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Original article

Childhood Bereavement and Lower Stress Resilience in Late Adolescence

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A B S T R A C T

Purpose: Although childhood traumatic experiences are recognized as important determinants for adolescent psychiatric health in general, our objective was to explore the specific influence of childhood bereavement on the stress resilience development trajectory.
Methods: In this national register-based cohort study, we identified 407,639 men born in Sweden between 1973 and 1983, who underwent compulsory military enlistment examinations in late adolescence, including measures of psychological stress resilience. We defined exposure as loss of a first-degree family member in childhood, and estimated relative risk ratios (RRRs) for reduced (moderate or low), compared with high, stress resilience with 95% confidence intervals (CIs) using multinomial logistic regression.
Results: Loss of a parent or sibling in childhood conferred a 49% increased risk of subsequent low stress resilience (RRR, 1.49, 95% CI, 1.41–1.57) and an 8% increased risk of moderate stress resilience (RRR, 1.08, 95% CI, 1.03–1.13) in late adolescence. There was also a graded increase in risk with increasing age at loss; teenagers were at higher risk for low resilience (RRR, 1.64, 95% CI, 1.52–1.77) than children aged 7–12 (RRR, 1.47, 95% CI, 1.34–1.61) and ≤6 years (RRR, 1.16 95% CI, 1.02–1.32). The excess risk was observed for all causes of death, including suicide and unexpected deaths as well as deaths due to other illnesses. The associations remained after exclusion of parents with a history of hospitalization for psychiatric diagnoses.
Conclusions: The long-term consequences of childhood bereavement may include lower stress resilience in late adolescence.

IMPLICATIONS AND CONTRIBUTION

Loss of a parent or sibling in childhood is clearly associated with low stress resilience in late adolescence, even after considering socioeconomic circumstances and parental psychiatric morbidity. These findings contribute to understanding determinants of stress resilience, and may enable identifying childhood interventions to support resilience development.

Conflicts of Interest: The authors have no conflicts of interest to disclose.
Author Contributions: All authors together developed the study concept, participated in the design of the study, interpreted the data, critically revised the manuscript for intellectual content, and approved the final version. B.K. acquired ethical permission together with K.F., reviewed the literature, and wrote the initial draft. R.C. performed the statistical analysis. K.F. and F.F. supervised the project. B.K. and R.C. are equal contributors.

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Stress resilience may be defined as an adaptive response to stress, facilitating recovery from adverse events and associated psychological traumas [1]. Stress resilience may also encompass the ability to maintain healthy levels of physiological and physical functioning in the midst of a traumatic exposure [2]. Genetic predisposition is thought to influence individual stress resilience [3], but the development trajectory has also been associated with socioeconomic patterns [4] and exposure to psychological stressors during childhood [5,6]. Children's stress balance may also reflect overall societal circumstances [7]. Several cross-sectional studies have indicated that childhood adversities may entail stress sensitization and thereby reduced stress resilience [8–12]. However, results from larger population-based studies with prospectively collected data on childhood circumstances are scarce [13].

In Sweden, 1 in 20 children experiences loss of a parent or sibling before the age of 18, and are thus exposed to one of the most stressful events a person can experience [14,15]. The ensuing grief and sorrow will affect psychological well-being as well as possibly long-term psychiatric health. In addition, the loss of a family member may negatively impact the development of psychosocial characteristics associated with high resilience [16], including emotional regulation, active coping strategies, and perceived self-control. Furthermore, both animal and human studies indicate that childhood as well as antenatal adverse exposures may induce physiological adaptations in neural architecture and gene expression involved in regulation of the stress response [5,17] and also entail long-term modifications in glucocorticoid secretion and stress reactivity [18–20].

In this longitudinal study, based on Swedish national population and health registers, we explore if loss of a parent or sibling in childhood is associated with a subsequent decrease in stress resilience. We utilize a measure of stress resilience, devised to assess psychological functioning and ability to cope with stress, available for a national cohort of men that were subject to mandatory military conscription assessments during late adolescence.

Methods

National registers

All residents in Sweden have a unique National Registration Number, recorded at birth or immigration, which enables record linkages in national registers. We acquired birth date, sex, country of birth, and child-parent linkages from the Swedish Multi-Generation Register, socioeconomic information from The Education Register and the Swedish Population and Household Census, and data on birth variables from the Medical Birth Register. Date and causes of death were obtained from the Causes of Death Register, and conscription variables from the Swedish Conscript Register. Information on parental psychiatric diagnoses came from the National Patient Register, established in 1964.

Study population

We included all men born in Sweden from 1973 to 1983. Until 2010, conscription was mandatory by law for all young men with a Swedish citizenship residing in Sweden. We could identify 88.3% (n = 492,152) of our birth cohort in the Swedish Conscript Register. Of the remaining 11.7%, 4.0% had died or emigrated before the age of 18, while 7.8% were exempt from enlistment because of circumstances such as incarceration, severe mental health problems, severe physical disability, or other reasons.

We excluded men without records in the Swedish Medical Birth Register (N = 5,209, .9%), and those born as a result of a multiple birth or who had missing/invalid information in this regard (N = 8,057, 1.4%). We also excluded men who did not have both biological parents identifiable from the Multi-Generation Register and adopted children (N = 4,220, .8%).

Exposure assessment

We identified all first-degree biological relatives (parents and siblings) of the conscripts. Loss of parent or sibling through death before conscription was used as our primary indicator of exposure to severe psychological stress (i.e., childhood bereavement). Childhood age was categorized as preschool (<7years), school age (7–12 years), and teenage (≥13 years). Date and cause of death of family member was obtained from the Cause of Death Register. Cause of death was categorized as illness (including, e.g., cardiovascular events and cancer) versus unexpected, with unexpected further divided into suicide or other unexpected causes primarily consisting of accidents, all according to the Swedish revision of International Classification of Disease (ICD) (Supplementary material, Table S1).

We further identified spouses as well as first-degree biological relatives (children, parents, siblings) of the conscripts' mothers using the Multi-Generation Register. Spouses were defined through a registered common biological child. Our secondary exposure (i.e., prenatal exposure) was defined as maternal loss of spouse or first-degree relative during a preconception period (0–12 months before calculated conception) or during pregnancy.

Stress resilience

The Swedish National Service Administration evaluated all potential conscripts (at median age 18 years) with regard to stress resilience. The aim of the military assessment was to identify conscripts that could be exposed to military stress without subsequent prolonged loss of psychological function, which would also promote long-term mental health after combat exposure. Adequate stress resilience level was also a prerequisite for later officer training [21].

This stress resilience assessment has been described in detail in previous research [22]. In brief, licensed psychologists schooled in military psychology performed 25-minute semistructured interviews. The test was summarized in a 9-grade normally distributed score where higher values indicate better functioning [21]. The score was categorized as low stress resilience (1–3), moderate stress resilience (4–6), and high stress resilience (7–9) [22–24]. The stress resilience score has been validated by the Swedish National Defense Research Institute against the army service records given by superior officers at the end of military service to privates and noncommissioned officers [25] and the inter-rater reliability of the stress resilience test has been found to be high (r = .85) [26]. Individuals with missing or invalid data on the stress resilience assessment were excluded (n = 67,027, 12.0%), leaving 407,639 individuals in our final study population.

Covariates at conscription assessment

Cognitive ability was assessed in potential conscripts with three test versions during this period [27], (Supplementary material).