



A Multilevel Structural Resilience Model:

When and for Whom do Neighbourhoods Really Matter?

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Sociology has a rich tradition of research indicating that neighbourhood conditions are a significant determinant of individual well-being. Much of this research, however, has been limited to urban samples in the United States and has used macro-level data. Unfortunately, the macro-level approach usually ignores the importance of individual differences that might influence response to neighbourhood conditions. Stated differently, it fails to address the question of why there is much heterogeneity in the behaviour of individuals living in the same neighbourhood. Indeed, most individuals residing in disadvantaged and disordered neighbourhoods achieve positive outcomes, a phenomenon labelled resilience. Importantly, resilience mechanisms occur at various levels, ranging from individual to broader meso- and macro-processes. Further, these resilience mechanisms do not exist in a vacuum; they are embedded in the everyday life and activity space of the neighbourhood. Thus, neighbourhood conditions may both pose a threat to the well-being of residents while generating a cascade of multilevel resilience processes that might be used to counter this threat. Individuals who live in different neighbourhoods may be more or less vulnerable or resilient to an adverse social environment depending upon both the types of disadvantages they experience and their access to resilience mechanisms to deal with these challenges. The present paper proposes a multilevel structural resilience model that identifies three resilience pathways: (a) resilience as a mediator of neighbourhood context and individual well-being; (b) resilience as a buffering process that protects individ-

uals from disadvantaged areas; and (c) resilience as a moderated mediation mechanism that is both influenced by neighbourhood context and, in turn, buffers the disadvantaged neighbourhood effect. It is argued that these three pathways can operate at the individual, meso-, and macro- level. Having presented the model, we review various research findings that provide support for its various elements.

Keywords: structural resilience model, neighbourhood context, individual well-being, multi-level approach, moderated mediation model

Introduction

Spatial inequality is a common phenomenon found in both developed and developing countries (Tickamyer, 2000). Neighbourhood context within a country is perhaps the most salient unit of analysis given its impact on individual life experiences (Sampson, 2013) and opportunities (Wilson, 1987). In the United States, for example, crime and mortality rates are spatially clustered within low-income neighbourhoods (Jorenz, Ananth, Polin and D'alton, 2016; Rosenfeld, Fornango and Rengifo, 2007; Shaw and McKay, 1969). In addition, public housing, low education, single-parent families, and unemployment tend to be concentrated in the most disadvantaged neighbourhoods (Peterson and Krivo, 2010; Theodos and Parilla, 2010; Wilson, 1987). These social patterns are not limited to the United States but rather are a global phenomenon (Sampson, 2012).

One of the best-known theories of neighbourhood

effect is social disorganization theory which was developed by Shaw and Mckay (1969) during the early twentieth century to explain crime at the macro-level. The theory asserts that rates of crime and poverty are unevenly distributed in geographical areas, with poor neighbourhoods having higher crime rates. Their disorganization theory highlights the role of macro-level structural disadvantage and its consequences. Consonant with this perspective, a meta-analysis of 214 quantitative neighbourhood studies published between 1960 and 1999 revealed that macro-level questions about the spatial clustering of crime/mortality rates and social disadvantage have been well documented in the 21st century (Pratt and Collen, 2005).

Although the macro-level perspective has made a significant contribution to our appreciation of the importance of neighbourhood, such macro-level studies run the risk of committing “ecological fallacy” by assuming that macro- and micro- relationships are alike (Robinson, 1950). Thus, significant results at the macro-level cannot be directly inferred to the behaviour of individuals. Fortunately, since the mid-1990s, multilevel modelling has been widely used to bridge the macro-micro gap (Raudenbush and Bryk, 2002). Increasingly, this research has documented the importance of macro-micro linkages in understanding neighbourhood effects on individual’s well-being. This new emphasis has been aided by Bronfenbrenner’s social-ecological model (1979) which provides an alternative theoretical framework to the macro social disorganization perspective. His model emphasises the ways in which micro-, meso-, and macro- level factors influence each other. It suggests that community, neighbourhood, and family factors combine in various ways to impact various individual outcomes, such as delinquency, employment, educational achievement, and health (see Brody et al., 2001; Lei et al., 2019; Ross and Mirowsky, 2009; Wodtke, Harding and Elwert, 2011). Accordingly, recent neighbourhood studies have moved beyond asking if neighbourhoods matter to examine how, when, and for whom they matter (Lei et al., 2014a; Minh et al., 2017; Sharkey and Faber, 2014).

Over the past decade, much attention has been devoted to the mediating role of neighbourhood-level

social process (i.e., collective efficacy, neighbourhood cohesion, neighbourhood ties) to explain how neighbourhood context affects delinquency (see Garthe et al., 2018; Maimon and Browning, 2010; Valdimarsdottir and Bernburg, 2015) and health-related outcomes (see Hong, Zhang and Walton, 2014; Jackson et al., 2016). This is labelled as the *structural process model*. Extant scholarship also suggests that the relationship between neighbourhood characteristics and individual well-being is mediated by parenting practices (Ma and Grogan-Kaylor, 2017), peer behaviours (Rankin and Quane, 2002), and psychological characteristics (Ross and Mirowsky, 2009). This model posits that neighbourhood disadvantages negatively impact various social processes, ranging from psychological to social factors, which in turn, increase negative outcomes such as delinquency, depression, physical illness, and school failure.

In addition to ignoring mediating mechanisms, macro-level studies have largely neglected the importance of individual differences that might influence response to neighbourhood conditions. Stated differently, it fails to address the question of why there is much heterogeneity in the behaviour of individuals living in the same neighbourhood. A recent study by Lei, Beach, and Simons (2018), for example, revealed that while people residing in disadvantaged neighbourhoods are more likely to become ill than those residing in more advantaged neighbourhoods, many, if not most, will remain healthy, a phenomenon labelled as the *neighbourhood resilience model*.

Although researchers have either used mediating or moderating mechanisms to explain neighbourhood effects, relatively little is known regarding the moderated-mediation role of neighbourhood characteristics (e.g., concentrated disadvantage, residential mobility, and racial composition) on individual well-being (Mirowsky, 2013). It suggests that the mediators (e.g., collective efficacy, parenting, or peer influences) of neighbourhood effects on individual outcomes may also operate as moderators that change the impact of neighbourhood effects on individual outcomes, either in buffering or amplifying them.

In this article, we first review the literature on neighbourhood effects. The review then considers

two important mechanisms whereby neighbourhood characteristics affect individual well-being. The first is a mediation and the second is moderation. Finally, integrating insights from both structural process (mediating) and neighbourhood resilience (moderating) models, we propose a *multilevel structural resilience model* which recognises that various social processes may simultaneously function as both mediators and moderators of neighbourhood context on individual well-being.

Do Neighbourhoods Matter?

The classical neighbourhood literature draws attention to macro-level social structures and processes, whereas individual social actors and behaviours are often lost in these accounts. Over the past two decades, there has been an increase in the use of multilevel modelling in neighbourhood studies (Raudenbush and Bryk, 2002). This research assumes that people who live in disadvantaged neighbourhoods are more likely to engage in crime / deviance and to have poor physical and psychological well-being than those who live in advantaged neighbourhoods (Diez-Roux and Mair, 2010; Leventhal and Brooks-Gunn, 2000). This assumption raises several important methodological issues (Kawachi and Berkman, 2003; Sampson, Morenoff and Gannon-Rowley, 2002).

One of the major issues is the question of whether neighbourhood really matters. On the one hand, the compositional effect perspective posits that similar people tend to aggregate within geographical proximity and that they may also have similar levels of health and well-being, regardless of place (Kawachi and Berkman, 2003). In other words, this perspective suggests that neighbourhood effects are just an artefact of the aggregation of numerous individuals with similar personal circumstances and characteristics. Contrary to this view, there is substantial evidence indicating a contextual effect of neighbourhood disadvantage on well-being (Kirby and Kaneda, 2005; Smith and Jarjoura, 1989; Subramanian, Lochner and Kawachi, 2003). These studies find that exposure to neighbourhood characteristics have a causal effect on individual-level outcomes. This research supports the contextual

effect perspective. To distinguish the contextual effect from the compositional effect, studies have controlled for individual characteristics that might be associated with both the likelihood of residing in a disadvantaged neighbourhood and with individual well-being (Kirby and Kaneda, 2005; Ross, 2000). Such research finds that even after accounting for individual-level socio-demographics (e.g., income, education, age, gender, race, and marital status), significant neighbourhood effects remain (Aneshensel and Sucoff, 1996; Diez Roux, 2001; Finegood et al., 2017; Hill, Ross and Angel, 2005; Ross and Mirowsky, 2001).

In addition to the compositional versus contextual debate, any significant neighbourhood effects may instead be a product of self-selection processes (Lei et al., 2019). To overcome the self-selection issue, recent studies have used a marginal structural model with prospective longitudinal data and the results continue to show a robust link between neighbourhood disadvantage and well-being (Kravitz-Wirtz, 2016; Wodtke, Elwert and Harding, 2016). In addition, using experimental data from the “Moving to Opportunity” (MTO) program has provided evidence that an improvement in neighbourhood socioeconomic environment has a causal impact on educational attainment, health, and delinquency (Sampson, 2004; Sharkey and Sampson, 2010).

It is now the case that evidence from multiple countries and using multiple study designs supports the contention that neighbourhood characteristics influence a variety of individual outcomes, including delinquency (Brody et al., 2001; Foster and Brooks-Gunn, 2013; Lei et al., 2014a; Simons et al., 2005), subculture (Anderson, 1999), depression (Ross and Mirowsky, 2009), employment (Alvarado, 2018), academic performance (Wodtke, Harding and Elwert, 2011) and health-related outcomes (Browning, Cagney and Iveniuk, 2012; Holmes and Marcelli, 2012; Lei et al., 2018, 2019). Accordingly, Robert Sampson, in his presidential address to the American Society of Criminology, declared that “[neighbourhood] is a fundamental context that has widespread effects on crime, perceptions of order and disorder, well-being, and much more” (Sampson, 2013: 1). Sampson (2003) summarised four main findings that

have emerged from the profusion of neighbourhood studies that have been published, including 1) considerable inequality exists between neighbourhoods and local communities along dimensions of socioeconomic status; 2) individual behavioural and health-related outcomes cluster together at the neighbourhood level including age, chronic diseases, delinquency, and violence; 3) neighbourhood characteristics are correlated with individual well-being; and 4) the neighbourhood effect remains even after controlling for a variety of sociodemographic variables.

How Does Neighbourhood Matter?

While the link between neighbourhood disadvantage and individual well-being is well established, the mechanisms by which neighbourhoods influence individuals remain unclear in the classical social disorganization theory (see Minh et al., 2017; Sharkey and Faber, 2014). Since the late 1970s, several studies (Bursik and Grasmick, 1993; Kornhauser, 1978) have reported that concentrated disadvantage inhibits residents' ability to establish effective informal social control, social cohesion, or social ties, which in turn is associated with crime / deviance. Extending this idea, Sampson et al. (1997) proposed that a set of neighbourhood processes, which they labelled collective efficacy, promote social cohesion and protect residents from the adverse effects of disadvantaged neighbourhood contexts. In neighbourhoods with high collective efficacy, residents trust each other and there is cohesion among neighbours who are willing to intervene to help each other to reach collective goals (Sampson, 2004). Sampson and his colleagues concluded that collective efficacy is a mediator of the effects of neighbourhood characteristics on delinquency.

In addition to neighbourhood collective efficacy, sociologists have focused on parenting as a mediator. Authoritative parenting has been shown in a variety of studies to decrease the probability of child and adolescent behaviour problems and there is evidence that neighbourhood disadvantage tends to disrupt such parenting practices (Simons, Simons and Wallace, 2004; White and Roosa, 2012). Thus, in part, neighbourhood disadvantage influences youth outcomes in-

directly through its impact on parental behaviour (Simons et al., 1996; Simons et al., 2004). Another way that neighbourhood disadvantage may influence youth outcomes is through its disruptive impact on collective socialisation. Collective socialisation refers to the influence that adults in a neighbourhood have on young people who are not their children (Bursik, 1988; Sampson, 1997). This takes place when the adults in the area know their children's friends and their friends' parents as well as other adults and children living in the neighbourhood. Such community ties allow adults to observe the behaviour of each other's children in different circumstances, to talk to each other about their children, and to establish common expectations and disciplinary strategies. Past research has found that collective socialisation deters youth behaviour problem (Brody et al. 2001; Simons et al., 2004). Neighbourhood disadvantage, however, undermines collective socialisation (Simons et al., 2004). Hence, an additional avenue whereby neighbourhood disadvantage impacts youth problems is through its corrosive effects on collective socialisation.

Another line of research has suggested that an individual's beliefs regarding normative behaviour are developed by observing the actions of others within the neighbourhood. Epidemic or contagion models of neighbourhood effects (Crane, 1991; Jencks and Mayer, 1990) focus on the way in which peers influence each other and assume that social problems are contagious and are spread through peer influences (Crane, 1991: 1227). This suggests that living in a disadvantaged neighbourhood, where peers are involved in crime or violent activities, increases the probability that an individual will become involved in such risky behaviours (Simons et al., 2004). Although the collective socialisation and contagion models make somewhat different assumptions, both viewpoints claim that parenting practices and neighbourhood peers seem to substantially affect the behaviour of people who live in a disadvantaged neighbourhood.

The neighbourhood stress perspective is a health-related model concerned with the factors that mediate the impact of neighbourhood disadvantage on health. This model has sought to explain the relationship between neighbourhood characteristics (e.g., poverty,

racial heterogeneity, and resident mobility) and health-related outcomes through psychological or physiological distress (Aneshensel, Harig and Wight, 2016). Empirical research guided by this model has revealed that living in a more disadvantaged neighbourhood is associated with long-term chronic stress that has been proposed to have negative biological consequences (Lei, Beach and Simons, 2018). This effect may be due to the simple fact that people living in disadvantaged neighbourhoods face a host of challenges such as threats of crime and disorder, feelings of powerlessness, and lack of opportunities and resources for success (Prentice, 2006; Truong and Ma, 2006). These challenges may trigger the release of stress hormones and affect physical health (Brody et al., 2014).

Overall, this set of studies is consistent with a model of *neighbourhood structural processes* where neighbourhood disadvantage affects individual well-being indirectly through various social processes, including collective efficacy, parenting practices, peer relationships, and psychological or physiological well-being.

When and for Whom Does Neighbourhood Matter?

As noted above, studies have reported that neighbourhood characteristics are related to individual well-being and that their effect is, in large measure, indirect through their impact upon social process measures (Aneshensel, Harig and Wight, 2016; Bursik and Grasmick, 1993; Sampson et al., 1997). However, neighbourhood studies have tended to employ a macro focus that ignores individual variation. In fact, despite a correlation between neighbourhood characteristics and individual well-being, outcomes among residents differ markedly by culture, ethnicity, gender, age, socioeconomic status, and family support. This raises important questions with regard to why all residents of an area are not influenced by neighbourhood conditions to the same degree (Lei et al., 2014a; Minh et al., 2017; Sharkey and Faber, 2014). More generally, when and for whom does neighbourhood context affect individual well-being? In contrast to purely

neighbourhood structural models, several studies reveal that neighbourhood effects on individual well-being are moderated by individual characteristics and / or experiences (Barnes and Jacobs, 2013; Bush, Lengua and Colder, 2010; Lei et al., 2014a, 2014b; Simons et al., 2002, 2005). Using this framework, known as neighbourhood resilience, some individuals residing in disadvantaged neighbourhoods achieve positive outcomes and avoid becoming involved in neighbourhood outcomes (Lei, Beach and Simons, 2018). Growing research, for example, suggests possible differential effects of parenting practices on crime / deviance across neighbourhoods (Lei and Beach, 2020; Simons et al., 2005). Accordingly, the family is perhaps the most important context protecting youth from the negative effects of neighbourhood disadvantage because it can influence the individual's perception of safety and social integration and is also the primary setting for socialisation.

Neighbourhood resilience processes can occur at various levels, ranging from individual to broader meso- and macro- moderators. At an individual-level, recent studies have provided evidence that age (Cagney, 2006), gender (Zimmerman and Messner, 2010), and even particular genetic polymorphisms (Lei et al., 2014b, 2015), can modify sensitivity to neighbourhood context. For example, Lei and his colleagues (2014b), using U.S. census data and longitudinal data from African Americans, found substantial gender differences in violence within gender-inegalitarian neighbourhoods, whereas these differences decrease within gender-egalitarian neighbourhoods.

Besides this resilience effect of individual-level characteristics, neighbourhood-level factors might also be expected to moderate the effects of neighbourhood context (Lei, Beach and Simons, 2018). Consonant with this idea, numerous recent studies have investigated the buffering role of collective efficacy, neighbourhood cohesion, and collective socialisation. This research has reported that collective efficacy / socialisation and neighbourhood cohesion have the potential to promote resilience to neighbourhood stressors. These findings indicate that neighbourhood-level factors may help to buffer the stressful facets of a disadvantaged neighbourhood, thereby enhancing

an individual's well-being despite ongoing stressors (Ellen and Turner, 1997; Lei et al., 2018; Liu et al., 2016; Odgers et al., 2009).

Together, these findings provide rather strong evidence that there are individual differences in response to neighbourhood problems. Indeed, the classical social disorganization theory also allows for the possibility that when other social ties and control are in place, such as when families or peers are more tightly knit, there may be resilience to the corrosive effects of neighbourhood disadvantage.

Multilevel Structural Resilience Model

What is not yet well understood is whether resilience factors can simultaneously serve as both mediators and moderators of neighbourhood effects. Resiliency is defined as “a construct representing positive adaptation despite adversity” (Luthar, Cicchetti and Becker, 2000). Consistent with this perspective, the neighbourhood resilience model hypothesises that certain individual and neighbourhood characteristics enhance positive outcomes, and that various protective factors (e.g., collective efficacy, supportive parenting, or friendship networks) can promote resilience. However, neighbourhood structure may also influence the extent to which an individual has access to these resilience factors (Beard et al., 2009; Norris et al., 2008). For example, social networks provide people with resources, including social support, social connectedness, collective efficacy, and a sense of belongingness (Parks, 2017). Thus, social networks not only mediate (Sampson, 2012) but also moderate the relationship between neighbourhood characteristics and individual outcomes (Ellen and Turner, 1997). Such findings are consistent with those observed in family studies. On the one hand, collective socialisation and family parenting behaviours (Brody et al., 2001) emphasise the mediating role of parenting practices in explaining neighbourhood effects on individual well-being. On the other hand, the family integration model provides evidence of the buffering effect of supportive parenting (Lei and Beach, 2020; Simons et al., 2002, 2005), suggesting that supportive parenting counters the risk of

living in a disadvantaged area. Together, such findings indicate that the stress of neighbourhood disadvantage tends to reduce the quality of parenting and thereby increase the probability of negative child outcomes (mediating effect), but when families are able to maintain supporting parenting practices in the face of neighbourhood disadvantage, they increase the probability that their child will achieve positive outcomes (moderating effect). Thus, the quality of parenting has both a mediating and moderating effect on the association between residing in a disadvantaged neighbourhood and child outcomes.

Such research suggests the need for models that incorporate both mediating and moderating mechanisms into an integrated model (Kwan and Chan, 2018; Mirowsky, 2013; Preacher, Rucker and Hayes, 2007). Such a model combines both the structural process and neighbourhood resilience perspectives. We strongly urge researchers to adopt such an integrated approach. In figure 1, we present a *multilevel structural resilience model* that might serve as a guide to researchers in testing such models. First, consistent with previous neighbourhood studies, this model hypothesises that the places where people live are important determinants of human behaviour and well-being. Second, given that individuals reside in multiple social spaces including families, schools, workplaces, and organisations, we hypothesise that the relationship between neighbourhood characteristics and individual outcomes will be mediated by resilience mechanisms ranging from individual to neighbourhood and broader contexts. Finally, these resilience mechanisms are expected, at least in many instances, to buffer the effect of neighbourhood characteristics on individual well-being. Support for this model is evident when the statistical test for a moderated-mediation effect is significant. In addition, the slopes for a neighbourhood \times resilience mechanism will show a fan-shaped pattern where people with protective factors or resources show no significant impact of neighbourhood disadvantage, whereas those with weak resilience show a significant positive impact of neighbourhood disadvantage on individual behaviour and well-being.

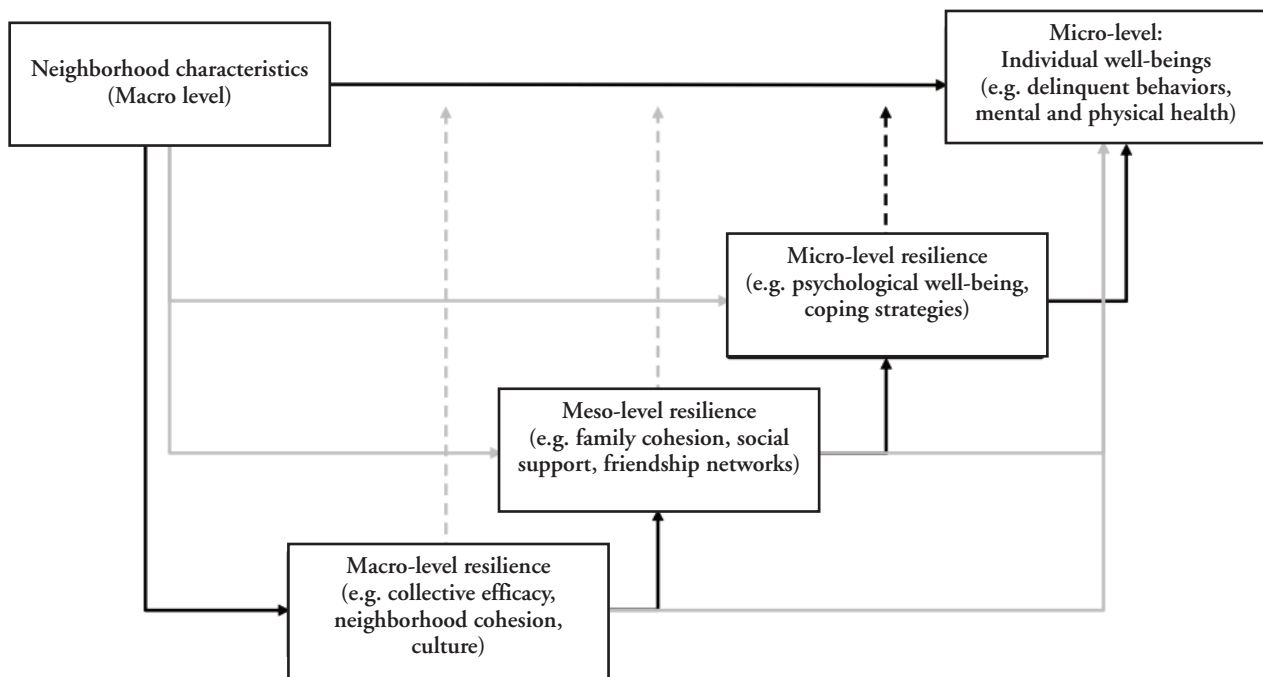


Figure 1. Multilevel Structural Resilience Model

Conclusion

Human activities are organised in time and space. Social disorganization theory, developed by Shaw and McKay (1942), has been used to explain crime at the macro-level and contends that urban neighbourhoods characterised by concentrated poverty, ethnic heterogeneity, and residential instability are linked to high rates of crime and violence. Going beyond the macro-level framework, sociologists have reported that disadvantaged neighbourhoods predict poorer short- and long-term outcomes across social and health domains (Aneshensel, 2009; Ross and Mirowsky, 2001; Sampson, 2012; Wheaton and Clarke, 2003; Wilson, 1987). Thus, contemporary neighbourhood studies examine not only the macro-level effects but also cross-level questions of how neighbourhood characteristics influence individual outcomes (Sampson, 2003).

In their seminal review, Sharkey and Faber (2014)

criticised the previous studies on the influence of neighbourhood context on individual well-being for not taking into account the possible mechanisms or pathways that specify how, when, and for whom neighbourhood matters. In response to such critiques, researchers began to examine the possibility that social processes or resilience may either mediate or moderate the effects of neighbourhood disadvantage on individual outcomes. Two prominent models have emerged from such research: the structural process model (Sampson and Laub, 1994) and the neighbourhood resilience model (Lei, Beach and Simons, 2018; Masten and Coatsworth, 1998; Norris et al., 2008). Unfortunately, these models ignore the fact that resilience processes can be conceptualised as both mediators and moderators. In the current study, we propose a multilevel structural resilience model that identifies three resilience pathways: (a) resilience as a mediator of neighbourhood context and individual well-being; (b) resilience as a buffering process

that protects individuals from disadvantaged areas; and (c) resilience as a moderated-mediation mechanism that is both influenced by neighbourhood context and, in turn, buffers the effect of neighbourhood disadvantage. Given that resilience mechanisms are embedded in the everyday life and activity space of the neighbourhood, we also assume that resilience and social process mechanisms occur at various levels, ranging from individual to neighbourhood.

In conclusion, the current review sought to elucidate the potentially modifiable pathways and mechanisms through which neighbourhoods affect individual well-being. We propose a model that emphasises the ways in which resilience factors may serve to both mediate and moderate the effect of neighbourhood characteristics on individual outcomes. As such, the model has the potential to generate research findings of value when designing intervention strategies aimed at reducing the risk of spatial inequality. For example, studies show that neighbourhood disadvantage often has a coercive effect on parenting, but when parents are able resist this influence, they are able to protect their children from the risks presented by life in a disadvantaged neighbourhood. Given these moderated mediation findings, there is a need for research that identifies the factors that enable parents to maintain supportive parenting practices in the midst of a very unsupportive neighbourhood context. In our view, examining such underlying moderated-mediation processes operating between neighbourhood disadvantage and individual well-being is likely to produce findings of great value for prevention and intervention.

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