SCIENCES

PAPER

PSYCHIATRY AND BEHAVIORAL SCIENCES

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Psychopathy and Mortality*

ABSTRACT: It is not known how mortality differs between psychopathic and nonpsychopathic individuals. We linked data from subjects having been in forensic mental examinations at Niuvanniemi Hospital during 1984–1993 to the data from the National Death Registry to estimate the association between psychopathy and mortality. One hundred psychopathic individuals scoring 25 or higher in the PCL-R scale were followed up for 20–30 years. Two control groups were used as follows: 178 offenders scoring less than 25 on the PCL-R, and sample of general population drawn from the Finnish National Statistics database. Results reveal that psychopaths die younger than the general population, and the causes of death are more violent than in the nonpsychopath control group. There was a significant positive correlation between PCL-R score and mortality, and the mortality among psychopaths was about fivefold when compared with general population.

KEYWORDS: forensic science, psychopathy, mortality, causes of death, PCL-R, unnatural death

Psychopathy is a complex and multidimensional personality disorder characterized by an antisocial lifestyle, and it has a strong association with violence and crime (1,2). Although a significant amount of research has been conducted to gain better understanding of this phenomenon, the developmental trajectory and different outcomes of psychopathy have been rarely investigated. Many studies have established the association between premature death and antisocial personality disorder (3), and many previous studies have established the association between antisocial behaviour and premature death by accidents, violence, suicides, and substance abuse. Shepherd et al. (4) found that death and disability by age 48 were strongly associated with antisocial behaviour at ages 8–10 and 27–32, convictions, and impulsivity during adolescence. Piquero and colleagues (5), using the same material found that high-rate chronic offenders had a high risk of being registered disabled and hospitalized, and Repo-Tiihonen et al. (6) found that the mortality rate of criminal offenders up to the age of 50 years with antisocial personality disorder (ASPD) was five to nine times that of the normal population. Psychopathic traits pose a risk for impulsive behaviour, unnecessary risk taking, and careless lifestyle, all of which may be deleterious and have negative effects on the life expectancy of a psychopathic person. However, it is not known how the mortality differs between psychopathic and nonpsychopathic individuals. Our aim was to examine whether the degree of psychopathy has effect on mortality and the causes of death.

Materials and Methods

The ethical approval for the study was obtained from the National Institute for Health and Welfare.

A total of 550 forensic examinations were conducted in Niuvanniemi Hospital 1984–1993. The purpose was to evaluate the accountability of the accused, and at the same time, to diagnose possible psychiatric disorders and substance abuse among other things. There were 156 homicides and 246 other violent offences as the first index crime; in 171 of the latter involved violent crime as a second charge also. The rest of the group was charged with less serious crimes such as theft, fraud, or drug-related crimes. Forensic examination in Finland includes multiple psychiatric interviews, a wide range of psychological tests, full physical evaluation, and up to 2 months of intensive monitoring in a closed psychiatric ward. Background information is gathered from lifetime medical and criminal records, and questionnaires are sent to examinees' family members, acquaintances, schools, and employers. The report itself is a 15–30 -page document which is sent to the National Institute for Health and Welfare (THL) for the final evaluation of accountability. Individuals who are legally accountable (as in our study groups) are sentenced to prison whereas those who are not guilty by the reason of insanity or mentally retarded are usually committed to involuntary treatment.

The exclusion criteria for our study were female gender, a major mental illness—such as schizophrenia or bipolar-disease— organic brain syndrome, an IQ less than 69 and age less than 18 years. Hare Psychopathy Checklist—Revised (PCL-R; 7) is the most widely used psychological tool to assess psychopathy in individuals. The 20-item list consists of various personality traits and documented behaviours. It is based on a semistructured

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interview which is cross-checked against official documents, such as criminal records. Each item is scored 0, 1, or 2 where the higher value represents higher correlation with each psychopathic feature. PCL-R is also validated when performed retrospectively with only written documents as a source (8). PCL-R was performed for the remaining 278 male individuals by a single person (O.V.) with proven interrater reliability compared with gold standard (ICC 0.89). The cutoff score of 25 points was used which is the standard procedure in Europe. (In the United States, a higher cutoff score of 30 is used). The mean age of the sample was 38 (SD = 9.7, range 22–66), and the PCL-R score varied from 25 to 40, with a mean of 32 points. Incidentally, all the subjects with high PCL-R scores (25 or higher) were Caucasian, native Finnish citizens. Data on mortality during years 1984–2013 was obtained from Statistics Finland.

Two control groups were used as follows: (i) 178 offenders (with the same inclusion and exclusion criteria as those scoring 25 or higher) from the same sample scoring less than 25 on the PCL-R, and (ii) an age- and sex-matched sample drawn from the Finnish total population (N = 5.7 million) which was obtained from the Statistics Finland. The total number of Finnish males older than 18 years ranged from 1,751,754 to 2,122,797 during the study period 1984–2013. It is estimated that the number of psychopaths in Finnish general population is in the range of 1–2%, and there were 57 prisoners per 100,000 inhabitants in 2014 (9).

In the statistical analysis, we used Standardized Mortality Rate (SMR) which was calculated by dividing the observed number of deaths in the study group by the expected number of deaths according to age and gender in the standard population (10).

Results

During the follow-up (mean 19, SD = 7 years), a total of 117 deaths occurred in the entire study group. The number of expected deaths was exceeded significantly in both psychopath and nonpsychopath groups. In the subjects with less than 25 PCL-R points (low psychopathy group), 73 deaths occurred when the number expected was 23. This yielded SMR of 3.16 (2.15–3.98) which is a considerable increase in deaths when compared to the normal population (Table 1). The SMR in the high psychopathy group was even higher, being almost fivefold compared to the normal population (p = 0.025 for the difference between low versus high psychopathy group). The risk of death according to PCL-R formed a nonlinear curve, which showed marked increase in risk of death from 20 points onward (Fig. 1). Due to low number of cases in both extremities of the psychopathy scores, confidence interval grew relatively wide creating an illusion of intermediate PCL-R scores actually protecting from early death. When compared to mortality at PCL-R score of 25,

a hazard ratio of 2.01 was detected (95% CI: 1.05–3.87) among those with score of 40. The age-matched survival curves differed from each other significantly from the first year on, with only a minor crossing approximately at year eight (Fig. 2). At the end of 25-year follow-up, 44% of the high psychopathy group had died, while the mortality rate was 41% among the low psychopathy group.

Physical diseases were the leading cause of deaths in the nonpsychopath group (Table 2). Cardiovascular diseases (27.4 per cent of deaths) and cancer (15.1 per cent) were the most common causes of death. In the psychopath group, unnatural causes were more frequent (Table 3). Of all the deaths in the psychopath group, unnatural causes accounted for 65.1 per cent
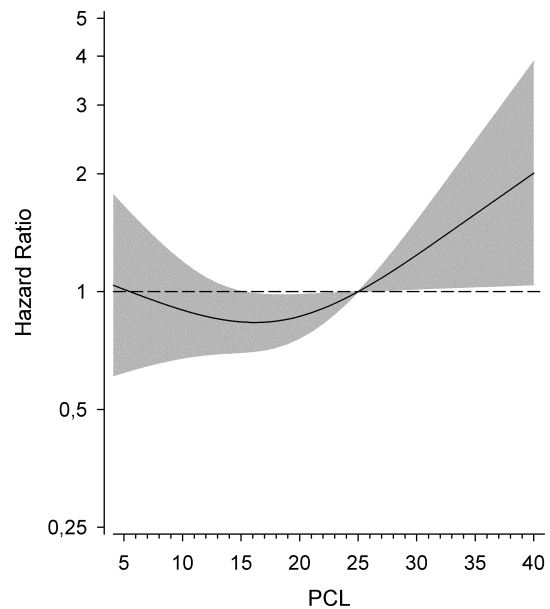

FIG. 1—Risk of death as a function of Psychopathy Checklist Revised (PCL-R) score. The estimates are adjusted for age, estimated by Cox regression based on 3-knot restricted cubic splines. Hazard ratio was 2.01 (95% confidence interval 1.05–3.87; indicated by grey area) at score of 40.
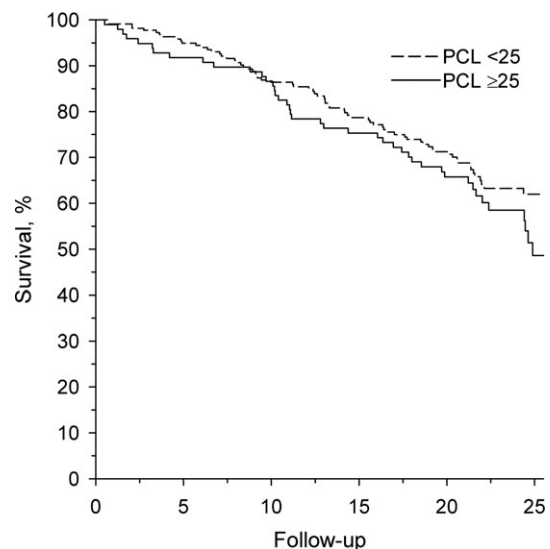

FIG. 2—Age-adjusted survival curves for low and high psychopathy groups.

TABLE 1—Expected and detected numbers of death among low and high psychopathy group compared with general population. PCL-R indicates Psychopathy Checklist Revised, and SMR indicates Standardized mortality ratio.

PCL-R	Detected	Expected	SMR	Lower 95% CI	Upper 95% CI
PCL-R < 25	73	23.08	3.16	2.51	3.98
PCL-R ≥ 25	44	9.07	4.58	3.61	6.52

p = 0.025 (for the difference between low versus high psychopathy group).

TABLE 2—*Natural and unnatural causes of death in low and high psychopathy groups.*

	PCL-R < 25	PCL-R ≥ 25	Total
No death	105 (58.99%)	56 (56.00%)	161 (57.91%)
Unnatural cause	31 (17.42%)	28 (28.00%)	59 (21.22%)
Natural cause	41 (23.03%)	15 (15.00%)	56 (20.14%)
Nonspecific cause	1 (0.56%)	1 (1.00%)	2 (0.72%)
Total	178 (100.00%)	100 (100.00%)	278 (100.00%)

TABLE 3—*Causes of death in low and high psychopathy groups.*

	PCL-R < 25	PCL-R ≥ 25	Total
Cancer	11 (15.07%)	4 (9.09%)	15 (12.82%)
Lung disease	3 (4.11%)	6 (13.64%)	9 (7.69%)
Cardiovascular disease	20 (27.40%)	2 (4.55%)	22 (18.80%)
Cerebrovascular disease	1 (1.37%)	0 (0.00%)	1 (0.85%)
Liver disease	2 (2.74%)	1 (2.27%)	3 (2.56%)
Other disease	4 (5.48%)	2 (4.55%)	6 (5.13%)
Suicide	11 (15.07%)	5 (11.36%)	16 (13.68%)
Homicide	2 (2.47%)	5 (11.36%)	7 (5.98%)
Traffic accident	1 (1.37%)	3 (6.82%)	4 (3.42%)
Drowning	2 (2.74%)	1 (2.27%)	3 (2.56%)
Other accident	4 (5.48%)	6 (13.64%)	10 (8.55%)
Intoxication	11 (15.07%)	8 (18.18%)	19 (16.24%)
Nonspecified	1 (1.37%)	1 (2.27%)	2 (1.71%)
Total	73 (100.00%)	44 (100.00%)	117 (100.00%)

of the cases, whereas in the nonpsychopaths the percentage was 43 (Table 3). It is notable that the majority of the unnatural deaths among 25+ group was caused by violent incidences such as accidents, suicides, and homicides. It is also noteworthy that the use of alcohol was at least contributory factor in over half of deaths in the psychopath group.

Discussion

We know from previous studies that antisocial lifestyle and premature death often go hand in hand. Our study not only confirms this finding but, for the first time, also shows the influence of the degree of psychopathy on mortality. The association was clear, but it is not possible to draw firm conclusions about the causal mechanisms. Both psychopath and nonpsychopath groups showed markedly elevated mortality rates compared to the normal population, yet the number of deaths in the psychopath group was even higher. In the previous study by Repo-Tiihonen et al. (6), up to ninefold mortality rate was observed in antisocial male criminal population compared with the present study. The higher mortality in the study by Repo-Tiihonen et al. can be explained by younger mean age and shorter follow-up time than in the present study, as stretching of the observation period tends to dilute the initial mortality rate. When young populations are compared with each other, unnatural incidents seem to dominate the causes of death. In contrast, in older populations natural causes are more prevalent. This trend can be seen in many disorders, for example, in schizophrenia (10).

Our results showed that deaths caused by accidents, homicides and intoxications were frequent, and chronic illnesses less common when compared to population with lower PCL-R-points. Many features of psychopathy can contribute to the increased mortality. Impulsiveness, novelty seeking, constant need for stimulation, and lack of behavioural control put the psychopaths in great danger of hurting themselves—as well as others.

Relatively young age of the psychopaths obviously protects them from the physical illnesses, and probably even longer follow-up time would have increased the number of cancers and cardiovascular diseases. Prevention of such major chronic illnesses is challenging even in the general population. In Finnish criminal population, the use of alcohol is the leading contributing factor in mortality before the age of 50, and it appears to be so also in case of the psychopaths. The heavy use of alcohol has a considerable impact in both life and death on Finnish criminal underworld (11). The length of the prison sentences would be very useful information when determining the protective effect of time spent in the penitentiary but, unfortunately, this data were unavailable. The average length of the prison sentence in Finland was 14 years for homicides, 21.7 months for aggravated assault, and 3.7 for assault in 2015 (12). The number of prisoners in the United States is over 12-fold compared to Finland (57 versus 698/100,000) (9). This study focused only on the male psychopaths, and in the future it would be intriguing to investigate if these findings hold true in the female population also. Due to the infrequency of psychopathy in women, our knowledge concerning the outcome of this disorder is even more scarce in females. Furthermore, rate for recidivism for criminality among psychopaths would be valuable information. To get more accurate picture of psychopaths' mortality, the size of study group could be larger and follow-up times longer. As mentioned, protective function of prison sentences should be controlled for.

In conclusion, the finding that psychopaths die younger adds valuable information about the nature of this disorder. The fact that psychopaths die at young age can also influence previous follow-up studies which can create an illusion that this disorder is fading away when subjects get older. The reality might be that many of the psychopaths stop committing crimes because they die before they reach latter stages of the follow-up studies. It is important to investigate how the risk of re-offending evolves over time after release from prison in order to optimally allocate resources in secondary crime prevention by probation services.

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