Acta Psychiatrica Scandinavica

Acta Psychiatr Scand 2012: 125: 187–188

DOI: 10.1111/j.1600-0447.2011.01829.x

ACTA PSYCHIATRICA SCANDINAVICA

Editorial comment

Socioeconomic status and mental health: what is the causal relationship?

Editorial comment to Kristian Tambs et al. 'Genetic and environmental contributions to the relationship between education and anxiety disorders. A twin study' (1)

In this issue of *Acta Psychiatrica Scandinavica*, Tambs et al. (1) utilize a Norwegian twin cohort to assess the relationship between a subset of psychiatric disorders (anxiety disorders) and a specific aspect of socioeconomic status (SES) (education) to gain insight into the causal direction. First, the authors confirm the substantial correlation between anxiety disorders and educational levels. Next, the authors find that the anxiety-education correlation is largely explained by shared common factors, most importantly shared genetic factors.

If replicated, these results are potentially important for both researchers and policy makers. First, the size of the correlation between anxiety disorders and educational attainment ($r = 0.30$) is larger than many previous studies and extends a pattern of robust correlations between education and mental health in developed countries and weak to null correlations in developing countries. Second, and more controversially, the finding that a large proportion of the identified correlation that can be attributed to shared genetic factors informs a long-standing debate on the causal relationship between mental illness and SES (2). Two competing, but ultimately compatible, theories have dominated this debate. The social causation theory hypothesizes that the stress associated with low SES environments increases the risk for mental illness. Longitudinal studies have supported the social causation construct, suggesting that interventions to improve life conditions for low SES communities should reduce the prevalence and burden of mental illness (3). The social selection theory hypothesizes that the correlation between mental illness and SES is primarily the result of mental illness leading to lower attainment. Cross-sectional and social mobility research has supported the social selection construct and suggested that interventions that improve mental health should also improve SES (4). While investigators have differed on whether social causation or social selection is the predominant mechanism of correlation for different psychiatric disorders, the consensus has been that together, the two hypothesized causal mechanisms account for the vast majority of the correlation between SES and mental illness.

Twin cohorts are an invaluable resource in determining the genetic and environmental components of variables and gaining insight into the relationship between variables. The results of this twin study suggest that the correlation between anxiety and educational attainment is due largely to shared genetic factors, and thus, the correlation is not primarily causal in either direction.

Given the limited power of the present study, the non-causal relationship between anxiety disorders and education reported in this study needs to be replicated in larger population cohorts that have sufficient power to test direct phenotypic causal relationships. Twin studies with longitudinal assessments can also add important insights into the causal relationship between anxiety and educational attainment. Further, because the relationship between SES and mental illness has proven to be different across different mental illnesses, future twin studies should explore the relationship between SES and other psychiatric disorders (5). If the present findings are extended to other diagnoses, the findings should spur interest into identifying the set of genes that predispose towards both low educational attainment and psychiatric disorders.

While the findings temper the hope that all interventions that affect education will affect mental health or vice-versa, the finding leaves room that a broad intervention could potentially affect both outcomes.

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