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Mental disorders and the risk of adult violent and psychological victimisation: a prospective, population-based study

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Original Article

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Abstract

Aims. Psychiatric patients are at increased risk to become victim of violence. It remains unknown whether subjects of the general population with mental disorders are at risk of victimisation as well. In addition, it remains unclear whether the risk of victimisation differs across specific disorders. This study aimed to determine whether a broad range of mood, anxiety and substance use disorders at baseline predict adult violent (physical and/or sexual) and psychological victimisation at 3-year follow-up, also after adjustment for childhood trauma. Furthermore, this study aimed to examine whether specific types of childhood trauma predict violent and psychological victimisation at follow-up, after adjustment for mental disorder. Finally, this study aimed to examine whether the co-occurrence of childhood trauma and any baseline mental disorder leads to an incrementally increased risk of future victimisation.

Methods. Data were derived from the first two waves of the Netherlands Mental Health Survey and Incidence Study-2 (NEMESIS-2): a psychiatric epidemiological cohort study among a nationally representative adult population. Mental disorders were assessed using the Composite International Diagnostic Interview version 3.0. Longitudinal associations between 12 mental disorders at baseline and violent and psychological victimisation at 3-year follow-up (n = 5303) were studied using logistic regression analyses, with adjustment for sociodemographic characteristics and childhood trauma. Furthermore, the moderating effect of childhood trauma on these associations was examined.

Results. Associations with victimisation varied considerably across specific mental disorders. Only alcohol dependence predicted both violent and psychological victimisation after adjustment for sociodemographic characteristics and childhood trauma. Depression, panic disorder, social phobia, generalised anxiety disorder and alcohol dependence predicted subsequent psychological victimisation in the fully adjusted models. All types of childhood trauma independently predicted violent and psychological victimisation after adjustment for any mental disorder. The presence of any childhood trauma moderated the association between any anxiety disorder and psychological victimisation, whereas no interaction between mental disorder and childhood trauma on violent victimisation existed.

Conclusions. The current study shows that members of the general population with mental disorders are at increased risk of future victimisation. However, the associations with violent and psychological victimisation vary considerably across specific disorders. Clinicians should be aware of the increased risk of violent and psychological victimisation in individuals with these mental disorders – especially those with alcohol dependence – and individuals with a history of childhood trauma. Violence prevention programmes should be developed for people at risk. These programmes should not only address violent victimisation, but also psychological victimisation.

Introduction

Mental disorders have repeatedly been related to violence perpetration (Pulay *et al.*, 2008; Fazel *et al.*, 2010, 2015). Correspondingly, stigmatising stereotypes regarding the dangerousness of psychiatric patients have become common (Torrey, 2011; Jorm *et al.*, 2012). However, research has revealed psychiatric patients to be victim of violence more often than perpetrator (Choe *et al.*, 2008; Maniglio, 2009). Moreover, psychiatric patients are violently victimised more often than other members of the general population (Teplin *et al.*, 2005; Kamperman *et al.*, 2014; Khalifeh *et al.*, 2016). Victimisation negatively impacts mental health (Resnick *et al.*, 1997; Dworkin *et al.*, 2017), and increases service use (Robinson and Keithley, 2000). In

psychiatric patients, victimisation is associated with more severe symptomatology, substance abuse (Goodman *et al.*, 2001; Walsh *et al.*, 2003) and lower quality of life (Lam and Rosenheck, 1998). Furthermore, victimisation increases the risk of revictimisation (Roodman and Clum, 2001; Dean *et al.*, 2007).

To date, research is mostly limited to clinical samples, such as patients with psychotic disorders (e.g. Dean *et al.*, 2007) or substance use disorders (SUD; Stevens *et al.*, 2007). It remains unclear whether subjects of the general population with mood, anxiety and substance use disorders are at increased risk of victimisation as well. Moreover, it remains unclear whether the risk of victimisation differs across specific disorders. The few studies that have addressed victimisation in the general population have demonstrated an increased risk for people with any mental disorder (Hart *et al.*, 2012), anxiety disorder, alcohol dependence (Silver *et al.*, 2005) and depression (Acierno *et al.*, 1999; Krahé and Berger, 2017) – although results have been somewhat inconsistent (Acierno *et al.*, 1999; Silver *et al.*, 2005).

Despite their value, these previous studies have important limitations. First, all have limited generalisability, since they exclusively addressed women (Acierno *et al.*, 1999), students (Krahé and Berger, 2017) or narrow birth cohorts (Silver *et al.*, 2005; Hart *et al.*, 2012). Second, all failed to address a broad range of specific mental disorders. Third, all focused on violent victimisation and did not include psychological victimisation, which is associated with even worse mental health than violent victimisation (Friborg *et al.*, 2015; Nelson *et al.*, 2017). Finally, although most controlled for relevant confounders, such as sociodemographic characteristics, lifetime victimisation (Acierno *et al.*, 1999) and participants' own violent behaviour (Silver *et al.*, 2005), they did not take childhood trauma into account.

A history of childhood trauma is an important risk factor for adult victimisation in the general population (Roodman and Clum, 2001), next to sociodemographic characteristics such as younger age, low socioeconomic status (Acierno *et al.*, 1999; Wittebrood, 2006) and being single (Silver *et al.*, 2005). Since childhood trauma has consistently been identified as a risk indicator for both mental disorders (Kessler *et al.*, 1997; Hovens *et al.*, 2010) and adult victimisation (Roodman and Clum, 2001; Barrios *et al.*, 2015), childhood trauma may act as a confounder in the association between mental disorder and subsequent victimisation. In a large population-based twin cohort, childhood sexual abuse increased the risk of adult sexual victimisation after adjustment for lifetime psychopathology, indicating an independent effect of childhood sexual abuse on adult sexual victimisation. Vice versa, lifetime psychopathology was associated with adult sexual victimisation after adjustment for childhood sexual abuse (Werner *et al.*, 2016). Since this study had a cross-sectional design and only addressed adult sexual victimisation, it remains unknown whether mental disorders and childhood trauma each have an independent effect on future violent and psychological victimisation. Furthermore, it remains unknown whether their co-occurrence leads to an incrementally increased risk of adult victimisation.

This prospective study aims to determine whether a range of mood, anxiety and substance use disorders at baseline predict adult violent and psychological victimisation at 3-year follow-up, also after adjustment for childhood trauma. This study is the first to examine these longitudinal associations in a large, representative community sample, differentiating between a wide range of mental disorders and including both violent and psychological victimisation. We hypothesised that (a) the presence of any mood, anxiety and substance use disorders predicts adult violent and psychological victimisation after adjustment for sociodemographic characteristics and childhood trauma; (b) a history of childhood trauma predicts adult violent and psychological victimisation after adjustment for any mental disorder and (c) the co-occurrence of any mental disorder and childhood trauma leads to an incrementally increased risk of adult victimisation.

Method

Sample

This study utilised data from the first two waves of the second Netherlands Mental Health Survey and Incidence Study (NEMESIS-2): an epidemiological cohort study on the prevalence, incidence and course of mental disorders in the Dutch general population aged 18–64 years (de Graaf *et al.*, 2010). Participants were selected based on a multistage, stratified random household sample. Based on the most recent birthday at first contact, one individual aged 18–64 years with sufficient fluency in the Dutch language was randomly selected from each household. Institutional addresses – and accordingly, institutionalised individuals (i.e. those living in hospices, prisons) – were excluded. Those temporarily living in institutions could be interviewed after they had returned home.

In the first wave (T_0), 6646 persons were interviewed (response rate 65.1%). This sample was nationally representative, although younger subjects were somewhat underrepresented (de Graaf *et al.*, 2010). Three years after T_0, all respondents were approached for follow-up, of whom 5303 persons were interviewed again (response rate 80.4%, with those deceased excluded). A previous study demonstrated that attrition at follow-up was not significantly linked to any mental disorder, any mood, anxiety or substance use disorder, or any individual mental disorder at baseline, after controlling for sociodemographic characteristics (de Graaf *et al.*, 2013).

Procedures

The first wave took place from November 2007 to July 2009 and the second wave from November 2010 to June 2012, with a mean period of 3 years and 7 days between both interviews. The interviews were laptop computer-assisted, and nearly all were conducted at the respondent's home. The average interview duration was 95 min for T_0, and 84 min for T_1. The study was approved by a medical ethics committee and has been carried out in accordance with the 1964 Declaration of Helsinki and its later amendments. All respondents provided written informed consent. A more comprehensive description of the design is provided elsewhere (de Graaf *et al.*, 2010).

Measures

Victimisation

At T_1, participants were asked whether they had experienced physical, sexual or psychological victimisation since T_0. Physical victimisation included kicking, biting, hitting with a hand or an object, or trying to wound with an object (i.e. gun, knife, piece of wood, scissors or other) or hot water. Sexual victimisation included unwanted sexual touching, forced undressing and forced sexual activity. Psychological victimisation included name-calling, offending, belittling, punishing unjustly, blackmailing or threatening, which

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largely corresponds to the definitions used in previous research (Fink *et al.*, 1995; Straus *et al.*, 1996).

To increase the likelihood of victimisation being reported, types of victimisation were not described as such, but were listed in a booklet and referred to by number. Participants were asked if and how often they had experienced each type of victimisation since T_0. Psychological victimisation was defined as present if it had occurred more than once, which is consistent with previous research (Glaser, 2002; McLaughlin *et al.*, 2010; Honings *et al.*, 2017). Physical and sexual abuse were defined as present if it had occurred on one or more occasions, which is also consistent with previous research (Kessler *et al.*, 2001; Miller *et al.*, 2011; Ten Have *et al.*, 2014). Each type of victimisation was coded dichotomously (absent/present).

Mental disorders

The presence of mental disorders was determined with the Composite International Diagnostic Interview (CIDI) version 3.0 (Haro *et al.*, 2006): a structured lay-administered diagnostic interview that generates DSM-IV diagnoses. This instrument was developed and adapted for use in the World Mental Health Survey Initiative (Kessler and Üstün, 2004). The CIDI 3.0 version used in NEMESIS-2 was an improvement of the Dutch version used in this initiative.

This paper encompasses the 12-month prevalence of the following disorders assessed at baseline: mood disorders (major depression, dysthymia and bipolar disorder), anxiety disorders (panic disorder, agoraphobia without panic disorder, social phobia, specific phobia and generalised anxiety disorder [GAD]) and SUD (alcohol/drug abuse and dependence). Clinical calibration studies have demonstrated that the CIDI 3.0 assesses mood, anxiety and substance use disorders with generally good validity in comparison with blinded clinical reappraisal interviews (Haro *et al.*, 2006).

Sociodemographic characteristics

At T_0, sex, age, education, living situation, employment status and household income situation were assessed. Age and educational attainment were included in the analyses as categorical variables with five and four categories, respectively. Employment status (paid job/no paid job), living situation (with partner/without partner) and household income situation (sufficient/insufficient income to make a living) were coded dichotomously.

Childhood trauma

Participants were asked whether and how often they had experienced physical, sexual or psychological abuse, or bullying before the age of 16 years. Childhood physical abuse was defined as kicking, hitting with a hand or an object, biting or trying to wound with an object or hot water. Childhood sexual abuse was defined as unwanted sexual touching, forced undressing and forced sexual activity. Psychological abuse included name-calling, offending, belittling, punishing unjustly, blackmailing, threatening, one's siblings being favoured and consistent lack of parental attention/support. To increase the likelihood of childhood trauma being reported, these experiences were listed in a booklet and referred to by number. Psychological abuse was considered present if it had occurred more than once; physical and sexual abuse were considered present if it had occurred on one or more occasions (consistent with Kessler *et al.*, 2001; Glaser, 2002; Miller *et al.*, 2011). Bullying was considered present if participants answered affirmative when asked whether they had been bullied regularly before the age of 16. Each type of childhood trauma was coded dichotomously (absent/present).

Statistical analysis

All analyses were performed with STATA version 12.1, using weighted data to correct for differences in response rates in several sociodemographic groups at both waves and differences in the probability of selection of respondents within households at baseline. Robust standard errors were calculated to obtain correct 95% confidence intervals (CIs) and *p*-values (Skinner *et al.*, 1989). Based on the literature, gender (Walsh *et al.*, 2003; de Waal *et al.*, 2018), age (Walsh *et al.*, 2003), living situation (Miethe and McDowall, 1993; Xu *et al.*, 2013), household income situation (Honkonen *et al.*, 2004) and childhood trauma (Werner *et al.*, 2016) were selected as potential confounders. All were univariately associated with both mental disorder and adult victimisation and were included as covariates in the models.

First, 3-year prevalence rates of adult physical, sexual and psychological victimisation were calculated. Second, descriptive analyses and logistic regression analyses adjusted for gender and age were used to examine sociodemographic characteristics as correlates of victimisation at follow-up (Table 1). Third, logistic regression analyses were performed to examine associations between 12-month mental disorders at baseline and adult violent and psychological victimisation at follow-up (Table 2), adjusted for sociodemographic characteristics (Model 1) and any childhood trauma (Model 2). In these regression analyses, physical and sexual victimisations were combined into the category 'violent victimisation' to increase power. Fourth, associations between all types of childhood trauma at baseline and violent and psychological victimisation at follow-up were examined using logistic regression analyses (Table 3), adjusted for sociodemographic characteristics (Model 1) and additionally for any mental disorder at baseline (Model 2).

Finally, to analyse whether any childhood trauma modified the effect of mental disorder on adult victimisation, we used an additive model, rather than a multiplicative model (guided by previous work; e.g. Ten Have *et al.*, 2002; Tuithof *et al.*, 2012). Additive interaction existed if the combined effect of mental disorder and any childhood trauma on adult victimisation was stronger than the sum of separate effects. The presence of additive interaction effects was determined by comparing this observed combined effect with the expected odds ratio (OR) in case of no interaction (i.e. the sum of the separate effects of childhood trauma and mental disorder). If the expected OR in case of no interaction lies below the lower limit of the CI of the combined effect, additive interaction is assumed (Hosmer and Lemeshow, 1992; Ahlbom and Alfredsson, 2005; Rothman, 2012). We tested eight interaction effects: any childhood trauma by any mood disorder, any anxiety disorder, any SUD and any mental disorder, for both violent and psychological victimisation. Listwise deletion was used for missing data. Two-tailed testing procedures were used with 0.05 alpha levels in all analyses.

Results

Sociodemographic characteristics as correlates of victimisation

Of all 5303 participants who completed the T_1 follow-up measure, 237 (5.5%) reported having experienced physical victimisation, 34 (0.7%) reported sexual victimisation and 963 (19.7%) reported

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Table 1. Sociodemographic characteristics at baseline as correlates of adult victimisation at follow-up in the general population (n = 5303), in unweighted numbers (n), weighted column percentages (%) and weighted adjusted odds ratios (ORs) with 95% confidence intervals (CIs)

		Physical victimisation (n = 237; 5.5%)		Sexual victimisation (n = 34; 0.7%)		Psychological victimisation (n = 963; 19.7%)	
Sociodemographic characteristics at T_0	n (weighted %)	Weighted %	OR[a] (95% CI)	Weighted %	OR[a] (95% CI)	Weighted %	OR[a] (95% CI)
Female	2922 (49.5)	44.4	0.78 (0.56–1.08)	74.8	2.94 (0.98–8.82)	52.3	1.13 (0.94–1.36)
Age at interview (ref: 18–24 years)	355 (12.0)	29.2	Ref.	39.0	Ref.	20.2	Ref.
25–34	851 (19.9)	32.8	0.64 (0.38–1.09)	24.2	**0.38 (0.15–0.97)***	25.4	**0.68 (0.49–0.96)***
35–44	1376 (24.5)	18.5	**0.28 (0.16–0.48)*****	13.9	**0.18 (0.06–0.53)****	23.5	**0.47 (0.34–0.66)*****
45–54	1308 (23.4)	14.9	**0.23 (0.14–0.39)*****	19.5	0.26 (0.07–1.02)	20.3	**0.42 (0.29–0.61)*****
55–64	1413 (20.2)	4.6	**0.08 (0.04–0.16)*****	3.4	**0.05 (0.01–0.30)****	10.6	**0.23 (0.16–0.34)*****
Education (ref: primary, basic vocational)	226 (7.1)	9.8	Ref.	2.2	Ref.	5.1	Ref.
Lower secondary	1388 (22.4)	23.5	0.52 (0.18–1.51)	33.5	4.12 (0.50–34.18)	23.2	1.32 (0.75–2.33)
Higher secondary	1728 (41.6)	42.5	0.53 (0.21–1.35)	43.5	3.28 (0.39–27.27)	44.9	1.42 (0.83–2.43)
Higher professional education, university	1961 (28.8)	24.2	0.48 (0.19–1.20)	20.8	2.74 (0.30–25.22)	26.8	1.26 (0.75–2.11)
No partner	1641 (32.6)	51.5	1.35 (0.85–2.16)	79.7	**6.35 (2.44–16.48)*****	44.9	**1.54 (1.28–1.86)*****
No paid job	1286 (23.4)	21.1	0.96 (0.53–1.74)	27.7	1.02 (0.26–3.95)	22.0	0.97 (0.77–1.21)
Insufficient income to make a living	354 (7.7)	15.5	**2.07 (1.80–3.97)***	42.5	**6.61 (2.18–20.08)****	12.7	**1.93 (1.40–2.65)*****

Significant results are shown in bold.
*$p < 0.05$ **$p < 0.01$ and ***$p < 0.001$.
[a]ORs are adjusted for gender and age.

Table 2. Associations between 12-month mental disorders at baseline and adult victimisation at 3-year follow-up (n = 5171) in unweighted numbers (n) and weighted adjusted odds ratios (ORs) with 95% confidence intervals (CIs)

		Violent victimisation (n = 263, 6.0%)		Psychological victimisation (n = 963, 19.7%)	
		Model 1	Model 2	Model 1	Model 2
12-month mental disorders at T_0	n	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Any mood disorder	329	**1.86 (1.04–3.31)***	1.47 (0.79–2.75)	**1.99 (1.45–2.72)*****	**1.62 (1.16–2.26)****
Major depression	291	1.43 (0.80–2.56)	1.14 (0.64–2.03)	**1.80 (1.33–2.45)*****	**1.49 (1.07–2.07)***
Dysthymia	53	0.38 (0.10–1.53)	0.30 (0.08–1.17)	1.89 (0.79–4.50)	1.54 (0.64–3.68)
Bipolar disorder	34	**4.03 (1.21–13.45)***	3.33 (0.88–12.65)	2.30 (0.87–6.07)	1.84 (0.72–4.73)
Any anxiety disorder	539	1.47 (0.93–2.33)	1.21 (0.73–1.97)	**1.63 (1.25–2.14)*****	**1.36 (1.05–1.77)***
Panic disorder	61	0.90 (0.26–3.05)	0.74 (0.22–2.50)	**2.23 (1.26–3.94)****	**1.84 (1.01–3.36)***
Agoraphobia	21	0.82 (0.10–6.66)	0.61 (0.07–5.11)	1.35 (0.44–4.11)	1.03 (0.34–3.11)
Social phobia	192	1.45 (0.65–3.23)	1.20 (0.50–2.90)	**1.80 (1.21–2.67)****	**1.52 (1.05–2.22)***
Specific phobia	275	1.27 (0.70–2.29)	1.00 (0.53–1.87)	**1.49 (1.03–2.15)***	1.22 (0.85–1.76)
Generalised anxiety disorder	93	1.88 (0.95–3.72)	1.68 (0.91–3.09)	**2.47 (1.40–4.33)****	**2.16 (1.22–3.81)****
Any substance use disorder	230	1.82 (0.95–3.49)	1.63 (0.80–3.33)	1.27 (0.76–2.11)	1.14 (0.67–1.92)
Alcohol abuse	146	0.79 (0.33–1.88)	0.73 (0.29–1.84)	0.93 (0.54–1.59)	0.87 (0.52–1.44)
Alcohol dependence	28	**12.06 (3.86–37.68)*****	**13.26 (3.91–45.00)*****	**4.34 (1.61–11.67)****	**4.53 (1.71–11.99)****
Drug abuse	39	1.05 (0.27–4.14)	0.84 (0.19–3.79)	1.77 (0.70–4.50)	1.46 (0.50–4.27)
Drug dependence	30	2.29 (0.44–11.86)	1.69 (0.24–11.82)	0.54 (0.20–1.47)	0.40 (0.14–1.09)
Any mental disorder	902	**1.57 (1.06–2.34)***	1.30 (0.84–2.03)	**1.58 (1.22–2.05)****	**1.33 (1.02–1.75)***

Significant results are shown in bold.
*$p < 0.05$ **$p < 0.01$ and ***$p < 0.001$.
Model 1 is adjusted for gender, age, partner status and household income situation.
Model 2 is adjusted for gender, age, partner status, household income situation and any childhood trauma.

psychological victimisation since T_0. Respondents with younger age and respondents with insufficient income to make a living were more likely to have experienced each type of victimisation, whereas respondents without a partner were more likely to have experienced sexual and psychological victimisation. Gender, education level and employment status were not associated with victimisation (Table 1).

Associations between mental disorders and victimisation

Violent victimisation

Respondents with any mood disorder in the 12 months preceding T_0 were significantly more likely to have experienced violent victimisation in the following 3 years, after adjustment for sociodemographic characteristics (Table 2; Model 1). This did not apply for respondents with any anxiety disorder or any SUD. Of the individual disorders, only bipolar disorder and alcohol dependence were associated with violent victimisation. After additional adjustment for any childhood trauma (Model 2), of all main categories and individual disorders, only alcohol dependence remained significantly associated with violent victimisation – increasing the odds more than 13-fold.

Psychological victimisation

Regarding psychological victimisation, a different picture emerged: both any mood disorder and any anxiety disorder were significantly associated with psychological victimisation in Model 1, whereas any SUD was not. In contrast to the limited correlates of violent victimisation, a large number of individual disorders predicted psychological victimisation after adjustment for sociodemographic characteristics: major depression, panic disorder, social phobia, specific phobia, GAD and alcohol dependence. Except for specific phobia, all abovementioned correlates remained significant after additional adjustment for childhood trauma. The strongest associations were found for alcohol dependence and GAD, which increased the odds almost 5-fold and more than 2-fold, respectively.

Associations between childhood trauma and victimisation

Respondents with a history of any childhood trauma were more likely to experience any adult victimisation after adjustment for sociodemographic characteristics (OR = 2.46 [1.62–3.73], $p < 0.001$). More specifically, respondents with a history of each type of childhood trauma – physical, sexual or psychological abuse, or having been bullied – were more likely to experience adult violent and psychological victimisation, as shown in Table 3 (Model 1). All associations remained significant after additional adjustment for any mental disorder (Model 2), indicating an independent effect on adult violent and psychological victimisation for each type of childhood trauma. The strongest associations were found between childhood sexual abuse and violent victimisation and between childhood psychological abuse and psychological victimisation, although all yielded similar magnitudes.

We found an additive interaction effect of any childhood trauma and any anxiety disorder on psychological victimisation

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Table 3. Associations between childhood trauma subtypes at baseline and adult victimisation at 3-year follow-up in the general population (n = 5171), in unweighted numbers (n) and weighted adjusted odds ratios (ORs) with 95% confidence intervals (CIs)

		Violent victimisation (n = 263, 6.0%)		Psychological victimisation (n = 963, 19.7%)	
		Model 1	Model 2	Model 1	Model 2
Childhood trauma at T_0	n	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Sexual abuse	454	**2.58 (1.57–4.24)*** **	**2.40 (1.41–4.08)** **	**2.16 (1.59–2.92)*** **	**2.01 (1.46–2.77)*** **
Physical abuse	510	**2.39 (1.71–3.36)*** **	**2.21 (1.58–3.09)*** **	**2.28 (1.74–2.97)*** **	**2.12 (1.65–2.72)*** **
Psychological abuse	1220	**2.39 (1.58–3.61)*** **	**2.26 (1.43–3.57)** **	**2.28 (1.84–2.84)*** **	**2.17 (1.75–2.69)*** **
Bullying	764	**2.00 (1.38–2.92)*** **	**1.91 (1.29–2.81)** **	**2.17 (1.77–2.67)*** **	**2.08 (1.69–2.55)*** **
Any childhood trauma	1889	**2.46 (1.62–3.73)*** **	**2.35 (1.49–3.72)*** **	**2.32 (1.94–2.77)*** **	**2.22 (1.87–2.64)*** **

Significant results are shown in bold.
*$p < 0.05$ **$p < 0.01$ and ***$p < 0.001$.
Model 1 is adjusted for gender, age, partner status and household income situation.
Model 2 is adjusted for gender, age, partner status, household income situation and any mental disorder.

(i.e. the expected effect lay below the lower limit of the CI for the observed combined effect: 2.22 *v.* 3.32, 95% CI 2.41–4.56). Hence, the co-occurrence of any childhood trauma and any anxiety disorder incrementally increased the risk of psychological victimisation. Additional logistic regression analyses, performed separately for individuals with and without a history of childhood trauma, showed that presence of any anxiety disorder was associated with an increased risk of adult psychological victimisation in individuals with a history of childhood trauma (OR = 1.48 [1.08–2.03], p = 0.014). In people without a history of childhood trauma, however, no significant association between any anxiety disorder and psychological victimisation existed. We found no other interaction effects on psychological victimisation, nor did we find any interaction effects for childhood trauma and mental disorder on violent victimisation. More details on these results are provided in online Supplementary material.

Discussion

This study is the first to determine longitudinal associations between a broad range of mental disorders and adult violent and psychological victimisation in the general population, taking childhood trauma into account. Importantly, this study demonstrates that associations with victimisation vary considerably across specific disorders. Contrary to our expectations, only alcohol dependence yielded a consistent effect on both types of victimisation after accounting for the effect of childhood trauma. Furthermore, this study shows that individuals with depression, panic disorder, social phobia and GAD are at risk of subsequent psychological victimisation, also after accounting for childhood trauma. This study also demonstrates that each type of childhood trauma is not only a risk factor for adult violent victimisation, but also for psychological victimisation, after adjustment for mental disorder. Finally, our results indicate that the co-occurrence of childhood trauma and any anxiety disorder leads to an incrementally increased risk of psychological victimisation.

Main findings

Violent victimisation

Our finding that alcohol dependence is strongly associated with future violent victimisation only partly corresponds to previous research (Silver *et al.*, 2005). Remarkably, alcohol abuse was not associated with victimisation, which contrasts numerous studies documenting a positive association between problematic alcohol use and sexual victimisation in female samples (Testa and Livingston, 2009). However, most were cross-sectional and unable to draw conclusions on causality. Evidence from prospective studies remains mixed: although some confirmed this association (Combs-Lane and Smith, 2002; Messman-Moore *et al.*, 2008), others could not (Gidycz *et al.*, 1995; Acierno *et al.*, 1999; Messman-Moore *et al.*, 2013).

The increased risk of violent victimisation among people with alcohol dependence might be explained by deficits in executive functions. Difficulties with problem-solving and decision-making under risky conditions have been commonly observed in people with chronic alcoholism (Le Berre *et al.*, 2017). Furthermore, alcohol dependence is associated with deficits in social cognition, such as impaired recognition of anger and difficulties reading others' state of mind (Kornreich *et al.*, 2002; Bora and Zorlu, 2017), even after periods of abstinence (Kornreich *et al.*, 2002; Oscar-Berman *et al.*, 2014). Presumably, these deficits may hamper one's capacity to cope with conflicts and risky situations. An alternative explanation, however, may be found in the victim-perpetrator overlap: people with alcohol dependence are not only at risk to become victim of violence, but also to commit violence themselves (Pulay *et al.*, 2008; Elbogen and Johnson, 2009; Fazel *et al.*, 2010). It remains unclear whether these factors uniquely apply to people with alcohol dependence, and not to people with alcohol abuse and other mental disorders.

Unexpectedly, most mental disorders were not associated with violent victimisation. These findings are largely in contrast with those observed in clinical (Stevens *et al.*, 2007; Meijwaard *et al.*, 2015) and population-based samples (Acierno *et al.*, 1999; Krahé and Berger, 2017). Although the presence of any mood disorder and bipolar disorder was associated with more violent victimisation, our results indicate that this increased risk should be attributed to childhood trauma rather than to these mental disorders. Previous studies may have overestimated the association between mental disorders and violent victimisation due to methodological shortcomings, such as a cross-sectional design (Stevens *et al.*, 2007; Meijwaard *et al.*, 2015), a less representative sample (Acierno *et al.*, 1999; Hart *et al.*, 2012; Krahé and Berger, 2017), or lack of adjustment for childhood trauma or previous victimisation (Stevens *et al.*, 2007; Hart *et al.*, 2012; Meijwaard *et al.*, 2015; Krahé and Berger, 2017). However, since the prevalence of

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violent victimisation was relatively low in our sample (n = 263, 6%), power to detect associations was somewhat limited.

Psychological victimisation

This is the first study to determine longitudinal associations between mental disorders and adult psychological victimisation. Our results indicate that people with alcohol dependence, depressive disorder, panic disorder, social phobia or GAD are at risk of psychological victimisation after adjustment for childhood trauma. Studies on psychological victimisation are scarce, but our results are largely in line with research in children and adolescents that indicated depressive symptoms and anxious-withdrawn behaviour to be associated with subsequent psychological victimisation (Shapero *et al.*, 2013; Brendgen and Poulin, 2018).

One explanation for the increased risk of psychological victimisation in people with depressive and anxiety disorders might be found in their high levels of interpersonal problems, which seem to persist even after remission (scar effect) (Ehring *et al.*, 2008; Saris *et al.*, 2017). Symptoms of depressive and anxiety disorders, such as irritability, apathy, avoidance and reassurance seeking, may cause frustration in social relationships, which in turn may evoke psychological violence. An alternative explanation may lie in the fact that individuals with a depressive or anxiety disorder show a bias towards negative information (Mathews and MacLeod, 2005; Maoz *et al.*, 2016; Carlisi and Robinson, 2018). Their tendency to perceive ambiguous information as negative may cause them to appraise and report ambiguous situations as psychological victimisation more often than others. Since psychological victimisation is generally more ambiguous than violent victimisation, perception bias appears to be mainly applicable to psychological victimisation. Future research should further explore the specific context of psychological victimisation incidents and should clarify why some mental disorders increase one's risk of psychological victimisation, while other disorders do not.

Childhood trauma

Our results fully support previous studies indicating that individuals who have been exposed to any subtype of childhood trauma are at risk of adult violent victimisation (Roodman and Clum, 2001; Widom *et al.*, 2007; Barrios *et al.*, 2015; Werner *et al.*, 2016), and build upon these by showing this pattern also holds for adult psychological victimisation. Moreover, this study shows that these effects are independent of mental disorder. The mechanisms through which childhood trauma leads to adult revictimisation remain largely unknown (see Messman-Moore and Long, 2003, for a review). Although problematic alcohol use (Gidycz *et al.*, 1995; Ullman *et al.*, 2009; Strøm *et al.*, 2017), interpersonal problems (Strøm *et al.*, 2017) and emotion dysregulation (Messman-Moore *et al.*, 2013) have been identified as mediators in this relationship, results remain inconsistent.

Our results indicate that the co-occurrence of childhood trauma and any anxiety disorder leads to an increased risk of psychological victimisation. Compared with individuals with either a history of childhood trauma or any anxiety disorder, individuals with both childhood trauma and any anxiety disorder may show more anxious-withdrawn behaviour, which was associated with subsequent psychological victimisation in adolescents (Brendgen and Poulin, 2018). Contrary to our expectations, we found no evidence that the co-occurrence of childhood trauma and mental disorders leads to an increased risk of violent victimisation. However, since the prevalence of violent victimisation was relatively low (n = 263, 6%), power to estimate interaction effects was somewhat limited.

Strengths and limitations

Major strengths of this study are its prospective design, the large, representative population-based sample and the use of a clinically validated diagnostic interview to establish a wide range of mental disorders (CIDI 3.0; Haro *et al.*, 2006). However, this study also has limitations. First, the assessment of victimisation and childhood trauma by retrospective self-report may be subject to recall bias. However, there is little evidence that psychopathology is associated with less reliable recollections of victimisation and childhood trauma (Goodman *et al.*, 1999; Paivio, 2001; Hardt and Rutter, 2004). Second, although face-to-face and telephone interviews remain the golden standard in victimisation research (e.g. Van Dijk *et al.*, 2008), both may result in more under-reporting than self-administration (Lynch, 2006). Third, no information about the severity or context of victimisation was available. Fourth, although we adjusted for relevant confounders, it remains possible that the reported associations were influenced by other sources of confounding, such as victimisation at baseline, psychiatric status at the time of follow-up assessment, or the respondent's own violent behaviour. Finally, younger people, people with insufficient mastery of Dutch language, people without a fixed address, and people who were institutionalised were somewhat underrepresented (de Graaf *et al.*, 2010). Accordingly, our results are not generalisable to these groups.

Conclusion

This prospective study shows that people with mood, anxiety or substance use disorders are at increased risk of future violent and psychological victimisation. However, the associations with victimisation vary considerably across specific disorders. Clinicians should be aware of the increased risk of any adult victimisation among individuals with alcohol dependence or a history of childhood trauma, and of psychological victimisation in individuals with depressive and anxiety disorders. Interventions that prevent adult (re)victimisation in people at risk are strongly needed. Two recently developed interventions aim to prevent violent victimisation in psychiatric patients by enhancing interpersonal and emotion regulation skills (de Waal *et al.*, 2015; Christ *et al.*, 2018). Importantly, our results show that violence prevention programmes should also target members of the general population with mental disorders. Moreover, these programmes should not only address physical and sexual violence, but also psychological violence.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S2045796018000768.

Data. The data on which this manuscript is based are not publicly available. However, data from NEMESIS-2 are available upon request. The Dutch ministry of health financed these data, which can be used freely under certain restrictions, and always under supervision of the principal investigator (PI) of the study. The PI of NEMESIS-2 (Dr Margreet ten Have, co-author of this paper) can be contacted at all times to request data: researchers can submit a research plan, describing its background, research questions, variables to be used in the analyses and an outline of the analyses. If such a request is approved, a written agreement will be signed stating that the data will only be used for addressing the agreed research questions, and not for other purposes.

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Conflict of interest. None.

Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation, and with the Helsinki Declaration of 1975, as revised in 2008.

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