Author's response to reviews

Title: Does neighbourhood social capital make a difference for levelling the social gradient in the health and well-being of children and adolescents? A literature review.

Authors:

Veerle Vyncke (veerle.vyncke@ugent.be)
Veerle Stevens (veerle.stevens@vigez.be)
Bart Declercq (b.declercq@ugent.be)
Caroline Costongs (gc.costongs@eurohealthnet.eu)
Giorgio Barbareschi (g.barbareschi@eurohealthnet.eu)
Stefán Hrafn Jónsson (shj@hi.is)
Sara Darias Curvo (sadacur@ull.es)
Vladimir Kebza (kebza@szu.cz)
Candace Currie (cec53@st-andrews.ac.uk)
Lea Maes (lea.maes@ugent.be)

Version: 2 Date: 5 November 2012

Author's response to reviews: see over
Does neighborhood social capital make a difference for leveling the social gradient in the health and well-being of children and adolescents? A literature review.

Veerle Vyncke, Veerle Stevens, Bart De Clercq, Caroline Costongs, Giorgio Barbareschi, Sara D Curvo, Stefán H Jónsson, Vladimir Kebza, Candace Currie and Lea Maes

We kindly thank the editorial team and the reviewers for the thorough, detailed and instructive comments on our draft paper. We have tried to answer all concerns and feedback.

All changes in the manuscript (i.e. changed or replaced paragraphs, minor adjustments) are indicated in red. All deleted text is scratched out in the document.

Below, a point-by-point response to the concerns, remarks and questions of the reviewers is provided.
Major Compulsory Revisions:

1a. Why is it important to especially study children’s health outcomes. Can we learn not enough of adult studies?

1b. Why do you expect a difference between studies of North-America and Europe?

To my knowledge, some evidence on adults’ health with similar questions like this review has, were done in North America, Europe and even Asia. What can you learn from these outcomes? If North American studies differ from European studies in adult studies, you may have a case that this would also play a role in children’s health research. If not, you should argue why you expect differences in the effect of the small-area context on children’s health between countries while using a theoretical foundation.

1a. Given that even among children, the importance of context evolves over different developmental states (Dallago et al., 2009; Gershoff & Aber, 2006; Jencks & Mayer, 1990), it can be assumed that neighbourhoods differently influence outcomes in children and adolescents on the one hand and outcomes in adults on the other hand (Lenzi et al., 2012). Furthermore, children and adolescents have limited mobility, making them more prone to neighbourhood differences (Maes et al., 2012). Although studies focusing on adults can be used as background informative, we believe that it is important to analyze the influence of neighbourhoods on outcomes in children and adolescents in it’s own right. Furthermore, this study was executed in the context of a FP-7 Project (Gradient Project – www.equityevidence.eu), which aimed to influence policy-makers in taking necessary steps to reduce the health gradient in children and adolescents. Research specifically aimed at children and adolescents was needed.

1b. Even tough this is an extremely important question, it seems that until now research has not yet fully addressed this issue. To strongly support the hypothesis that social capital differently influences health in different macro-contexts (e.g. countries), a multilevel analysis examining the random slope of the relationship between social capital and health is needed. To our knowledge, this evidence is currently not available.

Despite this lack of strong evidence, there are indications in literature on the importance of the macro-context for social capital effects. In her review on social capital and health in children, Virginia Morrow explicitly warns for the unconditional transferring of knowledge on social capital between different countries (Morrow, 1999). It is likely that amongst others differences in cultural and political climate between countries might affect the influence social capital has on health (Morrow, 1999; Ostrom, 2000). Ignoring the influence of unobserved country-characteristics makes studies prone to “endogeneity bias” (Kim et al., 2011). As an illustration, Ikeda & Kobayashi found that different levels of collectivism in Asian countries could explain the significant different effect of social trust on electoral participation. Based on these findings, they conclude that theories on social capital can’t implicitly be transferred from one context to another (Ikeda & Kobayashi, 2007).

2 I liked reading page 12, starting with “Childhood experiences are known to con...”, very much. Are you sure, you want to present this part of the text at page 12? Shouldn’t it be placed earlier? I do not say it has to change, please, just give it a thought.

We have decided to leave this paragraph at the current position, since it is helpful to motivate the importance of the research objectives, and to position our objectives within the current literature.
The socio-economic.. You wrote: “One of the factors that might explain the consistent relation between neighbourhood socio-economic factors and health outcomes are social processes at the neighbourhood level such as levels of trust, social norms and collective efficacy.” This comes out of the blue! I had a big: HOW question here. The same with page 13, at the beginning. Your article will certainly improve if you are more clear of WHY you use neighbourhood social capital as mediator effect and to do so you have to clarify how this works (mechanism).

The most important adaptation to the introduction of the article, is a more explicit focus on theoretical models that support and underpin our research objectives.

We believe that the addition on pg 7-9 (cfr. infra) contributes to a better and more clear motivation of the research aims:

'It is generally assumed that the relationship between neighbourhood characteristics and outcomes in children and adolescents is mainly indirect [42, 43]. Depending on their background, researchers have put forward different pathways in an attempt to explain the relationship between neighbourhood SES and health, resulting in three theoretical models. Researchers following a neo-material vision belief that the association between neighbourhood SES and health can be attributed to a differential access to material resources [10, 44]. The institutional resources model by Leventhal & Brooks-Gunn [42] claims that the quality, accessibility and availability of institutional resources might explain the relationship between neighbourhood characteristics and outcomes in children and adolescents. Following this model, the quantity and quality of resources that affect the life of young people (e.g. child care, leisure time activities, education, health care facilities) is likely to be lower in neighbourhoods with high levels of disadvantage (low SES, high ethnic diversity, high residential instability). For instance, research in different cities in the USA found that the quality of the sidewalks was lower in high poverty neighbourhoods than in low poverty neighbourhoods, which is in turn believed to negatively influence physical activity in children [45].

As an alternative pathway, researchers have stressed the importance of psychosocial pathways to link socio-economic deprivation to worse health [10, 44, 46]. According to the relationships model [42, 47], the home environment, parental networks and parental characteristics mediate the influence of neighbourhood characteristics on youth’s outcomes. More specifically, levels of parental characteristics that enhance child wellbeing (e.g. parental social support, parental monitoring and other qualitative parenting practices) are found to be lower in deprived neighbourhoods compared to non-deprived neighbourhoods, whereas levels of harmful parental characteristics (e.g. parental stress, exposure to intra-family violence) are believed to be higher in deprived neighbourhoods [47]. Furthermore, the norms and collective efficacy model states that neighbourhood structural disadvantage negatively influences the social norms that rule in the neighbourhood. Disadvantaged neighbourhoods are believed to have less health promoting social norms, and a lower willingness to intervene for the common good, which in turn has a negative effect on children and adolescent outcomes.[42, 47]. This is in line with research that ascribes a part of the relationship between macro-level income inequality and health to a decline of the collective social fabric [4, 8, 48-50].

4 I like to challenge the methods of this article: Please, describe why the following two publications were not part of your analysis:


I’m not saying that you have to include these studies. It’s only a test if the systematic of the review method design worked. Were these two publications part of the 792 articles? If not, why? If yes, when and why were these dropped out?

Both studies were not identified by our search strategy. For both articles, we believe that a lack of focus on health inequalities/ the health gradient might be an important reason for this. Furthermore, the first article did not particularly focus on neighbourhood characteristics, as the children where clustered in their school communities instead of their local neighbourhood.

A more detailed overview of reasons why these articles could not be selected is given below.

Aarts et al (2010):

- Focus on school communities in stead of residential neighbourhoods: school communities are used as a clustervariable.
- Environmental characteristics were not aggregated, nor were multilevel methods used: the design was not appropriate to answer our research questions.
- Did not consider the mediating/moderating role of neighbourhood social capital in the relationship between SES and health, nor the pathways that could explain the association between SES, neighbourhood social capital and health.

Sampson, Morenoff, & Raudenbush (2005):

- Did not consider the mediating/moderating role of neighbourhood social capital in the relationship between SES and health, nor the pathways that could explain the association between SES, neighbourhood social capital and health.

Minor Essential Revisions:

5 I got the impression that the reviewed articles had a lot of methodological weaknesses after reading Table 3. Please, explain why you concluded at page 18 that the study quality was mostly good or very good.

We acknowledge that the terminology we used in the assessment of the methodological quality could be misleading. The quality assessment of the studies was done using a validated quality assessment tool (based on the tool downloadable at http://www.ephpp.ca/tools.html). In the current version of the manuscript, we kept to the original terms used in this scoring tool (‘moderate to strong’), which is more correct.

6 Page 9. You list Bourdieu, Coleman and Putnam, however, you do not explain what the viewpoints of these researchers on social capital are. You just say that they have diverse. If you describe in short the different viewpoints, the reader will naturally understand that these viewpoints are different. Improve the article by giving more information here.

A short section on the vision of the founding fathers of the concept was added to the paragraph on social capital (pg. 10)

Bourdieu’s conceptualisation of social capital can be fit in an overarching theory on social stratification. He defines the concept as ‘the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition’ [55] pg 248. With this definition, he identifies social networks and the resources within social networks as the core elements of
social capital [53, 56]. Bourdieu’s relational definition of social capital is in contrast to the normative approach towards the concept by Putnam and Coleman [53, 56]: Robert Putnam refers to social capital as “features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit”[57]. This definition of social capital is the most widely cited in health research, but has been subject to critique [56, 58].

7 Explain why your paper focus on collective characteristics (page 10)

The decision to focus on neighbourhood social capital was part of the GRADIENT research project, as information on how social capital at a local level could contribute to leveling the health gradient was sought. The authors have tried to motivate the choice to focus on neighbourhood social capital, by stressing the importance of neighbourhood processes for children and adolescents’ health (cfr. Introduction pg. 12).

8 To reduce the article, shorten the description of the negative side of social capital at page 11. If I’m not wrong, it plays no role in the discussion section; thus why do you make such a big fuss out of it at page 10?

This paragraph was shortened.

9 Page 20, subtitle: used analyses. Please, add after “Five studies” the references to the studies you referring to. If you use the numbers of the reference list, it will be very space efficient and in my opinion useful. This comment applies to other parts of the results section as well.

For all parts of the results section, references were added.

10 Are the first three sentences of the summary of results important? I would like to read here the results on a higher aggregated level.

The discussion section of the article was extensively adapted. The first paragraph now gives a summary of research findings on a higher aggregated level, and explicitly links the findings to the current theory on neighbourhood processes for children and adolescents and social capital.

To analyse the role of neighbourhood social capital in the relationship between socio-economic status and health-related outcomes in children and adolescents, a review of the published literature was conducted. First, we looked into neighbourhood social capital as a mediator in the association between socio-economic status and health in children and adolescents, and the pathways that underlie this association. Two of the included studies found that social processes in the neighbourhood (referred to as ‘social cohesion’ and ‘collective efficacy’) mediate the association between neighbourhood disadvantage and health-related outcomes in children (aged between 4 and 12) [116, 117]. Furthermore, Canadian research found that the relationship between neighbourhood deprivation on the one hand and verbal ability and behaviour problems in young children on the other hand runs via social processes at home, such as maternal mental health and parenting practices [117]. However, three other studies did not find significant results when analysing neighbourhood social capital as an intermediate variable in the relationship between SES and health in young children (aged 3 to 5) [119, 120] and adolescents [115]. As such, this review partly finds support for the norms and collective efficacy model and full support for the relationships model put forward by Leventhal & Brooks-Gunn to explain how neighbourhoods influence outcomes in children and adolescents [42, 47]. Furthermore, this study investigated the interaction between neighbourhood social capital and socio-economic characteristics in explaining the health of children and adolescents. Two studies found that the relationship between neighbourhood social capital and behaviour problems in children (aged 5–10 years) depends on the socio-economic characteristics of the neighbourhood: in both studies neighbourhood social capital was only associated to lower levels of problematic behaviour for children in deprived neighbourhoods [118, 122]. Two other studies, focussing on aggression and quality of life in adolescents, did not find a significant interaction between neighbourhood social capital and SES [115, 121]. This finding partly supports the “compensation effect proposition”, which states that social capital is particularly beneficial for people with low levels of personal capital (e.g. low income, low educational level) [56, 105].

Due to a diverse set of indicators used to measure both social capital and health, it is challenging to draw firm conclusions from this study. However, the results suggest that certain components of social capital influence the
impact of SES on health outcomes in children. Furthermore, it seems likely that neighbourhood social capital is especially beneficial for children living in deprived neighbourhoods, although additional research is needed to support this.

Furthermore, most of the included studies focussed on young children and their parents. Of the six studies that focus on pre-school and school-aged children, four identify neighbourhood social capital as a significant mediator in the relationship between socio-economic status and health in children or find that neighbourhood socio-economic status moderates the association between neighbourhood social capital and health in children. In contrast, none of the two studies focussing on adolescents finds a significant interaction between SES and neighbourhood social capital. This could indicate that neighbourhood social capital is more important for the health of younger children, which would be in contrast to earlier findings by Chen et al [125]. This finding might be contributed to the fact that young children have lower levels of autonomy and mobility than older children and adolescents [126-128], leading to higher exposure to neighbourhood processes as these children are more bound to their local neighbourhoods. Earlier research also mentioned exposure as a mechanism to explain why social capital had a larger association to the health of parents with young children, compared the adults without young children.

11 Page 24, after sentence “However, further research is needed to confirm this statement” add something like: Younger children might depend more on the neighbourhood because they are too young to leave the neighbourhood for leisure time activities. Thus, they are likely to be more exposed than others.

We believe that the concept of ‘exposure’ indeed is an interesting concept that is often overlooked in social capital research, and have added extra information on this topic to this paragraph (pg. 30)

Although further research is needed to confirm this finding, this finding might be contributed to the fact that young children have lower levels of autonomy and mobility than older children and adolescents [126-128], leading to higher exposure to neighbourhood processes as these children are more bound to their local neighbourhoods. Earlier research also mentioned exposure as a mechanism to explain why social capital had a larger association to the health of parents with young children, compared the adults without young children.

12 Page 27, in my opinion a too long description of the Chicago research line and I’m not sure if this is the best way to raise the question of differences between North-American and European studies. It is more likely that the measurements, used in Chicago, are not suitable to measure contextual social capital – independent of the country. I do not think that the Chicago research line is very useful in the discussion of the measurement of contextual social capital in health research. You have not convinced me, that the country plays a role in studying small-area contextual social capital. I also wonder, what is the role of Putnam, Coleman, Bourdieu in this discussion?

Regarding the role of the macro-level (country) on social capital effects, we would like to refer to our answer on question 1b on page 1 of this document.

The attention for the Chicago research line in this section of the discussion can be attributed to the finding that all identified studies that tried to answer our research questions could be positioned within this research tradition, and not that we feel that this is the most appropriate way to measure social capital. However, it seems that this is a very popular way to look at neighbourhood social processes in children and adolescents in current literature

We have tried to incorporate our critical reflections on this situation (cfr. pg 34):

All of the included studies use a measure reflecting a form of ‘collective efficacy’, ‘social control’ and ‘social cohesion’ to measure social capital. Mostly, the included studies make use of the scale developed by Sampson and colleagues [123] as part of the Project on Human Development in Chicago Neighbourhoods to measure these concepts. However, one can ask oneself whether both these concepts and this scale are appropriate for research on social capital in a European context, certainly outside of urban areas. After all, social capital is very context dependent. Recent Flemish research found that the scale on informal social control did not sufficiently differentiate between different Flemish communities [136]. Further research should explore the usefulness of measures of social capital that originate from the Chicago School in a European context, as well as looking into
manners to measure social capital that are more closely linked to the theories of the founding fathers of the concept.

Abstract, result section: do not only report the results of four studies which confirmed the hypothesis; also mention the other four studies.

Eight studies met the inclusion criteria. The findings are mixed; only two out of five studies confirmed that neighbourhood social capital mediates the association between neighbourhood deprivation and health and wellbeing in adolescents. Furthermore, two studies found a significant interaction between neighbourhood SES and neighbourhood social capital, indicating that neighbourhood social capital is especially beneficial for children living in deprived neighbourhoods, whereas two other studies did not find a significant interaction between SES and neighbourhood social capital.

Figures:

- improvement possibility: Figure 2: be more clear of the reason of exclusion

The text in the figure was adapted to enhance clarity on the reason of exclusion.

Tables

- Table 1, well done. Minor question for clarification:

You mentioned you have used different languages for the search of articles. Table 1 only shows keywords in English language. Did you also use keywords in the other languages? If so, which one?

The keywords were only used in English.

- Table 2, also well done, however, there is a mismatch between the title of the table and the content of the table. In my opinion is the word “result” too strong. You only describe what was tested. I have to admit, you mention whether the association was significant or not, however, you do not report the direction of the association. The reader cannot conclude anything. You can fix this with a) delete the two words “and results” in the title of the table. Or b) Improve the last two columns. Maybe add a new column with conclusions of this review?

“And results” was deleted from the title.

- Table 3, well done. Please, make sure all abbreviations mentioned in the table are explained in the caption of the table.

All abbreviation are now in explained in the caption.
MAJOR COMPULSORY REVISIONS

BACKGROUND

1. Socio-economic factors at family and neighbourhood level and their impact on the health and well-being of children and adolescents, first paragraph:

This theoretical paragraph could strongly benefit from the addition of a brief explanation of Leventhal and Brooks-Gunn’s models (institutional resources model, norms and collective efficacy model and relationships and ties model; Leventhal and Brooks-Gunn, 2000; Leventhal et al., 2009), which represent the stronger theoretical basis available in neighbourhood research (and also one of the fundamental basis of your review). Since in their description of the main findings in the literature the authors already name and describe some of the main assumptions of these theoretical models, a brief description would make your introduction stronger from a theoretical point of view. Here some suggestions:

“According to the institutional resources model, in neighbourhoods with high levels of structural disadvantage (low SES, high ethnic diversity, high residential instability), the quantity and variety of resources for youth is lower, thus restricting the opportunities to access several types of services and activities; thus, the neighbourhood structural features transmit their influence on adolescent development by negatively impacting the resources of the local community. The norms and collective efficacy framework posits that the levels of collective efficacy within a local community are a function of the neighbourhood structural characteristics. Therefore, neighbourhood structural disadvantage is thought to negatively influence the ability of community members to create a shared set of socially accepted norms that promotes the willingness to intervene on behalf of the community (this, in turn, has a negative effect on children and adolescent development). Finally, according to the relationships and ties model, neighbourhood structural disadvantage may operate through its negative effects on parents’ well-being, marital relationships and parental competencies; all these aspects of the family context, in fact, negatively impact adolescents’ development.”

Thank you for this valuable input, the models of Leventhal & Brooks-Gunn indeed are an important theoretical background to the research aims of this literature review. Information on the models of Leventhal & Brooks-Gunn was added at pg 7-9.

It is generally assumed that the relationship between neighbourhood characteristics and outcomes in children and adolescents is mainly indirect [42, 43]. Depending on their background, researchers have put forward different pathways in an attempt to explain the relationship between neighbourhood SES and health, resulting in three theoretical models. Researchers following a neo-material vision belief that the association between neighbourhood SES and health can be attributed to a differential access to material resources [10, 44]. The institutional resources model by Leventhal & Brooks-Gunn [42] claims that the quality, accessibility and availability of institutional resources might explain the relationship between neighbourhood characteristics and outcomes in children and adolescents. Following this model, the quantity and quality of resources that affect the life of young people (e.g. child care, leisure time activities, education, health care facilities) is likely to be lower in neighbourhoods with high levels of disadvantage (low SES, high ethnic diversity, high residential instability). For instance, research in different cities in the USA found that the quality of the sidewalks was lower in high poverty neighbourhoods than in low poverty neighbourhoods, which is in turn believed to negatively influence physical activity in children [45].

As an alternative pathway, researchers have stressed to importance of psychosocial pathways to link socio-economic deprivation to worse health [10, 44, 46]. According to the relationships model [42, 47], the home environment, parental networks and parental characteristics mediate the influence of neighbourhood characteristics on youth’s outcomes. More specifically, levels of parental characteristics that enhance child well being (e.g. parental social support, parental monitoring and other qualitative parenting practices) are found to be lower in deprived neighbourhoods compared to non-deprived neighbourhoods, whereas levels of harmful parental characteristics (e.g. parental stress, exposure to intra-family violence) are believed to be higher in deprived neighbourhoods [47]. Furthermore, the norms and collective efficacy model states that neighbourhood
structural disadvantage negatively influences the social norms that rule in the neighbourhood. Disadvantaged neighbourhoods are believed to have less health promoting social norms, and a lower willingness to intervene for the common good, which in turn has a negative effect on children and adolescent outcomes.[42, 47]. This is in line with research that ascribes a part of the relationship between macro-level income inequality and health to a decline of the collective social fabric [4, 8, 48-50].

2. Social capital: the concept explored, last paragraph: in pointing out the importance of neighbourhood context for children and adolescents, the authors should refer to the specific characteristics of this developmental stages. For instance, it would be useful to refer to the limited autonomy of children, and to the increasing exploration of neighbourhood settings and social interactions with neighbors occurring in adolescence (when, however, their range of actions is still limited, thus making the neighbourhood a critical context in adolescent lives).

This point is now discussed in the discussion section based on a comment of the first reviewer:

[125]. This finding might be contributed to the fact that young children have lower levels of autonomy and mobility than older children and adolescents [126-128], leading to higher exposure to neighbourhood processes as these children are more bound to their local neighbourhoods. Earlier research also mentioned exposure as a mechanism to explain why social capital had a larger association to the health of parents with young children, compared the adults without young children.

3. Social capital and health, last paragraph: although the literature on the possible negative effects of social capital has to be included in the introduction, the presentation of findings supporting this negative effects should be shorter, respect to findings supporting a positive effect on health (since empirical research on the “dark side” of social capital is still scarce). The last three lines, in particular, refer to processes not specifically connected with the dark side of neighbourhood social capital (the negative influence of peers on risk behaviors, which usually derive from low levels of social capital in the neighbourhood), and should be removed.

These lines are removed from the manuscript (cfr pg 13-14) and the paragraph is shortened.

DISCUSSION

4. Summary of results, first paragraph: in synthesizing and discussing the results of the reviewed studies, the authors should specify what kind of mediation and moderation effects have been found. The paragraph “Two studies found that the relationship between neighbourhood SES and health in children aged 5-10 years was dependent of the level of social capital in the neighbourhood. A sixth study suggested that social capital mitigates the effect of neighbourhood socioeconomic status on self-esteem in rural adolescents” would benefit from a better clarification of the specific neighborhood influences in the association between SES and children and adolescents’ well-being. Moreover, regarding the mediation effects, the two studies that found a significant effect are in line with the norms and collective efficacy and the relationships and ties models; this should be stated, in order to provide a more complete theoretical interpretation of results.

The discussion section of the article was extensively adapted. The first paragraph now gives a summary of research findings on a higher aggregated level, and explicitly links the findings to the current theory on neighbourhood processes for children and adolescents and social capital.
To analyse the role of neighbourhood social capital in the relationship between socio-economic status and health-related outcomes in children and adolescents, a review of the published literature was conducted. First, we looked into neighbourhood social capital as a mediator in the association between socio-economic status and health in children and adolescents, and the pathways that underlie this association. Two of the included studies found that social processes in the neighbourhood (referred to as ‘social cohesion’ and ‘collective efficacy’) mediate the association between neighbourhood disadvantage and health-related outcomes in children (aged between 4 and 12) [116, 117]. Furthermore, Canadian research found that the relationship between neighbourhood deprivation on the one hand and verbal ability and behaviour problems in young children on the other hand runs via social processes at home, such as maternal mental health and parenting practices [117]. However, three other studies did not find significant results when analysing neighbourhood social capital as an intermediate variable in the relationship between SES and health in young children (aged 3 to 5) [119, 120] and adolescents [115]. As such, this review partly finds support for the norms and collective efficacy model and full support for the relationships model put forward by Leventhal & Brooks-Gunn to explain how neighbourhoods influence outcomes in children and adolescents [42, 47]. Furthermore, this study investigated the interaction between neighbourhood social capital and socio-economic characteristics in explaining the health of children and adolescents. Two studies found that the relationship between neighbourhood social capital and behaviour problems in children (aged 5-10 years) depends on the socio-economic characteristics of the neighbourhood: in both studies neighbourhood social capital was only associated to lower levels of problematic behaviour for children in deprived neighbourhoods [118, 122]. Two other studies, focusing on aggression and quality of life in adolescents, did not find a significant interaction between neighbourhood social capital and SES [115, 121]. This finding partly supports the “compensation effect proposition”, which states that social capital is particularly beneficial for people with low levels of personal capital (e.g. low income, low educational level) [56, 105].

Due to a diverse set of indicators used to measure both social capital and health, it is challenging to draw firm conclusions from this study. However, the results suggest that certain components of social capital influence the impact of SES on health outcomes in children. Furthermore, it seems likely that neighbourhood social capital is especially beneficial for children living in deprived neighbourhoods, although additional research is needed to support this.

Furthermore, most of the included studies focused on young children and their parents. Of the six studies that focus on pre-school and school-aged children, four identify neighbourhood social capital as a significant mediator in the relationship between socio-economic status and health in children or find that neighbourhood socio-economic status moderates the association between neighbourhood social capital and health in children. In contrast, none of the two studies focussing on adolescents finds a significant interaction between SES and neighbourhood social capital. This could indicate that neighbourhood social capital is more important for the health of younger children, which would be in contrast to earlier findings by Chen et al [125]. This finding might be contributed to the fact that young children have lower levels of autonomy and mobility than older children and adolescents [126-128], leading to higher exposure to neighbourhood processes as these children are more bound to their local neighbourhoods. Earlier research also mentioned exposure as a mechanism to explain why social capital had a larger association to the health of parents with young children, compared the adults without young children.

CONCLUSIONS

5. last paragraph: although no intervention studies were included in the review, the conclusions would benefit from a description of the implications that a better understanding of the “neighbourhood effects” may have on the planning and implementation of prevention and promotion programs (e.g., the choice of specific interventions based on neighbourhood SES or other structural characteristics; development of tailored interventions for families with different SES...).

The following sentences were added to the section on Conclusions and further research:

Intervention studies are needed to provide insight in how neighbourhood social capital can be enhanced and to identify the workable elements of these interventions having an impact on the health of young children and adolescents.
MINOR ESSENTIAL REVISIONS

ABSTRACT

6. Methods section: the aims should be stated more precisely in relation to the levels of analysis of the constructs under investigation. The study investigated “neighborhood social capital” and “neighborhood and family SES”; this could make it easier to understand the exact focus of the review from the beginning.

The abstract has been extensively adapted

BACKGROUND

7. Health inequality and the social gradient in health, last paragraph: “the introduction will explore the role of NEIGHBOURHOOD social capital”. By adding “neighbourhood” the reader knows what to expect from the review.

This was added to the text (cfr. pg 6).

8. Social capital: the concept explored, first paragraph: “This lack in consistency regarding the use of social capital is reflected in the lack of clarity on how to measure the concept [57]”. The authors should add “and in the variety of constructs and labels used to operationalize social relationships in the neighbourhood (e.g., social support, social resources, social cohesion, informal social control)”, since they refer to these constructs in their choice of search terms.

This was added to the text (cfr. pg 11).

This lack in consistency regarding the use of social capital is reflected in the lack of clarity on how to measure the concept and in the variety of constructs and labels to refer to neighbourhood social capital (e.g., social support, social resources, social cohesion, informal social control)

OBJECTIVES

9. first paragraph, from “Childhood experiences are known to contribute to health inequalities in adulthood” to “A large part of the evidence that explores health inequalities focuses on adults and/or investigates the inequity between extensive geographical areas (i.e. countries or states)”; this part should be located in a new paragraph.

The text was located in a new paragraph (cfr. pg 14).

DISCUSSION

10. Strengths of the study: the authors should add that they consider the potential “promotive” effect of neighbourhood features (besides the risk and protective effect), by including positive outcomes of well-being (self-esteem and satisfaction) in their search, an aspect that needs to be evaluated in greater depth in the literature.

This was added to the text at pg 32.

By pursuing a broad vision on health, the authors also considered studies that focus on positive health outcomes. Thus, this review was able to compliment evidence on the harmful effect of neighbourhoods on health and wellbeing in children and adolescents, with evidence on the promotive effect of social processes in the neighbourhood. The review also considered studies on positive youth development, a topic whose importance is stressed in recent literature [132, 133].
11. although the review explicitly refers to published work, a reference to a possible “publication bias” (and the consequences for the interpretation of the studies included in the review) is needed.

This was added to the text at pg 33.

Finally, this literature review only takes evidence from published studies into account. Consequently, publication bias might have led to an overrepresentation of studies that confirmed hypothesized effects of neighbourhood social capital, and thus an overestimation of the impact of neighbourhood social capital for children and adolescents.

MINOR ISSUES NOT FOR PUBLICATION

12. Although the paper is very well-written, a lower use of short sentences would make the text more fluid.

We tried to adapt the text where possible

13. Social capital: the concept explored, first paragraph: “Earlier, researchers mainly focused...” - remove the comma.

This was adapted in the text.

14. Social capital and health, second paragraph: “the beneficial influence of social capital”,” - remove the apostrophe.

This was adapted in the text.
MAJOR COMPULSORY REVISIONS

1. The main purpose of the study is to investigate whether social capital has a mediating or moderating effect on the relationship between SES and health-related outcomes in children and adolescents. Mediating and moderating effects are defined generically (top of p. 13), but it is important to contextualize these effects within a social capital framework. The authors should provide specific examples of how a particular social capital variable or component could mediate or moderate the relationship between SES and health among children and adolescents.

The introduction section of the paper was extensively adapted, mainly with regard to a better theoretical framework and clearer defined research aims. We tried to illustrate the theoretical framework at the basis of our research aims, with specific examples.

We believe that the addition of the models described by Brooks-Gunn that explain how neighbourhoods affect the life of young children and adolescents on pg 7-9 (cf. infra) contributes to a better and more clear motivation of the research aims:

> ‘It is generally assumed that the relationship between neighbourhood characteristics and outcomes in children and adolescents is mainly indirect [42, 43]. Depending on their background, researchers have put forward different pathways in an attempt to explain the relationship between neighbourhood SES and health, resulting in three theoretical models. Researchers following a neo-material vision believe that the association between neighbourhood SES and health can be attributed to a differential access to material resources [10, 44]. The institutional resources model by Leventhal & Brooks-Gunn [42] claims that the quality, accessibility and availability of institutional resources might explain the relationship between neighbourhood characteristics and outcomes in children and adolescents. Following this model, the quantity and quality of resources that affect the life of young people (e.g. child care, leisure time activities, education, health care facilities) is likely to be lower in neighbourhoods with high levels of disadvantage (low SES, high ethnic diversity, high residential instability). For instance, research in different cities in the USA found that the quality of the sidewalks was lower in high poverty neighbourhoods than in low poverty neighbourhoods, which is in turn believed to negatively influence physical activity in children [45].

As an alternative pathway, researchers have stressed the importance of psychosocial pathways to link socio-economic deprivation to worse health [10, 44, 46]. According to the relationships model [42, 47], the home environment, parental networks and parental characteristics mediate the influence of neighbourhood characteristics on youth’s outcomes. More specifically, levels of parental characteristics that enhance child wellbeing (e.g. parental social support, parental monitoring and other qualitative parenting practices) are found to be lower in deprived neighbourhoods compared to non-deprived neighbourhoods, whereas levels of harmful parental characteristics (e.g. parental stress, exposure to intra-family violence) are believed to be higher in deprived neighbourhoods [47]. Furthermore, the norms and collective efficacy model states that neighbourhood structural disadvantage negatively influences the social norms that rule in the neighbourhood. Disadvantaged neighbourhoods are believed to have less health promoting social norms, and a lower willingness to intervene for the common good, which in turn has a negative effect on children and adolescent outcomes [42, 47]. This is in line with research that ascribes a part of the relationship between macro-level income inequality and health to a decline of the collective social fabric [4, 8, 48-50].’

On pg 15-16, extra attention was given to the research aims of the article, which we tried to place within existing theories on social capital and the importance of neighbourhood social processes.

More specifically, our first research aim is to investigates whether (components of) neighbourhood social capital has a mediating effect on the relationship between SES and health-related outcomes in children and adolescents (see figure 1).
In a mediation model, a mediating variable is hypothesized to be intermediate in the relation between an independent variable and an outcome measure. This study focuses on the mediating effect of neighbourhood social capital on the association between socio-economic factors and health in children and adolescents, which is in line with the relationships model and the norms and collective efficacy model by Leventhal & Brooks-Gunn [42, 47].

Furthermore, social capital theory does not include hypotheses on moderating effects involving social capital. However, research focusing on adults has shown that there is an interplay between socio-economic factors and social capital. It is possible that having access to social capital is particularly helpful for people with less socio-economic resources, as a way to compensate their low position on personal capital (compensation effect proposition). On the other hand, personal and social capital might reinforce each others’ influence on health, leading to a greater impact of social capital for people with a high SES (cumulative advantage proposition) [56, 105].

The second aim of this literature review is to analyse the interplay between socio-economic factors and neighbourhood social capital in relation to health and wellbeing in children and adolescents. To test whether the association between an independent variable and an outcome measure differs across levels of a third variable, moderation model need to be analysed. A moderator variable affects the strength and/or direction of the relation between a predictor and an outcome: enhancing, reducing, or changing the influence of the predictor.

2. Similarly, the authors should explain how they determined whether a study “considered social capital as a mediating or moderating factor in the relationship between socioeconomic status and the health of children or adolescents” (bottom of p. 13). What specifically did it mean to model these relationships?

We acknowledge that our inclusion criterion regarding the methods of the articles might not always have been clear in the previous manuscript. In the method section (pg. 17-18) we have added detailed information on what we considered as ‘methods appropriate to answer our research questions’.

Regarding methodological and statistical approaches, the review focused on quantitative studies, using statistical analyses appropriate to investigate the mediating and/or moderating effect of social capital on the relationship between SES and health-related outcomes.

To test for mediation, studies were expected to either (1) use path analyses (such as structural equation modelling), (2) use a direct test of the indirect effect of SES on health of children and adolescents via neighbourhood social capital (e.g. the product of coefficients test or Sobel test [110]) or (3) enable to analyse the influence of the introduction of neighbourhood social capital variables on the regression coefficient of the SES variable (i.e. the relationship between SES and health). This last method is related to the most widely used method to detect mediation is the causal steps approach introduced by Baron & Kenny [111]. By estimating different pathways between the dependent, independent and mediator variable, this approach tries to indirectly test mediation. However, recently, this method has strongly been criticized [112, 113]. Therefore, we did not expect studies to strictly follow the causal steps approach by Baron & Kenny [111].

To test for moderation, studies were expected to include the interaction between SES and neighbourhood social capital in their analyses.

3. The authors should clarify whether they included studies that examined social capital as an independent variable and health outcomes of children and adolescents as outcome variables and also measured SES, even if these articles did not explicitly examine a mediating or moderating relationship? Given the relatively few number of studies identified and the early stage of research in this area, studies that examined the social capital and health among children and adolescents and included measures of SES (but did not examine a mediating or moderating relationship) could possibly shed additional light on potential mechanisms.
We agree that studies that conjointly examine the effect of neighbourhood social capital and SES on the health among children and adolescents provide interesting and useful insights in the importance of social capital for children and adolescents. However, we had very specific research questions, which were needed in light of the search for input for policymakers to tackle the health gradient in children and adolescents. To provide an answer on such specific research questions, studies with a specific method were needed.

4. One theoretical development in social capital research in the past decade has been the distinction among different types of social capital – bonding, bridging, and linking – and their potentially differential effects on health for various subpopulations. It would be helpful to know to what extent the measures used to examine health outcomes for children fall more in the bonding vs. bridging vs. linking social capital. What types have been studied in this arena and what is known about them in this context?

Although the distinction between bonding, bridging and linking social capital has been claimed to contribute to the disentangling of the complex concept ‘social capital’ (Putnam, 2004; Ferlander, 2007), some researchers have criticised this theoretical development (Ellaway, 2004; Muntaner, 2004; Navarro, 2004). Furthermore, it remains unclear whether the distinction between ‘bonding’ and ‘bridging’ social capital for instance mainly reflects a distinction between strong and weak ties (as is implied by the definition of these concepts by Robert Putnam (2000) or mainly to a distinction between horizontal and vertical ties, such as is described by Szreter & Woolcock (2004).

Not taking the problem of conceptual unclarity into account, none of the included studies themselves make a distinction between these different forms of social capital. Furthermore, they do not provide sufficient details on the type of social networks measured by the indicators of neighbourhood social capital (e.g. strong ties or weak ties, vertical ties or horizontal ties) to be able to address this issue in the discussion section. We therefore believe that the evidence does not allow a conclusion in terms of the difference between bonding, bridging and linking social capital.

5. Table 2 needs more information about the particular measures used for social capital in each study; for example, it is stated in the text that all used a social capital scale, but how many items were in each scale? Were psychometric properties reported?

The information was added to the table.

6. Similarly, some of the pathway descriptions (mediating or moderating) in Table 2 need to be revised to make it clear the direction of the relationships found, if any, at each step of the way.

7. The discussion section reads too much like a recitation of findings rather than a critical synthesis of findings and their implications for policy, research, and practice.

The discussion section of the article was extensively adapted. The first paragraph now gives a summary of research findings on a higher aggregated level, and explicitly links the findings to the current theory on neighbourhood processes for children and adolescents and social capital. Furthermore, extra attention is given to implications for research and practice. We hope that these revisions meet the concerns raised by the reviewer.

8. The discussion mentions at least a couple of times that four of the studies “confirmed our hypotheses,” yet these “hypotheses” are never clearly stated in the paper.
We have removed references to ‘hypotheses’, and have tried to more clearly formulate our findings in line with our research questions.

9. *The paper should be edited for clarity and conciseness.*

**MINOR ESSENTIAL REVISIONS**

10. The “weaknesses of the study” identified on p. 26 seem to be more the weaknesses of the evidence, not weaknesses of the review itself. These “weaknesses” (of the evidence) can be considered important findings of the review. The authors should identify weaknesses of their own study, such as the possibility that they missed some articles and that publication bias (where statistically significant findings are more like to be published) could have resulted in them overestimating the evidence that social capital mediates or moderates the relationship between SES and health among children and adolescents.

An extra remark concerning the influence of ‘publication bias’ was added to the text at pg 33.

Finally, this literature review only takes evidence from published studies into account. Consequently, publication bias might have led to an overrepresentation of studies that confirmed hypothesized effects of neighbourhood social capital, and thus an overestimation of the impact of neighbourhood social capital for children and adolescents.


