



Social safety, self-rated general health and physical activity: Changes in area crime, area safety feelings and the role of social cohesion



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ABSTRACT

The aim of this study was to examine whether changes over time in reported area crime and perceived area safety were related to self-rated general health and physical activity (PA), in order to provide support for a causal relationship between social safety and health. Additionally, we investigated whether social cohesion protects the residents against the negative impact of unsafe areas on health and PA. Multilevel logistic regression analyses were performed on Dutch survey data, including 47,926 respondents living in 2974 areas. An increase in area level unsafety feelings between 2009 and 2011 was associated with more people reporting poor general health in 2012 in that area, but was not related to PA. Changes in reported area crime were not related to either poor general health or PA. The social cohesion in the area did not modify the effect of changes in social safety on health and PA. The results suggest that tackling feelings of unsafety in an area might contribute to the better general health of the residents. Because changes in area social safety were not associated with PA, we found no leads that such health benefits were achieved through an increase in physical activity.

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1. Introduction

Over the past 20 years, the neighbourhood has gained importance in public health research. Neighbourhoods emerged as potentially relevant contexts for health, since their physical and social characteristics could plausibly affect health over and above individual risk factors, such as lifestyle factors (Diez Roux and Mair, 2010, p. 125). Compared to the physical environment, research on the social characteristics of the neighbourhood and their effect on health and behaviour is less common (Diez Roux and Mair, 2010; Sampson, 2003). One social characteristic that has received some attention in relation to health is the social safety of the neighbourhood. In some studies, social safety has been associated with depression and depressive symptoms and worse physical health, but the findings are inconclusive (Diez Roux

and Mair, 2010; Lovasi et al., 2014; Polling et al., 2014; Lorenc et al., 2012).

Social safety can be divided into objective and subjective safety. Objective safety refers to the occurrence of criminal offences, such as theft or burglary. Subjective safety reflects the perception of social safety and encompasses fear or anxieties caused by real or assumed threats. In criminology, subjective safety is commonly divided into a cognitive component, an emotional-affective component, and a behavioural component (Hardyns and Pauwels, 2010a). The cognitive component refers to the risk perception of personally becoming a victim. The emotional affective-component refers to feelings of unsafety and fear of crime. Fear of crime can be considered a specific type of unsafety feeling that solely focuses on the fear of becoming a victim of crime while unsafety feelings in general may include other fears or anxieties concerning neighbourhood problems, such as vandalism, street harassment or youth hanging around (Skogan and Maxfield, 1981; Hardyns and Pauwels, 2010a). The behavioural component refers to avoidance behaviour due to crime (Hardyns and Pauwels, 2010a; Oppelaar and Wittebrood, 2006). We will focus in this

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study on the occurrence of crime as a proxy for objective neighbourhood safety, and on the emotional component of subjective safety, because unsafety feelings and fear of crime are considered important factors influencing health (Lorenc et al., 2012).

Two pathways are commonly distinguished between neighbourhood crime, unsafety feelings, and health. The psychosocial mechanism is the most frequently mentioned pathway (Chandola, 2001). Crime and feeling unsafe induce stress, which negatively impacts mental and physical health (Chandola, 2001). It is further hypothesized that neighbourhood crime and unsafety feelings affect physical activity (PA) negatively. People may limit their outdoor activities because they feel unsafe there (McGinn et al., 2008). The empirical evidence for this latter mechanism is, however, inconsistent (Lorenc et al., 2012; Foster and Giles-Corti, 2008; Mason et al., 2013).

A third proposed pathway between social safety and health is that crime and unsafety feelings may result in mistrust of others, forming a barrier for social interactions among neighbours (Stafford et al., 2007) and the creation of social cohesion, which could be detrimental to health as well (Kawachi and Berkman, 2000; Diez Roux and Mair, 2010). On the other hand, it has been theorized that the level of social cohesion in a neighbourhood may reduce the development of feelings of unsafety in the presence of crime because people feel protected and less vulnerable (Ross and Jang, 2000; Lorenc et al., 2012). In other words, the social cohesion of the neighbourhood might affect the impact of crime on the development of unsafety feelings. Based on this argument, we hypothesize that neighbourhood social cohesion might protect against the presumed, negative health impact of neighbourhood crime and unsafety feelings on health and PA. In socially cohesive neighbourhoods residents might feel supported by their neighbours, which lowers the stress-inducing effect of neighbourhood crime and feelings of unsafety, resulting in better self-rated health and more PA.

So far, the evidence on the negative impact of neighbourhood social safety on health is based largely on cross-sectional studies. If neighbourhood crime and neighbourhood unsafety feelings determine the health of residents, we would expect changes over time in the neighbourhood social safety to affect health (Bambra et al., 2010). To our knowledge, no study has yet examined whether changes over time in the neighbourhood social safety affect the general health of residents. In case of PA, a few studies have considered the effect of changes over time in neighbourhood fear of crime. A recent Dutch study found favourable changes in fear of crime to be borderline statistically significantly associated with more residents being physically active (Jongeneel-Grimen et al., 2014). An Australian study reported an increase in fear of crime negatively influenced people's walking behaviour (Foster et al., 2014). A more comprehensive measure of social safety than just fear of crime could provide a clearer understanding of the relation between neighbourhood safety and physical activity. Furthermore, objective crime and subjective safety feelings are not strongly interrelated and, therefore, seem to represent two different aspects of social safety that may have a different impact on people's health and lifestyle (Lorenc et al., 2012). We will therefore study the impact of neighbourhood crime and unsafety feelings separately, and we will employ several measures of neighbourhood unsafety feelings.

In summary, the aim of this paper is to examine the causal relation between neighbourhood social safety and self-reported health and PA, and the protective effect of social cohesion herein. We will examine the effect of social safety on both self-rated health and PA, in order to respectively examine the psychosocial and the health-related behavioural mechanisms. The following research questions are addressed: Are neighbourhood crime and unsafety feelings associated with self-rated health and PA?

Are changes over time in neighbourhood crime and unsafety feelings related to general health and PA? Do the presumed adverse effects of increasing neighbourhood unsafety on general health and PA vary by the level of social cohesion in the neighbourhood?

2. Methods

2.1. Study population

Health and PA data and individual characteristics were obtained from the cross-sectional Dutch Housing Survey 2009 and 2012 (WoON), conducted by Statistics Netherlands (CBS). WoON is a nationwide, triennial survey of non-institutionalized adults (18 years and older). A stratified sample was drawn, covering municipalities nationwide. Data were collected through telephone, Internet, and face-to-face interviews. In total, 78,000 respondents completed the survey in 2009 (response rate 58%) and 69,330 in 2012 (response rate 63%). We selected respondents from the WoON 2012 survey who had lived at their current address since at least 2009 in order to examine the health effect of exposure to safety issues measured in 2009 and 2011.

The safety and cohesion measures were derived from repeated cross-sectional data from the Dutch Integral Safety Monitor 2009 and 2011 (*Integrale Veiligheidsmonitor*), conducted by Statistics the Netherlands (CBS). The Safety Monitor is a nationwide survey of non-institutionalized persons aged 15 years and older that monitors the safety, liveability, and victimization in the Netherlands. A stratified sample covering municipalities nationwide was drawn. Residents participated in the survey via either the Internet or a written questionnaire. Non-responders were approached again by telephone or face-to-face. A total of 198,122 and 223,944 respondents completed the survey in 2009 and 2011 respectively (response rate 40% in 2009 and 43% in 2011). We selected respondents of 18 years and older ($N=192,015$ in 2009 and $N=216,840$ in 2011; mean of 57.1 to 73.6 observations per area) to match the data with the WoON dataset containing the health data. The safety scores constructed from the Safety Monitor were combined with the health data by using the 4-digit postal code of the address of the respondents.

In total, 47,926 respondents living in 2974 areas (74% of the Dutch postal-code areas) were included in the analyses.

2.2. Measures

2.2.1. Self-rated general health and PA

Self-rated general health was measured by the single-question item: 'In general, how do you rate your health?' Using a 5-point Likert-scale, answers ranged from 'very good' to 'very bad'. Because the answers were highly skewed, and in order to make the outcome measure comparable to other international studies as well, we dichotomized the answers into (very) good versus less than good. Self-rated general health has consistently proven to be an independent predictor of mortality (Idler and Benyamini, 1997) and morbidity (Simon et al., 2005).

The physical activity of the respondents was determined by the single question: 'How many hours per week do you spend on physical activity or sports?' Recent Dutch studies that used the same data showed that the neighbourhood environment affected whether or not people were physically active, but not the amount of time people exercised (Jongeneel-Grimen et al., 2013, 2014). Therefore, we dichotomized PA and studied physical inactivity, defined as 0 hours of physical activity or sports per week.

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