro, B., Serrano, J. P., & Martínez-Vizcaíno, V. (2022). Relation between resilience and personality traits: The role of hopelessness and age. *Scandinavian Journal of Psychology*, 64(1), 53–59. https://doi.org/10.1111/sjop.12866

Odonkor, S. T., & Frimpong, K. (2020). Burnout among Healthcare Professionals in Ghana: A Critical Assessment. *BioMed Research International*, 2020, 1–8. https://doi.org/10.1155/2020/1614968

Orille, E., Steck, M. B., & Brannan, G. D. (2024b, October 6). Determinants of health. StatPearls - *NCBI Bookshelf*. https://www.ncbi.nlm.nih.gov/books/NBK608013/

Paulhus, D. L., & Williams, K. M. (2002). The Dark Triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36(6), 556–563. https://doi.org/10.1016/s0092-6566(02)00505-6

Rauthmann, J. F., & Will, T. (2011). Proposing a multidimensional machiavellianism conceptualization. *Social Behavior and Personality an International Journal*, 39(3), 391–403. https://doi.org/10.2224/sbp.2011.39.3.391 Grijalva, E., Newman, D. A., Tay, L.,

Ryland, H. (2020b). The Cambridge Handbook of Psychology, Health and Medicine Edited by Carrie D. Llewellyn, Susan Ayers, Chris McManus, Stanton Newman, Keith Petrie, Tracey Revenson and John Weinman 3rd edn.Cambridge University Press. 2019. £82.99 (pb). 900 pp. ISBN 9781316783269. *The British Journal of Psychiatry*, 216(3), 168–169. https://doi.org/10.1192/bjp.2020.12

Shafti, S. S. (2023). Machiavellianism: a critical appraisal. *Clinical Research and Clinical Trials*, 7(2), 01–04. https://doi.org/10.31579/2693-4779/126

Sendjaya, S., Pekerti, A., Härtel, C., Hirst, G., & Butarbutar, I. (2014). Are authentic leaders always moral? The role of machiavellianism in the relationship between authentic leadership and morality. *Journal of Business Ethics*, 133(1), 125–139. https://doi.org/10.1007/s10551-014-2351-0

Schyns, B., Braun, S., & Wisse, B. (2019). Dark personalities in the workplace. *Oxford Research Encyclopedia of Psychology*. https://doi.org/10.1093/acrefore/9780190236557.013.553

Schmitt, M., Gollwitzer, M., Maes, J., and Arbach, D. (2005). Justice sensitivity: assessment and location in the personality space. *Eur. J. Psychol. Assess*. 21, 202–211. doi:10.1027/1015-5759.21.3.202

Stafyla, A., Kaltsidou, G., & Spyridis, N. (2013). Gender Differences in work stress, related to organizational conflicts and organizational constrains: an Empirical research. *SSRN Electronic Journal*. https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2272958_code1379010.pdf?abstractid=2272958&mirid=3

Taber, K. S. (2017). The use of Cronbach's Alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Tabassum, S., Nizami, G. N., Ahmed, S. M., Asif, M., Rathi, H., & Muhammad Munaf, H. (2021). Work related stress among health care professionals in Karachi. *Journal of Physical Fitness, Medicine & Treatment in Sports*, 8(5). https://doi.org/10.19080/JPFMTS.2021.08.555747

Rutter, M. (2006). Implications of resilience Concepts for scientific understanding. Annals of the New York Academy of Sciences, 1094(1), 1–12. https://doi.org/10.1196/annals.1376.002

Rutter, M. (2012). Resilience as a dynamic concept. Development and Psychopathology, 24(2), 335–344. https://doi.org/10.1017/s0954579412000028

Alptekin, A., & Yakar, M. (2020). Determination of pond volume with using an unmanned aerial vehicle. *Mersin Photogrammetry Journal*, 2(2), 59-63.

Varshney, D. (2022). Machiavellianism, self-concept and resilience: do they affect employee performance? A moderated-mediated analysis. *International Journal of Productivity and Performance Management*, 72(7), 2093–2118. https://doi.org/10.1108/ijppm-06-2021-0348

Zhao, J., Xiao, S., Mao, J., & Liu, W. (2018). The buffering effect of machiavellianism on the relationship between role conflict and counterproductive work behavior. *Frontiers in Psychology*, 9. https://doi.org/10.3389/fpsyg.2018.01776.