

Systematic Review of the Personality Profile of Paramedics: Bringing Evidence into Emergency Medical Personnel Recruitment Policy

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Abstract

Aim: Because emergency medicine is extremely demanding and challenging for emergency medical personnel (EMP), it is important that the personality traits of EMP be understood. Few studies have addressed the personality traits that EMP should possess. The aim of this study was to systematically review the personality traits of EMP to establish a profile that can help identify individuals whose personalities are suited to prehospital emergency occupations.

Materials and Methods: Electronic databases, including MEDLINE, SCOPUS, CINAHL, and PsychINFO, with information accumulated from their conception to March 2015, were searched using the terms "personality," "trait," "rescue," "emergency," "medical," "services," "personnel," "paramedic," and "technician." The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement was followed in this review. Data extraction was performed by two authors who independently reviewed each article.

Results: Of 398 articles found, 27 were eligible for review. A total of 9,721 paramedics had participated in the selected studies. Nearly half of the studies were performed in the USA and Australia. The paramedics scored high in conscientiousness, sensation seeking, resiliency, and empathy but low in extroversion, neuroticism, and agreeableness.

Conclusion: While high conscientiousness and low neuroticism could be assumed to be protective factors against post-traumatic stress disorder among EMP, certain personality traits, such as conscientiousness, put them at risk of burnout. The personality traits of paramedics need to be further investigated in terms of role model traits and performance indicators related to personality traits.

Keywords: Personality, emergency, medical, services, paramedics

Introduction

Emergency medical services (EMSs) provide medical care for patients in life-threatening conditions in highly demanding, challenging, and interactive environments (1). In this context, emergency medical personnel (EMP) must have the ability to cope with emotionally challenging and stressful situations. Despite the many contextual variables that exist in emergency clinical practice (2), EMP have unique roles and responsibilities in dealing with stressful situations. Therefore, the personality traits of EMP have been the focus of a number of studies (3).

It would be advantageous to recognize personality traits that are congruent with emergency working conditions. Mitchell and Bray (4) indicated that a rescue person may score low in neuroticism and

openness to experience but high in extraversion, low openness to experience, high conscientiousness, high agreeableness, and sensation seeking. Although a typical "rescue personality" has been reported in several studies (3), few studies have concentrated on the personality traits of EMP (5, 6). These traits are associated with job performance criteria, particularly conscientiousness (7). Individuals with high conscientiousness may show higher competency or more extrovert ones may have higher social interaction than others, but both traits are necessary for EMSs. On the contrary, neuroticism would play an unconstructive role in chaotic emergency circumstances. In addition, a debate has arisen from studies addressing the issue of whether personality traits are homogenous among EMP (8). Wagner et al. (3) concluded that there is little evidence for a distinct personality type that is reflective of emergency service workers as a whole. Therefore,



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this disparity must be addressed so that the personality traits of EMP can be fully identified.

Emergency medical personnel are typically involved in disasters and traumatic events that could contribute to the development of post-traumatic stress disorder (PTSD) (9). As PTSD and burnout are recognized as serious issues among EMP (10, 11), it is vital to identify the personality traits of EMP that would help them cope effectively with stress so that psychological health could be maintained. To this end, Chng and Eaddy (11) investigated the relationship between sensation seeking and burnout, while Sheikhbardsiri (10) evaluated the relationship between personality traits and PTSD among EMP. Thus, there is a strong rationale for obtaining comprehensive insight into personality traits that cause an individual to be susceptible to psychological disorders, particularly PTSD.

To summarize, the significant role of EMP in EMSs, their multi-dimensional role in a decidedly interactive context, and the considerable occurrence of psychological disorders among EMP make it necessary to systematically review the personality traits of this group of workers to identify a personality profile that makes an individual suitable for prehospital emergency practice.

Materials and Methods

A literature review was performed to identify the personality traits of EMP. A search retrieved potentially relevant articles in electronic databases, such as MEDLINE, SCOPUS, CINAHL, and PsychINFO. The databases were searched from their conception to March 1, 2015, without any additional filters. The search terms used were "personality," "trait," "rescue," "emergency," "medical," "services," "personnel," "paramedic," and "technician." The procedures used in this review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement (12). Articles about the personality traits of EMP were included if they evaluated the personality of paramedics or emergency medical technicians or if they identified a "rescue personality." Studies that represented gray literature, congress abstracts, reviews, case studies, and duplicate publications were excluded. Two researchers independently reviewed the titles and abstracts of all papers identified in the primary search results. Disagreements were discussed by the researchers to reach a consensus. Relevant articles found in the reference lists of the retrieved papers were also searched for (Figure 1). If necessary, the authors of the research articles were contacted to retrieve supplementary information. The final articles were reviewed by the authors. Data extraction involved the two authors' independent reviews of each article and was based on country, instrument type, participants, sample size, and the results. The methodological rigor of the studies was also assessed. The authors reviewed the extracted data together and agreed on the results of the extraction of data and quality of each article (Table 1).

Results

Of 398 articles that were found, 27 were included in the final sample; a total of 9,721 paramedics had participated in the selected studies. Seven studies had been conducted in the US, six in Australia, two in Germany, two in Slovakia, and one each in South Africa, Austria, Canada, Sweden, Hungary, Iran, Norway, Romania, China, and England. Nine studies used researcher-constructed questionnaires, and the remaining studies used standardized instruments (Table 1).

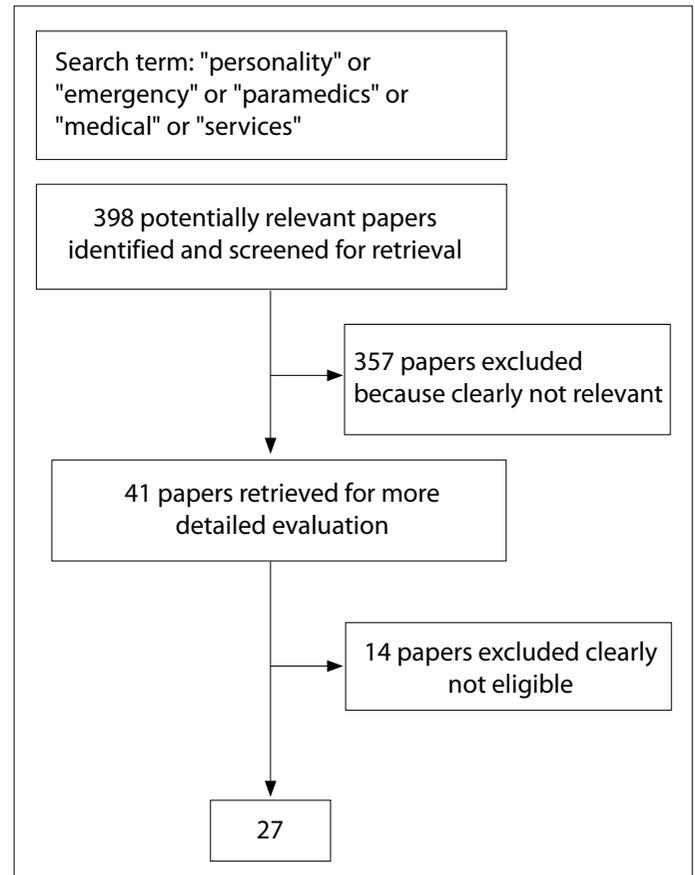


Figure 1. Results of the literature search and selection process

Big five personality and associated traits

Neuroticism: Traits related with neuroticism are being anxious, angry, emotional, worried, and insecure (7). EMP scored lower on neuroticism than the norm sample (5). Paramedics also scored significantly lower for neuroticism than other healthcare professionals (8). Among EMP, dispatchers had significantly higher scores than other groups for neuroticism, while ambulance drivers scored the lowest in this category (13). Furthermore, neuroticism was strongly related to the severity of stressors and to organizational conditions (14).

Extraversion: Traits related with extraversion are sociable, assertive, talkative, and active (7). EMP showed no differences in extraversion scores compared to the norm sample (5). Paramedics also scored significantly lower for extraversion than other healthcare professionals (8). Among paramedics, males were significantly less introverted than females (8), and it was possible to predict decision-making based on extraversion among male paramedics (6). The choice to join EMS was solely related to extraversion in comparison with firefighter jobs (15). Paramedic students scored lower for extraversion than other students in the university (16); high levels of anxiety and extraversion were negatively related to academic performance (17). Extraversion was also significantly related to the perceptions of post-traumatic growth (PTG) (18).

The sensation-seeking trait may also be associated with extraversion. EMP scored higher on risk and competition seeking than the norm sample (5, 12). Paramedics scored insignificantly lower on risk taking than other healthcare professionals (8). Paramedics who scored high on burnout also scored high on sensation seeking (19).

Table 1. Summary of findings extracted from the review literature on the personality profiles of paramedics

| Study | Participants | Instrument | Results |
|----------------------------------|--------------|--|---|
| Backus et al. (32) | 125 | Questionnaire about their beliefs and behaviors regarding their spirituality | EMP are interested to talk about their spiritual lives. Those EMTs with more active spiritual lives perceive themselves as happier. |
| Grevin (26) | 225 | MMPI-2 PK Scale | Both paramedics and paramedic students had significantly low scores on empathy. |
| Palmer and Spaid (19) | 91 | Standardized instruments | Burnout did not correlate with the overall sensation-seeking scale. |
| Chng and Eaddy (11) | 425 | Arnett's Inventory of Sensation Seeking and Revicki's Work-Related Strain Inventory | EMP had significantly higher sensation-seeking scores than the general public, but this dimension alone does not protect them from the effects of burnout. |
| Reich (38) | 31 | Adjective checklist and 23-item social identities questionnaire | EMT now/real me was significantly correlated with activity. EMT future/real me and EMT future/ought me were both significantly correlated with commitment. |
| Brown et al. (39) | 361 | 46-item core survey and a 16-item survey | Being able to help others was the most important and satisfying aspect of work life of EMP. |
| Regehr et al. (34) | 86 | The Bell Object Relations and Reality Testing Inventory (BORRTI) | EMP with personality patterns characterized by suspiciousness, hostility, and isolation and who had a tendency toward demanding, controlling, and manipulative behavior in relationships were more likely to have taken a mental health stress leave. |
| Fannin & Dabbs (2003) (15) | 195 | Questionnaires | EMS performance was predicted by extraversion. EMS performance was related to an interaction of testosterone with conscientiousness. |
| Jonsson and Segesten (23) | 362 | Professional Self-Description Form (PSDF) | Stress tolerance, consideration, and flexibility had the highest rank among the 21 self-description items named by ambulance personnel. |
| Kilner (31) | 34 | Questionnaire | Honesty, patient-centered approach and having caring, empathic and values life from technician's viewpoint. |
| Louria (17) | 53 | 16 Personality Factor Questionnaire (the 16 PF) | Five factors were found to be significant in relation to academic achievement on this course. These included abstract, verbal reasoning, levels of anxiety, levels of extraversion, work methods, and year level of study. |
| Shakespeare-Finch et al. (18) | 526 | Questionnaire | Correlations revealed that extraversion, openness, agreeableness, conscientiousness, and coping levels significantly relate to perceptions of PTG. |
| Mitmansgruber et al. (20) | 239 | Meta-emotion scale, Mindful attention and awareness scale, positive affectivity and negative affectivity scale | Meta-emotions would allow for a meaningful differentiation of processes in emotion regulation. Experiential avoidance is consistently negatively correlated with well-being. |
| Sterud et al. (14) | 1180 | Basic Character Inventory | Neuroticism was related to higher severity scores in all stressor dimensions except for time pressure. Neuroticism was related to both severity and frequency of lack of support from co-workers and leaders. |
| Pajonk et al. (8) | 245 | Hamburg Personality Inventory (HPA) | Results revealed differences for nervousness, extraversion, control, and altruism but not for openness and risk taking. |
| Pilarik and Sarmany-Schuller (6) | 92 | The Iowa Gambling Task, EQTM map, Stroop test, Rational-Experiential Inventory, NEO-FFI questionnaire | In men, it was possible to predict appropriate decision-making based on emotional stability, extraversion, and quick reactions. Appropriate decision-making of female paramedics could be predicted based on two zones of emotional intelligence (low emotional awareness and positive current conditions) and on quick reactions in the Stroop test. |
| Abedi et al. (16) | 492 | The NEO-Five-Factor Inventory (NEO-FFI) | Paramedical students were more introverted than others. |

Table 1. Summary of findings extracted from the review literature on the personality profiles of paramedics (continued)

| | | | |
|------------------------------------|------|---|--|
| Gayton and Lovell (24) | 219 | The 10-item Connor–Davidson Resilience Scale | These results showed that higher resiliency was significantly associated with better general health and well-being. |
| Williams et al. (27) | 783 | Medical Condition Regard Scale (MCRS) | Females had higher mean scores than males on each medical condition, supporting the multitude of empathy studies in healthcare students, where females were identified as being more empathetic than their male counterparts. |
| Williams et al. (28) | 783 | Jefferson Scale of Physician Empathy–Health Profession Students | Females had greater mean empathy scores than males: 108.69 vs 103.58 ($p=0.042$). |
| Jurišová and Sarmány-Schuller (22) | 134 | Melbourne Decision-Making Questionnaire, MDMQ, Questionnaire SPARO | Significant relationships between components and factors of mental integration (emotional and regulatory invariability, lower mental arousal) were found. Their integration forms a “calm, mentally stable and resilient personality type.” |
| Klee and Renner (5) | 173 | Critical Incident Stress Debriefing, Hamburg Personality Inventory | EMS personnel scored lower on neuroticism and openness but higher on conscientiousness and risk and competition seeking than a norm sample. EMS personnel showed lower scores for agreeableness and no differences for extraversion. EMS volunteers did not differ from EMS professionals regarding personality, except for the degree of extraversion. |
| Niculita (13) | 458 | The Big Five®plus Personality Inventory, Sensation Seeking Scale | The results revealed a series of significant personality differences among professional groups of ambulance workers. The high-level performance dispatchers group showed significant differences from the low-level performance group of the same category regarding their scores to the following personality scales and subscales: conscientiousness, self-efficacy, and achievement striving. |
| Fjeldheim et al. (25) | 131 | Connor–Davidson Resilience Scale (CD-RISC) | Participants meeting PTSD criteria also had significantly lower levels of resiliency and social support. Participants meeting criteria for PTSD had significantly higher rates of depression, perceived stress, and physical health symptoms and significantly lower rates of resiliency and social support. |
| Sheikhbardsiri (10) | 180 | The NEO Five-Factor Inventory and the Mississippi combat-related PTSD scale | PTSD of EMP was significantly correlated with personality traits of conscientiousness and neuroticism. |
| Williams et al. (29) | 1719 | Jefferson Scale of Physician Empathy – Health Profession Students’ version (JSPE-HPS) | Empathy did not decline during course progression with third-year students recording the highest mean empathy score across all 3 years. |
| Williams et al. (30) | 554 | Jefferson Scale of Physician Empathy – Health Profession Students’ version (JSPE-HPS) | Overall, self-reported empathetic regard for each medical condition included intellectual disability, substance abuse, attempted suicide, and acute mental illness. For students as a whole, mean scores generally improved over their course as they progressed through their degree. This study found that compared to males, females generally have a higher regard for patients presenting with intellectual disability, substance abuse, and attempted suicide. |

Among firefighters, the preference for firefighting over EMS work was predicted by the characteristic of fearlessness (15).

Openness to experience: Traits related with openness to experience are being imaginative, cultured, curious, broad-minded, and artistically sensitive (7). EMP scored lower on openness than the norm sample (5). The review also indicated that there was no difference between paramedics and other healthcare professionals in terms of openness to experience (8). Ambulance worker professional groups scored lower on openness to experience than doctors (13). Among firefighters,

individuals who preferred firefighting over EMS work were predicted by low scores for openness to experience (15). Perceptions of PTG were significantly related to openness to experience (18). Experiential avoidance related to lower scores for openness to experience was consistently negatively correlated with well-being among EMP (20).

Conscientiousness: Traits related with conscientiousness are being careful, thorough, responsible, and organized (7). EMP scored higher on conscientiousness than the norm sample (5, 21). Conscientiousness was significantly related to perceptions of PTG (18). Resilien-

cy related positively to conscientiousness and negatively to neuroticism. Consequently, 50–70% of EMP could be characterized as resilient (8). Conscientiousness was due to the integration of emotional and regulatory invariability and lower mental arousal (22). Stress tolerance ranked highest among the 21 items in ambulance personnel's self-description measuring ambulance attendants' perceptions of personality (23). Higher resiliency scores were significantly associated with better general health and well-being (24). Participants meeting PTSD criteria also had significantly lower scores for resiliency (25).

Agreeableness: Traits related with agreeableness are being flexible, trusting, cooperative, forgiving, and tolerant (7). EMP had lower scores for agreeableness than the norm sample (5). Among firefighters, the preference for firefighting over EMS work was predicted by a low score for the characteristic of agreeableness (15). Agreeableness significantly related to perceptions of PTG (18). Altruism scores were also high among paramedics, the difference being significant only in comparison with doctors (8). Both paramedics and paramedic students had significantly low scores for empathy (26). However, female paramedic students were identified as being more empathetic than their male counterparts (27–29). In general, empathy levels either declined (27) or improved (28, 29, 30) as students progressed through their coursework programs. Paramedic students (in response to empathy for medical conditions) scored the lowest for substance abuse and the highest for intellectual disability (27). Honesty is one of the dimensions of the HEXACO (honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, and openness to experience) personality model, and some of the characteristics categorized under honesty-humility are incorporated into the big five's agreeableness factor. Honesty was the most important characteristic reported by EMP (31). EMP are spiritual but not more so than the average civilian, and EMP with more active spiritual lives perceive themselves as happier (32). Although help is not a personality trait, helping behavior or prosocial behavior is also related to the big five traits, particularly to agreeableness. EMP reported that being able to help others was the most important and satisfying aspect of their work.

Discussion

Paramedics have been shown to score high for conscientiousness (5, 22). This means that they make every effort to be extremely thorough when administering EMSs (4). Life-threatening conditions require the attention of organized and responsible personnel, indicating that conscientiousness is a vital trait for paramedics. In addition, there is a significant difference in the key trait of conscientiousness between high- and low-level performance groups of dispatchers (13). Therefore, conscientiousness is recognized as an essential trait for EMP. However, the trait of conscientiousness may occasionally put paramedics at a disadvantage. Penterman et al. concluded that workers who score high on conscientiousness are sometimes inflexible in their responses during patient interactions, so the patient might quickly become irritated (21). It has also been reported that PTSD is significantly correlated with the personality trait of conscientiousness; however, this result requires further investigation (11).

It has also been shown that paramedics score high on sensation seeking (5, 12, 19). Due to the varied, new, complex, and intense situations that exist in the clinical practices of EMP, it would appear that the trait of sensation seeking is fitting in individuals who assume paramedic roles. Sensation seeking has been recognized as a common trait in rescue workers (4). Chng and Eaddy (11) showed a weak correlation between sensation seeking and burnout; however,

Palmer and Spaid showed that, overall, burnout is not correlated with sensation seeking (19).

Paramedics had low scores for neuroticism (5, 8). As Mitchell and Bray (4) indicated, people involved in rescue work may benefit from a calm and measured attitude (low neuroticism). Emotional stability is vital for paramedics who are involved in life-threatening medical situations in daily clinical practice (5), where they are required to remain controlled in many emergency situations and feel secure. Low neuroticism may indicate that paramedics are using effective coping mechanisms in response to stressful situations (19). In addition, neuroticism is significantly correlated with PTSD in EMP (11). It should be noted that these traits are not homogenous for all EMP. In contrast, dispatchers scored higher in neuroticism. Niculita mentioned that this might be related to their inability to stabilize a caller's situation or to provide the necessary assistance (13). Therefore, it is vital to implement effective interventions to lessen the effects of PTSD, particularly among dispatchers (33). As PTSD is significantly associated with lower levels of resiliency (34) and as resiliency relates positively to conscientiousness and negatively to neuroticism (8), resiliency should be considered as a protective trait for EMP.

Paramedics scored lower in extraversion (8). Although being introverted may seem to prevent the engagement of paramedics in intense personal interactions, being sociable, talkative, and active have been reported as appropriate traits for paramedics and for all individuals involved in rescue operations and engaged in daily interaction and communication with people (4). Several studies have confirmed that extraversion is one of the personality traits negatively associated with burnout (35). In addition, a tendency to be more optimistic may result in extroverted paramedics experiencing more feelings of satisfaction with their work (36).

Paramedics have also shown lower scores in openness to experience and agreeableness (5, 8). Mitchell and Bray (4) indicated that high agreeableness and low openness are optimal personality traits for rescue workers. Empathetic, highly dedicated, and a strong need to rescue others are key traits of the role models of paramedics (8, 36). Klee and Renner (5) discussed the discrepancy between low agreeableness and empathetic attitude, which may be related to the construct validity of the personality scales. Paramedics did not show imaginative and independent personalities (5, 8). This trait may be instrumental in their ability to precisely follow routines and procedures. Thus, it may be assumed that paramedics are resistant to new experiences.

Personality traits are related to burnout (37). Chng and Eaddy (11) reported that there may be no relationship between sensation seeking and burnout among EMP in spite of the weak positive correlation, so sensation-seeking or extroversion traits may not protect EMP from burnout. However, Sheikhbardsiri (10) showed that conscientiousness and neuroticism were significantly correlated with the Mississippi combat-related PTSD scores, suggesting that these personality traits accelerate burnout. These findings have been confirmed by Alarcon et al. (37), who meta-analytically indicated that neuroticism, extraversion, and conscientiousness are related to burnout.

Emergency medical personnel personality traits are congruent with professional practice in accordance with contemporary factor models for personality. The personality traits of EMP suffer from limited evidence and require further investigation, particularly to elucidate the association of the identified traits with certain critical disorders, such as PTSD and burnout (38, 39). Our review is limited due to the absence of randomized clinical trials in the field of personality traits of EMP and their association with work performance and professional proficiency, so a more rigorous design method is recommended.

Conclusion

Paramedics score high in conscientiousness, sensation seeking, resiliency, and empathy, but low in extroversion, neuroticism, and agreeableness. While high conscientiousness and low neuroticism could be assumed to be protective traits against PTSD in EMP, certain personality traits, such as conscientiousness, that help paramedics provide patients with secure medical service, also put them at risk of burnout. Further investigations into the personality traits of paramedics' role models and performance indicators related to personality traits is required.

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