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Australian children's independent mobility levels: secondary analyses of cross-sectional data between 1991 and 2012

Stephanie Schoeppe[a*], Paul Tranter[b], Mitch J Duncan[c], Carey Curtis[d], Alison Carver[e] and Karen Malone[f]

[a]*School of Human, Health and Social Sciences, Physical Activity Research Group, Central Queensland University, Building 18, Bruce Highway, Rockhampton, QLD 4702, Australia;* [b]*School of Physical, Environmental and Mathematical Sciences, The University of New South Wales, Australian Defence Force Academy, PO Box 7916 BC, Canberra, ACT 2610, Australia;* [c]*School of Medicine and Public Health, Priority Research Centre in Physical Activity and Nutrition, The University of Newcastle, ATC 315 University Drive, Callaghan, Newcastle, NSW 2308, Australia;* [d]*Department of Planning and Geography, School of Built Environment, Curtin University, GPO Box U1987, Perth, WA 6845, Australia;* [e]*School of Exercise and Nutrition Sciences, Deakin University Australia, 221 Burwood Highway, Burwood, VIC 3125, Australia;* [f]*Centre for Educational Research, University of Western Sydney, Sydney, NSW 2751, Australia*

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This study investigated changes in Australian children's independent mobility levels between1991 and 2012. Data from five cross-sectional studies conducted in 1991, 1993, 2010, 2011 and 2012 were analysed. Parent and child surveys were used to assess parental licences for independent mobility and actual independent mobility behaviour in children aged 8–13 years. Findings show declines in the proportion of young children (≤10 years of age) being allowed to travel home from school alone (1991: 68%, 1993: 50%, 2010: 43%, 2011: 45%, 2012: 31%) and travel on buses alone (1991: 31%, 1993: 15%, 2010: 8%, 2011: 6%, 2012: 9%). Furthermore, the proportion of children travelling independently to school decreased (1991: 61%, 1993: 42%, 2010: 31%, 2011: 32%, 2012: 32%). Significantly fewer girls than boys travelled independently to school at each time point ($p \leq .001$). Overall, the findings suggest that Australian children's independent mobility levels declined between 1991 and 2012.

Keywords: unsupervised travel; active transport; prevalence; trend; young people

Introduction

Child independent mobility describes the freedom of those aged under 18 years to travel to places without adult supervision (Hillman, Adams, and Whitelegg 1990; Whitzman and Mizrachi 2009). For children, independent travel usually involves active modes of travel such as walking and cycling, but also public transport (Carver et al. 2010b). Independent mobility is typically expressed as parental licence (i.e. permission) for unsupervised mobility and actual mobility behaviour. Usually, children's independent mobility licences increase between the ages of 8 and 13 years when parents recognise greater physical and cognitive capabilities in their children as they age (Whitzman and Mizrachi 2009; Carver et al. 2010b). Boys tend to have higher independent mobility levels than girls. This is demonstrated by boys having more licences for travelling to

*Corresponding author. Email: s.schoeppe@cqu.edu.au

places and taking public transport without adult accompaniment (Mackett et al. 2007; Brown et al. 2008; Page et al. 2009; Carver et al. 2010b).

In developed countries such as England and Germany, trend data have shown that children's unsupervised walking and cycling for transport have dramatically declined in the last four decades (Shaw et al. 2013). Reasons for this decline include increased motorised traffic, decreased neighbourhood walkability, parental safety concerns, busy family schedules and longer commute distances to school and leisure-time destinations (Tranter and Whitelegg 1994; Bringolf-Isler et al. 2008; Carver et al. 2010b; McDonald, Deakin, and Aalborg 2010; Ding et al. 2011). Declines in walking and cycling for transport have been accelerated as more parents choose to keep their children 'safe' by driving them to school and other locations, hence increasing the risk for remaining child pedestrians and cyclists. In Australia, several studies (Peddie and Somerville 2006; Van der Ploeg et al. 2008; Garrard 2009) have shown a decline in children's walking and cycling for transport. For example, trend data from New South Wales showed that between 1971 and 2003, the proportion of children who walked to school decreased from 58% to 26%, whilst the proportion being driven increased from 23% to 67% (Van der Ploeg et al. 2008). The decline in Australian children's active travel suggests that their independent mobility has also declined. However, children's active travel is not a sufficient marker for determining independent mobility, as children may walk and cycle to places with adults. More explicit measurement of independent travel is needed to accurately determine Australian children's independent mobility levels. Recent cross-sectional studies assessed children's independent active travel and found that only about a third of children aged 10–13 years commute independently to school by means of walking, cycling or using a scooter or skateboard (Rudner and Malone 2011; Carver et al. 2014; Schoeppe et al. 2014). However, unlike in other developed countries, temporal changes in Australian children's independent mobility levels have not been explored.

To address this research gap, the present study investigates changes in Australian children's independent mobility licences and behaviour between 1991 and 2012, and differences in changes in independent mobility levels by child age and gender.

Methods

Secondary data analyses were employed using data from five Australian cross-sectional studies conducted in 1991, 1993, 2010, 2011 and 2012. The studies were selected based on comparable data available for study populations and measures used to assess child independent mobility licences and behaviour. In all studies, the study populations were Australian primary school children and their parents. Children's age and gender were comparable across the studies; most children were between 8 and 13 years old with a mean age of around 10 years (Table 1). The study samples and measures of independent mobility licences and behaviour used in the secondary analyses are presented below.

Study samples

Canberra 1991

The 1991 Children's Mobility in Canberra study investigated children's independent mobility in the context of traffic danger, transport infrastructures, land-use patterns and parental safety concerns (Tranter and Whitelegg 1994). Convenience samples of 1360 parents and 1273 children aged 8–13 years were used in this analysis. The participants were recruited from 13 primary schools (Years 4–6) in Canberra and the nearby town of Queanbeyan (Tranter 1993). The schools were located in inner, middle and outer suburbs of Canberra (Australian Capital Territory) and

Table 1. Child gender and age across the study samples.

	Canberra 1991	Sydney 1993	Melbourne 2010	Sydney 2011	Rockhampton, Brisbane, Melbourne, Perth 2012
N	1273	476	421	131	283
Girl[a]	55.1	54.8	52.3	46.6	62.1
Mean age (SD)	10.4 (1.0)	10.0 (0.9)	10.4 (1.2)	9.9 (1.0)	10.5 (0.9)
Age in years[a]					
≤8	0.9	2.1	5.2	8.4	0
9	19.2	31.7	21.6	13.7	14.4
10	34.8	32.6	25.9	57.3	37.9
11	33.8	30.3	26.6	19.1	32.6
12	11.0	3.4	19.2	1.5	14.4
≥13	0.4	0	1.4	0	0.7

[a]Presented as percentage.

Queanbeyan (New South Wales) which is functionally part of Canberra. The study was endorsed by the Catholic Education Office and the ACT Ministry for Health, Education and the Arts. Written consent for study participation was obtained from school principals, parents and children.

Sydney 1993

The 1993 Children's Mobility in Sydney study was a replication of the 1991 Canberra study (Tranter 1993). Convenience samples of 298 parents and 476 children aged 8–12 years were included in this analysis. The participants were recruited from four primary schools (Years 4–6) located in the Sutherland area of Sydney, New South Wales (Tranter 1996). The schools in both Canberra and Sydney were all relatively low-density suburbs, despite their city location. The research was approved by the NSW Department of Education. Written consent for study participation was obtained from school principals, parents and children.

Melbourne 2010

The 2010 Children's Independent Mobility Study investigated children's independent mobility licences and behaviour with a particular focus on urban/rural differences in children's independent mobility, associations between mobility licences and children's independent mobility, and potential correlates of mobility licences (Carver, Timperio, and Crawford 2012). Random samples of 341 parents and 421 children aged 8–13 years were included in this analysis. The participants were recruited from nine primary schools (Years 3–6) based in Melbourne, the small town of Gisborne and the rural towns of Korumburra and Kyneton, Victoria. The schools were located in inner city ($n = 2$), urban ($n = 1$), suburban ($n = 1$), small town ($n = 1$) and rural areas ($n = 3$) (Carver, Timperio, and Crawford 2012). Ethical clearance for the study was obtained from the Deakin University Human Research Ethics Committee and the Department of Education and Early Childhood Development, Victoria. Written consent for study participation was received from school principals, parents and children.

Sydney 2011

The 2011 Child Friendly Communities Research and Community Engagement Project investigated children's independent school travel, licences for independent mobility and parental perceptions of neighbourhood safety (Rudner and Malone 2011). Convenience samples of 113 parents and 131

children aged 8–13 years were included in this analysis. They were recruited from three primary schools (Years 4–6) based in the suburbs of South Cronulla in the Sutherland Shire (close to the sites of the 1993 Sydney study); and Bulli, a suburb in the city of Wollongong; and Dapto, a small town at the southernmost edge of the sprawl of Sydney suburbia (Rudner and Malone 2011). Ethical clearance for the study was obtained from the University of Wollongong, and written consent for study participation was provided from school principals, parents and children.

Rockhampton, Melbourne, Brisbane and Perth 2012

The 2012 Children's Activity, Travel, Connectedness and Health (CATCH) and Independent Mobility, Active Travel and Children's Health (iMATCH) projects were interrelated studies to examine the role of policy, social and built environments in influencing children's independent mobility, active travel and related health outcomes (Curtin University 2015). Convenience samples of 301 parents and 305 children aged 8–13 years were included in analyses. They were recruited from nine primary schools (Years 3–7) in Rockhampton, Brisbane, Melbourne and Perth areas. The schools were located in inner urban ($n = 2$), middle suburban ($n = 2$), outer suburban ($n = 2$) and regional areas ($n = 3$) (Schoeppe et al. 2014). Given that city-related built environment factors were not the focus of analyses, it was not needed to disaggregate the CATCH/iMATCH data by city. Ethical clearance for conducting the CATCH/iMATCH projects was obtained from several universities (Central Queensland University, The University of Melbourne, Curtin University and Griffith University) and State Departments of Education and Training in Australia (Queensland, Victoria, Western Australia). Written consent for study participation was obtained from school principals, parents and children.

Measures

Paper-based child and parent surveys with almost identical questions were utilised in the 1991, 1993, 2010, 2011 and 2012 studies (Tranter 1993, 1996; Tranter and Whitelegg 1994; Rudner and Malone 2011; Carver, Timperio, and Crawford 2012; Schoeppe et al. 2014). The child questionnaires were filled out at school; the parent surveys were completed at home and returned to the researchers via mail or a letterbox at school. A detailed description of the measures used in each study is provided in the appendix. In summary, parental licences for child independent mobility were assessed using six items. First, parents reported whether their child is usually allowed to 'come home from school alone', 'travel on buses, trams, trains or other public transport (other than a school bus) alone' and 'cross main suburban roads alone'. Response options were yes and no. Second, parents were asked to report at what age they would allow their child to 'travel home from school alone', 'travel on buses alone' and 'cross main suburban roads alone'. Child age, gender and independent mobility behaviour were measured through the child surveys. Child independent mobility behaviour was assessed using two items. Children reported their 'travel mode to school' and 'accompaniment to school'. Response options for 'travel mode to school' included walking/cycling/taking the scooter, public transport and car. Response categories for 'accompaniment to school' were alone, with other children and with an adult. Children travelling to school alone or with other children were considered independently mobile and those commuting to school with an adult were considered not independently mobile. There are no standardised, validated measures available for assessing child independent mobility licences and behaviour. The survey measures used in each of the five studies included in the analyses were based on the original research questionnaires used in the Hillman, Adams, and Whitelegg (1990) study in England and Germany.

Statistical analyses

Descriptive analyses were used to assess child age, gender and prevalence of independent mobility licences and behaviour in each of the five study samples. Independent mobility licences were investigated for all children included in the samples and by child age. Independent mobility behaviour was examined for all children included in the samples and by child gender. Chi-square tests were used to assess differences in independent mobility behaviour by child gender. The significance level was set at 0.05. Analyses were performed in IBM SPSS Statistics (version 21.0).

Results

Independent mobility licences observed in the 1991, 1993, 2010, 2011 and 2012 studies are presented in Table 2. In Australian children aged 8–13 years, licences for 'travelling home from school', 'travelling on buses' and 'crossing main roads' varied greatly across the studies and

Table 2. Independent mobility licences in Australian children between 1991 and 2012[a].

	Canberra 1991	Sydney 1993	Melbourne 2010	Sydney 2011	Rockhampton, Brisbane, Melbourne, Perth 2012
Allowed to travel home from school alone	30.6	46.3	39.0	38.1	49.4
Age allowed					
≤8	30.2	18.1	9.7	10.6	6.7
9	12.0	10.4	11.7	14.2	7.2
10	25.4	21.4	21.7	20.4	16.7
11	5.2	6.1	13.5	10.6	15.6
12	16.5	19.5	24.0	23.0	14.4
≥13	10.7	24.5	19.4	21.2	39.4
Children aged ≤10 years	*67.6*	*49.9*	*43.1*	*45.2*	*30.6*
Allowed to travel on buses alone	5.6	12.8	11.7	2.7	12.2
Age allowed					
≤8	5.3	9.1	0.3	0.9	0.6
9	4.3	1.3	2.3	0.9	0.6
10	20.9	4.7	5.3	4.4	7.8
11	5.7	3.7	7.0	1.8	4.4
12	34.6	32.9	34.0	28.3	21.7
≥13	29.2	48.3	51.1	63.7	64.9
Children aged ≤10 years	*30.5*	*15.1*	*7.9*	*6.2*	*9.0*
Allowed to cross main roads alone	20.5	20.1	54.5	41.6	55.0
Age allowed					
≤8	20.9	5.4	8.5	6.2	8.9
9	12.6	6.0	16.4	15.9	10.0
10	35.6	11.8	24.9	19.5	16.1
11	5.8	6.7	16.7	11.5	19.4
12	17.9	38.2	22.6	30.1	21.1
≥13	7.2	31.9	10.9	16.8	24.5
Children aged ≤10 years	*69.1*	*23.2*	*49.8*	*41.6*	*35.0*

[a]Presented as percentage.

no temporal change was immediately apparent, except for 'crossing main roads'. Higher proportions of children were allowed to cross main roads alone in 2010, 2011 and 2012 than in 1991 and 1993. However, in-depth analyses of independent mobility licences by child age revealed that lower proportions of young children were granted independent mobility licences in 2010, 2011 and 2012 than in 1991 and 1993. For example, in the 1991 and 1993 studies, 68% and 50% of children aged ≤10 years were allowed to travel home from school alone, whereas in the 2010, 2011 and 2012 studies, these proportion were 43%, 45% and 31%, respectively. Similarly, in the 1991 and 1993 studies, 31% and 15% of ≤10-year-olds were allowed to travel on buses alone, whereas in the 2010, 2011 and 2012 studies, these proportion were 8%, 6% and 9%, respectively.

Levels of independent mobility behaviour observed in the 1991, 1993, 2010, 2011 and 2012 studies are presented in Table 3. Findings suggest that Australian children's independent mobility in the form of independent travel to school declined in the last 20 years. In the 1991 and 1993 studies, the proportions of children travelling independently (alone or with other children) to school were 61% and 42%, respectively. In contrast, in the 2010, 2011 and 2012 studies, these proportions were 31%, 32% and 32%, respectively.

Significant gender differences were found in relation to children's independent travel to school (Table 3). In the 1991, 1993 and 2010 studies, the proportions of children travelling

Table 3. Independent mobility behaviour in Australian children between 1991and 2012[a].

	Canberra 1991	Sydney 1993	Melbourne 2010	Sydney 2011	Rockhampton, Brisbane, Melbourne, Perth 2012
Travel mode to school					
All					
Walk, cycle, scooter	51.5	38.4	42.0	27.5	35.4
Public transport	8.7	5.7	6.9	13.7	5.7
Car	39.8	55.9	51.1	58.8	58.9
Boys					
Walk, cycle, scooter	58.4	41.9	46.3	35.7	41.5
Public transport	6.5	5.5	5.4	18.6	5.7
Car	35.1	52.6	48.3	45.7	52.8
Girls					
Walk, cycle, scooter	45.8	35.6	38.2	18.0	31.1
Public transport	10.5	5.8	8.2	8.2	5.6
Car	43.7	58.6	53.6	73.8	63.3
p-Value	<.001	.373	.188	.188	.194
Accompaniment to school					
All					
Alone	24.3	17.4	14.0	10.7	19.4
With other children	36.4	24.2	16.9	21.4	12.4
With adult	39.3	58.4	69.1	67.9	68.2
Boys					
Alone	31.8	25.6	20.4	17.1	23.6
With other children	33.2	23.7	17.4	28.6	10.4
With adult	35.0	50.7	62.2	54.3	66.0
Girls					
Alone	18.2	10.7	8.2	3.3	16.9
With other children	38.9	24.5	16.3	13.1	13.6
With adult	42.9	64.8	75.5	83.6	69.5
p-Value	<.001	<.001	.001	.001	.339

[a]Presented as percentage.

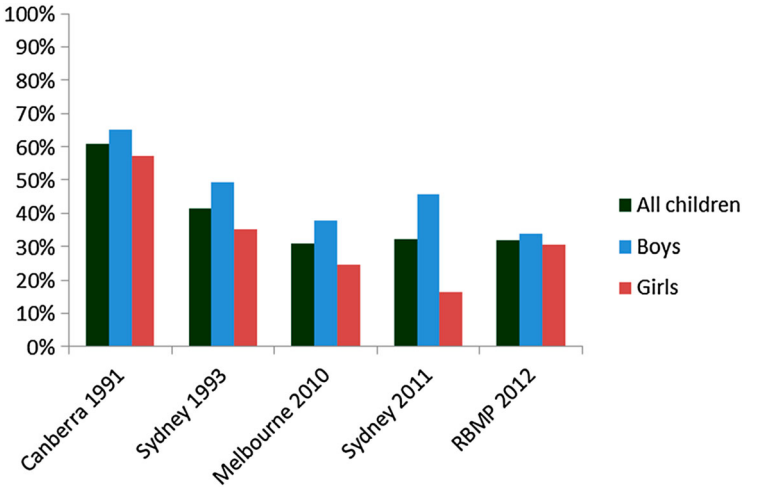

Figure 1. Children's independent travel to school between 1991 and 2012. Note: RBMP, Rockkampton, Brisbane, Melbourne and Perth.

alone to school were significantly lower in girls than in boys (18% vs. 32% in 1991; 11% vs. 26% in 1993; 8% vs. 20% in 2010, 3% vs. 17% in 2011; $p \leq .001$). In the 2012 study, the proportion of children travelling alone to school was also lower in girls than in boys; however, the gender difference was not statistically significant (17% vs. 24%; $p = .339$).

The decline in children's independent travel to school observed between 1991 and 2012 is illustrated in Figure 1. Evidently, fewer girls than boys travelled independently to school at each study time point. Australian children's active travel to school has also declined between 1991 and 2012; however, the decline is not consistent across all studies (Table 3). The proportions of children who commuted actively to school were 52% and 38% in the 1991 and 1993 studies, compared to 28% and 35% in the 2011 and 2012 studies. In contrast, in the 2010 study, the proportion of children commuting actively to school was 42% which is lower than in the 1991 study, but higher than in the 1993 study.

Discussion

This study investigated changes in Australian children's independent mobility levels between 1991 and 2012, including differences by child age and gender. Parental licences for independent mobility and actual independent mobility behaviour were assessed using secondary data from five cross-sectional studies conducted in 1991, 1993, 2010, 2011 and 2012. Overall, findings suggest that Australian children's independent mobility levels have declined in the last 20 years. Fewer young children ($\leq$ 10 years of age) were allowed to travel home from school alone and travel on buses alone in 2010, 2011and 2012 than in 1991 and 1993. Moreover, fewer children travelled to school alone or with other children in 2010, 2011 and 2012 than in 1991 and 1993. Children's independent travel to school differed by gender; significantly fewer girls than boys travelled independently to school in 1991, 1993, 2010, 2011 and 2012. Australian children's active travel to school has also declined between 1991 and 2012; however, the decline is not consistent across all studies.

Australian children's independent mobility licences declined among younger children. Whilst in 1991 and 1993 68% and 50% of children aged $\leq$ 10 years were allowed to travel home from school alone, these proportions were 43%, 45% and 31% in 2010, 2011 and 2012, respectively.

Similarly, in 1991 and 1993, 31% and 15% of ≤10-year-olds were allowed to travel on buses alone, whereas in 2010, 2011 and 2012, these proportions were only 8%, 6% and 9%, respectively. Our findings are consistent with trend data on independent mobility licences reported for primary school children in England and Germany (Shaw et al. 2013). For example, in English children aged 7–11 years, independent mobility licences for travelling home from school alone decreased from 35% in 1990 to 25% in 2010 (Shaw et al. 2013). Their licences for travelling on buses alone also declined from 7% in 1990 to 5% in 2010 (Shaw et al. 2013). Similarly, in German children aged 7–11 years, independent mobility licences for travelling home from school alone dropped from 93% in 1990 to 76% in 2010; and their licences for travelling on buses alone decreased from 61% in 1990 to 25% in 2010 (Shaw et al. 2013).

An unexpected finding in our study was that more children were granted licences allowing them to cross main roads alone in 2010, 2011 and 2012 (55%, 42% and 55%) than in 1991 and 1993 (21% and 20%). A similar increase was observed in English primary school children: 36% of children aged 7–11 years were allowed to cross main roads in 2010 compared to 22% in 1990 (Shaw et al. 2013). In contrast, a decrease was observed in German primary school children: 66% of children aged 7–11 years were allowed to cross main roads in 2010 compared to 80% in 1990 (Shaw et al. 2013). These unexpected and inconsistent study findings are difficult to interpret. One possible explanation may be that the term 'main road' was interpreted differently by parents across the studies. Another possible explanation may be that road safety has improved over the years, making it safer for children to cross main roads. Moreover, it must be remembered that the parental licence does not necessary equate with children's actual independent travel undertaken since many children were being driven to school despite the parental licence.

Australian children's actual independent mobility behaviour has also declined. The proportion of children travelling independently (alone or with other children) to school decreased from 61% in 1991 and 42% in 1993 to 31% in 2010, 32% in 2011 and 32% in 2012. Our findings are consistent with trend data on children's independent travel to school in other developed countries (Fyhri et al. 2011; Shaw et al. 2013). In England, 36% of primary school children aged 7–11 years travelled independently to school in 1990, whereas in 2010, this proportion had dropped to 23% (Shaw et al. 2013). Similar data from Great Britain showed that 22% of children aged 7–10 years travelled independently to school in 2002 compared to 14% in 2008 (Fyhri et al. 2011). In Germany, children's independent travel to school also declined from over 60% in 1990 to under 20% in 2010; however, the decline was mainly observed in relation to the proportion of children travelling to school with other children rather than alone (Shaw et al. 2013). In the overall Australian travel context, the decline in Australian children's independent travel to school is not surprising, given that in the last decades both active and public transport have generally decreased in Australian households whilst commuting by car has significantly increased (ABS 2011).

A gender difference in children's independent travel to school was evident in all studies included in analyses. Significantly lower proportions of girls travelled alone to school than boys (18% vs. 32% in 1991; 11% vs. 26% in 1993; 8% vs. 20% in 2010, 3% vs. 17% in 2011; 17% vs. 24% in 2012). This gender-specific finding is consistent with results from previous studies (Mackett et al. 2007; Page et al. 2009; Brown et al. 2008; Carver et al. 2010b) showing that independent mobility levels are lower in girls than in boys. However, whilst this gender gap narrowed between 1990 and 2010 in English primary school children (Shaw et al. 2013), our findings indicate that it remained between 1991 and 2010 in Australian primary school children, and even widened in 2011. In 2012, the gender gap was still present though much narrower than in previous years. Lower independent mobility levels in girls are concerning from a health perspective because they contribute to significantly lower physical activity levels observed in girls compared to boys (Van Mechelen and Kemper 1995). In addition, girls' physical activity levels

decline during adolescence (Van Mechelen 2000) when they are less inclined to participate in competitive sports than boys (Brooks and Magnusson 2007).

Independent mobility provides children many opportunities to accumulate physical activity that is important for a healthy development (Loprinzi et al. 2012; Schoeppe et al. 2013). The decline in children's independent mobility observed in this study demonstrates the need for public health interventions to promote independent travel in children. Interventions will require support from parents, and expertise from urban planners and transport experts to create built and social environments conducive to children's independent walking, cycling and outdoor play. Intervention measures may include active travel policies in schools and government funding for active transport infrastructures (e.g. footpaths and cycling trails), traffic calming measures, zoning, parks and playgrounds in the community (Sallis et al. 2006; Panter, Jones, and van Sluijs 2008). In addition, intervention measures may involve parental education on the health and social benefits of children's independent mobility, and the promotion of neighbour relations and social networks that may help assure parents that the neighbourhood is a safe place for children's independent travel and outdoor play (Pabayo et al. 2011).

Strengths of this research include the availability of child independent mobility data from five different time points within two decades, and the use of comparable independent mobility measures in child populations with homogenous age and gender. Other strengths of this research include the distinct measurement of independent mobility licences versus actual behaviour for assessing independent mobility levels. This is important, as children may be allowed to travel independently to places but end up being driven because it is more convenient and compatible with family schedules. Moreover, this research included children residing in major Australian cities and small towns capturing diverse levels of urbanisation (inner urban, middle suburban, outer suburban, regional and rural areas); this may support the generalisability of findings. Previous research has shown that children living in rural areas have lower independent mobility levels than children residing in urban areas, possibly because travel distances to destinations such as school are longer in rural than in urban areas (Carver, Timperio, and Crawford 2012). This research also has several limitations. First, the use of cross-sectional data preclude inference on causal mechanisms for the observed changes in child independent mobility. Built and social environmental factors such as travel distances to school, availability of walking/cycling trails and public transport infrastructure, street connectivity, traffic volume, traffic calming measures and perceptions of safety were not considered in analyses (as comparable data were not available from all studies). However, these environmental factors will likely have influenced temporal changes in children's independent mobility levels (Tranter and Whitelegg 1994; Bringolf-Isler et al. 2008; Carver et al. 2010a; Carver, Timperio, and Crawford 2013). Therefore, the findings from our study are only indicative of a decrease in Australian children's independent mobility levels between 1991 and 2012. Second, there is the possibility of selection bias due to differences in response rates across the five cross-sectional studies. Third, the use of parental proxy and child self-report measures might have introduced recall bias. However, child travel to school and parental licences for travel home from school, by bus and across main roads seem behaviours that are easily remembered, hence the possibility of recall bias was likely low. This was the first study to explicitly investigate temporal changes in Australian children's independent mobility levels. Future research in this area should use longitudinal data collected at regular time intervals to detect trends in children's independent mobility levels. Moreover, future studies should account for important environmental determinants of child independent mobility, such as distances to travel destinations, neighbourhood walkability and road safety. To limit recall bias, future studies could use a combination of self-report measures (child surveys, travel diaries) and objective measures (global positioning systems, wearable cameras) to assess child independent mobility.

In conclusion, Australian children's independent mobility licences declined among younger children. Fewer children aged ≤10 years were allowed to travel home from school alone and travel on buses alone in 2010, 2011 and 2012 than in 1991 and 1993. Australian children's actual independent mobility behaviour also declined. Fewer children travelled independently to school in 2010, 2011 and 2012 than in 1991 and 1993. Children's independent travel to school differed by gender; significantly fewer girls than boys travelled alone to school in 1991, 1993, 2010, 2011 and 2012. Overall, these findings suggest that Australian children's independent mobility levels declined between 1991 and 2012.

Disclosure statement

No potential conflict of interest was reported by the authors.

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