Depression and Violence in Adolescence and Young Adults: Findings From Three Longitudinal Cohorts

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Objective: Despite recent research demonstrating associations between violence and depression in adults, links in adolescents are uncertain. This study aims to assess the longitudinal associations between young people's depression and later violent outcomes.

Method: We used data from three cohorts with different measurements of depression exposures and subsequent violent outcomes. In a Dutch community cohort Research on Adolescent Development And Relationships (RADAR; N = 623) and a population-based British birth cohort Avon Longitudinal Study of Parents and Children (ALSPAC; N = 4,030), we examined the longitudinal links between adolescent depressive symptoms and violent behaviors from age 13 to 17 years. In a total Finnish birth cohort (FBC 1987; N = 57,526), we estimated risk of violent convictions in individuals clinically diagnosed with depression from age 15 to 27 years.

Results: During a mean follow-up period of 4 years, the adjusted odds ratio (aOR) of violent behaviors per unit of increase in depressive symptoms was 1.7 (95% CI = 1.2–2.5) in the Dutch RADAR community sample and 1.8 (95% CI = 1.4–2.3) in the British ALSPAC birth cohort. In the FBC 1987 cohort, the aOR of violent convictions was 2.1 (95% CI = 1.7–2.7) among individuals with a depression diagnosis compared with general population controls without depression. All risk estimates were adjusted for family socioeconomic status and previous violence.

Conclusion: Consistent findings across three longitudinal studies suggest that clinical guidelines should consider recommending risk assessment for violence in young people with depression. The benefits of targeting risk management in subgroups by gender need further investigation.

Key words: depression, violence, adolescents and young adults, longitudinal, birth cohort

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Recent empirical work has shown a heightened risk of violence in individuals with depression. This depression–violence link in adults has been reported in cross-sectional community surveys and register-based investigations,[1,2] as well as longitudinal cohort studies.[3-5] In particular, a recent longitudinal investigation of the whole Swedish population reported that the risk of violent crime in individuals with depression was around three times higher than in the normal population and increased twofold compared with that in their siblings without depression.[4] However, research into the depression–violence link currently lacks a developmental perspective. The link might even be stronger in adolescents than in adults because adolescent depression, compared with its adult form, is more likely to present with temper tantrums and irritability,[6] which may mediate any association with violence. Prior research has evaluated the depression–violence link mainly in clinical samples in which depression is evaluated dichotomously, and further clarification is required to determine whether this relationship is maintained at a nonclinical level. This is potentially important because minor depressive symptoms in adolescence predict full-blown depressive disorder and problem behaviors later in life, and are more common than adult depression.[7] Therefore, research into the depression–violence link in community adolescent samples in which both minor depressive symptoms and violent behaviors are prevalent[8,9] will address current uncertainties.

In addition, high rates of depression have been reported among adolescents in juvenile detention and correctional facilities (which have been estimated at 11% in boys and 29% in girls).[10] Despite the fact that that depression may co-occur with violence or related disorders such as conduct disorders,[11] and that factors such as genetic vulnerabilities[12] or peer victimizations[13] have been suggested to mediate these links, clarifying the longitudinal association between depression and subsequent violence among young people is required with careful adjustment for confounding factors. Research in adolescents could inform primary prevention and clinical management in particularly sensitive developmental periods for assessing and managing violence risk in depression. Adolescent depression is often underdiagnosed and untreated until later in life.[9,14] If a longitudinal association between adolescent depression and violence is

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identified, prevention efforts could further be shifted to adolescents, especially because there is clear evidence of effectiveness of treatment in this developmental period.[15]

Therefore, we have analysed data from three longitudinal studies to investigate links between depression and violence using both community and clinical samples of adolescents and young adults. Data from three European countries (i.e., the Netherlands, the United Kingdom, and Finland) were used. The epidemiological rates of depression and violence appear to be broadly similar in these three countries, with the prevalence of depressive disorders ranging from 2.5% to 3.6%[16] and violent convictions around 3% among young people.[17,18]

METHOD

Study Samples

We adopted a multiple-sample approach to examine the depression–violence link. We used three validated longitudinal datasets: a Dutch community cohort (Research on Adolescent Development And Relationships [RADAR]; N = 678); a population-based birth cohort in the UK (Avon Longitudinal Study of Parents and Children [ALSPAC]; N = 13,973) born in 1991 or 1992; and a total birth cohort of Finns born in 1987 (the 1987 Finnish Birth Cohort [FBC 1987]; N = 59,476). These three samples were selected for a number of major reasons. First, all of the cohorts included high-quality longitudinal data on depression and violence in young persons from a small-scale community sample to a total birth cohort. Second, these three cohorts used complementary measures of the examined variables, including self-report and clinical diagnoses of depression, and self/informant-report of violent behaviors and official registration of violent convictions. The variation in the sample characteristics and complementary measures of the studied variables provided an opportunity to test the link between depression and violence more comprehensively than previously done.

RADAR is an ongoing longitudinal study in the Netherlands. Adolescents were recruited from randomly selected schools in the midwestern part of the Netherlands. Data from 623 Dutch adolescents (341 male [55%]) who were annually followed from age 13 to 17 years were used. The mean age of the sample was 13.1 years (SD = 0.5 year) at first measurement. The majority of the participants identified themselves as Dutch (n = 499 [80.1%], with the other 124 participants [19.9%] being ethnic minorities). The RADAR cohort study was approved by the ethical-medical committee of University Medical Centre Utrecht, the Netherlands.

ALSPAC is a population-based birth cohort study in the UK. ALSPAC recruited 15,247 pregnant women residents in the Avon area who expected to deliver a child between 1 April 1991 and 31 December 1992, resulting in 15,458 children. For reasons of confidentiality, triplets and quadruplets were excluded. In the current study, we used data from a subsample of adolescents who participated in ALSPAC clinic sessions and were asked to fill in questionnaires related to depressive symptoms and violent behaviors. The total sample included 4,030 adolescents (1,768 male [43.9%]). Ethical approval for the study was obtained from the ALSPAC Ethics and Law Committee and the local research ethics committee.

The FBC 1987 study is a prospective nationwide population investigation in Finland. It consists of 60,069 children born in Finland in 1987.[19] Follow-up information was collected for all cohort members who survived the first week after birth (N = 59,476; 30,435 male [51.2%]). Data on the use of health care services, criminality, as well as family and socio-demographic background were obtained from official registers. The register data from the Finnish Legal Register Centre, Finnish Hospital Discharge Register (HDR), Statistics Finland Registers, and Population Register were combined using the participants' personal identification numbers. The FBC 1987 cohort study was approved by the ethical committee of the National Institute for Health and Welfare (§28/2009).

Measures

Depressive Symptoms and Diagnosis. In the RADAR and ALSPAC cohorts, depressive symptoms were assessed with questionnaires. In RADAR, Reynolds's Adolescent Depression Scale (2nd RADS-2)[20] was used, which is a self-report questionnaire with 23 items (e.g., "I feel like nothing I do helps anymore"). At age 13 years, adolescents responded to the questionnaire on a 4-point Likert-type scale, ranging from 1 (almost never) to 4 (usually). Cronbach's α of this scale was .93. In the ALSPAC cohort, depressive symptoms were measured by the short version of the Mood and Feelings Questionnaire (SMFQ),[21] which is a 13-item checklist of symptoms experienced in the previous 2 weeks (e.g., In the past 2 weeks, have you felt miserable or unhappy?). Adolescents reported on their depressive symptoms at age 13 years, with a three-point scale including 1 (true), 2 (sometimes true), and 3 (not true). Data were reversely coded so that higher scores indicated higher depressive symptoms. Cronbach's α of the scale was .84. Mean scores of depressive symptoms were calculated for the logistic regression analyses.

For FBC 1987, information on clinical diagnoses, rather than symptoms (which was not collected), was obtained from the Finnish Hospital Discharge Register (HDR) held by the National Institute for Health and Welfare (THL). HDR has been found to be a valid and reliable tool for epidemiological research.[22] The register includes all specialized inpatient and outpatient visits in public hospitals since 1998; participants were on average 11 years of age. Participants with at least two outpatient episodes as a main diagnosis between January 1, 1998, and December 31, 2012 (11–25 years) were identified as having a diagnosis of depression, according to the *International Classification of Diseases–10th Revision* (*ICD-10*; codes F32-F33.9).

Among the 59,476 participants in the FBC 1987 cohort, 3,666 (6.2%) had at least one outpatient (specialist) episode with a clinical depression diagnosis. We excluded participants with only one outpatient visit for a depressive episode (n = 772), or with a secondary diagnosis of schizophrenia, schizophrenia spectrum disorder, or bipolar disorder (n = 74), as those cases were most likely misclassified as depression during the first outpatient visits. We also excluded those participants with an inpatient diagnosis of depression (n = 923), as it would lead to selection biases: individuals' admissions to the hospital might have been secondary to recent violence or violence risk. In addition, we excluded 262 individuals with an inpatient diagnosis of depression but without an outpatient diagnosis of depression from the general control sample. Furthermore, we excluded participants with no exact date of violent crime (n = 78) from either case or control samples. Therefore, there were 2,050 individuals with clinical depression diagnoses and 55,476 general controls without depression.

Violent Behaviors and Convictions. In the RADAR and ALSPAC cohorts, violent behaviors in the past 12 months were measured with questionnaires. In RADAR, a scale based on the International Self-Report Delinquency Study[23] was used. Violent behaviors included stealing from a person with threat or force, assault, hurting someone with weapon, and beating or kicking someone. Adolescents who committed at least one of the listed violent behaviors from the second to the fifth measurements (14–17 years of age) were categorized as being violent. In ALSPAC, both adolescents and their