

Children and Housing Literature Review

by

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Preamble: This overview relates to an annotated research bibliography compiled as part of this project. The bibliography is stored as a RefWorks database on the University of Auckland library databases and is accessible to anyone with a UoA login and can be copied on request to those outside the University. The name and password for this database will be supplied on request. Rather than refer to each of the over 250 references on the database Mengzhu has made an indicative selection in the text. A companion overview essay is also being prepared by Pauline Herbst, based on the methodological literature on research with and by children, also recorded on the RefWorks database. – *Julie Park*

Introduction

Housing is considered an important issue for children’s well-being internationally. This literature review describes the key themes in academic research on children and housing. The most common research questions seek to address the relationship between various aspects of housing and children’s health, safety and well-being. A key recurring theme is the significance of poverty and inequality that provides the contexts of housing affordability, mobility, quality and location. I reviewed over 200 papers, reports and book chapters from a wide range of countries and topics and categorised the literature thematically. This review is not a comprehensive analysis of the detail of the articles or of the findings, but a description of what kind of research has been done globally in the field of children and housing. There is a general lack of ethnographic research in this area that features children’s experiences and perspectives of housing.

Methods and Scope:

This literature review is based on academic texts published in English. I found nearly 200 relevant research papers, by searching through 5 main databases: Google Scholar, Scopus, ProQuest, Jstor and INNZ. I used a combination of different key words across all the databases: “child*” “wellbeing” or “well-being”, “health”, “housing”, “quality of life”, “environment*”, “ecology*”, “ethnograph*”, “home”, “home environment”, “rental housing” and “children”. I have only read through all the abstracts and read the introduction, content pages of texts that did not have an abstract and categorised them by topic/theme, discipline and where the research was conducted.

The earliest article I found was a sociological paper questioning whether the housing requirements in the UK met the needs of children (Gray and Staples 1928). However, the majority of the papers were published from 1970s to 2014, and no other research between 1928-1970. The disciplines from which the literature is situated include: epidemiology, public health, medical/health science, architecture, sociology,

anthropology, psychology, neurology, pulmonology, social science, geography, social work, law, policy, criminology, education, economics and paediatrics. The countries/regions where research is conducted include US, Canada, New Zealand, Australia, UK, India, Bangladesh, Finland, Taiwan, Hong Kong, Europe and Germany. The empirical research is strongly dominated by US-based research, followed by NZ, UK, Australia and Canada. Some research was also transnational, aiming to capture for example, indicators of children's wellbeing internationally (Ben-Ariah 2007).

Theoretical frames

Bartlett (1997) provides a useful conceptual and theoretical framework to understand the relationships between physical environments, spatial and symbolic aspects of housing, and children's socialisation. She argues for a need to conceptualise the importance of interactions between the material environment and human inhabitants. Rather than treating housing as a setting where relationships develop between children and family members, it should be understood as having significant influence on development of familial relationships (Bartlett 1997: 170). Her key argument is that the social, cognitive and health outcomes related to housing for children are deeply connected to how much control parents have over their living situation. The physical qualities of houses, the location and neighbourhood mediate child-parent interactions (Bartlett 1997:175). In line with the themes of the literature I reviewed, they also draw attention to the prominent theme of poverty. What this paper demonstrates is the inseparability of children and their familial/social contexts. The framework many researchers draw from comes from Bronfenbrenner and Bronfenbrenner's (2009) work theorising a bioecological model to understand ecological/environmental interactions with human health (Ferguson et al 2003).

Children's housing and socio-economic inequality

The literature on children and housing connects socio-economic status to housing quality and home environments and often studies associations between various aspects of housing to children's well-being in social, psychological, education and physical domains. A lot of research has been done on the relationship between housing, poverty and children's well-being, particularly in the US (Fertig and Reingold 2008; Council on Community Paediatrics 2013; Crowley 2003), New Zealand (James et al 2010; Amore et al 2013; Amore 2013; Boston and Chapple 2014) and the UK (Pearce et al 2012; Brennan and Lancashire 1978). Housing disadvantage in Australia has been developed into a small area-index (McNamara et al 2010). Much of this research advocates for new policy directions to address the issue of child poverty, inadequate and poor quality housing that leads to health and educational disparities (Johnson 2014; Boston and Chapple 2014).

Numerous reports and research conducted on housing in relation to child poverty in New Zealand emphasise the importance of housing pathways as a means to alleviate child poverty (Johnson 2014; Boston and Chapple 2014; Baker and Howden-Chapman 2012; Expert Advisory Group on Solutions to Child Poverty 2014; Howden-Chapman et al 2013; James 2007; Morton et al 2014). Boston and Chapple (2014) provided a comprehensive analysis of the issue of housing and child

poverty in New Zealand identifying the key problem as the high cost and poor quality of New Zealand houses. Housing affordability and poor quality is what commonly leads to other housing-related issues such as crowding, dampness, high residential mobility, fuel poverty, coldness, familial stress and negative health outcomes for children. They argue for policy recommendations based on a child poverty lens to invest in social housing, better design and standards of housing in New Zealand. James et al (2010) advocate similar approaches to address child poverty in New Zealand focusing on the importance of housing pathways for children to grow into “productive and engaged adults” (James et al 2010:i). Other New Zealand research projects on children include the Growing Up in New Zealand project that is longitudinal study of approximately 7000 children over a period of time and includes data on housing and vulnerability (Morton et al 2014).

In the UK, differences in housing-related child injuries were found to correlate with parental occupations (Pearce et al 2012). Children from more disadvantaged backgrounds were found to have higher rates of injury in the home environment, single parent households more so than two parent ones, and children of adults in manual work were more likely to have incidents of injury than children of those in professional and managerial jobs. They concluded a correlation existed on housing injuries based on socio-economic inequalities. Socio-economic status, unemployment and housing status was examined in relation to child mortality in the UK (Brennan and Lancashire 1978). They argued the housing density played a more important role than unemployment.

Residential mobility, housing (in)security and homelessness

Many researchers have argued that residential mobility has adverse effects on children’s well-being in terms of education, emotional health and social outcomes (Anderson et al 2014; Julianelle and Foscarinis 2003; Kessler et al 2004; Leventhal and Newman 2010; Shepherd et al 2012; Ziol-Guest and McKenna 2014; Taylor 2012; Council on Community Pediatrics 2013; Auh et al 2006). Anderson et al (2014) argue that the mental health problems and educational deficits associated with residential mobility require specific understanding of the developmental-context of residential movements such as the change in family, neighbourhood, peer and school contexts. The social displacement of moving homes as a primary issue affecting negative social outcomes is backed up by de Souza Briggs (1998) study on African-American and Latino adolescents in New York and differences of social capital between “movers” and “stayers”. “Movers” were more cut off from their social support. The majority of evidence in the literature suggest that residential stability/secure housing, especially in terms of living in owned homes, is associated with better social, educational, economic and health outcomes for children (Gagné and Ferrer 2006; Boehm and Schlottmann 1999). Some studies on child psychological well-being and development have focused on residential mobility and the problem of homelessness (Downer 1997; Council on Community Paediatrics 2013; Park et al 2011; Taylor and Edwards 2012; Turnbull et al 2014). Downer (1997) and the Council of Paediatrics (2013) found lower psychological well-being of children without homes, highlighting the problems of poverty and family violence.

Residential mobility is often linked to poverty and homelessness. Interventions have been made to address the negative effects of mobility on children in terms of schooling (Julianelle and Foscarini 2003) and encouraging families to move out of high poverty neighbourhoods (Kessler et al 2014). The results of Kessler et al's (2014) study presented a gendered difference for boys and girls who were targeted in interventions to move out of high-poverty neighbourhoods. The rates of depression, PTSD and conduct disorders had increased among boys, but reduced for girls. On the contrary, Park et al (2011) argue that housing status (homeless or doubled-up episodes) does not have significant adverse effects on children; rather it is the family and environmental stressors common to many families living in poverty regardless of housing status. Ziol-Guest and McKenna (2014) examined the effect of housing instability for children under 5 years old. They found that more than three moves resulted in higher language and literacy problems, but also stated that this was most prominent for children living in poverty. The literature that raises the issues of residential mobility, housing insecurity and stability has generally focused on the consequences for children's cognitive development, educational outcomes and socio-emotional health and less about physical health. Much of this research also points to the contextual factors of mobility such as poverty, and the often, sudden changes in social environment in peer groups, family, neighbourhood and schooling.

Housing and child health, development and well-being

Housing is frequently framed as a health problem for children and adolescents (Wilks 2009; Breyse et al 2004). Children's well-being as a concept, however, is not well-defined and while various dimensions of well-being have been explored – social, cognitive, physical, psychological and economic – there is no consensus on the best way to measure well-being (Pollard and Lee 2003; Seaberg 1990). There are cross-cultural differences in defining what constitutes well-being. For example, in a study with Aboriginal Australian care-givers, strong culture is deemed central to Aboriginal children's well-being (Priest et al 2012). However, 'culture' is not seen as important in other studies. Child development literature tends to be based on psychological approaches that focus on cognitive development and the role housing plays in children's cognitive functioning.

A number of aspects of housing have been examined to explain or test correlations between housing conditions and child physical and mental health (Ormandy 2014). There is a wealth of evidence in this literature that suggest that substandard, poor quality housing has a strong effect on children's health. Chenoweth et al (2009) highlighted the substantial costs associated with medical care due to housing-related childhood illnesses in North Carolina. In Australia, indigenous child health has been examined in relation to housing and other socio-economic factors (Stephens and Bailie 2012; Bailie et al 2012; Hopkins et al 2014; Priest et al 2012; Shepherd et al 2012). Children's wellbeing and housing matters have also included some literature on child abuse. Some studies have looked at the relationship between inadequate housing, home environments (in terms of social and physical aspects of the home-space), homelessness and child abuse (Burgess et al 2010; Fowler et al 2013; Harden and Whittaker 2011; Perlman 2010; Perlman and Fantuzzo 2013). There are particular areas of children's health that the literature explores in depth,

such as the association between housing conditions and asthma or respiratory health and childhood lead poisoning.

Broad overview research on the relationship between children's health and housing has identified multi-dimensional ways in which housing, home environments, the physical and social aspects of living in houses affect children's well-being. Based on the wealth of research in this field, Weitzman et al (2013) posit that the connections between child health and housing is well established and there has been a movement for healthy housing programs as solutions to these problems. They argue:

The importance of homes in children's lives, history of healthy homes, asthma, and exposures to lead, carbon monoxide, secondhand/thirdhand smoke, radon, allergy triggers is discussed, as well as how changes in ambient temperature, increased humidity, poor ventilation, water quality, infectious diseases, housing structure, guns, electronic media, family structure, and domestic violence all affect children's health. (Weitzman et al 2013: 187)

The research publications in this review that have involved intervention programmes all argue that improved housing significantly improves children's health outcomes. Wolff et al (2001) conducted a study in Malawi which involved children under the age of 5 years old. Children living in improved housing were less likely to have respiratory, gastrointestinal and malarial infections. Leventhal and Newman (2010) critically reviewed recent research on the role of housing on children's development in the areas of physical, socio-emotional health, academic attainment and behavioural outcomes. They found strong evidence for the associations between environmental hazards/toxins and crowding with children's health and residential mobility with academic, social and emotional problems. They argue for more methodologically rigorous and focused research.

Asthma or respiratory health and housing

The research on the correlation between childhood asthma and housing unanimously points to the significance of housing conditions and quality on children's respiratory health. However, there is disagreement on the specifics of housing quality and characteristics that affect children's respiratory health. Some studies focused on the environmental conditions of housing quality – namely, mould, dampness, cold - and the relationship to childhood asthma (Biksey et al 2011; Brugge et al 2003; Holt et al 2013; Keall et al 2012; Kelly et al 2013, Northridge et al 2010; Somerville et al 2000; Strachan 1988; Yarnell 1979; Yarnell et al 1977; Trenholme et al 2012).

The earlier studies done on respiratory health and housing were conducted in South Wales (Yarnell et al 1977; Yarnell 1979). Yarnell et al (1977) tested the hypothesis that respiratory illness occurs more in children living in old housing compared to modern housing by comparing children's respiratory health between those living in central-heated council housing and traditional valley housing. They found that mothers reported fewer colds and sore throats in traditional valley housing and more in council estates with coal-powered central heating. Yarnell's (1979) study of hospital admissions and respiratory morbidity examined the relationship to housing and found that there was no significant relationship between inadequate

housing amenities and respiratory morbidity but there was a closer relationship to household crowding and other socio-economic variables.

A lot of research in the US done on asthma was conducted with families with children in public housing developments. This is perhaps an appropriate reflection that the statistics that show the highest prevalence of asthmatic children tend to be in public housing compared to private housing (Northridge et al 2010). Brugge et al (2003) conducted a research project that involved implementing a pilot asthma intervention program with 9 families in public housing in Boston. Their conclusion was that exacerbation of asthma is multifactorial rather than any one source that dominates as a trigger. Levy et al (2004) also conducted research in Boston with 78 children from three public housing developments to better understand asthma morbidity. Their findings identified multiple risk factors and argue that for better health outcomes, interventions need to happen on the social and built environment of children, as well as medical management.

A few studies on asthma and housing evaluated pilot intervention programmes (Brugge et al 2003; Somerville et al 2000; Sweet et al 2014; Free et al 2010). Somerville et al (2000) conducted an intervention-based pilot study on the role of heating to improve the health of asthmatic children. They installed central heating in 59 damp houses in Cornwall. The results were a significant reduction of all respiratory symptoms and the greatest reduction in nocturnal cough. This was one of the first evaluative studies of health outcomes after housing improvements and calls for further research to substantiate the results. A more recent program evaluation study that involved interventions (Sweet et al 2014) provided families with a public health nurse, cleaning supplies, pest and mould control. This study involved 115 participants and produced both quantitative and qualitative data that showed significant reduction in asthma symptoms. This home-based intervention was successful at improving the health of asthmatic children, as well as quality of life for caregivers. Free et al (2010) intervention found that more effective home heating resulted in fewer school absences for children with asthma.

Studies investigating dampness and mould as a triggers for asthma has had mixed results. Biksey et al (2011) conducted a quantitative and qualitative study with parents and children to examine asthma triggers in home environments in Pittsburgh, US. They found that parents discussed dustmite, mould, environmental tobacco smoke and pet dander as the main triggers for asthma. Strachan (1988) looked at the correlation between damp and mouldy housing and bronchospasm and argues that there was no significant difference in the degree of bronchospasm in homes with and without mould. They posit that association between dampness, mould in housing and respiratory symptoms is more related to parental reporting of symptoms. Tischer and Heinrich (2013) assessed the significance of residential mould for children's health, they argue that further research is needed in this field to also explore how microbial agents affect children's behaviour and cognitive development. Yang et al's (1997) study of dampness and respiratory health of children in Taiwan concluded that dampness was a significant risk factor for respiratory symptoms and poses as an important public health problem in subtropical areas. Keall et al (2012) found that increased levels of dampness and mould in New Zealand houses increased the odds of respiratory symptoms. Kelly et al (2013) found that respiratory conditions were the most common in hospital admissions of children and the parents had stated many

housing-related factors that increased the risks of respiratory symptoms, leading to the conclusion that living in poor quality housing has a major effect on children's health.

Aside from the physical qualities of housing, studies have looked at emotional and social stressors in the home in relation to childhood asthma. Kishore (2014) focused on severe housing stress and how it impacts childhood asthma and argues that while there have been many studies on housing quality and exposure to allergens, the experience of psychological stress related to housing had received little attention. She concluded that emotional stress related to poor housing, independent of allergen exposure, did increase risk of worse asthma outcomes. Another study highlighting housing stressors in the US argues that efforts to reduce stress and address structural inequities are important to address childhood asthma, which disproportionately affects non-white people in the US (Quinn et al 2010). Suglia et al (2010) explored the ways in which stress related to family violence, specifically maternal intimate partner violence (IPV) and housing quality play a role in increasing susceptibility to childhood asthma. The results of this study showed that children exposed to both maternal IPV and poor housing conditions in terms of deterioration and disarray increased the odds of childhood asthma. Multiple or cumulative stressors may increase risk of asthma in children more than a single stressor.

Socio-emotional/mental health of children and housing

Beyond physical health symptoms, housing has also been linked to children's socio-emotional/psychological health. Cairney (2005) looks at how housing tenure (renting vs ownership) affects children transitioning to adolescence, in particular, their psychological well-being and argues that housing tenure is still an important determinant of health. Coley and Leventhal (2013) confirm the various aspects of housing such as difficulties with quality, stability, affordability and housing subsidies are strong determinants of emotional and behavioural problems among children and youth in low-income families. They found that this association commonly operates through parental stress and behaviours. This type of research has also been done in public housing developments with mothers in Chicago (Dubrow and Garbarino 1989) and in New York (Morris et al 2002). Much of the research suggests that housing quality plays a significant role in determining children's socioemotional / psychological health (Evans et al 2001; Gifford and Lacombe 2006). Ferguson et al (2013) conducted an international review of this association highlighting research done in the global South. Marais et al (2013) looked at the mental health of orphans in South Africa in relation to housing conditions but their results were inconclusive and argue that methodology plays an important role in the mixed results. Their key finding was that children living in informal settlements had better socio-emotional health. Govender and Moodley (2004) conducted research in both formal and informal urban housing with African-American children and adolescents to understand the relationship between maternal support and adolescent psychological well-being and self-esteem, and they found a positive relationship which supports previous research. Harden and Whittaker's (2011) research on preschool children in the child welfare system argues that the influence of high-quality home environments on early childhood had a significant impact on their cognitive and psychological well-being with better social outcomes.

Neighbourhood influences on children's wellbeing are also considered along with family and home environments. Homel and Burns (1989) found in their study that children living in commercial inner-city areas reported more feelings of loneliness, rejection, worry, fear, anger and unhappiness compared to children living other areas. They argue that community socialisation also has an influence on children's socio-emotional health. Research into mobility and housing interventions in high-poverty neighbourhoods suggest that encouraging families to move out of high-poverty neighbourhoods are associated with increased rates of depression, PTSD, and conduct disorders among boys but reduced rates of depression and conduct disorders for girls (Kessler et al 2014). Neighbourhood effects on children's behaviour in low-income public housing neighbourhoods were found to have mixed effects on poor children (Goering 2003). Holt et al (2013) conducted a cross-sectional analysis of childhood asthma and found correlations between asthma diagnosis by age 5 with particular ethnicities (Hispanic), gender, mother's educational attainment, lack of insurance, and housing conditions. They looked for neighbourhood effects but the results were minimal and insignificant with the exception of neighbourhood educational qualifications. In Australia, socio-economic status of neighbourhoods was relevant in explaining children's conduct problems (Edwards and Bromfield 2009). El-Dardiry et al (2012) argued that neighbourhood social capital was influential on children's self-rated health and quality of life in Greece. Root and Humphrey (2014) investigated the role of neighbourhood racial composition on children's health and found that racial composition of neighbourhoods had no significant effect on children's self-rated health or in their health status trajectories.

The majority of the research on housing and children's socio-emotional health has been done with urban residents. Newland et al's (2014) study focuses on rural children's subjective wellbeing in the US looking at multiple levels of social and built environments from home, neighbourhood, school and peer-group contexts. They argue that the most important social relationships were family, teacher and peer relationships and found differences in self-image based on gender.

In research done in Australia, Shepherd et al (2012) argue that housing quality and tenure and disadvantage on a neighbourhood level have a strong direct effect on indigenous children's mental health. Other factors such as racism, family composition, crowding and stress among other things are important in explaining children's health disparities that are racially marked. Focusing on child development and housing in Australia, Taylor and Edwards (2012) explore the association between housing tenure, residential mobility and housing stress on children's cognitive development and socio-emotional function.

Housing status is another area of investigation in relation to physical and mental health among children in the US. Park et al (2011) found that housing status had little significance in determining adverse effects on children's cognitive development, and physical or mental health. Rather, family and environmental stressors were more important. Richman (1974) did a study that concluded it that housing type in terms of high and low rise flats did not have a significant impact of children and mother's mental health. The research on children's mental health and housing tend to stress the role of social environment in the home. Bartlett (1997) would argue that the social environment and relationships between adults and

children are mediated by the physicality of the house and are reciprocally influential in children's lives.

Lead poisoning/exposure and housing

Another sub-body of literature within the research on housing and child health investigates the health effects of lead exposure and childhood lead poisoning. The majority of this research was done in New Zealand (Bates 1995; Bates et al 1997) and the US (Chisolm et al 1985; Farr and Dolbear 1996; Hartje 2000; Reissman et al 2001; Rogers et al 2014; Stroop et al 2002). Reissman et al (2001) and Roberts et al (2003) discuss using Geographic Information System (GIS) technology to prevent childhood lead poisoning and assessment of risk for elevated blood lead levels in children. Stroop et al (2002) analysed lead-based paint risk for children living in military housing concluding that children in military housing are less likely to be exposed to lead compared to those living in the civilian sector housing. Hartje (2002) and Rogers et al (2014) explore the legal aspects of housing and lead poisoning prevention. Rogers et al (2014) argue that legislation is not an effective primary prevention strategy as it does not cover all the properties that children live in and is not strictly enforced.

Child development and education

Child development theory supposes a western model of child well-being (Ben-Arieh 2007). Several scholars employ the discourse of child rights to discuss well-being and argue for "children" to be considered a unique identity stage in life rather than as "adults in the making" (Ben-Arieh 2007, Bradshaw et al 2007, Korbin 2003). Housing conditions and home environments have been heavily researched in relation to concerns regarding child development transnationally (Ferguson et al 2013). Child development and housing literature involves issues of education, physical development (Essen et al 1978), cognitive development and academic achievement (Bradley and Putnick 2012; Bronfenbrenner and Bronfenbrenner 2009; Dubrow and Ippolito 1994; Evans 2006; Gagné and Ferrer 2006; Gottfried and Gottfried 1984; Levantahn and Newman 2010; Taylor and Edwards 2012). Harden and Whittaker (2011) conducted this research on the early home environment with children in the child welfare system in the US. Research on the home environment and child development looks at the ecological aspects of the home in relation to cognitive development whether the focus is on technologies in the home (Carson and Janssen 2012), exposure to dampness or pets (Casas et al 2013), residential mould (Tischer and Heinrich 2013) or the effect of "green" environments (Chawla 2002, Chawla, et al 2014, Wells 2000). The economic aspect of housing, in terms of affordability and cost are also examined in relation to child development (Harkness et al 2009; Kull and Coley 2014; Leventhal and Newman 2010).

As I have alluded to in the description of literature on residential mobility, a lot of research examines the relationship between the "home environment" and the education outcomes of children (Bradley et al 1988; Bradley et al 2012; Dubow and Ippolito 1994; Slaughter and Epps 1987). The "home environment" concept refers to conditions of housing – housing quality, material resources, formal and informal learning materials - and social aspects such as parenting (Slaughter and Epps 1987;

Bradley et al 2012). Dubow and Ippolito (1994) found that poverty and the poor quality of home environments leads to decrease in maths and reading scores for elementary school-aged children as well as increase in anti-social behaviour. Similar research by Harden and Whittaker (2011) explore the home environment during early childhood for children in the welfare system who have experienced out-of-home-placements during infancy. In their study, they discuss the role of emotional support in the home environment as a significant predictive factor for child development. Home environments with more emotional support and cognitive stimulation tend to produce higher cognitive and language scores, decreased behavioural problems and better social skills (Harden and Whittaker 2011). Perlman's (2010) thesis exploring the impact of out-of-home placement on children's educational achievements argue that it is not the experience of out-of-home placement alone that has the greatest effect on children's education, but the associated issues of child maltreatment, homelessness and poverty.

The role housing design plays in children's education, social and cognitive function seems to vary in different contexts. The research on access to play areas and green spaces suggests that design does matter for children's socio-emotional health but this is primarily research conducted in western contexts. Li (2011) investigated this hypothesis with school-aged children in Hong Kong and found that children's behaviour/conduct at school was not affected by their housing type, size and design as long as they can claim some privacy at home. This could be an indication of culturally adaptive factors in relation to housing structures.

The link between home ownership and education has also been explored. Green and White (1997) found that children of homeowners do tend to stay longer in schools than children of renters and young daughters of homeowners are less likely to have children than daughters of renters. Here, however, home ownership perhaps is more an indication of class status and relates to the literature that looks at other indicators of inequality and poverty, which suggest that the problem is not a specific condition of poverty, but poverty in general. However, there are difficulties in ascertaining these relationships through empirical research and they may not capture the complexities involved (Haurin 2013). The impact of assisted housing on educational attainment is considered insignificant (Newman and Harkness 2000).

Morris and Smith (2002) conducted a study on children's schooling and behavioural outcomes based on their housing type: public or non-public housing. Their key findings suggest that there are some negative academic and behavioural outcomes that a large proportion of children in public housing display. Furthermore, they argue that parents' poor mental health and children witnessing or experiencing domestic violence is also associated with negative outcomes in schooling and behaviour (Morris and Smith 2002). Schmitz (1992) argues that children in public housing have many factors working against them to achieve well academically. The solutions proposed in the majority of the literature is to implement changes in housing policy to ensure adequate housing conditions for children's development and socialisation as well as efforts to address poverty, housing affordability and quality (Schmitz 1992; Howden-Chapman et al 2013; Boston and Chapple 2014).

Crowding and Density

The cross-cultural research on crowding suggested that the meaning of 'crowding' is culturally defined. Western standards of ideal household occupancy are not shared universally (Bartlett 1997:179; Pene et al 1999). Many empirical studies are concerned with the relationship between crowding and illnesses e.g. infectious diseases with similar conclusions that crowding is an important risk factor in children's ill-health (Baker et al 2013; Evans 2006) as well as later adult health (Spencer 2001). The research in Aotearoa/New Zealand highlights the ethnic inequalities in crowding with Maori and Pacific populations disproportionately affected and Pakeha/Europeans with the lowest rate of crowding (Baker et al 2006). This is also reflected in data regarding children's hospital admissions at Wellington hospital with many crowding-related health conditions (Kelly et al 2013).

Several facets of crowding have been linked to children's health and development. Dush et al (2013) explore the issue of crowding through the concept of chaos. Chaos is defined as crowded, noisy, disorganised and unpredictable conditions for child development. They argue that chaos reduction would result in better health outcomes based on their study. Research in Britain in 1978 (Essen et al 1978) found little evidence for the association of poor housing and ill-health and physical development among 16 year old boys. However, height differences were found between boys living in crowded housing who were shorter than those living in non-crowded houses. Evans et al (1998) provide an ecological perspective based on research with 10-12 year olds in urban India on the role of chronic residential crowding on children's well-being. Their findings were that residential crowding was associated with elevated blood pressure among boys and learned helplessness among girls. In Kumar et al's (2014) systematic review of children's oral health related quality of life in relation to parental socio-economic status and home environments, they found that crowding among other factors was a significant predictor of oral health related quality of life. In Aotearoa/New Zealand, Baker et al (2008) found that tuberculosis is associated with household crowding. The effect of crowding on children has also been found to affect academic achievement as well as health (Solar and Mare 2012). The literature tends to focus on the negative health consequences of crowding, however the definition of what it means for a household to be over-crowded is not universally agreed upon.

Child safety and danger in housing and neighbourhoods

Children's safety in housing and neighbourhoods is a concern of many researchers aiming to decrease housing-related injury hazards (Ancliffe and Kokotallo 1996; Keall et al 2013; Pearce et al 2012). The themes covered are on the dangerous design of driveways (Austin et al 2014; Madley and Campbell 2014; Shepherd et al 2010), fire hazards (Harpur et al 2013; Van Niekerk et al 2006), the fears of children's safety related to housing intensification and apartment design (Carroll et al 2011) and how unsafe housing conditions relate to inadequate physical care of children (Ernst et al 2004). As solutions, Keall et al's (2013) paper proposes an intervention programme of repairs to structural home injury hazards in New Zealand while White (2013) proposes a housing Warrant of Fitness system to ensure housing safety and quality.

Neighbourhood violence has also been explored as a threat to children's safety. Carvalho's (2013) ethnographic child-centred research examined this aspect of children's lives in six public housing neighbourhoods in Portugal, where children's perception of the normalisation of violence affected their use of public spaces. A few studies have focused on (socio-)economic inequality and the rates of child injuries or mortality in housing-related circumstances in Europe (Sengoelge et al 2013) and the UK (Pearce et al 2012). Sengoelge et al (2013) compared 26 European countries to analyse child mortality related to housing injuries and country-level economic inequality using GDP as a measure.

The ongoing research of Karen Witten and her group on children and neighbourhoods will be discussed in the companion essay on methods (e.g. Witten and Kearns 2013, Carroll et al in press).

Child-centred research

Few studies in the literature on children and housing include children's perceptions and voices. This research has largely been conducted outside of New Zealand and covers a range of different topics. For example, in Portugal research was conducted on children's perceptions of place and violence (Carvalho 2013). In the US, Devlin (1994) interviewed children about race and income-related housing. Downey (2013) wrote an autoethnographic account of residential mobility as a "military brat" exploring the concept of 'home.' In Australia, children were consulted for the development of children's well-being indicators (Fattore et al 2007). In Finland, Helavirta (2011) examined children's moral standpoints related to the 'home.' A paper on Japan encourages children's participation and engagement on housing and community issues (Hirai and Okazaki 2007). Newland et al (2014) considered the subjective well-being of rural children in the US through a survey to develop indicators of well-being. Root and Humphrey (2014) analyse children's self-rated health and racial neighbourhood composition through surveys. Taylor et al (2002) studied children's views of nature and self-discipline, and the effect of green spaces on self-discipline. Their findings suggest gendered differences in the self-disciplinary effect of green spaces on boys and girls by proximity to their homes. Another study highlights children's experiences of housing insecurity. These children were part of an early childhood intervention programme (Turnbull et al 2014). Neighbourhood influences on children's life satisfaction and emotion are explored through Palestinian children's perspectives of life under occupation (Veronese et al 2012). In the UK, Bhatti (1999) did ethnographic research with Asian children at home and school. These studies that centre children and young people's perspectives are few and scattered. James (2007) in a scoping paper on young people and housing also found that the voices of children and young people are missing in discussions of housing in New Zealand and internationally.

Race, racism and ethnicity

A small subsection of housing literature considers the role of ethnicity and racism in issues around housing access and equity (Greene et al 2012; Priest et al 2012; Devlin 1994). This literature draws attention to how poverty and housing inequality is racialised across different western contexts. In the US, discussions of racism is focused on African-Americans and studies of housing discuss high-poverty

neighbourhoods as predominantly African-American (Fauth 2004). In Australia health and housing inequities adversely affect Aboriginal children (Priest et al 2012; Shepherd et al 2012; Stevens and Bailie 2012). In Aotearoa/New Zealand, ethnic inequalities in children's health and housing exist between Māori and Pacific populations and Pākehā (Amore et al 2013; Jaine et al 2008). The underlying structural issues related to racial discrimination in housing and the effect of institutionalised racism on health outcomes are often left unaddressed in the literature focused on children.

Children and rental housing

This review was particularly interested in the amount of research done with children in rental housing. Rental housing research overlaps with public housing programmes such as in the case of Housing New Zealand. The papers I found primarily discuss rental housing at the level of policy. Ancliffe and Kokotallo (1996) produced a report to Housing New Zealand to recommend the urgent establishment of policies and strategic action plans to prioritise children's safety in their rental housing pool. The policies they propose primarily target the design of the houses and provision of specific items and spaces. Baker and Howden-Chapman (2012) also call for the need to address children's health through improving housing and their key recommendation is to establish a warrant of fitness for rental housing and a large-scale programme to construct more social housing programmes in Auckland and Christchurch. Following this report, White (2013) reviewed the legislation and research on warrants of fitness for rental housing. The Expert Advisory Group on Solutions to Child Poverty (2014) had made similar policy recommendations to improve housing to alleviate child poverty. Suggestions include improving housing quality, increase social housing, affordability of housing and make access to home ownership easier for low-income families. In the US, Crowley (2003) also recommends intervention strategies at the federal policy level such as rental housing subsidies and construction of more rental housing for poorer families to address high residential mobility of low-income families with children, which in turn affects children's education.

The literature discussing children and rental housing often addresses the issue of discrimination that families with children face. Cummings and Rosentraub (1981) highlighted a report regarding housing discrimination against families with children, explaining this phenomenon with underlying economic dynamics. They argue that landlords seeking to maximize profits tend to cater to the 'singles' housing market, which makes it harder for families with children to access affordable rental housing. Margulis and Benson (1982) have also highlighted discrimination against families with children in rental housing. They found outright prohibition and restrictions based on age, sex, number and location of children in a building in Cleveland (Margulis and Benson 1982). Grineski and Hernandez (2010) explored the role of landlords in shaping environmental injustice through qualitative interviews with elementary-aged children with asthma. Their study argued that landlords were directly responsible for poor quality housing and immigrants were in particular risk, due to fears of eviction and also deportation. They argue for the need to recognise the role of landlords in maintaining poor housing conditions and environmental inequalities as they can be a target of intervention. Families in the US have taken

landlords to court due to housing discrimination and the courts ruled that discrimination based on having a child was indeed unlawful (Miles 1983).

On the flipside of rental housing, there have been studies done to explore the effect of parental home ownership. Boehm and Schlottmann (1999) found that children growing up in owned homes were more likely to own homes as adults, arguing that housing tenure plays a primary role in determining children's education, economic earnings and thus housing futures. This could be interpreted as one of the ways socio-economic status is reproduced among the owning class.

Child-friendly neighbourhood and housing design

Housing also needs to be situated in discussions of neighbourhood settings and the physical and social environment surrounding the home. The design of driveways has been given attention in relation to children's safety (Austin et al 2014; Madley and Campbell 2014; Shepherd et al 2010). Outdoor play areas have been investigated in relation to children's well-being and development. Bartlett (1997) cites numerous studies that suggest accessible outdoor play areas within the vicinity of the house were beneficial for children and this affected parent-child relationships. Children without access to outdoor play areas by their houses were more likely to be more attached to their parent(s) and when they do go outside, their parent(s) tend to be overprotective and anxious if there are safety hazards in the neighbourhood (Bartlett 1997). Housing design, location and the neighbourhood context mediate parent-child relationships and the socio-emotional health of children (Bartlett 1997). Marcus and Francis (1995) also argue for the importance of outdoor play settings close to home and that policy interventions in public housing are needed. This has led to considerations of design interventions in high-rise apartment blocks (Rubinfeld 2013). High-rise housing in particular is considered less beneficial for children because of lack of access to outdoor play areas, however in terms of conduct at school for children in Hong Kong, housing type seems to have little effect (Li 2011).

Commentary

Most of the literature on children and housing in the research that was found did not include children's perspectives. Within the housing and child health literature, there has been specific attention to the relationship between housing environments and children's respiratory health as well as to childhood lead poisoning. Much of the research involves epidemiological investigations to identify causation, predictors and determinants of children's health, well-being or pathologies. There are also few social science and ethnographic studies of how children experience their home environments, meanwhile the general themes and concerns of the literature I reviewed tend to place children as objects of study with an implicit value placed on children who can achieve well academically according to the standards of their cultural context, behave in socially acceptable ways, and to ensure children's growth to be "productive and engaged adults" (James et al 2010:i) as well as law-abiding citizens (Gibson et al 2009).

The empirical research suggests strong correlations between various aspects of housing and children's health and wellbeing across various contexts. The home environment is treated as a central environment for children's development and growth, and much of the literature highlights inequalities and addresses child poverty in relation to housing conditions. Child poverty and children's housing is inseparable from adult housing and while there are many young people living in inadequate housing, this is related to wider structural and historical issues that construct the current housing conditions, access to housing and neighbourhoods.

The solutions proposed for making changes to children's inadequate housing conditions and poverty tend to be state-centred policy recommendations. The lack of anthropological analysis in studies regarding children and housing takes for granted the hegemonic systems of inhabiting a home – that housing is necessarily a commodity and capital exchanges must be made through rent, buying and mortgaging. There is a major silence on how political economy affects poverty, inequality and by extension housing inequities. Apart from Quinn et al (2010) structural change solutions to the problems of poverty and housing have not been foregrounded. The roles culture and capitalism play were rarely named as foundational to the shaping of housing industries, design, quality, standards and conditions of inequality. Political ecological and critical medical anthropology approaches could provide further insight into the key issues surrounding children and housing.

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Appendix 1. International scope of the research

94 papers from US
 34 NZ
 15 UK
 14 Australia
 10 Transnational systematic reviews
 9 Canada
 3 Europe
 3 South Africa
 1 paper each from Malawi, Taiwan, Hong Kong, Germany, Bangladesh, India, Palestine, Nigeria, Peru, Philippines, Portugal, Spain, Finland