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Economic downturns and population mental health: research findings, gaps, challenges and priorities

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Abstract

Prior research suggests that the current global economic crisis may be negatively affecting population mental health. In that context, this paper has several goals: (1) to discuss theoretical and conceptual explanations for how and why economic downturns might negatively affect population mental health; (2) present an overview of the literature on the relationship between economic recessions and population mental health; (3) discuss the limitations of existing empirical work; and (4) highlight opportunities for improvements in both research and practice designed to mitigate any negative impact of economic declines on the mental health of populations. Research has consistently demonstrated that economic crises are negatively associated with population mental health. How economic downturns influence mental health should be considered in policies such as social protection programs that aim to promote recovery.

Introduction

The health effects of economic recessions and crises have been studied for decades (Katona, 1966; Dooley & Catalano, 1979; Marmot & Bell, 2009). Evidence suggests that recessions have detrimental effects on many health indicators (Abel-Smith, 1986; Catalano, 1991). Although those who become unemployed during a recession may have worse health compared with others, those who remain employed may also be affected through a loss of income, investments or job security (Brenner & Mooney, 1983; Carlisle, 2008). Given the adverse health consequences that accompany poor economic conditions, how economic recessions influence population mental health is of interest.

The United States has been in a recession since December 2007, defined by the National Bureau of Economic Research as ‘a significant decline in economic activity spreading across the economy, lasting more than a few months, normally visible in production, employment, real income and other indicators ’ (Business Cycle Dating Committee of the

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Declaration of Interest
None.

National Bureau of Economic Research, 2008). Furthermore, the effects of the financial crisis have spread around the world, leading to significant decreases of the gross domestic product in advanced economies, collapsing global trade, declining donations, and contractions in the emerging economies (International Monetary Fund, 2009).

The current economic contraction has been the longest lasting since the Great Depression. With unemployment rates reaching double digits (United States Department of Labor, 2009) there is both national and international concern about the public health impact of the current economic climate (WHO, 2009). There are anecdotal reports in the popular press (Agiesta, 2009; Elias, 2009; Guthmann, 2009; Rough, 2009; Smith, 2009), editorials in the scientific literature (Gunnell *et al*. 2009; Lundin & Hemmingsson, 2009), and new studies based on prior economic downturns indicating the negative impact that economic crises have had, and may be currently having, on mental health, including suicide (Stuckler *et al*. 2009). In light of the current global economic crisis, we discuss what is known and what needs further study regarding the association between economic recessions and population mental health.

Background and mechanisms

Studies on the relationship between economic downturns and mental health trace their intellectual origins to Durkheim's seminal work '*Le suicide* ' (1897) (Durkheim, 1951), in which he argued that changes in the economy could increase psychiatric pathology potentially leading to suicide (Horwitz, 1984) and noted that macroeconomic phenomena could have significant psychological effects on individuals. Durkheim's research led sociologists to conduct research examining suicide rates within and across societies based on sociodemographic characteristics (Hamermesh & Soss, 1974). Decades later, Brenner conducted empirical studies linking societal economic change to increased psychiatric hospital admissions, arguing that economic instability was the major factor influencing rates of mental hospitalization (Brenner, 1973; Trainor *et al*. 1987). He found that individuals who had lost employment were at heightened risk and individuals who had not lost employment but who worked in organizations that lost many employees (causing fear and stress to those who remained) could also experience negative mental health outcomes (Brenner, 1990).

Durkheim and Brenner's research highlighted the impact of macro-level social conditions on population mental health with important public policy implications (Dooley & Catalano, 1984). This work suggests that if the economic environment influences the incidence of symptoms of mental disorders in populations, then policymakers should consider the psychological implications of their economic decisions (Dooley & Catalano, 1984).

Other theoretical models could explain how macroeconomic conditions might influence mental disorders. Brenner's 'Economic Change Model of Pathology' examined the complex relationship between the economic environment and changes in physical, social and mental well-being (Brenner, 1987). Catalano & Dooley proposed that macroeconomic indicators influence the use of mental health facilities based on the 'provocation' and 'uncovering' hypotheses (Catalano & Dooley, 1977). During economic downturns, family members and society have decreased tolerance for disordered behavior, hence 'uncovering' behavior resulting in more manifest psychiatric disorder seen by health providers. Alternately, economic change can cause new disorder by eliciting or 'provoking' maladaptive behavior. Their work suggests more evidence for the uncovering hypothesis (Catalano *et al*. 1981), but they could not reject the provocation hypothesis (Catalano *et al*. 1985).

Other relevant theories include: the ' shift ' hypothesis which suggested that economic contractions may deprive certain populations of private treatment, thereby increasing use of

public mental health facilities (Catalano *et al*. 1985), and the ‘ stress ’ hypothesis that community economic change is related to mental disorder via individual life changes and elevated symptoms of depression and stress (Dooley *et al*. 1981). It has been suggested that the relationship between the economy and mental health can be evaluated on the continuum between the ‘unfettered enterprise’ hypothesis and the ‘ social protection’ hypothesis (Dooley & Catalano, 1984). Unfettered enterprise suggests that the human costs of economic change are negligible and that ‘normal ’ people can adapt to such change, whereas social protection identifies high human costs of economic change that may be inequitably distributed over the population (Dooley & Catalano, 1984). To the extent that research identifies results more consistent with the social protection hypothesis, policymakers should seek to prevent harm and provide support for those who are most vulnerable during economic downturns (Marshall & Dowdall, 1982).

Other factors could explain the relationship between economic downturns and poor mental health. During times of stress, including economic recessions, people are likely to increase their drug and alcohol use, which can result in poorer mental health (Vlahov *et al*. 2002; Roberts *et al*. 2010). The financial strain that results from retiring or losing a job can affect marital satisfaction and further reduce mental well-being (Higginbottom *et al*. 1993). Financial strain can result in the loss of personal control which further inhibits emotional functioning and physical health (Price *et al*. 2002). Financial strain can lead to reduced social support and negative relationships with family (Lincoln *et al*. 2005). Finally, workplaces are often a source of social support; therefore, job loss can negatively affect psychological well-being (Atkinson *et al*. 1986; Peirce *et al*. 2000).

While these theoretical perspectives and existing research have offered reasons why there may be a link between economic processes and population mental health, the empirical literature must evaluate whether such a link exists.

Overview of empirical research

Articles examining population macroeconomic decline and mental health have frequently used the unemployment rate because it is accessible and may provide a general reflection of the overall well-being of the economy (Dooley & Catalano, 1984). Empirical research studies typically examine three primary mental health indicators: (1) mental disorders; (2) admissions to mental health facilities; and (3) suicide.

Studies of the relationship between macroeconomic decline and mental disorders were primarily conducted in the 1970s and observed that people in the workforce were more likely to be negatively affected by the economic downturn than people not in the workforce (Dooley & Catalano, 1984). These studies reported that people of lower socio-economic status were more likely to be negatively affected than middle- or upper-status groups (Dooley & Catalano, 1979, 1984; Dooley *et al*. 1981).

Studies on admissions to mental health facilities primarily used older data but examined the use of these facilities for most of the 20th century. These studies examined differences in rates of admissions overall, and were based on a variety of factors, including sex, age, socio-economic status, educational attainment and prior mental health status. There were no consistent relationships between any of these particular subgroups and increases in admissions. First in-patient admissions increased for those with higher levels of education but decreased for those with lower levels of education (Brenner, 1969; Barling & Handal, 1980). Most studies either found that economic downturns were associated with increased first admissions (Brenner, 1967, 1969; Brenner *et al*. 1967; Marshall & Dowdall, 1982;

Kiernan *et al*. 1989) or there was no association (Barling & Handal, 1980; Ahr *et al*. 1981; Catalano *et al*. 1985).

Most research on the impact of unemployment on mental health focuses on studies of suicide. Findings differ by demographic characteristics (such as sex and age) as well as based on occupational status. One study showed that suicide and unemployment rates were positively correlated in employed males and negatively correlated in employed females, but no significant correlations were found between suicide and the unemployment rate among unemployed people of either sex (Platt *et al*. 1992). Studies have shown mixed results regarding whether men (Vigderhous & Fishman, 1978; Lester *et al*. 1992, Platt *et al*. 1992; Gerdtham & Johannesson, 2005, Inoue *et al*. 2008), or women (Dooley *et al*. 1989; Weyerer & Wiedenmann, 1995; Gunnell *et al*. 2003), have increased rates of suicide during economic downturns.

Where findings were unexpected (e.g. there was no relationship between suicide and economic downturns, or suicide rates appeared to decline during downturns), authors tried to explain their findings (Neumayer, 2004). For example, if a government provided social support during economic crises, such as labor market programs, this social protection could have mitigated the impact of unemployment and suicide mortality (Waters *et al*. 2003; Stuckler *et al*. 2009). Findings regarding suicide rates were often more nuanced than simply a negative or non-significant relationship between economic downturn and suicide.

Gaps, challenges, and priorities

The literature suggests that economic downturns are associated with increased psychological distress, use of mental health facilities and suicide. Economic declines may have a disproportionately negative impact on vulnerable population subgroups, such as those with pre-existing mental disorders, those of lower socio-economic status and the unemployed. While the literature is relatively consistent, there are several limitations associated with the existing work on this topic.

There are substantial differences in study quality, yet this fails to fully explain the heterogeneity in findings. Heterogeneity based on factors such as populations, methods for measuring employment, and reporting of suicide likely accounts for some of the observed differences in findings across studies. There are also several potential measurement problems associated with examining the relationship between economic downturns and population mental health. These include potential unmeasured variables, level of analysis, and use of aggregate economic measures which may not sufficiently capture an individual community's experiences.

The appropriate use of statistical methodology is a concern for analysis of the influence of macroeconomic forces on population health over time. Most research on population mental health trends in response to economic downturns uses time-series methods. When evaluating work that uses time-series analysis techniques it is important to consider the potential use of an inappropriate or *post hoc* lag structure (e.g. how much lag time should be included if any, and should time be measured in months or years) (Charlton *et al*. 1987), whether data should be de-trended, the immediacy of change and the method used to measure the impact of economic change on community mental health, choice of method to account for correlated data, and suitable framing of these analytic methods within a theoretical base (Catalano & Dooley, 1983). There is no universally agreed-upon ideal lag time, making comparisons across studies difficult (Kasl, 1979).

Additionally, the 'ecological fallacy' (Robinson, 1950), i.e. errors that may arise from attributing population-level phenomena to individual experiences, may prove to be a

concern in this type of research (Dooley & Catalano, 1979). When considering studies over a long period, concerns about study quality and comparability of research standards arise. Studies concerned with mental disorders or mental health utilization frequently used archival measures of mental health phenomena such as hospitalization (Dooley *et al*. 1981), and these studies are rather dated. Future research should investigate specific symptoms or diagnoses rather than just hospitalizations and suicides, events that are much rarer than other mental health issues. However, while it may be more difficult to obtain community-wide mental health data now than it was in prior decades, due to increasing patient data protections based on the Health Insurance Portability and Accountability Act (HIPAA) (Nosowsky & Giordano, 2006) or other mechanisms, this research is much needed given today's economic state.

A number of these gaps in the existing literature lay the framework for future research opportunities that could prove highly beneficial. The best research likely combines both aggregate-level and individual-level research (known also as cross-level analysis) (Dooley & Catalano, 1984). This would avoid the ecological fallacy while also accounting for pre-existing mental disorders and individual life events, and could improve understanding of how economic conditions are associated with disorders. Limited examples of cross-level analyses found similar relation-ships – as did the ecological studies – that economic downturns were associated with increased psychological distress, but continued research in this area is still needed.

While the literature covers several indicators over a long period of time and from several different countries around the world, it is still overall very sparse, prohibiting careful comparisons of similar phenomena at the same time and place. The unavailability of data across time (either a point in time or time periods) and place (size and scope of regions studied) as well as across either economic or mental health measures indicates that there is a clear need for research that could fill this gap.

While we do not focus on economic expansions, they have not necessarily always led to improved mental health, just as economic downturns do not always lead to mental health declines. Sometimes ' counter-cyclical ' findings have been documented – economic expansions were associated with worse mental health (Dear *et al*. 1979; Dooley *et al*. 1981).

Conclusions

There is a significant relationship between economic crises and psychopathology including suicide, help seeking for mental health problems, onset or exacerbation of mood disorders, and distress. Despite some potential methodological flaws, across study locations, designs, quality, and indicators measured, the literature indicates that there is a connection between economic decline and psychological disorders (Dooley & Catalano, 1984). Detrimental effects of economic crises most negatively affect the poor, less educated, and unemployed populations. Such effects also occur in the overall population and the employed, suggesting that economic crises may have effects regardless of social standing and occupational status, and have a negative impact on mental health across population subgroups.

While studies have focused on suicide rates, future research may examine measures of psychopathology, as suicide is an extreme outcome and rare event. Given the relative dearth of recent empirical research on psychiatric disorders, there is room for new empirical research on how the current economic downturn influences population mental health, and to what extent policymakers take population mental health into consideration when devising economic recovery strategies.

It is unclear how the decline in the amount of recent research in this area may influence the current policy approaches to dealing with the impact of economic downturns on population mental health. Although many articles suggest limitations of existing research and provide suggestions for future research, there is relatively little discussion of policy approaches to address the negative impact of economic crises on mental health. The few studies that addressed policy questions suggested that the expansion of social protection programs such as labor force expansion programs, social support systems, and access to health care and health insurance is needed (Waters *et al*. 2003; Lundin & Hemmingsson, 2009; Stuckler *et al*. 2009). While governments may be reluctant to increase spending during a recession, expanded societal protection schemes have appeared to somewhat mitigate the negative impact of economic downturns on population mental health.

While it is important to be skeptical of findings from aggregate-level research (Kasl, 1979), findings from empirical work on the relationship between economic decline and mental health indicate that health systems and policymakers should consider the health and social impact of economic downturns and develop policies and programs accordingly.

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References

Abel-Smith B. The world economic crisis. Part 1: Repercussions on health. Health Policy Plan. 1986; 1:202–213. [PubMed: 10312064]

Agiesta J. Recession taking emotional toll, new poll finds. The Washington Post. 2009

Ahr P, Gorodezky M, Cho D. Measuring the relationship of public psychiatric admissions to rising unemployment. Psychiatric Services. 1981; 32:398–401.

Atkinson T, Liem R, Liem JH. The social costs of unemployment – implications for social support. Journal of Health and Social Behavior. 1986; 27:317–331. [PubMed: 3559126]

Barling PW, Handal PJ. Incidence of utilization of public mental health facilities as a function of short-term economic decline. American Journal of Community Psychology. 1980; 8:31–39. [PubMed: 7369190]

Brenner M. Influence of the economy on mental health and psychophysiological illness: international perspective. Community Mental Health in New Zealand. 1990; 5:2–10.

Brenner M, Mooney A. Unemployment and health in the context of economic change. Social Science and Medicine. 1983; 17:1125. [PubMed: 6623119]

Brenner MH. Economic change and mental hospitalization – New-York State, 1910–1960. Social Psychiatry. 1967; 2:180–188.

Brenner MH. Patterns of psychiatric hospitalization among different socioeconomic groups in response to economic stress. Journal of Nervous and Mental Disease. 1969; 148:31–38. [PubMed: 5768892]

Brenner, MH. Mental Illness and the Economy. Cambridge, MA: Harvard University Press; 1973.

Brenner MH. Relation of economic change to Swedish health and social well-being, 1950–1980. Social Science and Medicine. 1987; 25:183–195. [PubMed: 3660009]

Brenner MH, Mandell W, Blackman S, Silberstein RM. Economic conditions and mental hospitalization for functional psychosis. Journal of Nervous and Mental Disease. 1967; 145:371–384. [PubMed: 6080028]

Business Cycle Dating Committee of the National Bureau of Economic Research. Determination of the December 2007 Peak in Economic Activity. Cambridge, MA: National Bureau of Economic Research; 2008.

Carlisle D. Public health in a recession. Nursing Times. 2008; 104:20. [PubMed: 19068886]

Catalano R. The Health-Effects of Economic Insecurity. American Journal of Public Health. 1991; 81:1148–1152. [PubMed: 1951825]

Catalano R, Dooley CD. Economic predictors of depressed mood and stressful life events in a metropolitan community. Journal of Health and Social Behavior. 1977; 18:292–307. [PubMed: 903598]

Catalano R, Dooley D. Health-effects of economic-instability – a test of economic-stress hypothesis. Journal of Health and Social Behavior. 1983; 24:46–60. [PubMed: 6853998]

Catalano R, Dooley D, Jackson R. Economic predictors of admissions to mental-health facilities in a nonmetropolitan community. Journal of Health and Social Behavior. 1981; 22:284–297. [PubMed: 7288134]

Catalano RA, Dooley D, Jackson RL. Economic antecedents of help seeking: reformulation of time-series tests. Journal of Health and Social Behavior. 1985; 26:141–152. [PubMed: 4040942]

Charlton JRH, Bauer R, Thakhore A, Silver R, Aristidou M. Unemployment and mortality – a small area analysis. Journal of Epidemiology and Community Health. 1987; 41:107–113. [PubMed: 3655630]

Dooley D, Catalano R. Economic, life, and disorder changes: time-series analyses. American Journal of Community Psychology. 1979; 7:381–396. [PubMed: 495581]

Dooley D, Catalano R. The epidemiology of economic stress. American Journal of Community Psychology. 1984; 12:387–409. [PubMed: 6486106]

Dooley D, Catalano R, Jackson R, Brownell A. Economic, life, and symptom changes in a nonmetropolitan community. Journal of Health and Social Behavior. 1981; 22:144–154. [PubMed: 7240713]

Dooley D, Catalano R, Rook K, Serxner S. Economic stress and suicide: multilevel analyses. Part 1: aggregate time-series analyses of economic stress and suicide. Suicide and Life-Threatening Behavior. 1989; 19:321–336. [PubMed: 2609362]

Durkheim, E. Suicide: a Study in Sociology. New York, NY: The Free Press; 1951.

Elias M. Mental stress spirals with economy. USA Today. 2009

Gerdtham UG, Johannesson M. Business cycles and mortality: results from Swedish microdata. Social Science and Medicine. 2005; 60:205–218. [PubMed: 15482879]

Gunnell D, Middleton N, Whitley E, Dorling D, Frankel S. Why are suicide rates rising in young men but falling in the elderly? – a time-series analysis of trends in England and Wales 1950–1998. Social Science and Medicine. 2003; 57:595–611. [PubMed: 12821009]

Gunnell D, Platt S, Hawton K. The economic crisis and suicide. BMJ. 2009; 338:b1891. Published online: 15 May 2009. [PubMed: 19447829]

Guthmann, E. [2 January 2009] Economy takes a toll on mental health. San Francisco Chronicle. 2009. (http://articles.sfgate.com/2009-01-02/news/17196316_1_anxiety-stay-at-home-moms-psychotherapist).

Hamermesh D, Soss N. An economic theory of suicide. Journal of Political Economy. 1974; 82:83–98.

Higginbottom SF, Barling J, Kelloway EK. Linking retirement experiences and marital satisfaction: a mediational model. Psychology and Aging. 1993; 8:508–516. [PubMed: 8292279]

Horwitz A. The economy and social pathology. Annual Review of Sociology. 1984; 10:95–119.

Inoue K, Tanii H, Abe S, Nishimura Y, Kaiya H, Nata M, Okazaki Y, Fukunaga T. The report in the correlation between the factor of unemployment and suicide in Japan. American Journal of Forensic Medicine and Pathology. 2008; 29:202–203. [PubMed: 18520495]

International Monetary Fund. World Economic Outlook: A Survey by the Staff of the International Monetary Fund. Washington, DC: International Monetary Fund; 2009.

Kasl SV. Mortality and the business-cycle – some questions about research strategies when utilizing macro-social and ecological data. American Journal of Public Health. 1979; 69:784–788. [PubMed: 453411]

Katona G. The psychology of the recession. The American Psychologist. 1966:135–143.

Kiernan M, Toro PA, Rappaport J, Seidman E. Economic predictors of mental health service utilization: a time-series analysis. American Journal of Community Psychology. 1989; 17:801–820. [PubMed: 2636540]

Lester D, Motohashi Y, Yang B. The impact of the economy on suicide and homicide rates in Japan and the United States. International Journal of Social Psychiatry. 1992; 38:314–317. [PubMed: 1493961]

Lincoln KD, Chatters LM, Taylor RJ. Social support, traumatic events, and depressive symptoms among African Americans. Journal of Marriage and the Family. 2005; 67:754–766. [PubMed: 16429592]

Lundin A, Hemmingsson T. Unemployment and suicide. Lancet. 2009; 374:270–271. [PubMed: 19589589]

Marmot M, Bell R. How will the financial crisis affect health ? British Medical Journal. 2009; 338:b1314. Published online: 6 April 2009. [PubMed: 19359306]

Marshall JR, Dowdall GW. Employment and mental hospitalization – the case of Buffalo, New-York, 1914–55. Social Forces. 1982; 60:843–853.

Neumayer E. Recessions lower (some) mortality rates: evidence from Germany. Social Science and Medicine. 2004; 58:1037–1047. [PubMed: 14723900]

Nosowsky R, Giordano TJ. The Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy rule: implications for clinical research. Annual Review of Medicine. 2006; 57:575–590.

Peirce RS, Frone MR, Russell M, Cooper ML, Mudar P. A longitudinal model of social contact, social support, depression, and alcohol use. Health Psychology. 2000; 19:28–38. [PubMed: 10711585]

Platt S, Micciolo R, Tansella M. Suicide and unemployment in Italy: description, analysis and interpretation of recent trends. Social Science and Medicine. 1992; 34:1191–1201. [PubMed: 1641680]

Price RH, Choi JN, Vinokur AD. Links in the chain of adversity following job loss: how financial strain and loss of personal control lead to depression, impaired functioning, and poor health. Journal of Occupational Health Psychology. 2002; 7:302–312. [PubMed: 12396064]

Roberts ET, Friedman SR, Brady JE, Pouget ER, Tempalski B, Galea S. Environmental conditions, political economy, and rates of injection drug use in large US metropolitan areas 1992–2002. Drug and Alcohol Dependence. 2010; 106:142–153. [PubMed: 19748745]

Robinson WS. Ecological correlations and the behavior of individuals. American Sociological Review. 1950; 15:351–357.

Rough G. Recession taking toll on Americans' mental, physical health. Arizona Republic. 2009

Smith, S. [25 January 2009] The ailing economy is making people sicker. Doctors see rise in stress, drop in healthy habits. The Boston Globe. 2009. (http://www.boston.com/news/local/massachusetts/articles/2009/01/25/the_ailing_economy_is_making_people_sicker/).

Stuckler D, Basu S, Suhrcke M, Coutts A, McKee M. The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis. Lancet. 2009; 374:315–323. [PubMed: 19589588]

Trainor J, Boydell K, Tibshirani R. Short-term economic change and the utilization of mental-health facilities in a metropolitan-area. Canadian Journal of Psychiatry – Revue Canadienne De Psychiatrie. 1987; 32:379–383. [PubMed: 3651981]

United States Department of Labor. The Employment Situation: June 2009. Washington, DC: Bureau of Labor Statistics; 2009.

Vigderhous G, Fishman G. The impact of unemployment and familial integration on changing suicide rates in the USA., 1920–1969. Social Psychiatry. 1978; 13:239–248.

Vlahov D, Galea S, Resnick H, Ahern J, Boscarino JA, Bucuvalas M, Gold J, Kilpatrick D. Increased use cigarettes, alcohol, and marijuana among Manhattan, New York, residents after the September 11th terrorist attacks. American Journal of Epidemiology. 2002; 155:988–996. [PubMed: 12034577]

Waters H, Saadah F, Pradhan M. The impact of the 1997–98 East Asian economic crisis on health and health care in Indonesia. Health Policy and Planning. 2003; 18:172–181. [PubMed: 12740322]

Weyerer S, Wiedenmann A. Economic factors and the rates of suicide in Germany between 1881 and 1989. Psychological Reports. 1995; 76:1331–1341. [PubMed: 7480502]

WHO. Geneva: World Health Organization; 2009. The Financial Crisis and Global Health Report of a High-Level Consultation.