

	Before adjustment		After adjustment*	
	B (SE)	p value	B (SE)	p value
Frequency of cannabis use	0.28 (0.02)	<0.0001	0.13 (0.04)	0.0003
Frequency of cigarette smoking	0.30 (0.03)	<0.0001	0.08 (0.05)	0.135

B=unstandardised regression coefficient. *Statistically significant ($p<0.05$) time-dynamic covariate factors included major depression, anxiety disorder, life stress, and deviant peer affiliations.

Table: Associations between psychotic symptoms and frequency of cannabis use and cigarette smoking at age 18–35 years, before and after controlling for non-observed fixed effects and time-dynamic covariate factors

application of mendelian randomisation to examine the linkages between smoking and schizophrenia studies suggests the need for more comprehensive analyses of data on tobacco smoking, cannabis, and psychosis before we accept the premise that cigarette smoking might be a cause of psychosis and reject a causal role for cannabis use in psychosis.

David M Fergusson, Wayne Hall, Joseph M Boden, L John Horwood

Christchurch Health and Development Study, University of Otago, Christchurch, New Zealand (DMF, JMB, LJH); The University of Queensland Centre for Youth Substance Abuse Research, Herston, Australia (WH); and The National Addiction Centre, Kings College London (WH)

dm.fergusson@otago.ac.nz

The Christchurch Health and Development Study is funded by the Health Research Council of New Zealand Programme Grant 11/792. This funding body played no role in the decision to submit the manuscript for publication. DMF, JMB, and LJH declare grants from Health Research Council of New Zealand. WH receives grants from WHO, outside the submitted work.

- 1 Gage SH, Munafò MR. Rethinking the association between smoking and schizophrenia. *Lancet Psychiatry*; **2**: 118–19.
- 2 Leonard S, Mical S, Freedman R. Genetics of smoking and schizophrenia. *J Dual Diagnosis* 2007; **3**: 43–59.
- 3 The Tobacco and Genetics Consortium. Genome-wide meta-analyses identify multiple loci associated with smoking behavior. *Nat Genet* 2010; **42**: 441–47.
- 4 Schizophrenia Working Group of the Psychiatric Genomics Consortium. Biological insights from 108 schizophrenia-associated genetic loci. *Nature* 2014; **511**: 421–27.
- 5 Moore TH, Zammit S, Lingford-Hughes A, et al. Cannabis use and risk of psychotic or affective mental health outcomes: a systematic review. *Lancet* 2007; **370**: 319–28.
- 6 Robins J, Morgenstern H. The mathematical foundations of confounding in epidemiology. *Comput Math Appl* 1987; **14**: 869.
- 7 Fergusson DM, Horwood LJ, Ridder EM. Tests of causal linkages between cannabis use and psychotic symptoms. *Addiction* 2005; **100**: 354–66.
- 8 Derogatis LR, Lipman RS, Covi L. SCL-90: an outpatient psychiatric rating scale: preliminary report. *Psychopharmacol Bull* 1973; **9**: 13–27.
- 9 Robins LN, Helzer JE, Croughan J, Ratcliff KS. National Institute of Mental Health Diagnostic Interview Schedule: its history, characteristics, and validity. *Arch Gen Psychiatry* 1981; **38**: 381–89.

covariates. The frequency of both tobacco and cannabis use were significantly related to rates of psychotic symptoms (table). After adjustment, cannabis use remained significantly related to rates of psychotic symptoms, whereas cigarette smoking did not (table). These findings suggest a possible causal effect of cannabis use on rates of psychotic symptoms and imply that the associations between cigarette smoking and psychotic symptoms are explained by the effects of the associations between cigarette smoking and cannabis, non-observed fixed effects common to tobacco and cannabis, and time-dynamic covariates associated with cannabis use.

These findings do not support the hypothesis that cigarette smoking plays a part in the development of psychotic symptoms. However, the data do support the hypothesis that cannabis use affects the risk of psychotic symptoms.⁵ Importantly, the outcome measure used in our study was not a measure of schizophrenia but rather a more general measure of psychotic symptoms. This difference could explain the differences between the findings of our study and the hypotheses advanced by Gage and Munafò. Nonetheless, the failure of our analysis to support the

W Mental health and suicide risk in Northern Ireland: a legacy of the Troubles?

Published Online
June 12, 2015
[http://dx.doi.org/10.1016/S2215-0366\(15\)00240-0](http://dx.doi.org/10.1016/S2215-0366(15)00240-0)

For more on the
effect of austerity see
<http://www.jrf.org.uk/austerity-northern-ireland-communities>

Northern Ireland is a changed place—for the better. It is a more prosperous and peaceful place than it was before the signing of the Belfast or Good Friday Agreement in 1998 and the formal ending of the decades-long conflict thereafter. However, in the intervening years, recognition has been growing of the social, economic, and political legacy of the Troubles,¹ and, in particular, of

the transgenerational effect of conflict-related trauma on the mental health of the population.^{1–3}

Concern continues about the effect of austerity. Findings from the Northern Ireland component of the World Mental Health Survey, undertaken in 2008, showed that mental health disorders are prevalent and often associated with exposure to the conflict.² The

prevalence of post-traumatic stress disorder is estimated to be one of the highest in Europe, and analyses of index events suggest that the excess is related to exposure to the Troubles.⁴ The mental health burden is compounded by the fact that a large proportion of those affected by mental health issues do not seek treatment and only few of those who do report receiving effective treatment.⁵

Unsurprisingly, therefore, mental health is one of the key priorities on the political agenda in Northern Ireland. Arguably, the starker indicator of the continued legacy of the Troubles has been the increase in suicide deaths since the conflict ended. The number of suicides doubled from about 150 deaths per year in the mid-1990s to more than 300 deaths by the year 2010, mostly of men.^{6,7} This equates to a suicide incidence of 15 per 100 000 per year compared with 12 per 100 000 per year for the UK as a whole. Adolescents in 2009 who were born at around the time of the signing of the Good Friday agreement and report having been exposed to the Troubles are also significantly more likely to have self-harmed by the age of 16 years⁸ than are those reporting no exposure. This finding parallels those from the World Mental Health Survey in Northern Ireland, which showed that Troubles-related trauma was associated with a high risk of suicidal thoughts and plans in addition to those conferred by the existence of mental disorders. Unexpectedly, though, no association has been noted between Troubles exposure and suicide attempts, which might show a high risk of death at the first attempt in this group.⁹

Against this backdrop, a research report entitled *Towards a better future: the trans-generational impact of the Troubles on mental health*,¹ prepared by Ulster University (Londonderry, UK) for the Northern Ireland Commission for Victims and Survivors, was published in March 2015. Findings from the report showed the ways in which the Troubles' legacy might be associated with suicide, and it received widespread media coverage in Northern Ireland and other places. For example, experience of the conflict was associated with major negative life experiences before suicide, such as relationship breakdown, unemployment, financial difficulties, and ill-health diagnoses. Conflict-related mental ill health and substance misuse disorders were implicated in development of suicidal thoughts. Exposure to violence, death, and pain (directly or indirectly) might contribute to an increased capability of suicide.

Despite the relative peace, post-conflict Northern Ireland is characterised by an increase in hate crimes against minority populations such as particular ethnic groups¹⁰ and people who are lesbian, gay, or bisexual (who, in Northern Ireland, also show a high proportion of suicidal ideation and behaviour).¹¹ Sporadic sectarian violence still occurs, although it is restricted to specific areas—the same areas most affected by the economic recession and subsequent austerity measures. Arguably, those living in such areas might have also lost the community connectedness and sense of purpose that was evident during the Troubles. Together, these factors point to the existence of a group at high risk of mental health problems and suicide due to coexistence of many traditional risk factors and conflict exposure. The World Mental Health survey figures suggest that this group constitutes about 14% of the total population and that they represent about half of people with mental health problems.¹

The mental health needs of those affected are being increasingly recognised by policymakers. For example, national mental health and suicide prevention strategies have been published and the Northern Ireland Self-Harm Registry has been established. These are welcome developments that have galvanised key stakeholders, guided service development, and helped to show how the legacy of the conflict could continue to affect the vulnerable.

However, the relation between the Troubles and mental health is complex, with many questions unanswered. Up-to-date research is needed to establish whether the relation between exposure to the Troubles and mental ill health remains as strong as it was in 2008. We believe it is likely to be. Additionally, much more needs to be done to promote connectedness, engagement, and resilience¹² in those who are disenfranchised with the present peace and political processes. The mental health needs of this sizeable minority who present with many vulnerabilities and have suffered a lot as a result of the Troubles should receive urgent attention. Otherwise, these unmet needs will continue to emerge in the form of low educational attainment, high unemployment in deprived communities, and social disadvantage. They are also likely to contribute to Northern Ireland's high numbers of suicides and transmission of mental disorders to future generations.¹



For more on suicide incidence in Northern Ireland see
http://www.dhsspsni.gov.uk/suicide_strategy.pdf

For more on suicide incidence in the UK see
http://www.ons.gov.uk/ons/dcp171778_395145.pdf

For the mental health strategy see
<http://www.dhsspsni.gov.uk/menhealth.pdf>

For the Northern Ireland Self-Harm Registry see
http://www.publichealthagency.org/sites/default/files/Annual%202013%20Report%20NIRSH_0.pdf

We believe that the key challenges for mental health promotion and suicide prevention in Northern Ireland relate not only to mental health care and tackling of stigma, but also to limitation of the effect of austerity, recognition of the changed social context in Northern Ireland, and increased connectedness to and engagement with vulnerable groups.

*Rory C O'Connor, Siobhan M O'Neill

Suicidal Behaviour Research Laboratory, Institute of Health and Wellbeing, University of Glasgow, Glasgow, G12 0XH, UK (RCO'C), and Ulster University, Londonderry, UK (SMO'N)

rory.oconnor@glasgow.ac.uk

SMO'N led the preparation of the Northern Ireland Commission for Victims and Survivors *Towards a Better Future* report, and RCO'C acted as a consultant on suicide and self-harm on the report.

- 1 O'Neill S, Armour C, Bolton D, et al. Towards a better future: the trans-generational impact of the Troubles on mental health. Belfast: Northern Ireland Commission for Victims and Survivors, 2015.
- 2 Bunting B, Murphy SD, O'Neill SM, Ferry FR. Lifetime prevalence of mental health disorders and delay in treatment following initial onset: evidence from the Northern Ireland study of health and stress. *Psychol Med* 2012; **42**: 1727-39.

- 3 Tomlinson T. War, peace and suicide: the case of Northern Ireland. *Int Sociology* 2012; **27**: 464-82.
- 4 Bunting B, Ferry FR, Murphy SD, O'Neill SM, Bolton D. Trauma associated with civil conflict and posttraumatic stress disorder: evidence from the Northern Ireland study of health and stress. *J Trauma Stress* 2013; **26**: 134-41.
- 5 Bunting B, Murphy S, O'Neill S, Ferry F. Prevalence and treatment of 12-month DSM-IV disorders in the Northern Ireland study of health and stress. *Soc Psych Psychiatr Epidemiol* 2013; **48**: 81-93.
- 6 Foster T, Gillespie K, McClelland R. Mental disorders and suicide in Northern Ireland. *Br J Psychiatry* 1997; **170**: 447-52.
- 7 O'Connor RC, Sheehy NP. Understanding suicidal behaviour. Leicester: British Psychological Society Blackwell, 2000.
- 8 O'Connor RC, Rasmussen S, Hawton K. Adolescent self-harm: a school-based study in Northern Ireland. *J Affect Disord* 2014; **159**: 46-52.
- 9 O'Neill S, Ferry F, Murphy S, et al. Patterns of suicidal ideation and behavior in Northern Ireland and associations with conflict related trauma. *PLoS One* 2014; **9**: e91532.
- 10 Montague R. Racism a legacy of Troubles in Northern Ireland. May 23, 2014. <http://www.belfasttelegraph.co.uk/opinion/news-analysis/racism-a-legacy-of-troubles-in-northern-ireland-30296592.html> (accessed May 11, 2015).
- 11 O'Hara M. Through our minds. Exploring the emotional health and wellbeing of lesbian, gay, bisexual and transgender people in Northern Ireland. Belfast: The Rainbow Project, 2013.
- 12 O'Connor RC, Nock MK. The psychology of suicidal behaviour. *Lancet Psychiatry* 2014; **1**: 73-85.



Corrections

Sijbrandij M, Kleiboer A, Bisson JI, Barbu C, Cuijpers P. *Pharmacological prevention of post-traumatic stress disorder and acute stress disorder: a systematic review and meta-analysis*. *Lancet Psychiatry* 2015; **2**: 413-21—In figure 1 of this Article (published online April 14, 2015), a box describing the number of full-text papers considered for inclusion has been added, and the numbers in the list of exclusions have been corrected. In the text, the number of full-text papers considered for inclusion has been corrected. These corrections have been made to the online version as of June 17, 2015.

Published Online
June 17, 2015
[http://dx.doi.org/10.1016/S2215-0366\(15\)00280-1](http://dx.doi.org/10.1016/S2215-0366(15)00280-1)