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Social inequalities in mental health: a review of concepts and underlying assumptions

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ABSTRACT We provide an overview of two major theoretical subjects in the study of the relation between social inequalities and mental health in the last 50 years: the conceptualization of social inequalities, and assumptions about their causes. The two conceptual approaches to the conceptualization of social inequalities are: 1) 'social stratification' or the ordering of individuals according to economic, political, or cultural rankings; and 2) 'social class' relations that yield a set of class positions for individuals according to their control over different types of assets (economic, political, cultural). The two major assumptions underlying these conceptual choices in studies of social inequalities and mental health are: 1) whether effects on mental health originate at the individual or at the group level (i.e. the 'levels-of-analysis' issue); and 2) whether mental health is the consequence of environmental determination or the individual's capacity for making independent decisions (the 'agency' issue). We propose a typology of models of social inequalities in mental health that relates these levels-of-analysis and agency issues. The typology provides an efficient conceptual reorganization that uncovers the assumptions and policy implications of research on social inequalities in mental health.

KEYWORDS *agency; levels; mental health; social class; social inequalities*

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Introduction

The purpose of this article is to provide a review and a reorganization of two central theoretical issues in the study of the relation between social inequalities and mental health. 'Social inequalities' is a general term encompassing both 'social stratification' and 'social class' as defined later. We import the term 'social inequalities' from contemporary social epidemiology (e.g. Lynch et al., 1998). Two major concepts of social inequalities, namely race (e.g. Muntaner et al., 1996) and gender (e.g. Belle, 1990) are not examined here (see Grusky, 1994 for a review of these concepts in sociology). We define mental health as a set of outcomes that include psychiatric disorders (i.e. mood disorders, anxiety disorders, substance abuse and dependence disorders) (American Psychiatric Association, 1980, 1987) and health events strongly associated with psychiatric disorders (i.e. suicide, homicide) (American Psychiatric Association, 1987; Des Jarlais et al., 1995). Although schizophrenia has been the preferred outcome in past research on social inequalities and mental health (Fox, 1990) its assessment using survey methodology, as opposed to clinical assessment, does not yield valid diagnoses (Eaton et al., 1991; Pulver et al., 1992). Therefore, schizophrenia is not the centerpiece of this analysis of the 'class-mental health' link. Schizophrenia has been at the center of the 'selection/causation' or mobility issue in sociology of mental disorders (Fox, 1990). Selection refers to the effect of mental illness on an individual's social position, while causation refers to the role of adverse social circumstances on the manifestation and course of mental illness (e.g. Dohrenwend et al., 1992). The degree of mobility (e.g. going from blue-collar to professional occupations) is central to sociology as it relates to prevailing liberal notions of social justice (e.g. working hard should be rewarded with upward mobility in the occupational structure; Rawls, 1958). However, from a public health perspective, the relation of social inequality to mental health is equally important whether its effects are on incidence or prevalence, as the discipline's goal is to improve the health of the whole population (Ortega and Corzine, 1990).

Historical background

There has been a long-standing interest in social inequality as a risk factor for mental disorders in the field of psychiatric epidemiology (Goldberger et al., 1920; Dohrenwend et al., 1992). Mental health has also been a traditional area for the study of social inequalities in sociology (Davis, 1938; Lennon, 1995; Cockerham, 1996). From 'first generation' studies before the Second World War that relied mostly on samples of persons seeking treatment, to the 'third generation' population-based epidemiologic surveys of the last decades (e.g. Epidemiologic Catchment Area surveys; National Comorbidity Study), researchers in both fields have observed inverse associations between 'social class' and mental health (Dohrenwend et al., 1992; Regier et

al., 1993; Kessler et al., 1995; Dohrenwend, 1998). Furthermore, because both psychiatric epidemiology and social epidemiology are interested in human behavior (as dependent and independent variables, respectively), the two fields are often confused (Eaton, 1994). In addition to changes in methodology over the past several decades (e.g. Kessler et al., 1994), there has been a change in the importance assigned to social inequalities in psychiatric epidemiology. First generation studies, conducted between the turn of the century and shortly after the Second World War were characterized by the use of hospital samples and clinical diagnoses of a small number of 'classical' psychiatric diagnoses (e.g. Faris and Dunham, 1939). These studies considered the inverse association between 'social class' and mental health to be a central question in psychiatric epidemiology (Dohrenwend and Dohrenwend, 1982; Dohrenwend, 1998). Second generation studies (e.g. Leighton et al., 1963), conducted between the aftermath of the Second World War and the 1970s were characterized by community surveys and by the notion of psychiatric disorders as a continuum of vulnerability to any form of disorder. These studies also regarded the 'social class' and mental health link as crucial to psychiatric epidemiology (Dohrenwend and Dohrenwend, 1982; Dohrenwend, 1998). The early 1980s saw the birth of modern psychiatric epidemiology (i.e. third generation studies), with the use of survey interview methods designed to diagnose a variety of psychiatric disorders leading to more accurate population estimates of the prevalence and incidence of specific disorders (Kessler et al., 1994). With this change in methodology came a *rapprochement* with biology and a retreat from sociological questions (Anthony et al., 1995; Dohrenwend, 1998).

Why concepts of social inequality and ontological assumptions are important in mental health research

There is a broad range of potential theoretical topics that could be emphasized in the field of social inequalities in mental health. Among others, important theoretical questions deal with logic (e.g. what is the logical structure of social causation models); semantics (e.g. what is the factual content of social causation models); epistemology (what is the relation between a social observation and the propositions that represent it); or ethics (e.g. is research on social inequalities morally neutral?). In this section we provide a rationale for focusing on concepts of social inequalities and their assumptions.

It is important for scholars to review their understanding of the different concepts of social inequalities in mental health research because the United States is experiencing an increase in the polarization of its economic structure (Levy and Murnane, 1992; Danzinger and Gottschalk, 1993; Blau, 1994; Wolff, 1996) with associated increases in health inequalities (Pappas et al., 1993). Surprisingly, psychiatric epidemiology and sociology of mental disorders are showing relatively less emphasis on social inequalities when the opposite is true for social epidemiology as a whole. Figure 1, showing the

number of articles on social class and health or mental health published during the last three decades (1970s, 1980s and 1990s), provides a strong justification for the present analytical review. The term social class was preferred over social inequalities for this search because the latter's generalized use stems from the present decade. According to the National Library of Medicine Medline database, the standard in epidemiology, the number of articles on social class and health has sharply increased during the 1990s (see also Lynch and Kaplan, 1997), but the number of articles on social class and mental health *barely* increased. In Socio Abs, a database exclusively for the social sciences, results showed a similar pattern to the larger Medline search, namely a resurgence of interest in social inequalities in health in the 1990s that is not paralleled by the amount of research on mental health (see Figure 1). Our findings suggest that interest in social class and mental health lags behind the resurgence of interest in the area of social class and health.

Assumptions in scientific arguments can be data, hypotheses, or definitions. In social science, assumptions have factual references that are seldom scrutinized or are taken for granted (i.e. factual assumptions, such as 'adults control their behavior'). Assumptions in social science are often borrowed from other disciplines (e.g. psychology, biology; Muntaner et al., 1996; Hirschfeld, 1998). For example, behavioral assumptions about agency and levels-of-analysis (e.g. utility maximizing rational actors) have guided

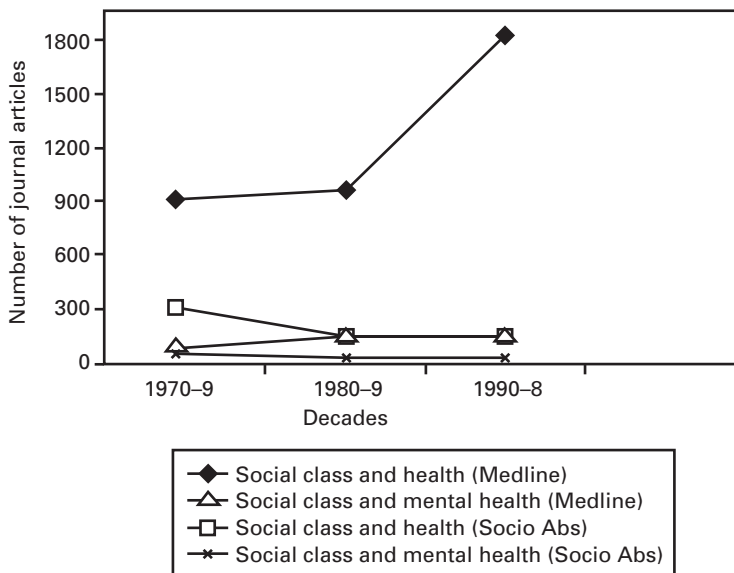


Figure 1 Number of articles on social class and health or mental health during the last three decades

Source: US National Library of Medicine. Medline and Socio Abs databases, March 1998. Journals published internationally, covering all areas of medicine.

recent research in several areas of sociology (Huber, 1997), including political sociology (Green and Shapiro, 1994), aging (Riley, 1997), organizations (Bird and Wiersema, 1996), status attainment (Knottnerus and Guan, 1997) and economic sociology (Kalleberg, 1995).

Understanding the assumptions of social inequalities in mental health research is particularly important as assumptions about individual determinants of behavior (i.e. agency) and the number of levels in society (i.e. unit of analysis) have historically played a key role in US social policy. For example, Jarvis's assumptions about the linkage between Irish descent, poverty and mental illness among migrants in 19th century Massachusetts shaped important mental health policies in his time, such as building separate facilities for the native-born and the foreign-born insane (Vander Stoep and Link, 1998). More recently, assumptions about race, class, and mental health in Herrnstein and Murray's *Bell curve* (1994) influenced social policy, such as in the repeal of universal entitlements to poor families or 'welfare reform' (Muntaner et al., 1996).

Our analytical review has been divided into two parts. The first part provides an overview of current conceptualizations of social inequalities in psychiatric epidemiology and the sociology of mental disorders. We use examples from each of Dohrenwend's three generations of studies (Dohrenwend, 1998) to illustrate the evolution, assumptions, and implications of different concepts of social inequalities in mental health research. The second part examines the major assumptions underlying the study of the relation between social inequalities and mental health and develops a typology that relates the agency and unit of analysis issues. Breaking down and comparing these assumptions (e.g. Coleman, 1990) contributes to our understanding of the theoretical and policy implications of studies on the relation between social inequalities and mental health (e.g. Rose, 1992; Rogler, 1996; Cohen, 1998).

Conceptual and methodological approaches to the relation between social inequalities and mental health

Concepts of social inequalities

In every study on social inequalities and mental health there is an implicit theory of stratification, although explicit theoretical frameworks may be seldom specified (e.g. Liberatos et al., 1988). In the following review of this field, we use two major conceptualizations of social inequalities: *social stratification* and *social class* (Kohn et al., 1990; Wohlfarth, 1997). Social stratification has been defined as 'the hierarchical ordering of society as indexed by formal education, occupational status, and job income' and social classes as 'groups defined in terms of their relations to ownership and control of means of production, and of their control over the labor power of others' (Kohn et al., 1990).

The first concept of social inequalities is best captured by the term *social stratification* (Kohn et al., 1990; Grusky, 1994; Kohn et al., 1997). Although measures of social stratification are also known as 'Weberian' measures of social class, we nevertheless prefer the term social stratification as it conveys hierarchy and includes other measures less directly related to the work of Weber (e.g. socioeconomic status) (Calvo and Wellisz, 1979; Robinson and Kelley, 1979; Wright, 1979; Kalleberg and Griffin, 1980; Marshall et al., 1988; Lazear, 1989; Kohn et al., 1990; Smith, 1990; Williams, 1990; Halaby and Weakliem, 1993; Wolff, 1996). We understand social stratification as the ordering of individuals according to dimensions which serve as descriptors of inequalities in social resources (i.e. economic, political, and cultural). Most social epidemiologists use several measures of social stratification simultaneously (e.g. years of education, occupation, income), because reliance on a single measure has proven insufficient to characterize the effects of social inequalities on the health of populations (Winkleby et al., 1992; Blane, 1995).

The second major concept is *social class* which is defined by class locations or positions in society stemming from relations of ownership or control over different types of assets (e.g. Eric Olin Wright's property, organizational, and credential assets) (Wright, 1997). We define assets as entities with market value that people own or control (e.g. stocks, bonds, firms, credentials) (Samuelson and Nordhaus, 1989; Wright, 1997). Another term used for these measures is 'Marxian.' We prefer to avoid this term, as some of the measures of social class in this tradition involve social stratification (e.g. the rate of surplus value) as well as relations between agents involved in the control over productive resources (e.g. owner, self-employed, worker; manager, supervisor, non-management). The definition presented here stems from the work of Eric Olin Wright, arguably the most influential contemporary scholar in this tradition (Wright, 1979, 1997; Marshall et al., 1988; Calinicos and Harnan, 1989; Kohn et al., 1990; Halaby and Weakliem, 1993).

Measures of social inequalities

The choice of measures by researchers in the field of psychiatric epidemiology is often guided by pragmatic considerations (Liberatos et al., 1988). On the other hand, sociologists tend to attribute more theoretical relevance than epidemiologists to the choice of indicators of social inequalities (Kohn et al., 1990; Wright, 1997). For example, sociologists have been interested in studying how proximal factors such as working conditions, social support, sense of control, and lifestyle mediate the relation between social stratification and health (Ross and Wu, 1995; McLeod and Shanahan, 1996). Epidemiologists and public health researchers by contrast are applied scientists and, therefore, are less interested in understanding the social causes of health inequalities than in the identification of useful interventions toward their elimination (Rose, 1992; Benzeval et al., 1995).

In the following paragraphs we present the principal measures of social

inequalities used in mental health research with succinct references to the conceptualizations from which they are drawn. As most research on social inequalities and mental health has been conducted using measures of social stratification, we illustrate the application of these measures with three of the most prominent studies to date (i.e. Hollingshead and Redlich's *Social class and mental illness* from the 1950s (1958); Srole et al.'s 'Midtown Manhattan study' from the 1960s; and Bruce et al.'s (1991) analysis from the New Haven Epidemiologic Catchment Area survey). We based our choices on the studies' historical significance as well as on their relevance to the conceptual distinctions between measures of social inequalities. These examples also summarize the empirical evidence on the inverse association between social stratification and mental disorder that has been gathered in the United States during the second half of the 20th century (Eaton, 1986; Cockerham, 1996).

Measures of social stratification *Education*, either as years of education or as credentials, is the most common measure of social stratification in psychiatric epidemiology (Liberatos et al., 1988). Its stability over adult life and reliability of measurement are the main reasons for its popularity (Kaplan and Keil, 1993). Education is important in the study of social inequalities in mental health because it represents knowledge that might have an influence over health behaviors (Blane, 1995; see also the discussion on *agency* later). Other models conceptualize education in economic terms as, for example, human capital (Becker, 1976). This theory maintains that education increases the value of an individual's contribution to the productive process, which translates into greater social rewards (Leigh and Fries, 1991). Another view of education claims that it is associated with the economic, political, and cultural rewards provided by access to a labor market of skills kept in short supply by a 'credentialing' process (e.g. obtaining a postgraduate degree) (Muntaner et al., 1994).

Occupation, measured according to categories set forth by the Bureau of the Census' Classification of Occupations, or by other measures such as occupational prestige, is a major indicator of social stratification in psychiatric epidemiology (Muntaner and Eaton, 1998). Occupational strata, besides identifying the technical aspects of work, are associated with prestige, wealth, skills, and specific working conditions (Blane, 1995). The functionalist tradition in medical sociology structures occupational prestige as the consequence of educational achievement (Ross and Wu, 1995). Other models of occupational stratification are not based on individual characteristics but emphasize the hierarchical location that persons occupy in society (Kalleberg and Griffin, 1980; Marshall et al., 1988). That is, the reward-relevant attributes of occupations derive from their location in the hierarchical structure of the workplace as defined not by the workers' education but by the unequal distribution of authority rights over human and physical resources in the workplace (Robinson and Kelley, 1979). Among these

models of occupational hierarchies, we find incentive contract (Lazear, 1989) and hierarchy theory (Calvo and Wellisz, 1979), which maintain that managerial and professional occupations obtain higher wages as a compensation for self-monitoring. Thus, part of the wage paid to managers and professionals is a substitute for self-monitoring (i.e. self-supervision is ensured by a high wage) (Halaby and Weakliem, 1993).

A third way of measuring social stratification in psychiatric epidemiology and sociology of mental disorders has been to assess a person's economic resources using mostly measures of personal and household *income* (Kessler et al., 1994) and occasionally measures of *poverty* at the individual, household, or neighborhood levels (Bruce et al., 1991). These measures present their own set of limitations. Attempts to measure income typically show a higher non-response rate than education and occupation, presumably because of the unwillingness of respondents to disclose their financial situation (Liberatos et al., 1988; Kaplan and Keil, 1993). Finally, because wealth is more unequally distributed than income (Wolff, 1996), it is likely that reliance on income as the preferred indicator of economic resources may overlook larger differentials in mental health.

Measures of social class There is a constant interplay in sociology between social stratification and social class (Kohn et al., 1990). For example, although income can be conceptualized as a measure of social stratification, several research programs consider income as a dependent variable to be explained by social class theories (Robinson and Kelley, 1979; Wright, 1979; Smith, 1990; Halaby and Weakliem, 1993). Thus, some sociological models try to explain which characteristics of positions in the social structure (i.e. social class relations) determine income differentials, because a person's relative income alone does not explain how that person was able to gain his or her share of social resources (Calinicos and Harnan, 1989). Social class positions in the social structure (e.g. owner, worker) are associated with various kinds of income (e.g. rents derived from renting property versus wages derived from being an employee) and differentials in wealth (e.g. value of assets owned) (Calinicos and Harnan, 1989).

Social class analysis represents an alternative approach to social stratification (Kohn et al., 1990) by maintaining that some social relations (e.g. manager versus non-manager) generate inequalities in economic, political, and cultural resources. For example, certain social class locations (nominally defined managers) are thought to generate inequalities in income as a result of differential *control over productive assets* (e.g. managers obtain higher wages because of a 'loyalty dividend' received in compensation for their supervisory function) (Wright, 1997). According to most definitions of social class (e.g. Wright's control over productive assets), it should not be considered as the equivalent of social stratification, because class entails relations between individuals rather than their mere stratification. However, even within a relational approach, the appropriation of economic,

political, and cultural resources can entail an implicit hierarchy of wealth and power (Halaby and Weakliem, 1993; Muntaner and Parsons, 1996). Although the majority of social class measures in medical sociology and social epidemiology are discrete (e.g. managers, supervisors and employees; owners, self-employed, and employees) (Kohn et al., 1990; Muntaner et al., 1994; Eaton and Muntaner, 1999), some researchers have begun to allow for continuous differentiation within social class positions (e.g. amount of income derived from ownership positions; number of employees under a managerial class position) (Kohn et al., 1990, 1997; Muntaner and Parsons, 1996).

Generational examples of measures of social stratification and social class

Table 1 presents the incidence rates of major psychotic disorders by ‘social class’ (i.e. a combination of occupational and educational rankings) from the Hollingshead and Redlich study, *Social class and mental illness*, conducted in New Haven, Connecticut, in the 1950s (Hollingshead and Redlich, 1958). Although persons with psychotic disorders are more likely to end up in contact with the mental health care system, administrative data cannot be assumed to represent the true prevalence. In addition, psychiatric criteria for the major psychoses have become more objective and restrictive since the 1950s. Nevertheless, the study shows a ‘social class’ gradient of increasing rates of psychotic disorders from the upper ‘class’ strata (e.g. Class I–II) to the lower ‘class’ strata (i.e. Class V). Patients from Class V had more than eight times the risk of developing schizophrenic psychoses than did patients in Classes I–II. Some of the study’s assumptions dealt with the issues of agency and levels of analysis discussed later. The association between social class and mental illness was explained with reference to lifestyles that are thought to be under an individual’s control, as in agency. Moreover, Hollingshead’s measure of social class combined education,

Table 1 Social class and rate of different types of psychoses per 100,000 of population, adjusted by sex and age

Type of disorder	Social Class			
	I–II	III	IV	V
Affective psychoses	40	41	68	105
Psychoses due to alcoholism and drug addiction	15	29	32	116
Organic psychoses	9	29	32	116
Schizophrenic psychoses	111	168	300	895
Senile psychoses	21	32	60	175

Source: Adapted from Hollingshead, A.B. and Redlich, F.C. (1958) *Social class and mental illness*. New York: John Wiley & Sons, Table 6 Appendix.

occupation, and area of residence, thus reckoning that group-level social factors affect mental health.

Figure 2 provides a second historical example of the social stratification–mental health association in the United States (Srole et al., 1963). This community-based survey, known as the Midtown Manhattan study, showed an interaction of ‘class’ (again a measure of social stratification based on education and occupation) and stress in the prediction of mental health that had a long-standing influence in psychiatric epidemiology (Dohrenwend and Dohrenwend, 1969; Eaton, 1974; Myers et al., 1975; Kessler and Cleary, 1980). The figure shows an increase in risk for mental disorder for the lower ‘social class’ and, most critical, a steeper stress slope for the lower ‘class’. The latter indicates that increasing levels of stress are more likely to produce a mental disorder among the lower ‘social class’ than among the middle or upper ‘social classes.’ This greater response to stress among the ‘lower class’ was explained by the authors as greater individual vulnerability. However, had they assumed that mental health is determined by group-level phenomena, they could have attributed the increased response among the ‘lower class’ to unmeasured group-level variations in stress.

Table 2 presents an example from the early 1980s on poverty as a risk factor for major psychiatric disorders (Bruce et al., 1991). This prospective evidence from the New Haven Epidemiologic Catchment Area (ECA) study incorporates the advances in psychiatric assessment that characterize current psychiatric epidemiology (Regier et al., 1993). Among relevant

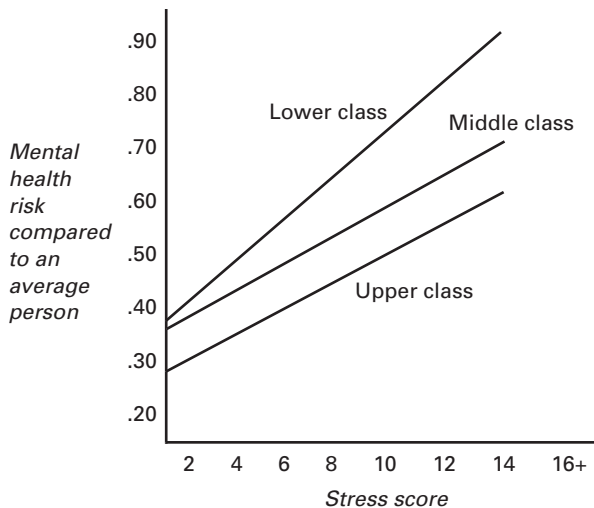


Figure 2 Mental health, stress, and social class in the Midtown Manhattan study
Source: Langner, T.S. and Michael, S. (1963) *Life stress and mental health*. New York: The Free Press of Glencoe, Figure 14.2.

Table 2 Effects of poverty on six-month rate of specific DIS/DSM-III disorders or disorder group

	<i>Cases</i>				<i>Adjusted OR^a (95% CI)</i>		
	<i>At risk</i>	<i>All</i>	<i>Poor</i>	<i>Not poor</i>	<i>A</i>	<i>B</i>	<i>C</i>
<i>Any DIS Axis I Disorder</i>							
No.	3064	264	36	211
Estimate (%)		9.4	15.2	9.0	1.82*	1.92*	...
SE		0.7	3.1	0.7	(1.14–2.54)	(1.12–3.28)	...
<i>Major depression</i>							
No.	3404	133	24	109
Estimate (%)		4.3	7.9	4.0	2.06*	2.29*	2.51**
SE		0.5	0.2	0.4	(1.05–4.04)	(1.19–4.43)	(1.32–4.78)
<i>Phobia</i>							
No.	3232	102	19	83
Estimate (%)		3.1	4.4	3.0	1.49	1.77	1.98*
SE		0.04	1.3	0.4	(0.82–2.73)	(0.97–3.22)	(1.07–3.65)

Notes: DIS/DSM-III = diagnostic interview schedule; SE = standard error; OR = odds ratio; CI = confidence interval.

^a Under adjusted OR, column A includes unadjusted OR; column B, OR adjusted for age, sex, race, and history of outcome diagnosis; column C compares specific psychiatric disorder with disorder-free (DIS Axis I) respondents and includes OR adjusted for age, sex, race, and history of outcome diagnosis.

* = $p < .05$; ** = $p < .01$

Source: Adapted from Bruce, M.L., Takeuchi, D.T. and Leaf, P.J. (1991) Poverty and psychiatric status. *Archives of General Psychiatry*, 48, 470–4.

analyses of ECA data (Holzer et al., 1986; Roberts and Lee, 1993), the study by Bruce et al. (1991) has the advantage of being longitudinal (see also Lynch et al., 1997a; Lynch et al., 1997b). Poor respondents were twice as likely to develop, over the one year follow-up, at least one major psychiatric disorder (i.e. DIS/DSM-III Axis I disorder) (American Psychiatric Association, 1980) than at-risk respondents who were not poor. Findings for major depression were of similar magnitude. These results may represent an underestimate of the magnitude of the association if we consider that the federal poverty line used in the study to define poverty should be higher to capture the experience of poverty in the US population (Danzinger et al., 1994). In this study, as in many other ECA analyses, assumptions about levels and agency are implicit, as no mechanisms for the stratification/mental disorder association were provided.

Table 3 presents selected results from the Baltimore ECA follow-up to illustrate the application of Wright's social class measure of organizational assets (i.e. managers, supervisors, and non-managerial workers) in psychiatric epidemiology. The ECA study (Eaton et al., 1981) was designed to estimate the prevalence and incidence of mental disorders in five US metropolitan areas, including Baltimore, MD. Five panels in these five metropolitan areas were interviewed twice in the early 1980s, with one year between interviews. Between 1993 and 1996, the Baltimore ECA site followed up its cohort of 3481 respondents using the DIS as diagnostic instrument (Eaton et al., 1997). Of the 2633 surviving respondents 73 percent who were located participated in the study. Table 3 presents the association between organizational assets and diagnoses of major depression and anxiety disorders (panic, phobic, and obsessive-compulsive disorders) seen in this study. In Wright's class scheme supervisors have authority over workers but, unlike managers, have little influence over company policy. Thus, supervisors are caught between managers and workers (i.e. a 'contradictory class location' in Wright's terminology): they have little impact over the decisions of top management but are responsible for workers' performance. The findings on Table 3 indicating that supervisors are more likely than managers to suffer from anxiety disorders are consistent with the role conflict and divided loyalties underlying Wright's contradictory class locations (Wright, 1997). Social class provides explanations based on relational mechanisms among individuals that differ from those originating from social stratification (i.e. rankings). Implications for social policies aimed at reducing socioeconomic inequalities in mental health are also different. Explanations based on social stratification favor redistributive policies such as progressive taxation, college loans, universal access to mental health services, or basic income to improve the mental health of the lower social strata (e.g. Wilkinson, 1996). However, social class explanations for socioeconomic inequalities in mental health imply that more fundamental shifts in social relations, such as democratization of the workplace, are necessary for improvements in societal mental health (e.g. Muntaner and Eaton, 1998).

Table 3 Social class (Wright's organizational assets), major depression, and anxiety disorders. Baltimore ECA follow-up 1993/6, n = 1920. Prevalence in percent and adjusted odds ratios (OR)^a

	<i>Major depression</i>		<i>Anxiety disorder</i>	
	%	OR	%	OR
<i>Social class</i>				
Non-management	1.4	0.5	15.7	2.1
Supervisor	3.6	2.9	15.7	2.6
Manager	1.0	1.0 ^b	8.1	1.0 ^b

Notes:

^a Odds ratios are adjusted for age, gender, race/ethnicity and social stratification (Eaton and Muntaner, 1999)

^b Reference category

In this section, we selected different measures of social stratification and social class according to the prominence of the sociological theories from which they were drawn (e.g. Wright's social class analysis; Becker's human capital). Some of them (e.g. education) are commonly used in psychiatric epidemiology, although authors rarely provide a theoretical rationale for their use; other measures of social stratification (e.g. assets) are seldom used in psychiatric and social epidemiology for various reasons (Kaplan and Keil, 1993). Broadening the spectrum of theory-based measures might improve our ability to predict 'class-related' mental health outcomes and increase our understanding of the social inequality–mental health association. There needs to be further consideration of the implications of using different concepts and measures to understand how social inequalities affect rates of mental disorders. The fields of psychiatric epidemiology, and the sociology of mental disorders, have just begun to address the conditions under which social stratification might be more useful than social class, and for what type of outcome (e.g. Wohlfarth, 1997; Eaton and Muntaner, 1999).

The relation between concepts of social inequality and assumptions about levels and agency Assumptions about the nature of the world (i.e. ontological assumptions), such as whether social class is an attribute of individuals only, or whether behavior is determined by free will, have a crucial impact on the theories, methods, and policy implications of sociological and epidemiologic studies of social inequalities (e.g. Huber, 1991; Link and Phelan, 1995). For example, measures of education are often used at the individual level with the assumption that an individual's innate abilities, effort, or free will have a major effect on his or her attainment of social status (e.g. Becker, 1976). On the other hand, measures of social class (e.g. measures of control over productive assets such as 'Employer,' 'Self-employed,' and 'Worker' (Kohn et al., 1990) are used with the assumption

that most workers face major constraints in their ability to influence their socioeconomic well-being which result from their social class location (e.g. as workers they have limited control over their wages and working conditions). Moreover, it is often acknowledged by class analysts that social class can be measured at the level of a society or nation, as at the level of the individual (Boswell and Dixon, 1993; Wright, 1997). In the next section we further examine the relation between concepts of social inequality and assumptions about levels of analysis and agency.

Levels and agency in models of social inequalities and mental health

According to the previous section, our choice of concepts of social inequality determines the kind of explanation provided in empirical studies and the type of social policies thereupon proposed to reduce social inequalities in mental health. The present section will review two major underlying ontological assumptions that also determine the type of explanation provided for the inverse association between social inequalities and mental health (e.g. Wallerstein, 1997). These are the focus on one or another level of analysis (Diez-Roux, 1998; Huber, 1991; Susser, 1994a, 1994b) and the emphasis on structure versus agency¹ (Sappington, 1990; Emirbayer and Goodwin, 1994).

A typology of models of social inequalities in mental health

The simultaneous examination of the two issues shown in Table 4 generates a framework within which to analyze social inequalities and mental health and understand their theoretical and policy implications. In Table 4, both columns and rows refer to the 'independent variable' of the social inequalities–mental health model, while the dependent variable is the extent or severity of mental disorders. Each of these models has been used to explain the relation of social inequalities to mental health.

The *structural constraints–choice* issue (columns in Table 4) refers to whether the effects of social inequalities on mental health are due to free will or to forces beyond individual or group control. 'Choice' refers to the capacity of individuals or groups to make independent decisions and act upon their environment with consequences for their mental health (e.g. 'people choose to use heroin'), while 'structural constraints' refers to the social environment that determines or puts limits on people's mental health (e.g. 'the stresses of poverty enhance the relative appeal of heroin') (see Booth-Davies, 1992). Certain 'dualist' models balance choice with environmental determination (e.g. class and rationality (Wright, 1997), social structure and self-direction (Williams, 1990)), among other 'dualist' models (Liebow, 1994; Eisenberg, 1995).

The *level-of-analysis* issue refers to whether the effects of social inequality *originate* at the individual or at the group level. Like many other sciences, epidemiology and sociology face the issue of the relations between micro

Table 4 Models of the relation between social class and mental health according to the matrix of structural constraints–choice and unit of analysis issues^a

<i>Level of analysis</i>	<i>Structural constraints–choice</i>		
<i>Individual</i>	Structural constraints Behaviorism Herrnstein and Prelec (1992)	Choice Rational choice Becker et al. (1992)	'Dualist' Rational choice Roemer (1993) Dualist models Liebow (1994)
<i>Group</i>	Economic change Brenner (1973)	Empowerment La Veist (1992) Collective efficacy Sampson et al. (1997)	Political economy Brenner (1995); Warner (1995)
<i>Macro–micro</i>	Biopsychosocial/ecological Goldberger et al. (1920) Anderson and Armstead (1995) Work organization Muntaner and O'Campo (1993) Fenwick and Taussig (1994)		Social production Evans et al. (1994); Muntaner (1999) Social structure and personality Kohn et al. (1990); Williams (1990)

Note: ^a The models' most distinctive position in the structure–agency and macro–micro issues has been emphasized for the purpose of illustration.

(i.e. individual organism) and macro (i.e. social group) levels. The two major approaches to the level of analysis issue are holism (e.g. human ecology) (Hawley, 1992) and individualism (e.g. rational choice) (Becker, 1976). Holists maintain that society determines individual behavior and mental health and, thus, favor a macro approach to explaining the source of social inequality effects on mental health. An example is an economic recession which would affect a large segment of society (Brenner, 1973). Individualists, on the other hand, claim that social inequality effects on mental health are just the sum of each individual's social stratum effect on her/his mental health; a micro approach (Becker et al., 1992). A third position, which could be labeled as 'macro-micro', maintains a relative autonomy of group and individual social inequality effects on mental health while trying to uncover relations between group and individual levels of analysis (O'Campo et al., 1994; Sampson et al., 1997).

Although there is not a one-to-one correspondence between concepts of social inequalities and the levels-of-analysis issue, education and occupational status tend to be conceptualized and measured at the micro level (e.g. Robins and Regier, 1990), while measures of economic resources, such as income or wealth, are often measured at the micro and macro levels (e.g. Brenner, 1995; O'Campo et al., 1995).

Different models of the relation between social inequalities and mental health can be simultaneously characterized according to the structural constraints-choice and levels-of-analysis issues (see Table 4). The *behaviorist* model of substance abuse disorders is characterized by both the 'individualism' and 'structural constraints' positions. This model (Herrnstein and Prelec, 1992) considers social stratification exclusively as the consequence of an individual's behavior, and mental health outcomes like addiction to heroin as fully determined by the previous history of organism-environment interactions; with no room for independent choice or agency. For radical behaviorists, the experience of 'free will' is just an illusion caused by the structure of the human brain (Zuriff, 1985).

The *economic change* model is characterized by structural constraints and a group ('macro') level of analysis (Brenner, 1973). In an economic change model of mental disorders (Brenner, 1973), rates of mental disorders such as depression are fully determined by business cycles, recessions, and other macroeconomic events, with no possibility for effective collective action such as passing laws to protect the population against the effects of unemployment. Another set of models which might be termed *biopsychosocial* (Goldberger et al., 1920; Anderson and Armstead, 1995; Link and Phelan, 1995) and *work organization* (Muntaner and O'Campo, 1993; Fenwick and Taussig, 1994) models, share the view that rates of mental health disorders are determined by the structural constraints imposed by social inequalities at the group level, such as the division of labor within a firm; and the individual level, such as the amount of work performed by a worker.

Other models emphasize the capacity of individuals (*rational choice*;

Roemer, 1993), groups (*collective efficacy*; Sampson et al., 1997) or both (Evans et al., 1994) to choose a course of action that might have a significant impact on their mental health. An example at the individual level is the decision to stop addiction to nicotine (Becker et al., 1992); at the group level, communities can elect officials who represent their interests regarding social factors that influence mental health (La Veist, 1992).

We also display models that consider mental health as the outcome of *both* inequality-related structural constraints and choice simultaneously, either at individual level (Roemer, 1993; Liebow, 1994; Perry, 1996), group level (Brenner, 1995; Warner, 1995), or both levels (Kohn et al., 1990; Williams, 1990). Thus, in Roemer's rational choice model (Roemer, 1993), individuals face constraints due to their social class but also are able to make independent decisions, such as whether to smoke or not. In Brenner's 1995 model, group level ('macro') social stratification factors, such as an economic recession, determine rates of mental disorders, but social classes are not passive victims of economic change; social classes can act as organized groups to influence rates of mental disorders. Finally, the *social structure and personality* model (Williams, 1990; Kohn et al., 1997) (a 'macro-micro' model) theorizes that the effects of social stratification on mental health are determined by both group level constraints (e.g. work autonomy and freedom of schedule that protect against depression) and individual level choices (e.g. mastery and coping behaviors that protect against depression).

The structural constraints-choice and level of analysis issues are necessary to understand the health policy implications of studies of social inequalities and mental health. For example, an individual level *rational choice* model of nicotine addiction (Roemer, 1993) allows for some degree of individual responsibility for the act of smoking. Therefore, public health measures such as behavior modification programs will be directed at individual smokers with some element of punishment for excessive smoking. For example, individuals might have to pay for their health care bills associated with smoking (Roemer, 1993). On the other hand, the *economic change* model would explain rates of mental disorder in a state as the consequence of macro level structural constraints, such as an economic depression. The public mental health measures derived from an *economic change* model will favor intervention at the macro level, such as investing in job creation in the target state (Wilkinson, 1996).

As with the levels of analysis issue, the preference for a particular model along the structural constraints-choice continuum has implications for selecting indicators of social inequalities. Measures of social stratification such as education and occupational status have an interpretation in terms of individual choice (delay of gratification, effort, intelligence; Herrnstein and Murray, 1994); measures of social stratification such as control over productive assets have an interpretation in terms of individual choice but under major social constraints (Eaton and Muntaner, 1999); and measures such as income and occupational stratification emphasize both choice and structural

determination of health inequalities. For example, according to Wright's measures, that assume rational choice under constraints (Wright, 1985), a supervisor might be suffering from an anxiety disorder due to his or her contradictory location within class relations (i.e. being both management and worker, a structural constraint), but still has the capacity to quit if he or she wants to (i.e. can exert independent choice).

Most studies of social inequalities assume both a structural effect of lack of resources (e.g. lack of opportunities for educational attainment, lack of 'good' jobs with adequate wages and benefits) that puts individuals at risk of mental disorders (e.g. Bruce et al., 1991), and the existence of choice (e.g. individuals have the choice to get into educational programs and delay gratification to obtain higher wages). For example, researchers assume that individuals have some control over their economic well-being which in turn has a beneficial impact on mental health via greater sense of control and social support (e.g. Ross and Wu, 1995).

Conclusion

Paradoxically, at a time when the 'class-mental health' association is no longer a central problem of psychiatric epidemiology (Anthony et al., 1995), (see Figure 1) the sporadic evidence for the establishment of social stratification (Bruce et al., 1991) or social class (Wohlfarth, 1997; Eaton and Muntaner, 1999) as a risk factor for the range of mental disorders has never been stronger (see Table 3). Important challenges lie ahead for psychiatric epidemiologists and sociologists devoted to the study of social inequalities in mental health. The first is to incorporate the conceptual and measurement advances originating in sociology (e.g. Muntaner and Parsons, 1996). Such interdisciplinary efforts foster the formulation of new conceptual and empirical problems. For example, what are the implications of different theories and methods (e.g. class versus stratification) for understanding, predicting and reducing the social inequalities-mental health association? Are class and social stratification approaches mutually exclusive, or is class just a deeper concept of social inequality as Wright argues (Wright, 1997)? And under what conditions would one be more useful than the other, and for what type of outcome (Wohlfarth, 1997)? We provided several preliminary answers to some of these questions in this article.

We believe that our typology of models might bring a conceptual reorganization of the field of social inequalities in mental health that provides an efficient way of describing this field according to its underlying assumptions. By placing models simultaneously into the 'levels' and 'agency' issues, we provide a practical descriptive tool to understand what are the major assumptions of current research in social inequalities in mental health. In some cases these assumptions are both fundamental statements about the world (i.e. with far-reaching implications) *and* unrecognized: that is, they are ontological assumptions. As illustrated elsewhere in this review, acknowledging and

being aware of the different ontological assumptions is crucial to identify important theoretical, empirical, and policy implications of social inequalities in mental health research. For example, several pieces of Congressional legislation (e.g. 'welfare reform') that drive current public health research are based on strong assumptions about agency at the individual level (i.e. personal responsibility). A multilevel structural model of mental health among welfare recipients would have very different policy implications (e.g. investment in the neighborhoods where welfare recipients live to provide employment at a living wage which in turn would be expected to improve mental health). Awareness of contemporary concepts and ontological assumptions may also help to re-establish the prominence of social inequalities in psychiatric epidemiology and sociology of mental disorders, which is particularly urgent in a period of increasing social inequalities in health.

Note

1. 'Structure versus agency' is also referred to as 'determinism versus free will' or 'structural constraints versus choice.'

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