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The association between depression and parental ethnic affiliation and socioeconomic status: a 27-year longitudinal US community study

Sophie D. Walsh · Stephen Z. Levine · Itzhak Levav

Abstract

Purpose This study examined the extent to which parental SES and ethnic affiliation during adolescence are associated with Center for Epidemiologic Studies Depression Scale (CES-D) scores compatible with depression during adulthood.

Methods The data were extracted from the US National Longitudinal Survey of Youth (NLSY79) conducted in 1979 on several ethnic groups (African-Americans, Hispanics and Others). These data included paternal socio-economic status (SES) when respondents ($N = 8,331$) were on average aged 18. The CES-D was re-administered 27 years later to assess the presence of depression.

Results Adjusted for age, binary logistic regression modeling showed that parental low SES increased the risk of CES-D of scores compatible with depression across ethnic groups for both genders. A gradient was observed of an increased likelihood of depression scores with lower parental SES levels: among African-American respondents, depression scores were highest at the lowest parental SES levels (OR = 3.25, 95% CI 2.19–4.84) and the risk dropped at medium (OR = 3.00, 95% CI 1.96–4.59), and highest SES levels (OR = 1.85, 95% CI 1.12–3.07). An analogous pattern was generally found for each ethnic group.

Conclusions Low parental SES during adolescence significantly increases the likelihood of CES-D scores compatible with depression during adulthood across US ethnic groups and in both genders.

Keywords Major depression · Ethnicity · Socio-economic status · Psychiatric epidemiology

S. D. Walsh · S. Z. Levine (✉)
Department of Criminology, Bar-Ilan University,
52900 Ramat Gan, Israel
e-mail: levine.sz@gmail.com

I. Levav
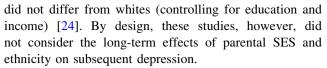Mental Health Services, Ministry of Health, Jerusalem, Israel

Introduction

Epidemiological studies frequently report a strong or strong inverse association between socio-economic status (SES) and various forms of depression. Complexities, however, exist in the depression–SES association since, for example, studies have assessed depression differently. For instance, some studies use diagnostic instruments to ascertain depression, such as the Present State Examination (PSE) [1], and the World Health Organization Composite International Diagnostic Interview (CIDI) [2], while other studies use symptom-based scales, such as the Center for Epidemiologic Studies Depression Scale (CES-D) [3–5]. Also, the association has been reported based on SADS-I/Research Diagnostic Criteria of depression among adult women only [6]. A meta-analysis that examined 60 studies on the SES–depression association reported 51 studies with an odds ratio of over 1, and 35 studies informed a statistically significant association. There were a number of methodological issues elicited in the studies related to measurement of: (1) SES, making the relationship stronger for economic rather than for other measures (e.g., occupation); and (2) depression, making the relationship stronger for symptom-based scales (e.g., CES-D) rather than for diagnostic instruments (e.g., CIDI). Overall, the meta-analysis concluded in support of "compelling evidence of socioeconomic inequality in depression" [7].

This finding has been observed mainly among adults. Prior research, however, suggests that there are grounds to examine the persistence of the association between low SES during adolescence and adulthood depression [e.g., 8]. A meta-analysis of both cross-sectional and longitudinal studies has shown long-lasting consequences of SES [9]. In addition, the SES–depression association during adolescence may interact with factors that have been identified as increasing its risk. These factors include female gender (e.g., for a screening study, see [10], for a review, see [11]), and disadvantaged ethnic group status in studies using screening scales [12, 13], and diagnostic instruments [14, 15]. These factors are yet to be ascertained in studies of SES during late adolescence and subsequent depression during adulthood. The problem of understanding the association between SES and depression is compounded methodologically since most studies use diagnostic instruments [16, 17] yet fewer studies use screening scales [10], and a majority rely on a cross-sectional design during adulthood. Studies rarely examine the association between SES during adolescence and later depression longitudinally [18]. Also, as noted above, they rarely examine the association between parental SES during adolescence and subsequent depression accounting for other key variables, for example, female gender and ethnic group membership (for an exception based on a diagnostic assessment, see 19).

In the US, which is the nation of focus of this report, ethnic minorities are over-represented in low SES groups. This requires studies to disentangle their respective effects [e.g., 20], yet many studies have failed to do that [13, 15]. Hispanic Americans, who are over-represented in the lowest socioeconomic status [CBS, 21] are a particularly appropriate group to examine the association between SES and ethnicity, relying on a longitudinal design to further elaborate prior research [22]. Hispanic Americans are the fastest growing ethnic minority group. Since 1990, their number has increased by more than 50%, and in 2005, there were 42.7 million Hispanics in the United States (over 14.0%). Two major large epidemiological surveys have compared other ethnic groups with Hispanics Americans. In the Los Angeles Epidemiologic Catchment Area Survey, the 1-week prevalence rates of depression based on the CES-D scores of 16 or greater were: Hispanic Americans, 27.4%; African Americans, 21.8%; and whites, 15.6%. After controlling for SES, however, this effect was no longer significant [23], thus suggesting that socioeconomic strain plays a major role in depression among minority ethnic groups. In the National Comorbidity Survey analysis of CIDI-based 12-month and current major depression prevalence rates, results show that Hispanic Americans, as compared to whites, had a higher prevalence rate of major depressive episodes while African Americans

did not differ from whites (controlling for education and income) [24]. By design, these studies, however, did not consider the long-term effects of parental SES and ethnicity on subsequent depression.

The objective of this study is to examine the long-term association between parental SES during adolescence and the prevalence of depression after 27 years, accounting for gender and ethnic group membership.

Method

Procedure, sample and measures

Data were extracted from the National Longitudinal Survey of Youth 1979 Cohort (NLSY) [25]. This is a representative US-based national probability cohort of people ($N = 12,686$) interviewed since 1979 at an initial average age of 18.4 (SD = 2.2). Its representativeness, long follow-up and comprehensive data set have made the NLSY widely used in research in many disciplines [e.g., 26–28]. Parental level SES and respondent ethnic group membership were assessed in 1979.

To measure parental SES, a composite standardized mean score was calculated from paternal/maternal highest grade of formal education, father's Duncan index and family income [e.g., 29]. The Duncan index is one of several socioeconomic status indices that aim to quantify social standing and prestige [30]. The Duncan index specifically provides an occupational prestige measure that was developed from US national consensus data [31]. Although the index has been criticized for being outdated, it is said to be the most frequently used social class measure in social science research in the US, and has been used in epidemiological research [32, 33]. The Duncan Index is contained in the NLSY dataset. The composite parental SES score was split into three groups based on three tiled Z score distributions of low (under -0.24), medium (up to 0.31) and high (over 0.31) SES. Ethnic status was derived from self-reported ethnic affiliation.

For the remaining 26 ethnic groups, participants were categorized as "Others". In cases of mixed ethnic descent, paternal origin was used. The NLSY systematically over-sampled Hispanic and African American respondents. Over-sampling was directed by a probability based on size measures for these groups rather than for the general population. This procedure makes it possible to equalize the distribution of the minority groups among the various sampling groups, and to do it more adequately than would otherwise be possible.

In 2006, when the subjects were on average 45.5 years (SD = 2.2), the CES-D was used to assess depression during the preceding week. The CES-D is a screening scale

that assesses dysphoric mood and loss of affect [34]. To test the clinical significance of the instrument, research has examined the overlap between the CES-D and clinically based depression measures in 1,709 adolescents. This has shown a sensitivity (true positives) in the range from 70 to 99% and its specificity (true negatives) to range from 56 to 94% [35]. CES-D ≥ 16 was used as a cut-off level compatible with depression [36], as applied widely in previous studies [23, 37].

A total of $N = 8,331$ (65.6%) study participants had available information for our analysis from 1979 to 2006. Participants with available information did not significantly differ from those excluded from analysis due to missing values ($n = 4352$) by parental SES ($t = -1.32$, $df = 9,550.47$, $p = 0.19$), but significantly differed on ethnic group membership (Hispanic Americans: $n = 381$, 19%; African Americans: $n = 650$, 20.5%; and Others: $n = 3,324$, 44.3%) compared with those included in the analysis ($\chi^2 = 806.5$, $df = 2$, $p < 0.001$).

Results

The final sample ($N = 8,331$) consisted of $n = 4,088$ (49.1%) men and $n = 4,243$ (50.9%) women. Their SES was grouped into low ($n = 2,777$, 33.3%), medium ($n = 2,641$, 31.7%) and high ($n = 2,913$, 34.97%). Ethnic group membership included: Hispanic Americans ($n = 1,621$, 19.5%), African-Americans ($n = 2,524$, 30.3%), and Others ($n = 4,186$, 50.2%). On aggregate, 367 (4.4%) respondents were identified as having a CES-D score of 16 and above (henceforth, depression), as defined earlier. Depression rates were significantly higher among Hispanic Americans ($n = 140$, 5.5%) followed by African-Americans ($n = 81$, 5.0%), and Others ($n = 146$, 3.5%), respectively ($\chi^2 = 17.5$, $df = 2$, $p < 0.01$). Similarly, CES-D-based depression rates decreased from the low ($n = 180$, 6.5%), to the medium ($n = 110$, 4.2%) and the high ($n = 77$, 2.6%) parental SES ($\chi^2 = 50.27$, $df = 2$, $p < 0.01$).

Binary logistic regression models were conducted to predict depression for each gender and for men and women combined. Birth year was included as a control variable. SES and ethnicity were combined to create a variable reflecting all permutations of parental SES and ethnic origin. Results of the binary logistic regression models in Table 1 show that across all three ethnic origin groups, a lower parental SES at age 18 was associated with an increased risk of depression in adulthood. For instance, among African Americans, risk was highest for the low SES (OR = 3.3, 95% CI 2.2–4.8), followed by medium SES (OR = 3.0, 95% CI 2.0–4.6), and then high SES (OR = 1.85, 95% CI 1.12–3.07). Table 1 also shows similar results for the other two ethnic groups.

To examine differences in the SES-ethnicity permutations, the overlap in confidence intervals were examined for each permutation. Non-overlapping confidence intervals indicate a significant difference in the magnitude of the effect. On aggregate, as shown by the overlapping confidence intervals (Table 1), there was generally no statistically significant difference in these effects across ethnic groups. Thus, a general trend of increased risk of CES-D-based depression for lower parental SES is observed across ethnic groups (Table 1). This trend replicated across genders, increasing confidence in the robustness of the results. This indicates that lower paternal SES during adolescence increased the likelihood of risk irrespective of ethnic group membership and gender.

Sensitivity analysis

Post hoc sensitivity analysis was computed to examine if the results replicated by removing people of "non-English" origin from the Other ethnic category. The observed trend of statistical significance ($p < 0.05$) replicated the study trend of lower SES corresponding with higher risk of depression across ethnic groups.

Discussion

Based on US representative data, the current results show that lower paternal SES during adolescence increased the likelihood of risk of depression 27 years later, irrespective of ethnic group membership and gender. For each ethnic group a gradient was observed, namely, lower parental SES was always significantly associated with elevated risk of depression. These results replicated for each gender.

This study extends prior findings based on the cross-sectional association between low SES and depression [23, 24], by showing that early parental SES during adolescence predicted subsequent CES-D-based depression during adulthood. This result suggests that early family stressors, particularly arising from low SES [38], also impact biological mechanisms that affect subsequent normal neuropsychological development [38, 39], cumulating in depression.

In this study, the protective effect of high SES on the association between ethnic group status and depression was slightly weaker among the Hispanics and African-Americans [23]. Conceivably, among disadvantaged ethnic minorities (Table 1), there appear to be discrimination effects that may modestly increase the likelihood of depression across the SES strata [40]. The risk of depression is reduced across ethnic group as paternal SES increases. This effect of SES suggests that key mechanisms of the risk of depression across ethnic minorities include

Table 1 Binary logistic models predicting CES-D-based depression by gender

	Men		Women		Total	
	OR	95% CI	OR	95% CI	OR	95% CI
Hi-L	4.94[a]	(1.81–13.51)	3.76[a]	(1.89–7.46)	2.89[a]	(1.92–4.36)
Hi-M	1.58	(0.20–12.43)	0.00	(0.00–0.00)	1.81	(0.96–3.41)
Hi-H	0.00	(0.00–0.00)	0.93	(0.12–7.04)	1.97[b]	(1.00–3.88)
AA-L	8.12[a]	(3.40–19.38)	3.29[a]	(1.60–6.76)	3.25[a]	(2.19–4.84)
AA-M	3.90[a]	(1.43–10.61)	5.70[a]	(2.99–10.88)	3.00[a]	(1.96–4.59)
AA-H	0.95	(0.12–7.42)	1.04	(0.31–3.5)	1.85[b]	(1.12–3.07)
O-L	5.74[a]	(2.86–11.53)	2.72[a]	(1.61–4.58)	3.61[a]	(2.39–5.45)
O-M	1.98	(0.95–4.15)	1.61	(0.96–2.71)	1.71[a]	(1.12–2.61)
Intercept	0		0		0	

Hi Hispanic American, *AA* African American, *O* Others, *SES L* Low, *M* Medium and *H* High. *O–H* Reference category, results adjusted by gender and birth year

[a] $p < 0.001$

[b] $p < 0.05$

the socioeconomic strain of poverty [41–43], that may include poorer parental and, probably also, social bonding [39]. These are associated with poverty and have long-term consequences [38].

Conclusions and limitations

There are several limitations to this study. First, reliable diagnoses in community studies require diagnostic instruments, administered by clinicians [44] or by trained interviewers [45] to assess depression and not only self-report questionnaires [46]. Second, the absence of a baseline depression measure indicates that it is possible that depression at the endpoint results from initial depression. For instance, previous research has shown that factors measured at age 7 years reduced the association of SES with depression and anxiety symptoms at age 33 years by as much as 25% [47]. These factors may include the child's academic ability and parental interest in the child's education. Also, the association of parental SES with adult depression reflected adult-specific factors, such as financial hardship and job insecurity [47]. That study and others [48, 49] illustrate that childhood depression plays a role in maintaining the relationship between poverty and depression during adulthood, a factor unaccounted for by this study. Also, population-based epidemiological surveys report that depression prevents upward mobility, and promotes a vicious cycle of poverty [24]. Meta-analysis, however, generally favors the explanation that low SES increases the risk of depression, rather than depression hindering upward social mobility [7, 50]. Third, the conclusions are restricted to the current prevalence rate of depression and not the age of onset, as the age of onset is not ascertainable in these data. In other epidemiological datasets, the "peak onset ages for depression are reported in early adulthood (roughly 20–30 years of age in all NCS cohorts)" [51]. This suggests that the onset of depression may have followed the assessment of parental SES in these data. Fourth, social mobility may have occurred during the

study, such that some children or parents' SES may have increased, and others decreased. Research during the study period indicates that African American offspring have on average 2 years more education than their fathers, a modest but socially important improvement [52]. Fifth, there are other key sociological factors not accounted for that may influence the results (e.g., rural and migrant status). Sixth, the control group consisted of people from various ethnic backgrounds and the sensitivity analysis only of "whites". This appeared to be reasonable given their SES was higher than the African-Americans and Hispanic groups. Finally, there is no measure of parental depression that may increase the likelihood of offspring depression.

Despite its limitations, the present study uniquely examines the association between ethnic group affiliation, early parental SES, and subsequent depression using a representative sample over a 27-year follow-up period and provides consistent results that highlight the role of parental SES. Irrespective of gender, for each ethnic group a gradient was observed, such that lower parental SES is significantly associated with elevated risk of depression. This suggests that early parental SES is consistently associated with subsequent depression across ethnic groups over an extended period.

Conflict of interest Not applicable.

References

1. Rodgers B (1991) Socio-economic status, employment and neurosis. Soc Psychiatry Psychiatr Epidemiol 26:104–114
2. Bijl RV, Ravelli A, van Zessen G (1998) Prevalence of psychiatric disorder in the general population: results of The Netherlands Mental Health Survey and Incidence Study (NEMESIS). Soc Psychiatry Psychiatr Epidemiol 33:587–595
3. Cho MJ, Nam JJ, Suh GH (1998) Prevalence of symptoms of depression in a nationwide sample of Korean adults. Psychiatry Res 81:341–352
4. Husaini BA, Neff JA (1981) Social class and depressive symptomatology. The role of life change events and locus of control. J Nerv Ment Dis 169:638–647

5. Eaton WW, Kessler LG (1981) Rates of symptoms of depression in a national sample. Am J Epidemiol 114:528–538

6. Dohrenwend BP, Levav I, Shrout PE, Schwartz S, Naveh G, Link BG, Skodol AE, Stueve A (1992) Socioeconomic status and psychiatric disorders: the causation-selection issue. Science 255:946

7. Lorant V, Deliege D, Eaton W, Robert A, Philippot P, Ansseau M (2003) Socioeconomic inequalities in depression: a meta-analysis. Am J Epidemiol 157:98–112

8. Fichter MM, Kohlboeck G, Quadflieg N, Wyschkon A, Esser G (2009) From childhood to adult age: 18 year longitudinal results and prediction of the course of mental disorders in the community. Soc Psychiatry Psychiatr Epidemiol 44:792–803

9. Muntaner C, Eaton WW, Miech R, O'Campo P (2004) Socioeconomic position and major mental disorders. Epidemiol Rev 26:53–62

10. Leach LS, Christensen H, Mackinnon AJ, Windsor TD, Butterworth P (2008) Gender differences in depression and anxiety across the adult lifespan: the role of psychosocial mediators. Soc Psychiatry Psychiatr Epidemiol 43:983–998

11. Piccinelli M, Wilkinson G (2000) Gender differences in depression. Critical review. Br J Psychiatry 177:486–492

12. Kaplan G, Glasser S, Murad H, Atamna A, Alpert G, Goldbourt U, Kalter-Leibovici O (2010) Depression among Arabs and Jews in Israel: a population-based study. Soc Psychiatry Psychiatr Epidemiol 45:931–939

13. Jackson-Triche ME, Greer Sullivan J, Wells KB, Rogers W, Camp P, Mazel R (2000) Depression and health-related quality of life in ethnic minorities seeking care in general medical settings. J Affect Disord 58:89–97

14. Plant EA, Sachs-Ericsson N (2004) Racial and ethnic differences in depression: the roles of social support and meeting basic needs. J Consult Clin Psychol 72:41–52

15. Oquendo MA, Lizardi D, Greenwald S, Weissman MM, Mann JJ (2004) Rates of lifetime suicide attempt and rates of lifetime major depression in different ethnic groups in the United States. Acta Psychiatr Scand 110:446–451

16. Meltzer H, Bebbington P, Brugha T, Jenkins R, McManus S, Stansfeld S (2010) Job insecurity, socio-economic circumstances and depression. Psychol Med 40:1401–1407

17. de Wit MA, Tuinebreijer WC, Dekker J, Beekman AJ, Gorissen WH, Schrier AC, Penninx BW, Komproe IH, Verhoeff AP (2008) Depressive and anxiety disorders in different ethnic groups: a population based study among native Dutch, and Turkish, Moroccan and Surinamese migrants in Amsterdam. Soc Psychiatry Psychiatr Epidemiol 43:905–912

18. Aneshensel CS, Estrada AL, Hansell MJ, Clark VA (1987) Social psychological aspects of reporting behavior: lifetime depressive episode reports. J Health Soc Behav 28:232–246

19. Miech RA, Caspi A, Moffitt TE, Wright BRE, Silva PA (1999) Low socioeconomic status and mental disorders: a longitudinal study of selection and causation during young adulthood. Am J Sociol 104:1096–1131

20. Williams DR (1999) Race, socioeconomic status, and health. The added effects of racism and discrimination. Ann N Y Acad Sci 896:173–188

21. Bureau UC (2000) Overview of Race and Hispanic Origin: Census 2000 Brief. Census Bureau; 2002, Washington, DC: US

22. Vega WA, Kolody B, Aguilar-Gaxiola S, Alderete E, Catalano R, Caraveo-Anduaga J (1998) Lifetime prevalence of DSM-III-R psychiatric disorders among urban and rural Mexican Americans in California. Arch Gen Psychiatry 55:771–778

23. Frerichs RR, Aneshensel CS, Clark VA (1981) Prevalence of depression in Los Angeles County. Am J Epidemiol 113:691–699

24. Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, Wittchen HU, Kendler KS (1994) Lifetime and 12 month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. Arch Gen Psychiatry 51:8–19

25. Bureau of Labor Statistics US Department of LaborNational Longitudinal Survey of Youth 1979 cohort, 1979–2006 (rounds 1–21) [computer file]. Produced and distributed by the Center for Human Resource Research, The Ohio State University. Columbus, OH: 2008

26. Baum CL 2nd, Ruhm CJ (2009) Age, socioeconomic status and obesity growth. J Health Econ 28:635–648

27. Van Cleave J, Gortmaker SL, Perrin JM (2010) Dynamics of obesity and chronic health conditions among children and youth. JAMA 303:623–630

28. Gortmaker SL, Must A, Perrin JM, Sobol AM, Dietz WH (1993) Social and economic consequences of overweight in adolescence and young adulthood. N Engl J Med 329:1008–1012

29. Ganzach Y (1998) Intelligence and job satisfaction. Acad Manag J 41:526–539

30. Krieger N, Williams DR, Moss NE (1997) Measuring social class in US public health research: concepts, methodologies, and guidelines. Annu Rev Public Health 18:341–378

31. Duncan O (1996) A socioeconomic index for all occupations. In: Reiss A Jr (ed) Occupations and social status. Free Press, New York, pp 109–138

32. Liberatos P, Link BG, Kelsey JL (1988) The measurement of social class in epidemiology. Epidemiol Rev 10:87–121

33. Geronimus AT, Bound J (1998) Use of census-based aggregate variables to proxy for socioeconomic group: evidence from national samples. Am J Epidemiol 148:475–486

34. Ross CE, Mirowsky J (1984) Components of depressed mood in married men and women. The Center for Epidemiologic Studies' Depression Scale. Am J Epidemiol 119:997–1004

35. Gotlib IH, Lewinsohn PM, Seeley JR (1995) Symptoms versus a diagnosis of depression: differences in psychosocial functioning. J Consult Clin Psychol 63:90–100

36. Williams JW Jr, Noel PH, Cordes JA, Ramirez G, Pignone M (2002) Is this patient clinically depressed? Jama 287:1160–1170

37. Rosenquist JN, Fowler JH, Christakis NA (2011) Social network determinants of depression. Mol Psychiatry 16:273–281

38. Shonkoff JP, Boyce WT, McEwen BS (2009) Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. JAMA 301:2252–2259

39. Turner RJ, Lloyd DA (1999) The stress process and the social distribution of depression. J Health Soc Behav 40:374–404

40. Ren XS, Amick BC, Williams DR (1999) Racial/ethnic disparities in health: the interplay between discrimination and socioeconomic status. Ethn Dis 9:151–165

41. Schulz A, Williams D, Israel B, Becker A, Parker E, James SA, Jackson J (2000) Unfair treatment, neighborhood effects, and mental health in the Detroit metropolitan area. J Health Soc Behav 41:314–332

42. Wight RG, Aneshensel CS, Botticello AL, Sepulveda JE (2005) A multilevel analysis of ethnic variation in depressive symptoms among adolescents in the United States. Soc Sci Med 60:2073–2084

43. Patel V, Rodrigues M, DeSouza N (2002) Gender, poverty, and postnatal depression: a study of mothers in Goa, India. Am J Psychiatry 159:43–47

44. Levav I, Kohn R, Dohrenwend BP, Shrout PE, Skodol AE, Schwartz S, Link BG, Naveh G (1993) An epidemiological study of mental disorders in a 10 year cohort of young adults in Israel. Psychol Med 23:691–707

45. Kessler RC, Ustun TB (2004) The World Mental Health (WMH) Survey Initiative Version of the World Health Organization

(WHO) Composite International Diagnostic Interview (CIDI). Int J Methods Psychiatr Res 13:93–121

46. Shrout PE, Lyons M, Dohrenwend BP, Skodol AE, Solomon M, Kass F (1988) Changing time frames on symptom inventories: effects on the Psychiatric Epidemiology Research Interview. J Consult Clin Psychol 56:267–272

47. Power C, Stansfeld SA, Matthews S, Manor O, Hope S (2002) Childhood and adulthood risk factors for socio-economic differentials in psychological distress: evidence from the 1958 British birth cohort. Soc Sci Med 55:1989–2004

48. Cooper B (2005) Immigration and schizophrenia: the social causation hypothesis revisited. Br J Psychiatr 186:361–363

49. Kirkbride JB, Barker D, Cowden F, Stamps R, Yang M, Jones PB, Coid JW (2008) Psychoses, ethnicity and socio-economic status. Br J Psychiatr 193:18

50. Gal G, Kaplan G, Gross R, Levav I (2008) Status inconsistency and common mental disorders in the Israel-based world mental health survey. Soc Psychiatry Psychiatr Epidemiol 43:999–1003

51. Knauper B, Cannell C, Schwarz N, Bruce M, Kessler R (1999) Improving accuracy of major depression age-of-onset reports in the US National Comorbidity Survey. Int J Methods Psychiatr Res 8:39–48

52. Borjas GJ (1992) Ethnic capital and intergenerational mobility. Q J Econ 107:123–150