Personality, depressive symptoms and prior trauma exposure of new recruits at two Metropolitan Police Service academies in South Africa

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Background. Police officers are predisposed to trauma exposure. The development of depression and post-traumatic stress disorder (PTSD) may be influenced by personality style, prior exposure to traumatic events and prior depression.
Objectives. To describe the personality profiles of new Metropolitan Police Service (MPS) officers, and to determine the association between personality profiles, trauma exposure and depressive symptoms.
Methods. We performed a cross-sectional analysis of 139 new recruits at two MPS academies in South Africa. A questionnaire elucidating traumatic life events and personality profiles was developed using the Millon Clinical Multiaxial Inventory-III (MCMI-III). Depressive symptoms were measured using the Hamilton Depression Rating Scale (HAMD).
Results. Almost all subjects (99.3%) had previous trauma exposure, most commonly the unexpected death of a loved one and motor vehicle accidents. Prevalence of clinical depression was low (mean HAMD 3.57; standard deviation ±3.37). Personality characteristics revealed a high prevalence of anxiety (64.7%; 95% CI 56.8 - 72.6), depressive clinical patterns (34.5%; 95% CI 26.6 - 42.2), paranoia (33.1 %; 95% CI 26.6 - 42.2) and major depression (10.3%; 95% CI 5.1 - 15.1). There were no significant associations between any of the traumatic events and depressive symptoms, nor were there any significant associations between any of the personality variables and HAMD score ($p>0.05$).
Conclusion. The presence of depressive symptoms among MPS officers was low, with no significant associations between traumatic events, personality variables and depressive symptoms.

While traumatic stress studies have been undertaken in the South African Police Service (SAPS),[1,2] there are few data related to traumatic events experienced by policemen of the Metropolitan Police Service (MPS) – a branch of SAPS concerned with law enforcement on the road. Similar to other disaster workers, these policemen are expected to be at increased risk of acute stress disorder, depression and post-traumatic stress disorder (PTSD). According to Fullerton *et al.*,[3] disaster workers are seeking care for emotional problems at an increased rate.

In the general population, risk factors for the development of PTSD and depression following trauma exposure include factors such as previous trauma exposure, previous PTSD and personality disorders.[4] Yehuda[5] postulated that previous trauma exposure and subsequent development of PTSD may have something to do with biological responses that are sensitised following initial trauma. Phelps *et al.*[6] conceptualised that in PTSD there is inadequate processing of trauma memories. This, together with negative cognitive appraisals at the time of the trauma, may lead to non-integration and encapsulation of the memories.

With repeated exposure to traumatic events, these memories are stimulated and may lead to recurrent PTSD symptoms.[6]

Gender, although not well researched in emergency services, is a consistent risk factor in the general population, with female subjects being more vulnerable.[7] Recent studies add further support to the notion that traumatic events increase vulnerability to a range of psychiatric disorders.[8,9] Furthermore, pre-trauma risk factors are shared across different anxiety and depressive disorders. Patients with partial rather than full PTSD often have their

post-traumatic symptoms subsumed within another anxiety or depressive diagnosis. There is also increasing evidence that clinicians should be cognizant of the possible role of traumatic experience in the cause of patients with diagnoses other than PTSD.[10]

As is the case with civilians, experience of trauma is necessary but insufficient in itself to explain the development of post-trauma reactions in police officers. Personality characteristics, including rigidity, increased personal restriction and cynicism, may develop in police officers as a 'survival personality'. Personality styles that are considered particularly vulnerable to the stresses of police work have been defined: 'somatising, paranoid, histrionic, passive-aggressive, and obsessive-compulsive.'[11]

According to Carlier et al.[12] and McFarlane,[13] personality dimensions such as neuroticism and, to a lesser extent, introversion, as well as previous psychiatric history, are risk factors for psychopathology. While personality inventories such as the Minessota Multiphasic Inventory (second version) (MMPI-2)[14] and the Inwald Personality Inventory (IPI)[15] have been used to predict which personalities cope better in police forces, there have been no documented cases of the use of a scale that measures psychopathology such as the Millon Clinical Multiaxial Inventory-III (MCMI–III). Since the MPS academy does not make use of any personality assessment during recruitment, and there may be associations between personality pathology and depression following trauma exposure, it was appropriate to consider the personality profiles of those that enter the MPS and ascertain lifetime trauma exposure at that point, prior to duty-related trauma exposure.

We aimed to ascertain whether an association exists between sociodemographic profiles, personality characteristics and previous trauma exposure and depressive symptoms on entry into the MPS academy.

Method

Permission was obtained from the Chief of the MPS, as well as the head of the academy of two MPS academies in Gauteng Province. The protocol was approved by the Human Research and Ethics Committee of the University of the Witwatersrand (no. M050301). All new cadets were invited to participate in the study, with recruitment in the first week of course commencement. Volunteers gave written, informed consent to participate.

Measures

A brief questionnaire was administered, aimed at eliciting a demographic profile of the subjects, as well as the 17-item Hamilton Depression Rating Scale (HAMD) – an objective rating scale that assesses depressive symptoms. According to Bech,[16] the standardisation of the HAMD in relationship to depression is: 'no depression' (0 - 7), 'minor depression' (8 - 12), 'less than major depression' (13 - 17), 'major depression' (18 - 29), and 'more than major depression' (30 - 52).[16] A section of the PTSD clinician-administered rating scale (CAPS)[17] was used to assess lifetime exposure to traumatic events prior to entry into the MPS force (i.e. non duty-related). To assess personality dimensions, the MCMI-III was administered. The inventory consists of 150 statements to which true/false answers are required. It establishes clinical patterns, severe personality pathology, clinical syndromes and severe syndromes that fit into *Diagnostic and Statistical Manual of Mental Disorders* (fourth edition, text revision) (DSM-IV-TR) categories.

The standard score used by the MCMI-III is the base rate (BR). This takes into account the prevalence of the particular characteristic within the standardising population, so that the same BR score would place the individual in the same relative position in the standardising population as one move from one scale to the next. A BR of 75 is the anchor point for definite presence of the particular characteristic being measured, whereas a BR of 85 is the point at which the characteristic in question is the most predominant characteristic for the individual. The profile is deemed invalid if there are ≥12 omitted or double-marked items. This inventory is particularly useful in identifying personality disorders.[18] In this study, a BR>74 was recorded, indicative of possible pathology.

The inventory also has built-in modifier scales – disclosure (*x*), desirability (*y*) and debasement (*z*) – constructed to identify distorting tendencies which characterise subjects and their responses.[18] The disclosure scale was designed to identify people who may be unusually self-revealing of information of a personally sensitive nature or who are particularly reticent, withholding and secretive in this regard. A BR>74 reflects an unusually open and self-revealing attitude. An elevation of the *y*-scale (desirability) elevation (BR >74) indicates an attempt to place oneself in a pleasing and favourable light. The *z*-scale (debasement) reveals the extent to which the results have been influenced by the person's attempts to appear more troubled by emotional and interpersonal problems than might have been evaluated objectively.

Statistical analysis

Data were analysed using SAS statistical software (version 9.1). Results were expressed as means with standard deviation (SD) or medians (with range) for scores of non-normal distribution. Categorical variables were presented as frequencies, percentages and 95% confidence intervals (CIs). A Wilcoxon-Mann-Whitney test was used to determine associations between personality variables and HAMD scores. Significance was assumed at a two-sided *p*-value <0.05.

Results

One hundred and forty-five recruits volunteered to participate in the study. The demographic data and personality profiles of all subjects were ascertained. Data from 139 subjects were used in the analysis; 6 subjects did not complete the HAMD and the trauma exposure portion of the PTSD, and were therefore excluded.

Sociodemographics

The demographic profile of the participants is presented in Table 1: the majority (51.8%) were females; 51% had at least a grade 12 level of education; more than half the sample (51.0%) admitted to alcohol use; and the majority (80.0%) were smokers. A history of psychiatric problems was present in 3.5% (95% CI 0.5 - 6.7) of the cohort. There was a history of suicide in the family in 7.2% (95% CI 2.9 - 11.5) and a family history of alcoholism in 19.4% (95% CI 12.8 - 26.0). With regard to previous contact with mental health services, 10.8% (95% CI 5.6 - 16.0) of the police officers had previously consulted a psychiatrist or psychologist (Fig. 1).
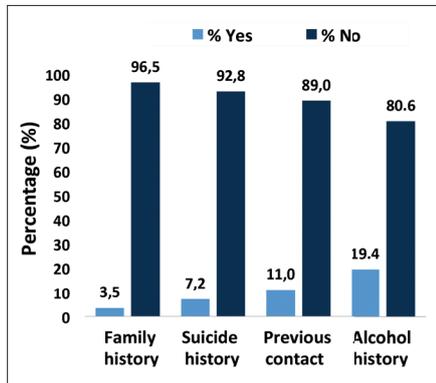
Fig. 1. Family history and previous contact with psychological services.

Personality profiles

Fig. 2 represents the personality profiles of the participants, including clinical patterns, severe personality pathology, clinical syndromes and severe syndromes, categorised as per the inventory in terms of rates of the modifier scales (disclosure, debasement and desirability). Six profiles were invalid. With regard to the modifier scales, a BR>74 was evident in 61 (43.9%; 95% CI 35.6 - 52.2), 35 (25.2%; 95% CI 18.0 - 32.4) and 26 (18.7%; 95% CI 12.2 - 25.2) subjects for the x-, y- and z-scales, respectively (Fig. 2a).

Of note was the high percentage of depressive (34.5%; 95% CI 26.6 - 42.2) clinical patterns (BR >74). For severe personality pathology scales, 33.1% (95% CI; 25.3 - 40.9) had a BR>74 in

the paranoid category. Anxiety was the most common clinical syndrome (64.7%; 95% CI 56.8 - 72.6). Only 14 policemen, 10.1% (95% CI 5.1 - 15.1) had major depression (Fig. 2a - d).

Trauma exposure

One hundred and thirty-eight (99.3%) participants had experienced at least one traumatic event in their lifetime. Fifty-five (39.6 %; 95% CI 31.5 - 47.7) had experienced only one event, meaning that a greater number of subjects (83; 59.7%; 95% CI 49.7 - 69.7) had experienced ≥2 events. The most common traumatic event was experiencing the unexpected death of a loved one (46.8%; 95% CI 34.6 - 58.9), followed by experiencing a motor vehicle accident (MVA) (25.9%; 95% CI 18.6 - 33.2) (Table 2).

HAMD

The majority of the subjects had HAMD scores in the 'no depression' category (122; 87.8%; 95% CI 82.4 - 93.2). Scores were distributed as follows: 13 (9.4%; 95% CI 6.9 - 11.8) in the 'minor depression' category, 3 (2.16%; 95% CI -0.26 - 4.57) in the 'less than major depression category', and only 1 (0.7%; 95% CI -0.68 - 2.12) in the 'major depression' category (Fig. 3). The scores ranged from 0 to 18 with a mean of 3.57 (SD ±3.37). There were no significant associations in scores for any of the sociodemographic factors (p>0.05). In addition, depressive symptoms
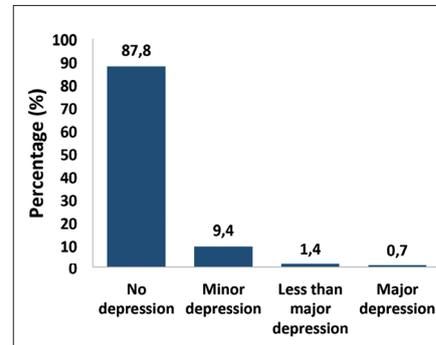

Fig. 3. HAMD scores of subjects upon entry in the MPS.

in the participants were not associated with traumatic events (p>0.05) or personality characteristics (p>0.05).

Discussion

The MPS, established in 2001 as a branch of the SAPS, is concerned with law enforcement on the road. Duties include road trafficking, the control of the traffic flow, and attendance to road emergencies such as MVAs, where MPS officers are often the first to arrive at the scene. MPS training involves a 6-month period of theoretical application/study and practical experience on the road. Upon successful examination, each officer undergoes a 6-month attachment to the SAPS. During this period, they may be exposed to a greater variety of traumas, such as violent crimes and crime scenes.

Every 6 months, the academy receives >1 000 applicants to the course, of which only 120 - 200 are chosen. The selection process consists of:

- screening for a criminal record (fingerprint check)
- confirmation of a valid matriculation certificate and driver's licence
- a physical endurance test, comprising a 2 km run and basic exercises (e.g. push-ups and sit-ups)
- passing a basic literacy test
- passing a driving competency test
- meeting medical fitness requirements, as specified by an outside practitioner
- no psychometric tests are administered.

Plans are underway to extend the training period from 6 months to 1 year, with the attachment to SAPS occurring after 1 year – due to growing concerns about the quality of MPS officers being trained, owing to an
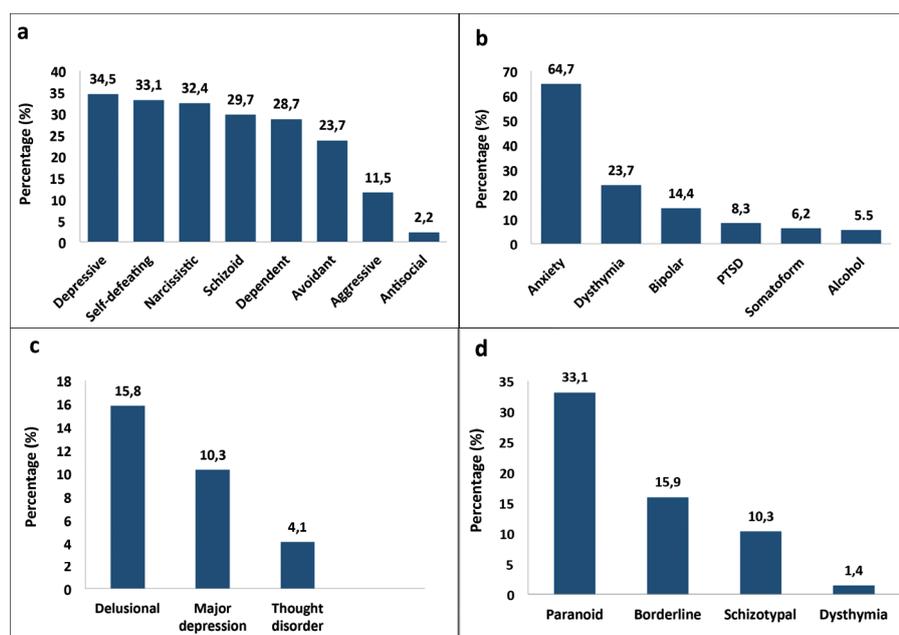

Fig. 2. MCM-III – distribution of (a) clinical patterns, (b) clinical syndromes, (c) severe syndromes, and (d) severe pathology.

inadequate length of time spent learning important theoretical aspects. Some of the theory includes a working knowledge of bylaws, firearm handling, policies and other legislature related to policing on the roads.

The results indicated that, despite high lifetime trauma exposure, depressive symptoms were not very prevalent in the sample. The most common trauma was experiencing the unexpected death of a loved one, followed by experiencing an MVA. These were not significantly associated with depressive symptoms. Similar to previous findings,[11] there were a high number of pathological personality characteristics, such as anxiety, paranoia and depressive clinical patterns according to the MCMI-III. However, there were no significant associations between any of these personality characteristics and the HAMD score.

The sample was equally distributed in terms of gender. This was unusual, given that males typically dominate police services. However, there could be several reasons for this. Firstly, since this was the MPS, not the general police services, females may have been more drawn to this police force as it deals with a specific area of policing. The study took place at a time when South Africa (SA) was preparing for the Federation of International Football Association (FIFA) world cup to be held in 2010 and there was a strong drive to employ as many people as possible to fulfil security needs. Thirdly, this could be a reflection of the unemployment rate in SA, with many women undertaking training where they may be assured of benefits and a possible career.

The mean age of the sample (29.5 years; SD ±6.35) may reflect that this was not the first job for many – 77.0% of the subjects were previously employed. The majority (99.3%) had obtained at least a grade 12 (matric) level of education, with 48.3% having attained some sort of post-matric education. All of this imparts life experience and hence exposure to traumatic events in a society that has documented high levels of crime and violence. The trauma history exposure confirmed this, with 99.3% having been exposed to at least one traumatic event in their lifetime.

Of concern was the number of subjects who admitted to regular alcohol use (53.9%). This could have implications for their coping style in the face of future trauma exposure. A study which evaluated police officers at recruitment, or shortly thereafter, and again 2 years later, showed significant changes using the MMPI-2.[19] There were suggestions of increasing somatic symptoms, anxiety and alcohol vulnerability. The increased vulnerability to alcohol abuse was the strongest finding, and by the fourth year of service, mean MacAndrews Alcoholism Scale scores were within the critical range.[19]

Other important sociodemographic variables are noted in the literature as risk factors for the development of both depression and PTSD, including family psychiatric histories (e.g. alcoholism and suicides) and prior contact with psychological services.[4,5,20] In this study, subjects presented with a family history of psychiatric disorders (n=5), suicides (n=10) and alcoholism (n=27). Fifteen subjects had previous contact with psychological services, raising the question of mental wellbeing in this sample, as well as prior trauma exposure and considerations of responses to future traumatic events in the context of duty.

According to Millon et al.,[18] the MCMI-III is not a general personality instrument to be used for normal populations. However, it may be used for diagnostic screening.[18] The instrument is likely to over-pathologise and tends to produce false-positives when used in non-clinical populations. Results should therefore be interpreted with caution. The profile that typifies the defended normal respondent includes spurious elevations of narcissistic, histrionic and compulsive scales.[6] The results indicate that most of the officers answered the questions honestly, with only 6 profiles being invalid.

There were elevations of anxiety in 64.8% of subjects, raising the question of whether this was a spuriously anxious group or whether the clinical picture was due to trauma already experienced, or due to the impending course and expected trauma exposure. However, only 12 subjects had a BR>74 for the PTSD clinical syndrome scale, despite the high rates of trauma exposure. Alcohol dependence was also elicited on the MCMI-III scale in one subject, whereas 51% admitted to alcohol use when answering the questionnaire. This could be due to under-reporting in the MCMI-III. These discrepancies highlight

Table 1. Sociodemographic profile of the MPS officers	
Age (years), mean±SD	29.5 ±6.35
Gender, n (%)	
Female	72 (51.8)
Male	67 (48.2)
Race, n (%)	
Black	108 (77.7)
White	16 (11.5)
Coloured	15 (10.8)
Level of education, n (%)	
<Grade 12	1 (0.7)
Grade 12	71 (51)
>Grade 12	67 (48.3)
Previously employed, n (%)	107 (77)
Smoker, n (%)	111 (80)
Alcohol use, n (%)	75 (53.9)
Other substance use, n (%)	2 (1)

Table 2. Traumatic events experienced prior to entry into the police force	
Trauma	n
Unexpected death of loved one	65
Experienced MVA	36
Victim of assault	10
Loved one with life-threatening illness or injury	10
Traumatic event experienced by close other*	9
Victim of rape	9
Witnessed injury or death	7
Witnessed MVA	6
Victim of partner violence	5
Political trauma (civilian in war)	4
Life-threatening illness	4
Political trauma (combat)	3
Natural disaster	3
Man-made disaster	2
Victim of other sexual assault	1

MVA = motor vehicle accident.
*Other than life-threatening illness or injury.

the challenges of using the MCMI-III in this population. In as much as the MCMI-III correlates with the DSM-IV-TR, it is a personality inventory and may be deficient in assessing Axis I pathology such as an anxiety disorder (e.g. PTSD), as well as alcohol abuse and dependence. As its original use

was intended for a 'sick' population, perhaps specific measures of coping styles would have been more appropriate to use.

Despite these limitations, certain personality styles were apparent in the population. Bearing in mind that the participants were police officers who may undergo potentially traumatic duty-related events, this may influence the way that they cope with duty-related traumatic events. It would be useful for the MPS to consider some form of personality/coping style inventory such as the IPI, which is an established police officer screening tool, to assist recruitment.[14] Exposure to trauma is common, with 39 - 90% of the population exposed to at least one lifetime trauma.[21] SA is particularly burdened with high levels of crime; notably, 61.1% of subjects had been exposed to more than one traumatic event. For police officers, the exposure to traumatic stressors is greater than in the rest of the population, and like other emergency personnel, they are not immune to developing PTSD.[12]

MVAs – personally experienced or witnessed prior to entry into the MPS programme – emerged as one of the most common types of trauma experienced by the subjects. The unexpected death of a loved one as a traumatic experience was the only category experienced more than MVAs. Personal life stressors and their effect on job performance is an area where intervention may be sought in this population. MVAs are particularly notorious on roads in SA; therefore, it is expected that the MPS officers would be exposed to many MVAs. Whether these would be experienced as traumatic, and whether the police officers would develop psychopathology such as depression and PTSD remains to be determined prospectively.

Despite the high levels of trauma exposure, HAMD scores were not high, with only one subject in the 'major depression' category. The significant difference between males and females at baseline (females scored higher for depression) is not unusual, given that females tend to have higher rates of depression in general.[22] Further research is indicated to ascertain how MPS officers cope with duty-related traumas and whether traumas experienced prior to entering the police force affect the development of depressive and PTSD symptoms with new traumatic events.

Study limitations

This study was limited by the cross-sectional design, small sample size and lack of PTSD measures. In addition, a personality inventory designed to assess coping style might have been more relevant, rather than one designed to assess psychopathology. Follow-up studies investigating responses to duty-related trauma in this population are recommended.

Conclusion

We confirmed high rates of trauma exposure in a population that will be exposed to trauma in their duties. We illustrated that the population of men and women that enter the MPS are not without 'baggage' in terms of alcohol use, high levels of anxiety and prior contact with psychological services. Since these are risk factors for psychiatric disorders such as depression and PTSD, it would be interesting to ascertain whether these officers do experience these disorders in response to duty-related traumatic exposure over time. Recommendations can then be made to the management with regard to the MPS selection process and interventions to be employed.

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