Brief Report

# Trauma and Psychosis: An Analysis of the National Comorbidity Survey

Mark Shevlin, Ph.D.
Martin J. Dorahy, D.Clin.Psych., Ph.D.
Gary Adamson, Ph.D.

**Objective:** The authors hypothesized that the likelihood of psychosis classification would increase with traumatic experiences.

**Method:** Data from the National Comorbidity Survey were used to estimate the relationship between interpersonal trauma and the likelihood of a classification of psychosis.

**Results:** Childhood physical abuse predicted psychosis, and there was a significant cumulative relationship between trauma and psychosis, with number of trauma types experienced increasing the probability of psychosis.

**Conclusions:** Overall, physical abuse predicted psychosis. In addition, a significant gender-by-rape interaction was observed, with rape having higher predictive value for psychosis in male subjects.

*(Am J Psychiatry 2007; 164:166–169)*

Renewed interest in the etiology of psychotic disorders and symptoms (1) has sharpened the focus on psychosocial factors. Read et al. (2) reviewed the relationship between child maltreatment and psychosis and argued for a potential causal connection. In a large-scale prospective study, Janssen et al. (3) reported that child abuse before the age of 16 was a significant risk factor for psychotic symptoms. In a recent analysis of the second British National Survey of Psychiatric Morbidity (4), traumatic experiences were associated with the presence of a psychotic illness rather than other types of psychiatric difficulty. After depression and the shared contribution of other traumas were controlled, lifetime factors such as sexual abuse, running away from home, and experiencing serious injury, illness, or assault were demonstrated to increase the likelihood of psychosis classification. However, traumatic experiences in this study were, in part, relatively nonspecific, assessing several types in the one item (e.g., "victim of serious injury, illness, or assault"), and were broadly defined as those related to both interpersonal stress (e.g., sexual abuse, bullying) and noninterpersonal stress (e.g., being homeless). An examination of data from the National Comorbidity Survey allowed us to clarify and expand on previous findings. Specifically, we focused on whether interpersonal threats to physical and sexual integrity were related to psychosis in a large national sample. We hypothesized that traumatic experiences would increase

TABLE 1. Traumatic Experiences Among National Comorbidity Survey Respondents by Psychosis Classification[a]

| | | Psychosis Absent | | Psychosis Present | |
|---|---|---|---|---|---|
| Trauma | N | N | % | N | % |
| Rape | | | | | |
| No | 5,616 | 5,583 | 99.4 | 33 | 0.6 |
| Yes | 258 | 249 | 96.5 | 9 | 3.5 |
| Total | 5,874 | 5,831 | 99.3 | 42 | 0.7 |
| Serious attack or assault | | | | | |
| No | 5,382 | 5,351 | 99.4 | 31 | 0.6 |
| Yes | 492 | 480 | 97.6 | 12 | 2.4 |
| Total | 5,873 | 5,831 | 99.3 | 42 | 0.7 |
| Physically abused as child | | | | | |
| No | 5,544 | 5,513 | 99.5 | 30 | 0.5 |
| Yes | 246 | 234 | 95.2 | 12 | 4.8 |
| Total | 5,790 | 5,747 | 99.3 | 42 | 0.7 |
| Neglected as child | | | | | |
| No | 5,621 | 5,587 | 99.4 | 34 | 0.6 |
| Yes | 164 | 156 | 94.9 | 8 | 5.1 |
| Total | 5,786 | 5,743 | 99.3 | 42 | 0.7 |
| Sexually molested | | | | | |
| No | 5,454 | 5,425 | 99.5 | 29 | 0.5 |
| Yes | 416 | 403 | 96.9 | 13 | 3.1 |
| Total | 5,870 | 5,828 | 99.3 | 42 | 0.7 |

[a] A weight variable was used to adjust data to approximate the national population distributions of the cross-classifications of age, sex, race/ethnicity, marital status, education, living arrangements, region, and urbanicity as defined by the 1989 U.S. National Health Interview Survey.

the likelihood of a classification of psychosis. In addition, we examined the interaction effects of gender and trauma on psychosis.

## Method

The National Comorbidity Survey was a collaborative epidemiologic investigation (1990–1992) based on a stratified, multistage area probability sample of noninstitutionalized persons between 15 and 54 years of age in the coterminous United States designed to study the prevalence and correlates of DSM-III-R disorders. The initial survey employed a household sample of over 8,000 respondents, and a subsample of the original respondents completed the additional Part 2 survey, which contained a detailed risk factor battery and additional diagnoses. All analyses reported in this article were conducted from the National Comorbidity Survey Part 2 data (N= 5,877).

A modified version of the Composite International Diagnostic Interview was used to assess the lifetime prevalence of nonaffective psychosis (a summary category consisting of schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder, and atypical psychosis). The National Comorbidity Survey also elicited information on the occurrences of traumatic events (these were presented to the respondent on a list and referenced only by number). We selected five questions that represented childhood victimization, threats to physical integrity, and threats to sexual integrity. Specifically, a "yes" or "no" response was required to the following statements:

1. You were seriously neglected as a child.
2. You were physically abused as a child.
3. You were seriously physically attacked or assaulted.
4. You were raped (someone had sexual intercourse with you when you did not want to by threatening you or using some degree of force).
5. You were sexually molested (someone touched or felt your genitals when you did not want them to).
6. No explicit age limit was stated for "childhood" events.

## Results

The traumatic experiences and psychosis classifications of the National Comorbidity Survey respondents are presented in Table 1. All analyses were conducted using hierarchical binary logistic regression in SPSS 11.0 where the model was built sequentially, retaining only those variables that were significant in each block. The following background variables were used as predictors in the first block: gender, age, depression (lifetime prevalence), family history (two variables were used to represent lifetime prevalence of depression in respondent's mother and father), urbanicity (a binary variable representing urban or nonurban location), and income (four-category variable). The only significant predictor was depression (odds ratio=9.74, 95% CI=5.14–18.47; z=48.75, p<0.001). The trauma variables were entered in the second block, and physical abuse was the only significant predictor (odds ratio=2.68, 95% CI=1.11–6.52; z=4.76, p=0.03), although all the odds ratios were similar in magnitude and direction ranging from 1.50 to 2.68. The difference in model fit between a logistic model with all the odds ratios constrained to be equal and another in which each variable had a unique effect was not statistically significant ($\Delta\chi^2$=0.714, $\Delta$df= 4, p=0.94), indicating significant homogeneity among the effects of the trauma variables. The estimated common odds ratio for all variables was statistically significant (odds ratio=1.80, 95% CI=1.51–2.14; z=42.90, p<0.001). In the third block, five gender-by-trauma interactions were included, and the gender-by-rape interaction was found to be significant. The final model indicated that psychosis could be predicted by depression (odds ratio=5.09, 95% CI=2.99–8.66; z=36.06, p<0.001), physical abuse (odds ratio=3.45, 95% CI=

1.90–6.25; z=3.45, p<0.001), and the gender-by-rape interaction (odds ratio=1.58, 95% CI=1.15–2.18; z=1.58, p<0.001). With depression removed from the model, the effects for physical abuse (odds ratio=4.49, 95% CI=2.47–8.12; z=24.56, p<0.001) and the gender-by-rape interaction (odds ratio=1.88, 95% CI=1.37–2.59; z=15.15, p<0.001) were slightly higher. To interpret the interaction, the same analysis was rerun separately for male and female subjects (after replacing the interaction term with only the rape variable). The effect for the rape variable was statistically higher for male subjects (odds ratio=5.81, 95% CI=1.24–27.17; z=4.99, p=0.02) than female subjects (odds ratio=4.05, 95% CI=2.02–8.08; z=5.67, p<0.001). With depression removed the effects for male subjects (odds ratio=8.19, 95% CI=1.85–36.32; z=7.66, p=0.01) and female subjects (odds ratio=5.65, 95% CI=2.87–11.10; z=25.30, p<0.001) were slightly higher.

To examine the cumulative effect of traumas, psychosis was regressed on an aggregate variable created to represent the number of traumatic events experienced by each respondent (0, 1, 2, and ≥3). The aggregate trauma variable was entered as a categorical predictor in the second block of a logistic regression, with depression entered in the first block. The first level (no traumatic experiences) was used as a reference category for a simple contrast. The odds ratios for one traumatic experience (odds ratio=2.12, 95% CI=1.13–3.99; z=5.46, p=0.02), two experiences (odds ratio=3.89, 95% CI=1.83–8.28; z=12.41, p<0.001), and three or more experiences (odds ratio=7.96, 95% CI=3.91–16.17; z=32.86, p<0.001) indicated an increasing likelihood of psychosis as the number of trauma types experienced increased.

## Discussion

Childhood physical abuse was the only significant predictor of psychosis in the total sample after depression was controlled. Read et al. (2) argued that rather than the diathesis for psychotic illnesses being solely related to a biological-genetic vulnerability factor, it may for some be related to early neurodevelopmental alterations resulting from childhood abuse. The current findings support the notion that childhood physical abuse may be one experience that alters neurobiological development and increases the risk for a psychotic illness. Moreover, cumulative trauma may also operate to further heighten risk, given the positive association between the number of traumatic experience types and risk of a psychotic illness.

Although childhood physical abuse was the only significant predictor of psychosis, there was significant homogeneity among the effects for all trauma variables, and the common odds ratio for all traumas was statistically significant (odds ratio=1.80, 95% CI=1.51–2.14; z=42.90, p<0.001) although lower than that for childhood physical abuse. This suggests the effects of the other traumas should not be ruled out as possible predictive factors for psychosis, since their odds ratios were not significantly different than that for childhood physical abuse.

In keeping with the significant gender differences reported in the onset, phenomenology, and course of psychotic symptoms (5, 6), it is perhaps not surprising that victimization experiences were related to psychosis differentially for male and female subjects, with the odds ratios associated with rape being significantly higher for male subjects. The subversion of both biological roles (i.e., males' evolutionary and anatomical function as "penetrators" during coitus) and cultural roles (e.g., the Western enculturation of males toward power) in male rape may come to bear on its profound association with psychosis in men. As depression was controlled in the analysis, the higher rate of affective symptoms often reported in female subjects with psychotic illnesses (7) cannot account for either gender differences in the significance of specific victimization experiences or the link between physical childhood abuse and psychosis in female subjects.

Although retrospective reporting of childhood trauma, especially from individuals with psychotic illnesses, represents one potential methodological problem, previous work has indicated that such reports are typically reliable (8). The findings highlight the importance of evaluating interpersonal victimization experiences during clinical assessment to ensure comprehensive formulation of the patient's difficulties and appropriate treatment planning (2, 4).

Received June 3, 2005; revisions received Aug. 3 and Nov. 7, 2005; accepted Dec. 28, 2005. From the Psychiatric Epidemiology Research Unit, University of Ulster at Magee College; the Trauma Resource Centre, North & West Belfast HSS Trust; and the School of Psychology, The Queen's University of Belfast. Address correspondence and reprint requests to Dr. Shevlin, Psychiatric Epidemiology Research Unit, University of Ulster at Magee College, Londonderry BT48 7JI, United Kingdom; m.shevlin@ulster.ac.uk (e-mail).

All authors report no competing interests.

### References

1. Bentall RP: Madness Explained: Psychosis and the Human Condition. London, Penguin, 2003
2. Read J, Perry BD, Moskowitz A, Connolly J: The contribution of early traumatic events to schizophrenia in some patients: a traumagenic neurodevelopmental model. Psychiatry 2001; 64:319–345
3. Janssen I, Krabbendam L, Bak M, Hanssen M, Vollebergh W, de Graaf R, van Os J: Childhood abuse as a risk factor for psychotic experiences. Acta Psychiatr Scand 2004; 109:38–45
4. Bebbington PE, Bhugra D, Brugha T, Farrell M, Lewis G, Meltzer H, Jenkins R: Psychosis, victimisation and childhood disadvantage: evidence from the second British National Survey of Psychiatric Morbidity. Br J Psychiatry 2004; 185:220–226

5. Read J: Poverty, ethnicity and gender, in Models of Madness: Psychological, Social and Biological Approaches to Schizophrenia. Edited by Read J, Mosher LR, Bentall RP. New York, Brunner-Routledge, 2004, pp 161–194
6. Maric N, Krabbendam L, Vollebergh W, de Graaf R, van Os J: Sex differences in symptoms of psychosis in a non-selected, general population sample. Schizophr Res 2003; 63:89–95
7. McGlashan TH, Bardenstein KK: Gender differences in affective, schizoaffective, and schizophrenic disorders. Schizophr Bull 1990; 16:319–329
8. Goodman LA, Rosenberg SD, Mueser KT, Drake RE: Physical and sexual assault history in women with serious mental illness: prevalence, correlates, treatment, and future research directions. Schizophr Bull 1997; 23:685–696