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Structural neighbourhood characteristics, perceived collective efficacy and perceived disorder: a multilevel study on fear of crime

Strukturelle Nachbarschaftsmerkmale, wahrgenommene kollektive Wirksamkeit und wahrgenommene Unordnung: eine Mehrebenenstudie zur Kriminalitätsfurcht

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Abstract: This study examines whether residential stability and neighbourhood SES, two key neighbourhood structural characteristics from Social Disorganisation Theory (SDT), have a contextual effect on perceived social trust, perceived informal social control, and perceived social disorder and whether these contextual structural and perceptual measures are related to three measures of fear of crime, independent of population composition. Attention is paid to three well-known dimensions of fear of crime: risk perception (cognitive), fear (emotional) and avoidance behaviour (behavioural). The results demonstrate that neighbourhood residential stability is strongly related to perceptual measures of collective efficacy (perceived social trust and perceived informal social control) and perceived social disorder, controlling for demographic background characteristics and individual level social capital. The implications of these findings and avenues for future studies are discussed.

Keywords: Collective efficacy, social capital, perceived social disorder, fear of crime, neighbourhood effects

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Zusammenfassung: In dieser Studie wird zunächst untersucht, ob die residentielle Stabilität und strukturelle Benachteiligung (SES), zwei zentrale strukturelle Merkmale von Wohnquartieren, die im Mittelpunkt der Theorie der sozialen Desorganisation (SDT) stehen, einen kontextuellen Effekt auf das wahrgenommene soziale Vertrauen, die wahrgenommene informelle soziale Kontrolle und die wahrgenommene soziale Unordnung haben. Zweitens wird untersucht, ob diese genannten Merkmale der Stadtviertel und wahrgenommene kollektive Wirksamkeit mit drei Operationalisierungen der Kriminalitätsfurcht zusammenhängen, wenn individuelle Merkmale als Kontrollvariablen verwendet werden. Dabei werden drei bekannte Dimensionen der Kriminalitätsfurcht berücksichtigt: die Wahrnehmung des Viktimisierungsrisikos (kognitive Dimension), Kriminalitätsfurcht (emotionale Dimension) und Vermeidungsverhalten (verhaltensbezogene Dimension). Die Ergebnisse zeigen, dass die Stabilität des Wohnviertels und soziales Kapital das wahrgenommene soziale Vertrauen, die wahrgenommene informelle soziale Kontrolle und die wahrgenommene soziale Unordnung präzisieren. Diese Variablen präzisieren auch das Viktimisierungsrisiko, die Kriminalitätsfurcht und das Vermeidungsverhalten. Die Implikationen dieser Ergebnisse und Möglichkeiten für zukünftige Studien werden diskutiert.

Schlüsselworte: Stadtvierteleffekte, wahrgenommene informelle Sozialkontrolle und Zusammenhalt, wahrgenommene soziale Unordnung, Kriminalitätsfurcht

1 Introduction

The question of how the social environment shapes human health and behaviour is one of the most well-studied

topics in the social and health sciences. Emerging from this large body of research is substantial evidence that exposure to life stress and adversity can negatively affect human functioning, disease risk, and longevity (Abdullah et al., 2015; Bird et al., 2018; Erving & Hills, 2019; Hill et al., 2005; Ige-Elegbede et al., 2020; Liu et al., 2017; Lüdemann, 2006; Shields & Slavich, 2017). Living in impoverished, harsh environments that signal threats or pose real threats have also been studied for decades in criminological inquiries. Indeed, also in criminology, it is known that neighbourhoods are important for diverse aspects of an individual's wellbeing (Hardyns et al., 2016).

The present study investigates some of the assumed outcomes of neighbourhood structural characteristics, derived from Social Disorganisation Theory (SDT), namely neighbourhood residential stability and neighbourhood SES, on perceptions of collective efficacy, perceptions of disorder and (cognitive, affective and behavioural dimensions of) fear of crime. In the present study the focus lies on fear of crime as a result of a complex outcome of area characteristics and the perceptions thereof. Thus, we assume that perceptions (what we perceive with our senses or 'the definition of the situation') (partially) intervene when we explain individual differences in fear of crime. While the fear of crime literature is vast and contains numeral definitions, assumptions, conceptual and empirical challenges (see e.g. Hirtenlehner & Farrall, 2013), we study individual differences in fear of crime from a combination of individual and neighbourhood characteristics. Fear of crime may seem irrational, but may also be seen as a natural response towards perceptions of the environments one is exposed to (e.g. integrated threat theory, see Ross & Jang, 2000; Stephan & Stephan, 2000). In doing so, we analyse data that was collected in 2007 by a large-scale survey conducted by the Belgian municipality of Leuven.

The structure of this article is as follows. First, we point out the theoretical relevance of neighbourhood characteristics, social capital, and perceptual measures of collective efficacy and disorder in explaining individual differences in fear of crime. Next, we discuss some methodological issues related to both the measurement of collective efficacy and the conceptualisation of the relationship between collective efficacy, disorder, and fear of crime. Then we test specific hypotheses regarding the role of individual perceptions in explaining individual differences in fear of crime. Finally, we highlight the conclusions, and discuss the limitations of the present study in light of future studies and policy avenues.

2 Theoretical backdrop and previous research

2.1 Neighbourhood characteristics, social capital, and perceptual measures of collective efficacy and disorder

Despite the underlying curse of conceptual ambiguity, over the last decade, researchers and policymakers have increasingly focused on social capital and social cohesion as important issues in security policy (Binik, 2019; Field, 2003; Friedrichs & Oberwittler, 2007; Han, 2021; Hermann, 2009; Sampson, 2003; Starcke, 2019). The lack of consensus on the definition of both concepts is illustrated by the fact that researchers sometimes view social capital and social cohesion as an individual characteristic and others as characteristics of groups and areas where individuals live (Friedrichs & Blasius, 2000, 2003; Kawachi et al., 2008; Van Ham & Feijten, 2008). Neighbourhood theories have traditionally stressed the role of structural characteristics, while individual-level theories have traditionally stressed social exclusion, vulnerability or the buffers that decrease the likelihood that disadvantage translates into fear of crime. Individual social capital is such a characteristic.

As of the 1980s, inspired by the work of a.o. Granovetter (1973), a research tradition that studied the relationship between social capital and crime rates started to flourish. This relationship was firstly studied at the macro-level and later by integrating a multilevel perspective, integrating multiple levels of aggregation that originally placed the emphasis on network density and local social ties as main dimensions of social cohesion (Sampson, 2003) and victimisation as an individual outcome (Miethe, 1994). A lack of social ties was seen as one of the major consequences of residential mobility and economic deprivation in metropolitan neighbourhoods. From then on, the question of why social networks have the effect of reducing crime increasingly became heavily debated and studied (Franklin et al., 2008; Vieno et al., 2016). Social networks were increasingly being perceived as mechanisms from which elements of social capital could be drawn, referring upon the perceived tangible and/or intangible resources possibly emanating from the interactions with (significant) others (Bourdieu, 1986; Hardyns et al., 2019; Macinko & Starfield, 2001; Putnam, 2000).

Social capital refers to resources (human capital one can make use of in everyday situations) (Kim & Ross, 2009) and social capital does have a spatial dimension (Sampson, 2012). Usually, in the tradition of Putnam's

view, social capital refers to the number of persons one can trust and count on (Putnam, 2000).¹

In this study individual social capital is conceptualised as social support: the support and assistance a person receives by/from social ties that exist both within and outside of the neighbourhood in which the individual lives (Berlotti et al., 2013; Bourdieu, 1986; Lin, 1999). Previous studies (e.g. Vieno et al., 2016) have demonstrated that social capital – both at the individual and ecological/collective level – is negatively related to measures of fear of crime. In addition, individual social capital may reduce fear of crime by reducing feelings of vulnerability due to its supportive function: higher levels of perceived social capital may lead to individuals being convinced that they will be supported by others when they encounter certain problems (Vieno et al., 2016). In that regard, it has been argued that individual social support may increase mental and physical health and reduce feelings of unsafety as social support aids in providing opportunities for human interaction (Ganster & Victor, 1988; Makarios & Livelsberger, 2013). Moreover, Agnew (1985) argued that individual immersion into social networks increases the access of individuals to valuable information, while Ferguson and Mindel (2007) found that higher levels of social support networks contribute to higher levels of collective efficacy and enhances the adoption of preventive and protective safeguards. In addition, Ferguson and Mindel (2007) found that respondents with a higher supportive network were more inclined to safeguard themselves and their direct environment from criminal behaviour. We could thus also assume that the same processes occur at the individual perceptual level, as higher perceptions of social capital may enhance perceptions of social trust due to increased possibilities of positive human interaction, but may also establish higher perceptions of informal social control given that individual social capital could increase the willingness to intervene on behalf of the common good (to take preventive and protective safeguards) (Vieno et al., 2016).

While aggregate level studies have demonstrated that neighbourhood characteristics (e.g. disadvantage and sta-

bility) and social cohesive neighbourhood processes like collective efficacy are correlated, the effects of neighbourhood structural characteristics and social capital on perceived collective efficacy and perceived disorder have been studied to a lesser extent and are nascent in criminological inquiries (see e.g. Gerstner et al., 2019; Hardyns et al., 2018; Nix et al., 2015; Oberwittler et al., 2017; Ross & Mirowsky, 2009; Sutherland et al., 2013). Perceived collective efficacy is a concept which originated in educational and organizational research, based on an extension of Bandura's social cognitive theory (Bandura, 2000; Goddard et al., 2004; Parker, 1994).

Collective efficacy is defined as '*social cohesion among neighbours combined with their willingness to intervene on behalf of the common good*' (Sampson et al., 1997, p. 918). Collective efficacy refers to the presence of social trust on the one hand and informal social control on the other. U.S.-based studies have frequently established that high levels of collective efficacy are strongly and negatively related to neighbourhood levels of (violent) crime (Hipp, 2016; Hipp & Wickes, 2017; Morenoff et al., 2001; Sampson, 2012). Collective efficacy is affected by structural neighbourhood characteristics such as concentrated disadvantage, immigrant concentration and residential mobility as well as opportunity characteristics derived from Routine Activities Theory (RAT) and Crime Pattern Theory (Andresen, 2019; Sampson, 2012). Previous studies (see for example Blasius et al., 2013; Gerell, 2017; Gerell & Kronkvist, 2017; Maimon & Browning, 2010; Mazerolle et al., 2010; Sampson & Wikström, 2008; Starcke, 2019; Oberwittler & Wikström, 2009) have demonstrated that at the neighbourhood level, low levels of collective efficacy are strongly and positively related to concentrations of disorder and crime, and as a result, residents of these neighbourhoods run a higher risk of becoming a crime victim and experiencing increased risk of fear of crime (Hanslmaier, 2019). However, if neighbourhood structural characteristics are correlated to neighbourhood levels of collective efficacy, there should be a link via perceptions, as perceptions of neighbourhood characteristics link neighbourhood structural characteristics to neighbourhood social processes. Individuals (consciously or unconsciously) scan the environment (Matsueda, 2017; Opp, 2011; Sagarin & Taylor, 2008) which in turn lead to neighbourhood differences in social processes like collective efficacy, as a consequence of transformational processes. The present study adds to the growing literature by dealing with contextual effects of neighbourhood structural characteristics on perceptual measures of collective efficacy and perceived social disorder (Ross & Mirowsky, 1999).

Building on previous studies (e.g. Gerstner et al., 2019; Wickes et al., 2013), we distinguish between perceived so-

¹ In contemporary global societies, social capital is not necessarily restricted to the area one lives. However, there is an increasing consensus that social capital has positive outcomes over the life-course (Ross & Jang, 2000) and that having social capital is an important buffer against some structural neighbourhood characteristics of neighbourhoods (which play a pivotal role in SDT or the social disorganisation models which emerged over the past decades) (Bruinsma et al., 2013). SDT and Collective Efficacy Theory (CET) share a scholarly interest in the devastating effects of area concentrations of structural disadvantage, neighbourhood stability and negative outcomes at multiple levels of analysis (Hardyns & Pauwels, 2017).

cial trust and perceived informal social control, as neighbourhood characteristics only can be related to outcomes like fear of crime by perceptions of cues that are derived by inhabitants (and neighbourhood visitors). Such cues vary from signals that people care (perceptions of social trust and informal social control) and signals that (social) disorder is tolerated in the neighbourhood. We distinguish between both dimensions of collective efficacy as this is motivated by several studies that have shown that (in the European settings) perceptual measures of neighbourhood processes are not unidimensional constructs (e.g. Hardyns et al., 2019; Starcke, 2019). Most studies in the wake of Sampson et al. (1997) have studied collective efficacy by combining the two aspects of this construct and viewing it as an overarching neighbourhood characteristic.

2.2 Perceiving collective efficacy, disorder, and fear of crime: the challenge of unravelling the causal structure

Studies of neighbourhood characteristics, perceptual measures of collective efficacy and disorder and fear of crime are often cross-sectional by nature. Cross-sectional designs are by nature an extremely weak design to correctly specifying the relationship between especially (perceived) disorder and fear. While perceptions of the environment may trigger responses such as fear of crime, this story is far from complete as fear (an emotional response to external stimuli from the environment one is exposed to), risk perceptions (a cognitive response to environmental stimuli from the environment one is exposed to) can also trigger a series of physiological reactions which makes individuals focus on certain aspects of the environment. This may cause the individual to increasingly capture more signals of disorder and fail to capture positive cues from the neighbourhood then individuals who exhibit lower levels of fear of crime. It is therefore not surprising that studies started to take the reversed causality model seriously (Wyant, 2008). Therefore, it is clear that a naïve, unicausal model (such as the disorder-fear link) is not warranted.

Therefore, this study should also be differentiated from other empirical inquiries in its conceptualisation of the relationship between perceived collective efficacy and fear of crime. For example, in the study of Markowitz et al. (2001), the relationship between collective efficacy and fear of crime was conceptualised insofar perceived disorder lowers levels of collective efficacy, mediated by fear of crime. The relationship between collective efficacy and fear of crime can thus also be seen as part of a feedback loop: perceived disorder may feed fear of crime by lowering levels of

collective efficacy, and fear of crime may feed perceived disorder in neighbourhoods, thus again lowering levels of collective efficacy (Wyant, 2008; Kelling, 2015; Skogan, 2015; Welsh et al., 2015; Yang & Pao, 2015). Nonetheless, in this study, we hypothesise that individual differences in fear of crime are provoked by individual differences in perceptions of the (symbolic) cues derived from structural characteristics, such as neighbourhood SES and neighbourhood stability. This is in line with previous cross-sectional studies, stating that fear of crime is higher in areas with higher levels of ethnic heterogeneity and economic deprivation and that perceptions of higher levels of community collective efficacy together with lower levels of distrust and anonymity may reduce fear of crime (Brunton-Smith, 2011; Brunton-Smith et al., 2014; Jackson, 2004; Ross & Jang, 2000). Yet, when measured at the same point in time, little can be concluded with regard to the causal nature of the association between perceived collective efficacy, perceived disorder and fear of crime. As such, the analyses presented in this article are just one part of a full test of a systemic model. We simply cannot simultaneously test for the effects of fear of crime on collective efficacy. Nor can we assess whether any feedback effect occurs. We therefore underscore that we adopt a systemic view, acknowledging causal feedback loops, while methodological restrictions (especially the cross-sectional design) force us to study this complex relationship in a simplified way.

3 The present study

The present study builds on more recent developments in the social disorganisation/collective efficacy literature identified in more recent studies. We dispose of data at the neighbourhood level and the individual level and are able to review this premise in light of this new information. As such, we test whether direct effects of residential stability and neighbourhood SES, two key structural characteristics of SDT dimensions of perceived collective efficacy, are related to avoidance behaviour, perceived risk of victimisation and the emotional fear of crime. Traditional research into the fear of crime generally distinguishes between three components of fear of crime: a cognitive component, often measured as the *perceived risk of victimisation*; an emotional component or actual *fear of crime*²; and a beha-

² The affective or emotional component – which is frequently considered as the standard indicator of fear of crime – is often criticised for not being crime-specific. In many cases, the items would gauge general fear, not crime-specific fear (Boers, 2003; Kreuter, 2000; Lüdemann, 2006; Starcke, 2019).

Conceptual model

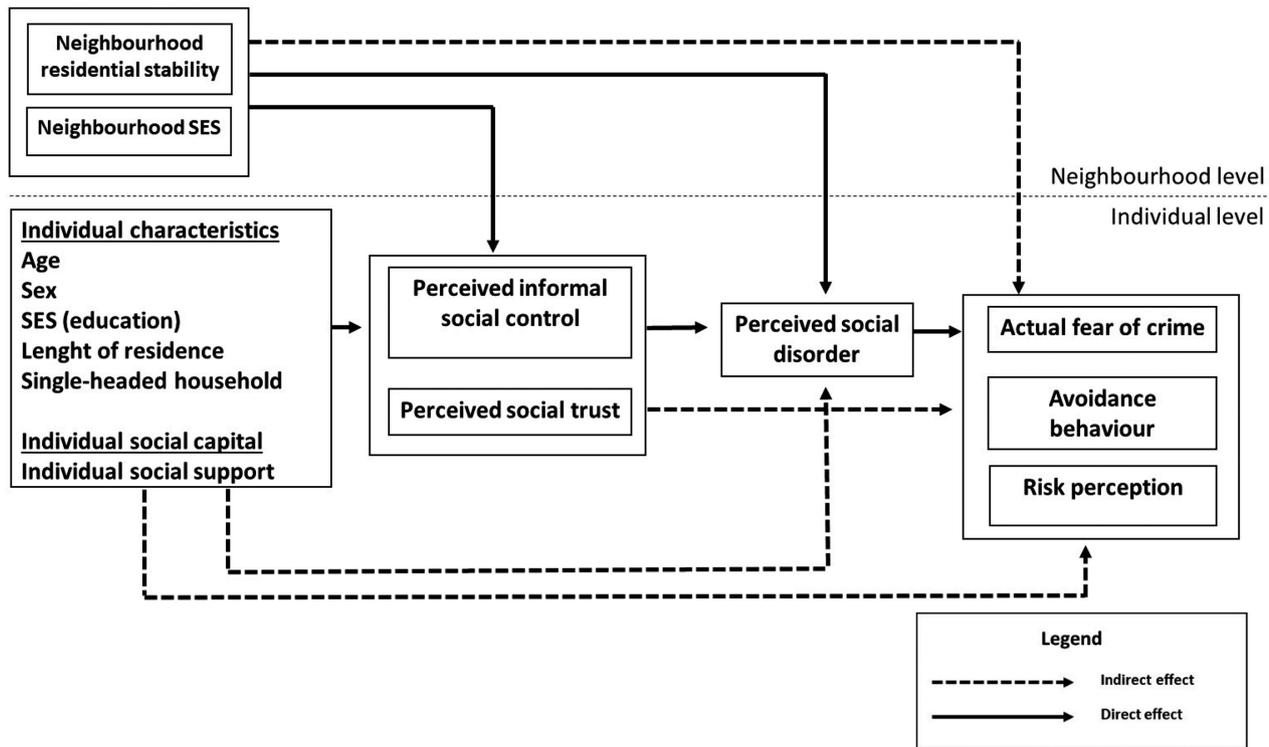


Figure 1: Conceptual model – hypothesised effects on the three components of fear of crime.³

vioural component, which consists of ‘behaviour-linked attitudes or measures taken in response to feelings of fear or insecurity’ (Boers, 2003; Ferraro, 1995; Pauwels et al., 2010; Pleysier, 2009; Reuband, 2000; Skogan, 1993; Starcke, 2019; Vanderveen, 2006). *Avoidance behaviour* is an example of the behavioural component of fear of crime. It is a defensive reaction to the emotional state experienced by an individual who has an actual fear of crime. Empirical tests of SDT and CET have mainly focused on the contextual effects of the behavioural aspect of fear of crime and have looked at whether individuals’ avoidance behaviour can vary depending on the socio-demographic background characteristics, on the one hand, and effects of the neighbourhood on the other. This study contributes to the empirical literature in two ways. First, it addresses potential contextual effects of neighbourhood characteristics for these three components of fear of crime in one study. In addition, this study adds to the literature by assessing the effect of structural characteristics of neighbourhoods on perceived social trust, perceived informal social control and perceived social disorder.

4 From theory to testable propositions

The research propositions tested in this study were constructed step by step according to the structure of SDT, and its implications for perceptions of collective efficacy, perceived social disorder and fear of crime. We focus on (1) the relationship between residential stability and neighbourhood SES, independent of demographic controls and individual social capital on perceptual measures of collective efficacy and disorder, (2) the effect of residential stability and neighbourhood SES on fear of crime and (3) the effect of residential stability, neighbourhood SES and individual level social capital on fear of crime, controlling for perceptual measures of collective efficacy and disorder (see figure 1).

³ This conceptual model served as a guideline to test the hypotheses and therefore does not take into account the many acknowledged feedback loops between the key elements of this ‘systemic’ model. Direct and indirect effects refer to hypothesised effects and not to empirical effects

Hypothesis 1: Neighbourhood level residential stability and neighbourhood SES are negatively related to the three dimensions of fear of crime, independent of the neighbourhood's demographic population composition (including age, sex, SES, length of residence, single-headed household).

Hypothesis 2: The effects of residential stability and neighbourhood SES and individual background variables on fear of crime are reduced when individual social capital is taken into account. Individual-level social capital has a negative effect on the fear of crime dimensions.

Hypothesis 3: Neighbourhood levels of residential stability and SES are no longer related to fear of crime, once perceptual measures of collective efficacy and disorder are taken into account. Perceived social trust and perceived informal control have negative effects on fear of crime, while perceived disorder has a positive effect on fear of crime.

Hypothesis 4: Neighbourhood levels of residential stability and SES are negatively related to perceived social trust, perceived informal social control, and perceived social disorder, independent of individual demographic background variables and individual-level social capital. Individual-level social capital has a positive effect on perceived social trust and perceived informal control and a negative effect on perceived disorder.

5 Data

This study is based on a large-scale population survey conducted by the Belgian municipality of Leuven in 2007. Leuven (Louvain in French and Löwen in German) is a regional town and municipality in the Belgian province of Flemish Brabant. It is the centrally located capital of this province as well as the capital of the administrative and judicial district of Leuven. Leuven, located near the Dijle River, has a surface area of 5,663 ha and has over 100,000 inhabitants in the period of data collection. Leuven is also home to the KU Leuven, Belgium's oldest university. For the purpose of this study, the city was divided into twenty-three districts or clusters of statistical sectors. The statistical sector is the smallest territorial base unit created by the (former) Belgian Directorate General Statistics and Economic Information (now: Statistics Belgium) for which socio-economic statistics are still compiled and freely accessible. At the moment of data collection, there were 114 statistical sectors in Leuven. These statistical sectors are somewhat larger than Output Areas in the UK, but still rather small. The statistical sectors have been created based on the need for a smaller statistical unit than the

level of the Belgian municipality, in order to obtain clearly defined morphological and social units of analysis. In the Belgian context, local policymakers often use clusters of statistical sectors (called districts) because local crime prevention and policing is often centred around districts, a practical solution between the smaller geographic areas and the larger and more heterogeneous municipalities.⁴

The data was originally collected by Leuven's local police for preventive policy reasons. This study is the result of a cooperation between the local police and Ghent University. The samples for the neighbourhood survey were finally selected based on the division into twenty-three districts or clusters of statistical sectors⁵. To achieve a sufficiently large sample, the goal was to obtain a sample of 375 persons per district. The City of Leuven's population register was used to select the samples. Based on the year of birth, only respondents aged sixteen years and older were selected. The population register was then divided into twenty-three separate files based on the twenty-three districts. A random sample of 375 persons was taken per district (using the sample function in SPSS).⁶ These people were then sent an official written invitation to participate in the survey. In total 8,875 persons were selected. During the first phase of data collection, the selected respondents received a letter signed by the Mayor of Leuven informing them that they had been selected to participate in a scientifically guided survey and informing the respondents that they would soon receive additional information and a formal request for cooperation. In a second phase of the study, the surveys were distributed by police community support officers and accompanied by an explanatory letter. Of the 8,875 questionnaires sent out, 3,156 were finally completed (and returned). This translates into a general response level of 35.6%. After the data cleaning process, we retained a file containing 3,075 respondents distributed throughout the twenty-three districts. The number of respondents per district amounted to a minimum of 57 and a maximum of 228 respondents, with an average of 134 respondents per district.

⁴ The distribution of the number of residents per neighbourhood is the following: min = 1838; max = 7188; mean: 4178,70; SD = 1346,18.

⁵ The City of Leuven comprises twenty-five districts, though two districts have few or no residents at all and were not included in the study.

⁶ Due to a limited response level at the beginning of the survey 625 persons were contacted for the district 'Leuven Centre' alone.

6 Methodology

Hierarchical linear two-level regression models were run to test the aforementioned propositions. In essence this represents an extension of the traditional regression analysis, which makes it possible to simultaneously incorporate data in the analyses on different levels (Bowers, 2010; Recchia, 2010; Snijders & Bosker, 1999). Multilevel studies of offending, victimisation and fear of crime have become a widespread tool in contemporary criminology (Bruinsma et al., 2018; Friedrichs, 2014; Oberwittler, 2004; Starcke, 2019; Steenbeek, 2011; Van Wilsem, 2003; Wittebrood, 2008). The order in which the variables were entered was inspired by SDT (but incorporated perceptual measures of collective efficacy). In accordance with the construction of the theoretical model, one or several variables are added to each new model.⁷ The analyses were performed in SPSS 27. The results of the multilevel analyses are presented in the tables using ‘fixed effects’ and ‘random effects’. The ‘fixed effects’ are spilt into level 1 (the individual analysis level) and level 2 (the neighbourhood level). The ‘random effects’ depict the variation at the highest and lowest analysis level and are important for calculating the intra-class correlation coefficient (ICC). The ICC value represents the proportion of individual differences in fear of crime which can be attributed to differences between neighbourhoods. Lastly the Akaike Information Criterion (AIC) was also supplied for each model. When this value shows a decline in a new model compared with the previous model, this means that the new model fits better with the data. To avoid item non-response, the Expectation-Maximisation (EM) imputation method was used whereby each missing value for an indicator of a scale construct was estimated on the basis of other items in the same scale construct. Even though the item non-response per scale construct was no higher than 6%, we still opted to make use of the EM imputation technique and thus restrict respondent loss as a result of ‘listwise deletion’, whereby respondents with missing values are omitted from the analysis.

6.1 Measurement of individual characteristics

Demographic control variables at the individual level are chosen because they allow to distinguish between the individual level variable and its structural counterpart and be-

cause they are measures of vulnerability which we know are also related to individual differences in fear of crime. *Age* is a control variable in the model. It is a continuous variable that is supposed to have a positive effect on the dimensions of fear of crime. *Length of residence* is a control variable that indicates that the respondent has lived at the same address in the past ten years. *Single-headed household* indicates whether the respondent lives alone (the household comprises just one person) and has a positive effect on fear of crime. The *level of education* variable is a partial measure of an individual’s SES and exerts a negative effect on fear of crime and is operationalised by the respondent’s highest attained diploma. This variable is dichotomised. We differentiate between higher education (university college and university) versus no diploma, basic education, and secondary education. *Home ownership* indicates that the head of the respondent’s household is a homeowner and is expected to have a negative effect on fear of crime.

Individual social capital (social support) is a general scale that is based on items that measure the extent to which the respondent is able to call upon human assistance. We hypothesise that social capital is inversely related to dimensions of fear of crime. The following propositions were used: ‘I have people who help me with practical matters’, ‘I have people with whom I can have a personal conversation’, ‘I have people I can count on for practical matters’, ‘I have people I can count on for personal assistance and support’. Cronbach’s alpha is 0.83. No distinction could be made between bonding and bridging social capital in the questionnaire.

Fear of crime was measured by evaluating the extent to which someone is afraid in his/her neighbourhood of becoming the victim of theft on the streets, violence or the threat of violence and sexual harassment. Cronbach’s alpha is 0.92.

Avoidance behaviour is a scale construct that was measured based on the following statements: in my neighbourhood I often ... ‘avoid certain areas because I don’t think they are safe’, ‘remain guarded (alert) when I am walking down the street’, ‘adapt or restrict my behaviour for safety reasons’, ‘avoid going out when it’s dark’. Cronbach’s alpha is 0.90.

Risk perception was measured by evaluating the extent to which respondents considered the likelihood of their becoming a victim of a break-in, theft on the street, violence or of the threat of violence or sexual harassment in their neighbourhood this year. Cronbach’s alpha is 0.89

Perceived neighbourhood social trust was measured using five different items. The respondents were asked to what extent they agreed with the following statements about their neighbourhood: ‘people in this neighbourhood

⁷ The descriptive statistics of the included variables can be consulted in appendix 1.

are prepared to help their neighbours', 'this is a close-knit neighbourhood', 'people in this neighbourhood can be trusted', 'people in this neighbourhood do not generally interact', 'contacts in this neighbourhood are generally good'. Cronbach's alpha is 0.86.

Perceived informal social control was measured using seven different items. The respondents were asked how likely they considered it to be that someone in their neighbourhood would intervene if ... 'children are spraying graffiti on a building in the neighbourhood', 'people on the street are being noisy at night', 'a child behaves disrespectfully towards an older person', 'someone is selling or using drugs in a public place in the neighbourhood', 'someone is being verbally harassed on the street', 'someone is being beaten or threatened on the street', 'someone is urinating or vomiting in the street'. Cronbach's alpha is 0.90. Additional exploratory factor analysis reveals that all items in this scale point to one and the same latent construct.

Perceived neighbourhood disorder was measured using the following items: 'people urinating/vomiting in public', 'young people hanging around in groups on the street', 'drunk people on the street', 'drug use or dealing in public places', 'people verbally harassing others in public', 'people physically harassing others in public', 'threats and intimidation', 'sexual harassment', 'disputes and/or harassment between neighbours', 'presence of vagrants, homeless people or beggars'. Cronbach's Alpha is 0.93.

6.2 Measurement of neighbourhood characteristics of SDT

Neighbourhood residential stability was measured by aggregating the individual background characteristic length of residence. *Neighbourhood SES* was measured by aggregating individual SES. Aggregating neighbourhood characteristics is not without methodological problems. If there are problems with regard to the representativity of the sample, biased aggregate measures can be obtained. Therefore, we studied the ecological correlations between these measures and administrative data on neighbourhood mean income. The correlations between aggregated measures of neighbourhood residential stability and neighbourhood median income were sufficiently high, suggesting sufficient ecological validity⁸. In this paragraph we provide additional motivation for our choice of neighbourhood characteristics de-

rived from the social disorganisation perspective. In SDT and CET, residential stability has been stressed to be of importance because stability is a potent structural condition which fosters neighbourhood cohesive processes (Hardyns & Pauwels, 2017; Sampson, 2012; Oberwittler, 2013). Many studies have argued that it is increasingly difficult to measure the effects of different neighbourhood structural characteristics because of matters of urban segregation, making it impossible to distinguish between the original constructs of SDT (like structural disadvantage, residential stability, immigrant concentrations). Indeed, one practical solution is the creation of overall latent variables that capture the social structure of urban neighbourhoods. While this way of proceeding has its merits, it also has a downside, namely that we do not get insight into the independent effect of theoretically distinct variables. Our selection for these two neighbourhood characteristics has been affected by a balance between theoretical and pragmatic rationales. Theoretically, SDT has always emphasised neighbourhood residential stability as structural condition that fosters local social ties. Our next challenge was finding a valid neighbourhood characteristic that represented a measure of neighbourhood SES, as close to the original social disorganisation model and which was free from problems of multicollinearity. A careful examination of the available data that were given us within the framework of the research project led us to choose for neighbourhood SES, as measured by the aggregate of respondents having a degree (university college or university). Other neighbourhood level indicators of disadvantage displayed correlations that were too strong (> 0.80) that it was unjustified to treat them as separate variables. Multicollinearity checks (using the VIF values) showed no problems of multicollinearity were present. All independent variables were standardised before they were entered into the equation.

7 Results

In accordance with the propositions of this study, two complementary multilevel analyses are run. First, we analyse the main effects of residential stability and neighbourhood SES on fear of crime and consequently we assess the main effects of residential stability, neighbourhood SES, individual level social capital on fear of crime, controlling for perceptual measures of collective efficacy and disorder. Secondly, we analyse the relationship between neighbourhood residential stability and neighbourhood SES, independent of demographic controls and individual social capital on perceptual measures of collective efficacy and disorder.

⁸ The correlations between neighbourhood residential stability and neighbourhood median income are 0.68**. In addition, there was a high and significant correlation between neighbourhood residential stability and immigrant concentrations (-0.887**).

7.1 Multilevel regression analyses of the fear of crime, avoidance behaviour and risk perception

Table 1 presents the results of three blockwise hierarchical regression models. For reasons of parsimony, the intercept-only-model (model 0) is not included in the table, but its results are discussed. Model 1 includes the level 2 effects, i. e. the effects of neighbourhood residential stability and neighbourhood SES, as well as the effects of individual characteristics and social capital on the three components of fear of crime. In model 2, perceptions of collective efficacy are entered into the equation and in model 3, the effects of perceptions of disorder are added.

For fear of crime (the anxiety dimension), the null model has an AIC of 8899, whereas the AIC's for avoidance behaviour and risk perception are 8941 and 8923, respectively. The Intra-class Correlation Coefficient (ICC) is 5.05% for the null model of actual fear of crime, 4.04% for the null model of avoidance behaviour (behavioural dimension) and 3.06% for the null model of perceived risk of victimisation (cognitive dimension).

Model 1 clearly shows that residential (in)stability has a strong and significant negative effect on actual fear of crime, avoidance behaviour and perceptions of risk, although this relationship is stronger for the actual fear of crime. In addition, there is no significant effect of neighbourhood SES on the actual fear of crime, nor on avoidance behaviour or perceived risk of victimisation. While the analyses show that residential stability at the neighbourhood level makes a significant difference, individual level characteristics remain the most important predictors of individual fear of crime. Around ninety percent of individual differences in fear of crime are attributable to a variation at the individual level. According to the findings, women, and people with a low level of education run a significantly higher risk than men and the highly educated to experience fear of crime. Moreover, social capital at the individual level is negatively related to the three different components of fear of crime. As such, individuals with higher levels of social capital are less likely to report actual fear of crime, avoidance behaviour and risk perceptions. Some individual level characteristics are only related to specific components of fear of crime. Older people run a higher risk to experience actual fear of crime and seem to be more amenable to display avoidance behaviour. In addition, respondents in single-headed households are more likely to exhibit avoidance behaviour. Nevertheless, despite the significant effects of most of the individual characteristics on fear of crime, there are no significant effects of residential stability at the individual level and home ownership on fear of crime.

Next, perceptual measures of both components of collective efficacy are added to the statistical model. Model 2 shows that individual social trust is negatively related to each component of fear of crime. Hence, individuals with higher social trust are less likely to report actual fear of crime, avoidance behaviour and risk perceptions. Furthermore, there seems to be a positive relationship between informal social control at the individual level and both actual fear of crime and risk perceptions. Yet, these effect sizes are negligible. More important, however, is that when individual perceptions of collective efficacy are taken into account, the effects of neighbourhood residential stability on the three components of fear of crime decrease, though the effects are still significant. Only for the effect of neighbourhood residential stability on actual fear of crime, some significance is lost. Moreover, the effect of age increases when perceptions of collective efficacy are taken into account, while social capital decreases, which could indicate that younger people are more likely to report fear of crime because they perceive less collective efficacy as younger people may generally have 'more plans to move' compared to elder people (Jeffrey, 2018). After addition of perceptions of informal social control and social trust, 3.33% (ICC) of the individual differences in actual fear of crime can be explained by neighbourhood characteristics. For avoidance behaviour and risk perception, this is 2.33% and 2.2% respectively. This model seems to have a better model fit, as the AIC decreases for every component of fear of crime.

Finally, individual perceptions of disorder are taken into account. Model 3 shows that perceived social disorder is strongly related to the three components of fear of crime. Thus, people who perceive more disorder, are more likely to report actual fear of crime, avoidance behaviour and risk perceptions. The effects of residential stability on the three components of fear of crime are rendered insignificant when perceptions of disorder are taken into account, suggesting that the effects of residential stability run via individual perceptions, especially via perceptions of disorder. Yet, we do not equate this with mediation, as this requires a specific mediation analysis. Furthermore, the effects of age on the three components of fear of crime increase when perceptions of disorder are taken into account, while for sex, level of education and individual social capital, the effects (further) decrease. Model 3 seems to have the best model fit, as the AIC values are smallest, which is especially the case for the model of avoidance behaviour. The ICC values decrease for every component of fear of crime. The impact of perceptions of disorder is notable.

Table 1: Multilevel regression analyses of the fear of crime, avoidance behaviour and risk perception

	Fear of crime N=3009			Avoidance behaviour N=3009			Risk perception (perceived risk of victimisation) N=3009		
	Model 1 B	Model 2 B	Model 3 B	Model 1 B	Model 2 B	Model 3 B	Model 1 B	Model 2 B	Model 3 B
<i>Level 2: Neighbourhood characteristics</i>									
Residential stability (mean)	-0.17***	-0.15**	NS	-0.16***	-0.15***	NS	-0.13**	-0.12**	NS
Level of education (mean)	NS	NS	NS	NS	NS	NS	NS	NS	NS
<i>Level 1: individual characteristics</i>									
Age	0.07***	0.09***	0.11***	0.12***	0.14***	0.16***	NS	0.1***	0.12***
Sex (being male)	-0.13***	-0.13***	-0.11***	-0.19***	-0.19***	-0.17***	-0.09***	-0.09***	-0.07***
Length of residence (10 years+)	NS	NS	NS	NS	NS	NS	NS	NS	NS
Home ownership	NS	NS	NS	NS	NS	NS	NS	NS	NS
Level of education (higher education)	-0.1***	-0.11***	-0.08***	-0.18***	-0.18***	-0.15***	-0.11***	-0.11***	-0.08***
Single-headed household	NS	NS	-0.03 (BS)	0.04*	NS	NS	NS	NS	-0.04*
Social capital	-0.1***	-0.07**	-0.05***	-0.05**	NS	NS	-0.09***	-0.06**	-0.04*
Perceived informal control		0.07***	NS		NS	-0.05**		0.07***	NS
Perceived social trust		-0.14***	-0.05**		-0.14***	-0.05**		-0.16***	-0.07***
Perceived social disorder			0.47***			0.46***			0.46***
<i>Variation level 2</i>	0.03	0.03	0.01	0.03	0.02	0.01	0.02	0.02	0.01
<i>Variation level 1</i>	0.89	0.87	0.70	0.85	0.84	0.67	0.91	0.89	0.72
<i>ICC</i>	3.26 %	3.33 %	1.40 %	3.40 %	2.33 %	1.47 %	2.15 %	2.2 %	1.37 %
<i>AIC</i>	8559	8511	7808	8427	8378	7676	8635	8556	7906

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; NS = not statistically significant ; BS = Borderline significance level

7.2 Multilevel regression analyses of perceptions of CE and disorder

Table 2 presents the results of the regression analyses of the relationship between neighbourhood residential stability and neighbourhood SES, independent of demographic controls and individual social capital on perceptual measures of collective efficacy and disorder. The intercept-only model of perceived informal social control has an ICC of 2.97 %, while for avoidance behaviour and risk perception, the ICC's are 7.92 % and 14 %. The AIC for the intercept-only model of perceived informal social control is 9006 and 8857 for the null model of perceived social trust. For the intercept-only model of perceived disorder, the AIC value is 8649.

According to the results, there is a significant positive relationship between residential stability and perceptions of collective efficacy. Residential stability seems to be a significant predictor of both perceptions of informal social control and social trust. The higher the residential stability in neighbourhoods, the higher perceptions of informal so-

cial control and social trust. In addition, there is a negative relationship between neighbourhood residential stability and perceived social disorder. In neighbourhoods with higher residential stability, respondents perceive less disorder.

Furthermore, regarding the effects of individual characteristics on perceptions of collective efficacy, home ownership is positively related to both components of individual collective efficacy. A positive relationship also holds for the effects of individual social capital on both components of perceptions of collective efficacy. In addition, respondents in a single-headed households are less likely to report higher informal social control and social trust. Some individual characteristics are only related to one component of perceived collective efficacy: there is a significant positive relationship between age and perceptions of social trust, and there is a positive relationship between sex and perceptions of informal social control.

For perceptions of disorder, women and elder people are more likely perceive disorder (as a problem), which is also the case for respondents reporting less social capital

Table 2: Multilevel regression analyses of perceived CE and disorder

	Perceived informal social control N=3009	Perceived social trust N=3009	Perceived social disorder N=3009
	B	B	B
<i>Level 2: Neighbourhood characteristics</i>			
Residential stability (mean)	0.10**	0.14**	-0.33***
Level of education (mean)	NS	NS	NS
<i>Level 1: individual characteristics</i>			
Age	NS	0.14***	-0.07***
Sex (being male)	0.04*	NS	-0.04*
Length of residence (10 years+)	NS	NS	NS
Home ownership	0.05**	0.11***	NS
Level of education (higher education)	NS	NS	-0.06***
Single-headed household	-0.04*	-0.08***	0.07***
Social capital	0.17***	0.27***	-0.07***
Variation level 2	0.02	0.02	0.03
Variation level 1	0.94	0.83	0.85
ICC	2.09 %	2.77 %	3.41 %
AIC	8730	8332	8411

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; NS = not statistically significant

and with a lower individual SES. Only for respondents in single-headed households, a positive relationship exists with perceptions of disorder. Respondents tend to perceive more disorder when they live alone. The model with perceived social trust as a dependent variable seems to have the best model fit. The AIC is lower compared to the other models.

8 Conclusion and limitations

The present study showed that neighbourhood residential stability had strong and significant effects, beyond social and demographic background variables in explaining individual differences in perceived social trust, perceived informal social control and perceived social disorder. Thus, perceptions of the environment, although without doubt partially biased, do not completely fall out of the sky. Neighbourhood SES (as measured by the educational level) did not contribute significantly to the explanation of individual differences in the aforementioned variables.

The results reveal a significant and positive relationship between individual social capital and both dimensions of perceived collective efficacy, which may indicate that individual social support may fuel perceptions of social trust and the willingness to intervene for the common good. In addition, social support may as hypothesised

serve as important buffer against perceptions of disorder. Homeownership affects perceptions of collective efficacy in a positive way but living alone can ease these perceptions. Moreover, living alone may contribute to increased perceptions of disorder. Age contributes to increased perceptions of individual social trust and disorder, while sex only contributes to clarify increased perceptions of informal social control and disorder.

Next, we analysed the effects of neighbourhood structural characteristics and individual level characteristics on individual differences in three measures of fear of crime. Perceived social trust is significantly related to the three dimensions of fear of crime, independent of demographic background variables and neighbourhood structural characteristics. Perceived informal control is only significantly related to actual fear of crime and risk perceptions. When perceptions of disorder are taken into account, the effects of neighbourhood residential stability disappear, and the effects of the perceptual measures of CE decrease. As such, perceived social disorder seems to be an important mechanism through which neighbourhood characteristics (residential stability), individual background characteristics and individual perceptions influence fear of crime.

As with many studies in this research field, a number of important limitations need to be taken into account. A first limitation involves the low number of level-2 units ($N = 23$) that were available to us, which meant we were

automatically limited with regard to adding variables at level 2. Therefore, we strategically chose two structural characteristics that were previously identified as important structural determinants of social processes and individual level outcomes.

A second limitation is that the data collection was cross-sectional, which made it more difficult to distinguish cause and effect. Future research should therefore consider taking into account longitudinal study designs, which may provide opportunities to test whether multiple feedback loops can be found between perceptual measures of social trust, informal control and disorder on the one hand and fear of crime on the other hand. The systemic model allows for such feedback loops (see e.g. Oberwittler, 2013).

A third limitation of this study relates to the construction of the measurement scales for the two components of perceived CE: perceived informal social control and perceived social trust. As mentioned, we adapted the operationalisation of both components of CE to the Belgian (Flemish) context, since some of the items in the classical operationalisation did not seem to fit with the Belgian context (Hardyns, 2010; Hardyns et al., 2010, 2016, 2019, 2018, 2021). However, we do acknowledge that this may have led to a decrease in the intercorrelation between the two components. This was especially the case for the measurement of perceived social trust.

A fourth limitation is that our measurement of disorder is restricted to perceived social disorder and does not take into account perceptions of decay (physical disorder).

Fifth, we did not dispose of neighbourhood measures of disorder, therefore the effects of neighbourhood structural characteristics on perceptions of disorder may be overestimated.

Besides these limitations, we acknowledge that the phenomenon of fear of crime is much more complicated and as most studies in that area, our study also suffers from the 'omitted variable' bias. One fact that was completely ignored in this study was the role of media, and nowadays social media. Using social media may strengthen or reinforce images of areas.

9 Recommendations

Policy initiatives aimed at reducing fear of crime should be based on intervening in factors which are causally related to the outcome. As we know causation is hard to prove (and cannot be proven by survey data), we need to think of possible mechanisms. As perception links structural characteristics of the environment to the outcome variables of these study (fear of crime measures), one way of thinking

is addressing the neighbourhood structure and avoiding segregation. Perceptions of social trust, informal social control and perceived social disorder are also linked to measures of fear of crime. This means that both positive and negative signals play a role in these highly subjective experiences (avoidance behaviour, actual fear as an emotional component and risk perceptions). At the individual level one can stress the importance of social capital. Individuals who are socially embedded have lower levels of fear of crime measures. These preventive measures are related to well-being and not crime. One may thus question whether these measures are important in relation to crime prevention.

As we do not assume a unicausal relationship between neighbourhood structure, perceptions of the environment and levels of fear, preventive measures should be clearly delineated: some projects can concentrate on the overall improvement of community life, while other targeted measures can focus on increasing one's social capital. Our results therefore should and cannot be used to promote broken window policing strategies or being tough on crime measures, but improving the environment, its structure, and the quality of life of a neighbourhood's inhabitants are important in one's overall well-being. One may not forget that there may be indirect effects on crime levels as the signals that areas send are not only interpreted by inhabitants, but also by potential offenders.

Although it is easy to interpret the relationship between perceptions of disorder (these perceptions are often related to levels of social and physical disorder and crime, which further affect the overall neighbourhood residential stability), we do not favour naïve Broken Windows interpretations. While we acknowledge that it sometimes is necessary to take immediate action in breaking complex causal chains in neighbourhood deterioration, preventive measures are not equally effective for everybody, and thus, strictly speaking deriving policy measures from our studies is unwarranted. Our study invites to further investigate these reciprocal links over time to first understand the mechanisms at work better. Evaluating preventive measures requires a different study and a different design. However, as a general idea, negative signals probably have the overall quality of life in general, so stimulating positive signals seems a better way to think about neighbourhoods. One always works with the strengths of neighbourhoods when one wants to tackle the weaknesses of neighbourhoods.

In short, in addition to working on a stronger social climate and reduction in disorder, it remains important to invest in the social capital of people. At the individual le-

vel, networks and resources represent an important weapon in the fight against insecurity (Bourdieu, 1986; Coleman, 1988, Putnam, 2000). For example, governments can opt to set up a neighbourhood-oriented approach that focuses on specific individual needs. The further development of an individuals' network to which he or she can appeal, should be an inclusive policy objective. However, it could be worth to pursue a more integrated 'cross-level' approach towards crime in general and fear of crime in particular, tackling both neighbourhood and individual level dimensions of social organisation and social disorganisation. Therefore, it is important that in the future more tools are provided by governments and academia to make this approach possible. In this respect, front-line workers could also play a role in integrated initiatives aimed at improving social organisation on the one hand and tackling social disorganisation on the other, targeting both neighbourhood and individual level dimensions. Existing mechanisms, for instance the structural method of community-oriented policing, can assist in addressing those dimensions. Policy interventions could therefore aim to raise awareness among residents regarding the importance of maintenance in the neighbourhood. Preserving the positive image of neighbourhoods should be a consistent principle within policy initiatives.

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Appendix 1: Survey descriptives (non-standardised)

	Minimum	Maximum	Mean	Standard deviation
Neighbourhood residential stability	0.24	0.69	0.05	0.12
Neighbourhood SES (level of education)	0.46	0.73	0.62	0.07
Sex	0.00	1.00	0.49	0.50
Age	17.00	101.00	46.41	18.76
Individual residential stability	0.00	1.00	0.49	0.50
Individual SES (level of education)	0.00	1.00	0.62	0.49
Home ownership	0.00	1.00	0.67	0.47
Single-headed household	0.00	1.00	0.28	0.45
Perceived social capital	4.00	28.00	22.52	5.68
Perceived informal social control	5.00	35.00	22.77	6.52
Perceived social trust	7.00	49.00	24.31	10.06
Perceived disorder	-12.67	47.35	0.00	13.06