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Income deprivation and mental well-being: The role of non-cognitive skills

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ABSTRACT

We show that the positive relation between income deprivation and mental health is affected by an individual's non-cognitive skills. Income deprivation is operationalized as the Yitzhaki index, i.e., as a function of the sum of income differences between an individual and others in her reference group who are more affluent. Non-cognitive skills are extracted from a Locus of Control questionnaire and the Big Five Inventory, a self-report measurement of an individual in regard to five aspects of personality: conscientiousness, neuroticism, extraversion, agreeableness and open-mindedness. The results, based on the 2002–2010 waves of the German Socio-Economic Panel dataset (SOEP), show that deprivation is negative and significantly related with mental health. However, neurotic individuals are more deprivation-sensitive than are others. Compared to the mean effect, a one standard deviation rise in neuroticism is associated with a deprivation effect that is 36.6% and 51.9% larger among men and women, respectively. Although to a lesser extent, extraverted men and conscientious women are also found to be more deprivation-sensitive than are others, the corresponding figures being 31.1% and 45.9%, respectively. These findings suggest that personality differences should be taken into account in the design of policies, practices and initiatives aimed at alleviating the well-being costs of income deprivation.

1. Introduction

Since the pioneering work of Townsend (1979), a number of studies in the sociology and economics literature have investigated the impact on an individual's overall health, not only of her income level (in the absolute sense) but also of that level relative to the income levels of others. The existence of such an impact is key to the relative-income hypothesis (RIH), according to which income comparisons exert a significant effect upon health outcomes (e.g., Wilkinson, 1996; Subramanian et al., 2009; Mangyo and Park, 2010). The evidence on mental health is scarcer, but the results are in line with those of general health (Eibner et al., 2004; Jones and Wildman, 2008).

Our focus is on the question of whether relative-income effects on mental health differ among individuals endowed with different sets of non-cognitive skills. Relative income is operationalized as Yitzhaki's (1979) index of deprivation. This index is defined as the sum of income differences between an individual and those in her reference group who are more affluent, relative to the total income in the group. There are three major reasons for the focus on mental health. First, mental health is probably the most important pathway by which relative deprivation affects physical health. Individuals at or near the bottom of the socio-economic hierarchy tend to experience relatively high levels of stress due to their inability to control their

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lives and thus to participate fully in all that society has to offer. This low-grade stress mobilizes hormones that affect the cardiovascular and immune systems (Marmot, 2004). Second, an increase in income may not affect mental health, but it can worsen health in general. This is likely to be the case if the increase leads to unhealthy lifestyle outcomes, including alcohol abuse (Ling, 2009; Costa et al., 2014). Thus, to the extent that physical- and mental-health outcomes are not closely correlated, an estimate of the effect of relative income on an aggregate measure of health is likely to be less precise than an estimate of its effect on one or the other measure alone (Ruhm, 2005). Third, the prevalence and the duration of mental-health problems place a considerable burden on health-care systems. The cost of treating depression alone in the European Economic Area has been estimated €136.3 billion, of which roughly a third is paid by health-care programs (McDaid et al., 2008).

We proceed by drawing on the Big Five Inventory (BFI), a widely accepted method of conceptualizing personality, and the 2002–2010 waves of the German Socio-Economic Panel dataset (SOEP). The "Five" in "BFI" refers to the five major traits that define human personality across cultures (Costa and McCrae, 1992): conscientiousness, neuroticism, extraversion, agreeableness and open-mindedness. This information is combined with an estimate of the Locus of Control (LOC) of each of the respondents in the dataset: that is, the degree to which they feel in control of their lives. Mental health is assessed by means of the SF-12 questionnaire. Included biannually in the SOEP since 2002, the SF-12 is the abridged, practical version of the 36-item Short Form Health Survey (SF-36). It was developed as a means of measuring health-related quality of life.

Non-cognitive skills are included in this study for two reasons. First, while these skills are personality traits not closely correlated with measures of intelligence, such as the IQ scale, they have recently been found to be a significant factor in a variety of life outcomes, including health, criminal activity and economic success (for a survey, Almlund et al., 2011) and also in labor-market elements such as job-search effort (Caliendo et al., 2010), employment (Uysal and Pohlmeier, 2011; Tefft, 2012) and especially earnings (Mueller and Plug, 2006; Heineck and Anger, 2010). These effects have led researchers to argue that non-cognitive skills should be given greater consideration in the literature (Borghans et al., 2008). Second, recent evidence points to the relevance of personality in defining the importance of income as a factor in life satisfaction (Boyce and Wood, 2011; Budria and Ferrer-i-Carbonell, 2012) and in determining an individual's capacity to adapt to destabilizing life events, such as unemployment (Boyce et al., 2010). Do non-cognitive skills modify the relation between deprivation and mental health? It may be well the case that, for instance, those lacking self-confidence or otherwise prone to negative emotions overreact to social comparisons. A limitation of previous studies has been the simplistic assumption that the deprivation effect is constant across individuals endowed with different sets of non-cognitive skills.

We show that of all the traits affecting the relationship between mental health and income deprivation, neuroticism is the most conspicuous one. The results are based on a fixed effect (FE) estimator. By focusing only on the changes that occur within individuals, the FE estimator successfully controls for time invariant factors that may be simultaneously related to mental health and deprivation. The observed correlation between deprivation and health may be not causal if people with specific characteristics, including personality traits, are less productive and more deprived and, at the same time, more likely to report bad health. For instance, personality is closely related to self-assessed measures of well-being and, at the same time, it has some predictive power for occupational choices, employment possibilities and earnings. By including individual fixed effects we factor out of the income and deprivation effects those indirect influences that flow from individual factors to economic status.

The paper is organized as follows. In the next section we provide an overview of the literature on the socioeconomic determinants of individual health, with a special focus on mental health and the role of societal comparisons. In Section 3 we describe the data and explain how mental health, income deprivation and personality traits are measured. In Section 4 we present the econometric model and the estimation strategy. In Section 5 we report the results and show how and to what extent non-cognitive skills modify the mental health–deprivation relationship. In Section 6 we discuss the results and potential problems of reverse causality. In Section 7 we present our concluding remarks.

2. Background and previous findings

Mental well-being is closely correlated with individuals' socioeconomic status. In a meta-analysis that comprises more than 50 cross-national epidemiological studies, Lorant et al. (2003) find that income level is negatively correlated with the risk of depression. Similar findings are reported in a related survey by Fryers et al. (2003). Weich et al. (2001) use cross-sectional survey data for Britain to show that individuals with the lowest incomes score worst in the mental-health section of the General Health Questionnaire (GHQ). Additionally, a statistically significant interaction is found between income inequality and income level relative to the prevalence of mental disorders. However, the evidence for the relationship between GHQ and income is often contradictory. For instance, Shields and Wheatley Price (2005) concluded that income is, as a rule, unrelated to GHQ even after they had considered a number of specifications and had run separate regressions for men and women. Using US cross-sectional data, Sturm and Gresenz (2002) show that both family income and education are closely correlated with health, including a variety of mental-health disorders (depression, dysthymia, panic and generalized anxiety) and other specific physical conditions. However, no significant association is found between income inequality and depressive or anxiety disorders. Similarly, McMillan et al. (2010) find an inverse association between income and psychological distress in the US, even though the evidence is less consistent for other diagnostic categories (mood, anxiety and substance-use disorders).

Several studies rely on longitudinal data to assess the impact of income dynamics on health. Using the British