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Does contextual unemployment matter for health status across the life course? A longitudinal multilevel study exploring the link between neighbourhood unemployment and functional somatic symptoms

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ABSTRACT

This study examines whether neighbourhood unemployment is related to functional somatic symptoms, independently of the individual employment, across the life course and at four specific life course periods (age 16, 21, 30 and 42). Self-reported questioner data was used from a 26-year prospective Swedish cohort (n=1010) with complementary neighbourhood register data. A longitudinal and a set of age-specific cross-sectional hierarchal linear regressions was carried out. The results suggest that living in a neighbourhood with high unemployment has implications for residents' level of functional somatic symptoms, regardless of their own unemployment across time, particularly at age 30.

1. Introduction

Previous research suggests that experiencing unemployment might have immediate health implications but also long-lasting effects over the life course. Cross-sectional and longitudinal studies from adolescence, early adulthood and later in life have shown consequences for a range of health outcomes, such as mental health, hypertension, self-rated health and mortality (Brydsten et al., 2015; Hammarström and Janlert, 2002; Strandh et al., 2014; McKee-Ryan et al., 2005; Paul and Moser, 2009). Moreover, as illustrated by the increasing evidence on neighbourhood effects on health, individual health is not only affected by one's individual life conditions but also by the context in which individuals live, interact and develop (Riva et al., 2007; Merlo, 2011; Root and Humphrey, 2014; Pickett and Pearl, 2001; Diez Roux and Mair, 2010; Bronfenbrenner, 1977). For example, in the case of unemployment, living in a neighbourhood with high levels of unemployment might affect residents' health, at least partially independent of their own labour market status (Pickett and Pearl, 2001; Mau et al., 2012; Milner et al., 2014). However, whether such neighbourhood unemployment is related to health across the life course is relatively unknown. This issue is what the present prospective study seeks to contribute to by examining the influence of neighbourhood unemployment across the life course and at specific life course periods on functional somatic symptoms.

Research theorising the relationship between health and place investigates how contextual factors "get under the skin" among residents in a neighbourhood (Daniel et al., 2008). This process is generally viewed as a complex interplay of factors at different levels of society (Elder Jr and Giele, 2009). In this study we have conceptualized the people-place interaction of unemployment as *embodied stress:* that is, how the societal context is biologically incorporated into the body, and thereby expressed as population patterns of health and disease. Experiencing unemployment is a stressful life event which affects health through financial deprivation and emotional strain such as worries about the future, re-employment, self-esteem and feeling of belonging (Giatti et al., 2010; Jahoda, 1981). At a neighbourhood level, the composition of one's own and other residents' unemployment within the neighbourhood may also influence health, operating through mechanism such as deprivation in infrastructure, educational and labour market opportunities, availability of healthy foods at affordable prices, increased stress and lack of social support (Pickett and Pearl, 2001; Giatti et al., 2010). This could be viewed as the collective burden of neighbourhood unemployment, where deprivation in the neighbourhood could increase individual strain, independent of a person's own labour market position. Altogether, these processes may shape the pathways of embodied stress and individual health (Elder Jr and Giele, 2009).

There is a well-established body of literature on the individual health risk of living in socioeconomic disadvantaged neighbourhoods (e.g. measured by occupational structure or household income), even

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when individual socioeconomic characteristics are accounted for (Riva et al., 2007; Pickett and Pearl, 2001; Murray et al., 2012). However, few studies have investigated the role of neighbourhood unemployment as a specific aspect of neighbourhood disadvantage. Longitudinal studies from Northern Europe and the US indicate that people living in neighbourhoods with a high proportion of unemployment have poorer self-rated health as well as an increased risk of cardiovascular disease, diabetes, and mortality (Müller et al., 2015; Stafford et al., 2004; Cummins et al., 2005; van Lenthe et al., 2005). A recent retrospective British study conducted by Murray and colleagues (2016) on the National Statistics Longitudinal Study showed that employed people (age 40+) living in a neighbourhood with high unemployment in 2001 were more likely to leave the workforce ten years later, even when individual health was accounted for. The authors identified high neighbourhood unemployment as one important predictor for preventing sick-leave or early retirement in the workforce (Murray et al., 2016). Similar findings were reported in a retrospective study based on the US Health and Retirement Study by Wright and colleagues (2013), studying the relationship between urban neighbourhood unemployment history and current mental health from middle age to old age. They concluded that early exposure to neighbourhood unemployment may have mental health consequences later in life; however, not due to accumulated ill-health but instead explained by an early effect on baseline emotional health (age 51–61) (Wight et al., 2013). Little is however known, about whether such a relationship is applicable in a Swedish setting, and among those in other phases of life where a person's own labour market position is vital. The lack of prospective studies further hampers any conclusions regarding the impact of neighbourhood unemployment across the life course.

From a Western European perspective, Sweden is a worker-friendly welfare state, characterised by high access to different labour market measures, active trade unions, and highly developed income protection buffering against moral stigmatisation and poverty (Thornqvist, 1999; Magnusson, 2007; Calmfors et al., 2002; Esping-Andersen, 1990). Sweden is also seen as a nation with a high focus on equity in health (Raphael, 2014). However, as seen in most western countries in recent decades, macroeconomic fluctuations, globalisation, and shifting ideologies have led to a general withdrawal of governmental involvement in benefits available for citizens (Raphael, 2014). The weakening of public programmes and benefits may make people in already disadvantaged positions become more dependent on their immediate social surroundings, such as social and material resources in the neighbourhood. One of the few Swedish studies that have investigated contextual and individual influences of unemployment on health suggests that high municipal vacancy rates improved mental health among unemployed, while no contextual health effect was found for municipal unemployment rate (Strandh et al., 2011). Two other Swedish studies did however find a relationship between neighbourhood unemployment and health status, even after taking individual employment status into account (Ohlander et al., 2006; Sundquist et al., 2006). However, none of these studies applied a longitudinal perspective, and they were thus unable to investigate whether this potential relationship is present across the life course, or to identify whether the relationship varies between particular periods of the life course (Merlo, 2011).

A recent longitudinal study conducted on the same cohort as the present study did find an independent contribution of overall neighbourhood disadvantage to the overall level of ill-health across the life course and at specific life course periods, taking individual disadvantages into account (Gustafsson and San Sebastian, 2014). Drawing on the findings of this study and the potential role of neighbourhood-level unemployment for individual health, the present study therefore moves further by asking whether neighbourhood unemployment, as a single aspect of neighbourhood disadvantage, may have an independent contribution to health across the life course and if so, how it plays out at specific periods of life, irrespective of individual unemployment. The specific aims are (i) to examine whether neighbourhood unemployment is related to overall health status across the life course independently of the individual employment position from adolescence to middle age (age 16–42); and (ii) to analyse whether this relationship is demonstrable in four specific life course periods (age 16, 21, 30 and 42) from adolescence to middle age. As health outcome, we studied self-reported functional somatic symptoms (FSS), e.g. bodily complaints of unclear aetiology, such as headaches, musculoskeletal pain, abdominal pain and dizziness (Eikelboom et al., 2016; Beck, 2008; Creed et al., 2012). FSS have been shown to be closely related to increased level of stress as well as mental health, life satisfaction and general health (Raphael, 2014; Creed et al., 2012; Haug et al., 2004; Campo, 2012; van Gils et al., 2014) but also to be influenced by the neighbourhood conditions where a person resided (Swartz et al., 1989).

2. Methods

2.1. Sample and data procedures

This 26-year longitudinal study follows all school leavers in an industrial town in northern Sweden. In four waves (at age 16 in 1981, 21 (1995), 30 (1995) and 42 (2007)) participants completed a comprehensive questionnaire regarding labour market, health and health behaviours, family and leisure time. At the last follow-up the response rate was 94.3% (n=1010) of those still alive of the original cohort (n=1071). A detailed description of the cohort, the data collection procedure and available measures is published elsewhere (Hammarström and Janlert, 2012).

For each cohort participant, neighbourhood measures were collected in accordance with Statistics Sweden's small-area market statistics (SAMS). SAMS is a small-scale geographic division constructed as polygons, using demographic distinctions (such as roads, buildings etc.) to demarcate neighbourhoods. In this study the SAMS areas were composed on 31 December in 1980, 1986, 1995 and 2007, consisting of at least one cohort member and on average 1000 individuals from the neighbourhood. Neighbourhood of residence was collected in 1980 for the 1981 measure point to take into account that many of the participants moved from their parental home when leaving compulsory school. The number of neighbourhoods increased from 72 in 1980 to 374 in 2007, due to the cohort members' moving pattern. Information on socioeconomic measures were retrieved from Statistics Sweden for all residents living in each area. A more detailed description of the data procedure is published elsewhere (Gustafsson and San Sebastian, 2014). The Regional Ethical Review Board in Umeå, Sweden, approved the data collection in this study.

2.2. Measures

Functional somatic symptoms (FSS) at age 16, 21, 30 and 42 were measured by ten items of self-reported physical symptoms in the borderline between soma and psyche (added to an index ranging 0–20) (Haug et al., 2004; Zijlema et al., 2013). Occurrence of eight of the symptoms during the last 12 months (headache/migraine, stomach ache, nausea, backache/hip pain/sciatica, fatigue, breathlessness, dizziness, overstrain) were asked for and answered as 'no', 'yes, light' or 'yes, severe'. The last two symptoms, palpitations and sleeping difficulties, were asked for and answered as 'never', 'sometimes' or 'often/always' (Cronbach's alpha was 0.699 at age 16, 0.698 at age 21, 0.737 at age 30, 0.782 at age 43) (Hammarström et al., 2016). FSS have shown to be present across the life course and increase with age (Haug et al., 2004). A recent systematic review concluded that few of the patients diagnosed with FSS had underlying somatic diseases (Eikelboom et al., 2016). FSS were used as separate measures at each age and as a time-varying measure.

The variable of neighbourhood unemployment was constructed as the proportion of non-employment in the working-age population (age 18–64) within a neighbourhood, based on register data of annual