

Pre-schoolers' transport imaginaries: Moving towards sustainable futures?

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ABSTRACT

Being on the move is part of children's everyday life in cities. However, little is known about how young children experience transport systems or their aspirations for mobility in cities. In this paper, we explore pre-schoolers' experiences with the mobile world and show their affinity with different transport modes and hopes for their current transport system. We draw on a participatory research project that engaged children in class discussions, a tile-based city building exercise and neighbourhood walks. Findings suggest that although the voices of children aged 3–5 years are absent in mobility or transport debates, children are fascinated by mobility and transport related activities and services. Pre-schoolers from Dunedin, New Zealand, though recognising a predominantly motorised transport system, also showed creative or alternative modes making their way into their own transport systems. In this paper we argue that children should be introduced to and experience alternative modes of transport in the early years to allow for more imaginary transport geographies creating greater support for more sustainable, liveable urban environments for all ages.

1. Introduction

Primary school children and young people's voices are making increasing noise in transport related studies. Many studies to date have elicited children and young people's experiences of being driven, using buses, walking or cycling in urban environments - with a focus on their journey to school being dominant (Wilson et al., 2018; Mitchell et al., 2007; Fusco et al., 2012; Jones et al., 2012). However, little is known of how very young children, aged 3–5 years, experience being mobile in the modern transport environment (Templeton, 2018; Smith and Kotsanas, 2014) or what their aspirations and hopes for mobility in cities are. This paper, therefore, aims to bring young children's voices to the fore, revealing pre-schoolers' understanding of their mobile worlds, their affinity for different transport modes and indications of their hopes for changes to their current transport system. We aim to extend the current understanding of doing/being/thinking transport systems. We assert that young children are already socialised in the predominantly motorised transport system they encounter on a daily basis and thus we argue that young children should be introduced to and experiment with alternative modes of transport in the early years to allow for more imaginary transport geographies. Their altered imaginary geographies may address the need for more sustainable, liveable urban environments for all ages. Values and norms internalised as pre-schoolers may shape future societies in a positive way.

2. Transport and children's mobile urban worlds

In our contemporary, car dominated urban environments, children's engagement with their environments and their mobilities are spatially fragmented. Many children in auto-dependent societies spend most of their time in 'islands' such as houses, schools, after-school-care and leisure facilities scattered over the entire urban area and linked by vehicle transport routes (Zeiher, 2003; Depeau et al., 2017). Parents chaperone their children between these islands, which is especially well-documented for the journey to and from school (Panter et al., 2010; McMillan, 2007; Buliung et al., 2017). Many of these studies have a health focus and address the energy expenditure of different transport modes (Faulkner et al., 2009; Buttazzoni et al., 2019; Waygood et al., 2015). In particular, studies look at distances to and destinations for as well as preferred choices and constraints shaped by environmental and social determinants for engaging in active transport modes (Mackett and Paskins, 2008; Villanueva et al., 2013; Wilson et al., 2018). These and many other studies point towards the influence of land-use mix, traffic volume, distance, speed, street connectivity and parental fears of 'stranger-danger' on families' participation in active or motorised transport to school (Foster et al., 2014; Mitra and Buliung, 2012; Helbich et al., 2016). Similarly, whether children walk, cycle, take public transport or are driven to school, afternoon or leisure activities depends on perceptions of the local neighbourhood in terms of personal and road safety, but also on parental aspirations to participate in local

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or nonlocal extra-curricular activities (Holloway and Pimlott-Wilson, 2018; Hjorthol and Fyhri, 2009; Loebach and Gilliland, 2016), children's mobility impairments (Ross and Buliung, 2018; Stafford et al., 2019) and seasons (Ergler et al., 2016; Harrison et al., 2017).

These mainly car-oriented practices to reach diverse destinations create their own paradoxes beyond having societal implications, such as fewer child and adult pedestrians being out and about (Laird, 2001; Frank et al., 2006; Evans et al., 2012). The dominant symbolic and practical value of motorised transport for reaching the different destination 'islands' in urban environments is closely related to what Sheller and Urry (2000: 747) called the "new urban subjectivities" constrained by fragmentation and segregation of land use. The automobile provides opportunities to experience a broader range of spaces but it also comes with associations of power, prestige, and wealth (Urry, 2004; Gartman, 2004; Cresswell, 2011; Schwanen, 2016). It dominates the experience of cities and as such the "coming together of private citizens in public space is lost" (Sheller and Urry, 2000: 746). For example, some researchers have discussed children's longing for independent, active transport, while highlighting their limited view and experience of the world resulting from being passive passengers and users of supervised indoor spaces (Riazi and Faulkner, 2018; Malone, 2007; Kearns et al., 2003). However, for children, being a passenger not only impacts on the availability of safe local play or walking affordances, but can also determine the structure of the built environment and its walkability (Holt et al., 2008; Kytä et al., 2018). Often children's 'coming together' on their journey to school or in their neighbourhoods is, for example, denied through car oriented urban design (Ergler, 2020; Villanueva et al., 2013) or reliance on personalised motor transport (Mitchell et al., 2007; Collins and Kearns, 2001; Pooley et al., 2005; Fusco et al., 2012). Moreover, Waygood et al. (2017) showed in their comparative study between Japan, Canada and Sweden that cultural elements - for example attendance of local neighbourhood schools - allow for independent active travel, which also plays a role in fostering social community interactions. In other words, the reduction of child pedestrians due to the increase of parental chauffeuring across cities is an outcome of the role of auto-mobility in modern societies and reduces children's independent mobilities and often their familiarity with social and environmental affordances (Villanueva et al., 2013; Schoeppe et al., 2016; Riazi and Faulkner, 2018; Ergler et al., 2017). Thus, this desire for or curse of the motorised transport is not only debilitating for children in terms of their mobility practices now and in the future, but also impacts on their environmental literacy and how they experience, utilise and see their urban environment and its diverse affordances (Ergler, 2020; Hopkins and Stephenson, 2014; Freeman, 2010; Kytä et al., 2018). Further, as we will show in this paper, car dependency impacts on young children's understandings of, ideas about and attitudes towards their transport system in cities. In this regard, children's travel socialisation plays an important role. Haustein et al. (2009) in their work with young adults reveal that car use habits and mobility behaviour is based on their travel socialisation during childhood and adolescence. However, children's norms, values and attitudes to transport are influenced not only by the attitudes, norms and values of their socialisers (e.g. families, education facilities) (Kopnina, 2011; Eagly and Chaiken, 1993; Borg et al., 2019; Ergler et al., 2013), but also by their own experiences.

3. Mobility experiences of young children in urban environments

While, as we just outlined, there is quite a substantial body of research on especially primary school children, transport and mobilities, little is known about how pre-schoolers experience, use and engage with different modes of travel or their mobile worlds in cities. One reason for this omission is that young children are invariably considered as dependent travellers (Smith and Kotsanas, 2014; Clement and Waitt, 2018; Gustafson and van der Burgt, 2015), although the concept of 'independence' in independent mobility for primary school

children has already been questioned (Mikkelsen and Christensen, 2009). Another reason is that very young children are seen as lacking the competence to effectively articulate their city transport understandings and experiences.

The handful of studies that look at young children's mobilities directly or at the periphery reveal the access barriers and mobility issues in or with young children's roaming spaces. For example, transport hubs or road crossings do not cater for the needs of small feet or parents with prams (Clement and Waitt, 2018; Smith and Kotsanas, 2014). Similarly, Ergler et al. (2015) show 3–5 year olds as longing for safe and secure routes to travel to destinations close to their homes. In their research, the young children suggested including more sidewalks, traffic calming measures or bike lanes in their local environment. Templeton (2018) focused more on how 2–5 year olds' travel experiences shaped their sense of belonging when they took the New York subway accompanied by a caregiver to their early childhood centre or when they engaged with 'friends' and 'strangers' during their walking, car, bus or tram trips. Walking with pre-schoolers can reveal their local wellbeing affordances (Ergler et al. *in press*). Studies, mainly set within the context of mobile pre-schools, demonstrate this through the focus on the embodied and sensory experiences of pre-schoolers revealing, for example, that being on the move can be a playful encounter with their human and non-human surroundings (Gustafson and van der Burgt, 2015; Ekman Ladru and Gustafson, 2018; Eriksson and Sand, 2018; Eriksson and Sand, 2017; Smith and Kotsanas, 2014). All in all, these studies already suggest that young children's experiences of being on the move leaves a remarkable impact on their identity formation, their connection with the human and non-human world and aspirations for improving their travel experiences. However, to our knowledge no study so far has looked into pre-schoolers' connections with their transport system, their relationships with the mobile world and how their current urban experiences shape their understanding of what is possible in a transport system beyond their knowledge about the environmental impact of various modes of transport (Borg et al., 2019). We aimed therefore to investigate young children's socialisation into the transport system of their cities.

4. Starting points: the need for sustainable, liveable cities for expanding children's imaginary horizon

Normalising active transport, independent mobility and use of public transport in which social interaction cannot be avoided can be part of a healthy city childhood (Freeman and Tranter, 2011; Ergler et al., 2017). Cities are recognising the need to redress the balance in favour of people over cars (Gehl, 2013). Here we reference two examples where children experience alternative ways of interacting with their city, interaction we argue is a prerequisite for imagining their city in new ways. However, to be able to see beyond the norm, it is important to expand children's geographical imaginations – their imaginary horizon – as implied by the two following examples. Firstly, in an environment that is pedestrian rather than car dominated (Barcelona's *Superilles*) children experience playful encounters with their urban world. Secondly, where children from an early age are exposed to vehicular transport but in ways that are confirming (Susilo and Waygood, 2012; Christensen et al., 2011; Nansen et al., 2017). In this second example, Japanese children learn in a scaffolded way to negotiate the challenges of transport whilst simultaneously developing their own independent mobility and creating a different relationship with their environment (Waygood et al., 2015). As such, we suggest that these different encounters then allow children to expand their visions of and for their environments; it expands their geographical imaginaries and may alter their travel socialisation in later years when applied to countries other than Spain or Japan.

4.1. The Barcelona Superilles

The problem the *Superilles* were designed to address are neatly summed up as follows:

Barcelona today has a density of 7000 vehicles per square kilometre—by comparison with 3000 in Madrid, 1500 in Paris, and 1200 in London—which has dire effects on spatial justice and health. More than 60% of public space is given over to cars, even though they are only used for 20% of movements around the city, and the average occupation per vehicle is just 1.2 people. Every year, more than 700 people die prematurely because of air pollution, which is well above the limits set by the WHO (Bravo, 2018).

Since the initiation of the superblocks or *Superilles*, streets have prioritised pedestrianisation (car use has reduced by 75%), with increased incorporation of social features such as seating, playgrounds, picnic areas, sports facilities and markets. The changes mean young children can experience the street as a playful social space, enhance their own independent mobility and socialise more easily with people outside their immediate friends and family.

4.2. Japan's approach to independent mobility

Although pedestrianisation and reduction of car dominance is always welcomed, children do have to learn to negotiate roads and associated traffic hazards. Removal of children from the streets to ensure their safety, while understandable, is not necessarily in children's best interests long-term (Freeman and Tranter, 2011). Their removal unfortunately reinforces the notion that streets are car spaces and drivers internalise their dominant position. In many western cities, such as in Dunedin in which this study took place, young children would not normally be seen using streets independent of adults. However, Japan has adopted a rather different approach (Hoy, 2015; Japan info. 2017, Waygood et al., 2017; Drianda and Kinoshita, 2011) where young children are encouraged to undertake journeys independently as part of their maturation and environmental learning. This process, for example, is fostered through the Japanese version of a walking school bus where since the 1960s older primary school children have led a group of about 10 children to their neighbourhood school (Waygood et al., 2015). However, Japanese children are also encouraged to be independent outside institutionalised settings as has been captured on a much-loved TV programme *Hajimete no Otsukai (First Errand)* where young children (from aged 2 upwards) are clandestinely filmed whilst undertaking their first errand. The children show remarkable competence in negotiating the streets, some take public transport and their growth in confidence is apparent as their journeys proceed. What is also apparent is the societal nurturing of independence and the role of its members in helping and looking out for children (Drianda and Kinoshita, 2011; Susilo and Waygood, 2012; Waygood et al., 2017). To succeed in cities children need to have safer cities, develop their way-finding skills and be able to rely on social support when out.

All children though, not just in Japan, need to learn to negotiate their environments if they are to become fully functioning citizens. A combination of children's mobility capacity building and safer streets is critical in this respect. The children in Fig. 1 are heading in the direction of the underground station on their way home after visiting Vauxhall City Farm in London. If they use the London underground/subway, they internalise the use of public transport as normal and see walking to public transport as ordinary. It is an experience they could not have through going on a chartered bus from school to the farm. En-route they will also have opportunities to observe and possibly interact with other people and activities happening along their way (Waygood et al., 2017; Mitchell et al., 2007; Horton et al., 2014).

Similarly, when singer Ed Sheeran came to Dunedin the city square became a pedestrianised zone with public gatherings including cultural performances enabling children, such as the girls in Fig. 2, to experience the central square as a culturally vibrant, safe space rather than as

the traffic island it normally is. Dutch children's current attitudes and behaviour to cars have been demonstrated to influence their future car ownership aspirations (Kopina, 2011; Kopina and Williams, 2012).

Without positive and diverse mobility experiences children can find it hard to conceptualise different, more supportive, transport environments. In other words, these experiences create diverse transport imaginaries. In our study, we were interested to see how transportation would be reflected in the experiences of using cities and imagining a city from scratch in our young participants.

5. Study location

The study took place in Dunedin, New Zealand, a reasonably compact city, located in the South Island of New Zealand that has about 120,000 citizens. The city has an area of 3314.8 km² and city-proper of 255 km². City dwellers are dominantly of Pakeha/NZ European origin, other populations include Maori, Asians including Chinese, Pacific Islanders and recent immigrants and refugees. Most of these demographics were reflected in the 27 study participants aged 3–5 years. The sea in the east and hills in the west of the city define the city's geographical area. The inner city, which is surrounded by higher and lower socio-economic suburbs, is thriving and currently being refurbished and rejuvenated. The vibrant city centre acts as a bus hub for all suburban buses. Smaller shopping areas often form the hearts of the suburbs, which are dominated by free standing houses. There are no out of town or peripheral shopping malls, shops are in the city centre or in suburban local centres. Within the city there is a very limited highway/motorway network and most city roads have footpaths/sidewalks. The majority of suburbs have access to play areas such as playgrounds, sport fields, parks and green spaces within walking distance and educational facilities and other health and basic services are a short walk, bus or car ride away.

Car ownership in Dunedin is high with 40.5% of households owning one car, 48% two or more with only 11% approx. not having access to a car. Therefore, the major mode of transport in the city is by car with 62% of people either driving their own motorised vehicle to work or being a passenger in a car, truck or van, but some people (1%) cycle, walk or jog (7%) and some (5%) use the bus network to get to work, although it is generally perceived as infrequent and unaffordable (Dunedin City Council, n.d). Electric bikes, which can cope with the steep hills, are becoming increasingly popular in the city, some have children's carts attached. The walkscore for Dunedin's suburbs varies between 98 for the central city to 4 for the outer suburbs. Walkability and access are affected by the very steep topography in parts of the city. One of the city's tourist attractions was – (until it lost its' title in 2019 to a street in Wales) the world's steepest street. The Dunedin City Council is committed to move towards introducing a more sustainable transport system by supporting and encouraging alternative modes of transport. The government transport agency is currently helping create a network of cycle ways and improved pedestrian connections and is increasing investment in the public transport system (Dunedin City Council, 2019; Otago Regional Council, 2018).

6. Research design

The data presented is derived from the Dunedin pre-schooler city mapping project (Ergler et al., 2015; Freeman et al., 2017), which has been approved by the Human Ethics Committee at the University of Otago (15/115). We worked with 27 children aged 3–5 years from three Dunedin early childhood centres (see Table 1). The participating centres cater for a range of different social classes and backgrounds and are located in low, medium and high deprivation areas. The 11 girls and 16 boys who participated in the study reflected the general ethnic and socio-economic mix of the city. All participants were able bodied and dominantly chauffeured to destinations representing the car-dominated travel habits of Dunedin. The majority of children from the medium and



Fig. 1. Young children heading home after a school visit to Vauxhall City farm, whilst also learning to negotiate their neighbourhood, traffic and possibly public transport.

high socio-economic areas also have visited places outside Dunedin by plane and some rode trams, subways, trains, bicycles in the places they visited. A minority of participants cycled or took the public bus to get to destinations within Dunedin from all three centres.

To gain insights in pre-schoolers' urban experiences, we followed a right-based study design (Bessell, 2017). Our approach included not only gaining consent for children's participation from parents and centres, but we ensured that children consented themselves both verbally and through their body language to the three different

methods we employed, not only before the data collection commenced, but throughout the entire data collection process. The three methods used in this project included first the invitation to pre-schoolers to participate in a class discussion about their general city experiences, which also covered activities they enjoy doing on weekdays and weekends and 'things' they would like to see changed in their city. The second method comprised the creation of their 'ideal' city using pre-made tiles (Freeman et al., 2017). Children were asked to build individual cities (one pair coproduced a city) on large carpet squares



Fig. 2. Pedestrianisation of the city square during the visit to the city of singer Ed Sheeren, meant the children could experience the square as a cultural performance and safe place rather than as is usual as a traffic island.



Fig. 3. Example of building a city and tiles available for children to choose from.

using common city features such as houses, roads, cars, parks and playgrounds (see Fig. 3). To ensure we did not pre-determine their cities, children had to ask for tiles and when a feature was unavailable they could draw it on a blank tile. While many children built their cities based on their experiences growing up in Dunedin, and therefore included many city features, they also added additional aspects that hinted at their visions for cities.

In addition to the two methods taking place in the early childhood centres, 10 children were given parental permission and themselves agreed to take us on a neighbourhood walk and show us their favourite and less loved places and activities in their local environment. While parents were invited to accompany their children, we encouraged the pre-schoolers to lead the walk and the discussions en-route. To capture the walks, which lasted between 20 min to an hour and half, children were invited to take pictures or asked us to take photos (using an iPad) of social and environmental affordances (Kyttä, 2004; Heft, 1988; Ergler, 2020), people and locations that were meaningful for them (Ergler et al. in press). All discussions were digitally recorded and then transcribed. To analyse the verbatim and visual data, we looked through the initial transcripts, photos and videos and noted down interesting topics and themes. In a second step, we coded photos, video stills and transcripts thematically (Braun and Clarke, 2006; Ergler et al.

in press). We further analysed children's cities in two ways. We developed a scoring system that showed that the children's maps were neither simplistic nor random (Freeman et al., 2017). Children built their cities with a purpose and links in mind for the different city features, such as transport, where they, for example, placed roads, traffic lights and cars together. Then we further conducted simple frequency counts and engaged in descriptive statistics.

7. Fascination with the mobile world or replicating a traditional auto-dominant city?

The three to five year olds exhibited a deep passion for and fascination with motorised transport in their cities by replicating and re-gurgitating the system of automobility (Urry, 2004). Our participants showed in their cities, during the walks and the mat discussions that they had embodied the centrality of the motorised transport system they encountered in Dunedin on a daily basis. They bought into and rarely deviated from, normalised, auto-dominant practices of the contemporary transport system in Dunedin. In the following sections we go into more detail regarding the role automobility plays in how children experienced and viewed mobility in Dunedin and built their cities.

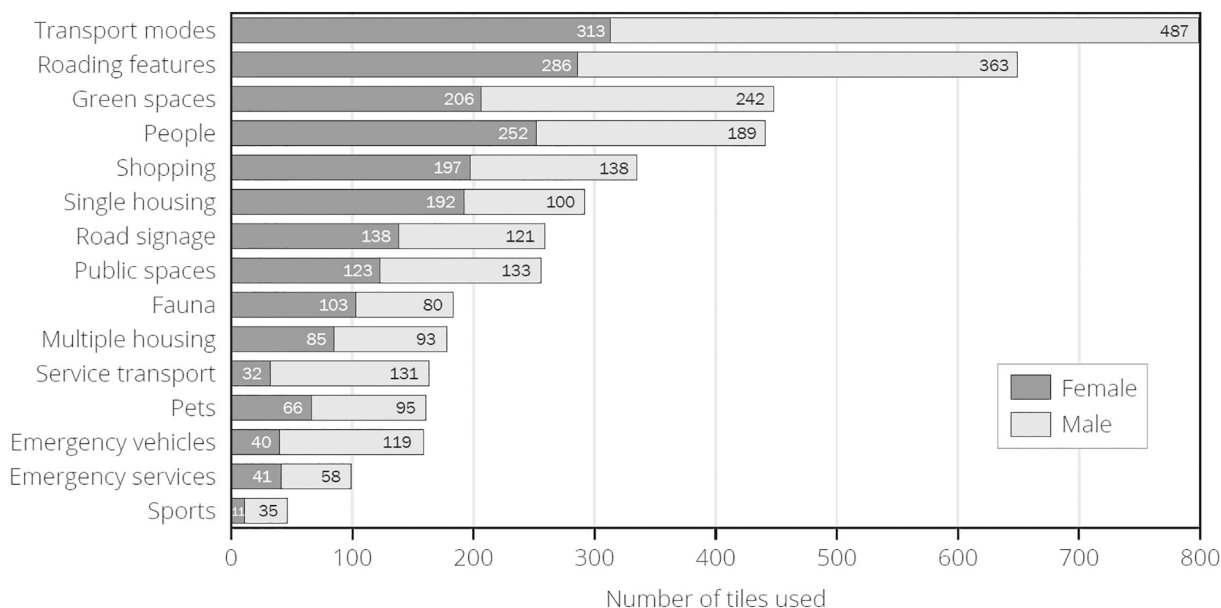


Fig. 4. Frequency counts of single tiles used by all children.

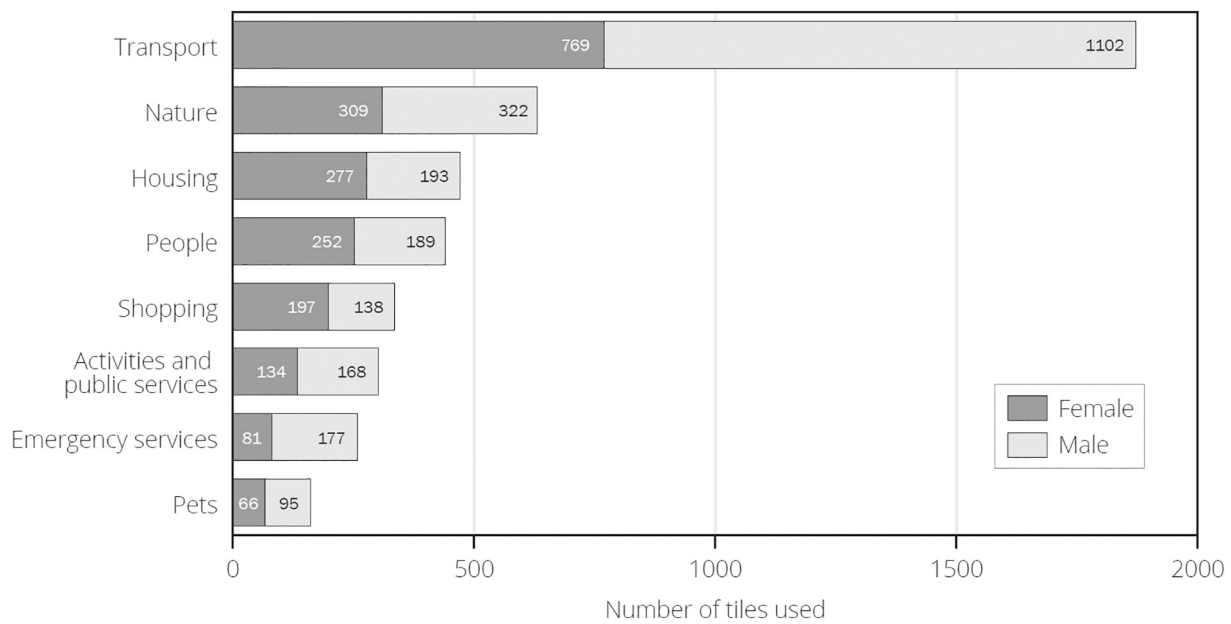


Fig. 5. Frequency counts of tiles classed into groups.

7.1. Transport dominates young children's cities

Transport was the key city activity recognised by children, which was determined by counting the total number of tiles children placed on their cities and categorizing these tiles into different feature classes. The children clearly selected motorised transports as their primary transport mode. In rank order by general feature classes children used 1871 transport related tiles; 800 Transport modes (e.g. bus, car, bicycle, plane), 649 road features (e.g. straight road, curved road, cycle way), 259 road signage (e.g. stop sign, traffic light), 163 service transport (e.g. petrol station, train station, airport) (see Figs. 4 and 5); next was nature at 631 tiles, housing at 470 tiles and people at 441 tiles. Transport has almost three times as many selections as the next group,

nature related items and activities. No significant differences could be observed for male and female participants selecting transport modes and road features. These categories have the highest counts for both girls and boys. Girls selected 313 transport mode tiles and 286 road feature tiles, whereas the boys used 487 and 363 tiles for the same categories followed by nature (girls: 309 tiles, boys: 322 tiles), housing (girls: 277 tiles, boys: 193 tiles) and people (girls: 252 tiles, boys: 189 tiles). The only tile feature that boys used considerably more of was emergency services (girls: 81 tiles, boys: 177 tiles). These feature classes show not only that children are able to recognise the key elements of a functioning city, such as transport, nature, people, housing and services (Freeman et al., 2017), but also that transport and mobility play a leading role in young children's cities with transport modes (e.g.



Fig. 6. An example of a heavily auto-dominated city from the outset of the city building activity. This figure also illustrates the consideration many children had for traffic calming mechanism, e.g. stop signs and traffic lights.



Fig. 7. The city illustrates a reliance on mechanised vehicles, however, there are now trains and planes as alternative transport methods. The location of housing adjacent to the transport nodes indicates the necessity of roads to connect them.

cars, trucks, bicycles, planes) leading their selection choice (see Figs. 4, 5 and 6).

The participants often picked a transport related feature first or early on during the city creation process. When they were building their cities, 18 (8 girls, 10 boys) of the 27 children selected a transport feature such as roads, cars, bikes or traffic lights as the first item they put

on their city. Some 15 (5 girls, 10 boys) selected a transport feature as their second tile and 17 (6 girls, 11 boys) used a transport item as their third choice, whereas 13 (5 girls, 8 boys) and 12 (3 girls, 9 boys) children selected a transport feature as their fourth and fifth tile respectively. So, at least half of the children and at times even more selected transport related features very early on in building their cities



Fig. 8. A common trend within children's cities. Clear road networks with both car types present and buses. Children often placed these directly onto their roads. People are not on the roadways.

irrespective of their gender. Transport type tiles were often selected alongside other city feature tiles. Only one boy picked transport related tiles for all his first five placement types, two children (1 girl, 1 boy) for their first four choices and five participants (2 girls, 3 boys) for their first three choices. Fig. 6 illustrates a city heavily dominated by vehicles from the outset of the city building activity. This dominance remains throughout the cities children created, with further transport modes introduced and utilised to connect people to houses and various locations as for example illustrated in Fig. 7. From analysing these findings, we interpret this observation to mean that motorised transport is in children's eyes the normal way to get people and goods from A to B in their cities; but transport also enables people to connect to places constituting the 'good life' or 'livingness' in urban environments. Motorised transport frames the backdrop to mobile lives (Sheller and Urry, 2000; Freeman and Quigg, 2009; Lin, 2018).

7.2. Embodying the dominance of motorised transport: norms, fun and safety

Young children dominantly embodied the current ubiquity and necessity of individual, motorised transport in cities. For our participants, cities are comprised of 'people, cars and houses' - as one child in the mat-based discussion simply put it. Cars are an essential feature of a city's picture and children frequently explained that they need to build roads and place cars in their cities as you get around in cities "by cars" or they justified the placing of "cars" in their cities, "because people drive". Others simply said, cities need "roads...and cars, because they drive on the roads". Cars are essential for cities "so that the city is full", and "just need them [cars]". One boy, Markes, for example, told us that he wants to place all cars available in his city "because everybody here has cars". Fig. 8 graphically represents the dominance many children placed on cars and other road-based transport methods. In this city cars are adjacent to houses, with people noticeably absent from roadside spaces. Rather, roads are filled with cars, while people are near houses or in undesignated periphery spaces.

Cars are part of and play an important role in young children's lives for getting them and other family members to and from their kindergarten, shops, or attending extra-curricular activities. Therefore, it is not surprising that cars featured so dominantly in their cities as being the norm in a urban transport system (Urry, 2004; Freeman and Tranter, 2011). However, when we dug a bit deeper into their reasoning, children started to address more explicitly the normalised way of the auto-dominant city and car ownership. Mabel, for example, said that she 'needs some cars...[be]cause Dads have to have cars' and Andrew demanded 'lots of cars...[be]cause there are lots of houses and every house needs a car'. Moreover, the young children were also aware that motorised transport can ease the travel between destinations for different reasons. Some children, like Ethan, highlighted that cars can traverse long distances:

Researcher: Why do we need more cars?

Ethan: Because it is a long way, we can't walk though...I need more cars!

Similarly, Ayla explained that people travel in cars "[be]cause they cannot walk...it is too far sometimes" for utilising a desired affordance in a park, at the beach or a playground. Related to the ease of traveling long distances by car, automobiles are also convenient for overcoming topographical issues as Andrew told us: cars "can go up and down" hills.

But you can also transport "lots of things" in the car as Jovan revealed and big cars allow for the chauffeuring of children, as Ayla highlighted "[b]ecause some people have many children". Similarly, another child noted that cars were needed, perhaps over bikes, although he used bikes for "fun", "[be]cause everyone can fit in it [the car]". Moreover, children emphasised the need for trucks and service vehicles to keep the city running as they "see them on the road".

Children asked, for example, for "workmen trucks" or trucks "for the people". But trucks also "carry big stuffs, like ships" or "bring cars", while fire trucks are "needed for fire" and the ambulances are there "when somebody is sick" or "has a broken leg". Nick simply summarised the role of emergency vehicles in cities as follows: "Fire truck is important for fire and police cars is important for catching bad people and ambulance for dead people". Clearly, children are aware of the different service vehicles and the role these trucks play for the functioning of a city.

The young participants not only placed importance on motorised transport when they built their cities, but they also, during the mat discussions, revealed the current importance of vehicular transport for getting people to different destinations.

Children talking over each other: Car, Airplane, helicopter

Researcher: Who travelled with an airplane?

Children talking over each other: Went to Australia, Christchurch.

Researcher: How else do you travel around the city?

Nick: On the taxi.

Harry: By car.

Motorised transport makes people mobile in their cities, but also connects them with other cities within New Zealand and the rest of the world or as one child put it "to fly to the world". Planes and airports in particular carried the meaning of connecting their small country in the Southern Part of The Pacific Ocean to the rest of the world as the following excerpts suggest.

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Children connected going on holidays, seeing family members and the freedom to travel to a place you are unfamiliar with and want to explore and utilise its affordances. Planes carried the exoticness of the far world and were frequently observable objects in the sky of Dunedin.

Researcher: Why do we need some planes?

Ethan: To fly somewhere far...[people] can go to any country where they want to go.

Researcher: What do we need airplanes for?

Raphael: To fly to Australia.

Researcher: Ok and where do people go on airplanes?

Markes: Where their families are.

Researcher: Where do people go on planes?

Jack: "To Auckland and stuff."

The young children shared with us not only the need for cars in urban environments to get around in their cities, but they also highlighted the importance of planes to connect with the wider world. Moreover, they also alerted us to their joy of watching motorised traffic, in particular cars, trucks and trains. Observing or looking at motor vehicles was an enjoyable activity for some of the participants.

Two boys in particular, revealed their fascination with cars, trucks or diggers during the neighbourhood walk. Fig. 9 indicates that one of the boys took us along a busy city highway and across a bridge to observe the cars, buses, trucks and diggers.

Timothy: Usually go across the bridge. We will find the diggers.

Researcher: What do you like about diggers?

Timothy: They make holes.

Researcher: What do you like when you walk?

Timothy: See the fire trucks.



Fig. 9. Timothy's neighbourhood walk. The map includes the bridge over the motorway where he enjoys observing vehicles.



Fig. 10. Progression of a city. The road layout was the initial tile choice, with a clear pattern around the edge of the 'city'. Houses and shops were then placed alongside these road networks. The final component of city is green space in the centre of the city. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Researcher: Do you like trucks?

Timothy: Loading ones...we are getting near to bridge!

Timothy, as his grandmother revealed, is able to spend hours just sitting down on a bench or standing on the bridge and looking at vehicles passing or observing the construction site that changed the access to the highway when the neighbourhood walk was conducted. Timothy was fascinated with big trucks coming and going, diggers excavating the road and other service cars coming in and dropping materials and people. The family even bring drinks and snacks to be able to stay for as long as Timothy wants and observe the happening. Timothy seems fascinated by technical things and explained to us that if we want to watch cruise and cargo ships we need to drive to Port Chalmers. He also debated with us whether the steam train mainly running with tourists one or two times a day in the high season will be on schedule. During this brief encounter, he also made sure we knew where the trains are housed when not on the move. In contrast, Julia paid more attention to the aesthetics of motorised transport and alerted us to the fun of looking at different coloured cars while walking past them during our

neighbourhood stroll.

Researcher: What do you like?

Julia: I like purple, green, red cars...I like blue ones as well ... and I like golden cars! [Julia pointed to different coloured cars, while walking past them].

These experiences shape children's attitudes about motorised transport and inform their values.

However, children not only revealed the embodied and normalised practices of vehicle transport in urban environments and the fun some associated with it, but they also exposed how deeply safety issues are entrenched in their urban mobility experiences. Children grabbed our hands when we came to cross a road during the walks or they were reminded by parents to stop at the edge of the sidewalk and wait for us before walking across. Being cautious of motorised transport has been inculcated in children from an early age, which then also translated into their own model cities as the following excerpts indicate.

Andrew: Here is the traffic light.
 Researcher: Need more?
 Andrew: Yes. Sometime I see them when it is green men you can cross the road but when red men flash again it means you finish crossing close. Do you have crossing?
 Researcher: I have these crossing [zebra crossing].
 Andrew: I have seen some of these....
 Researcher: You can draw on them the green men.
 Andrew: Yes this green man has legs and when it is there you can cross.
 Researcher: Anything else you want from these boxes?
 Julia: Stop signs.
 Researcher: Why do we need stop signs?
 Julia: Because people stop when they drive...We need to put them in front of the car. And in front of the ice cream shop.
 Researcher: Why do we need traffic lights?
 Ayla: So that people can go and stop. When people see this people crossing and car going.
 Researcher: Why is that?
 Ayla: Because people might watch.
 Researcher: Why do we need footpaths [sidewalks]?
 Erin: For walk because of the cars.
 Jovan: Footpaths [sidewalks].
 Researcher: Why do we need footpaths [sidewalks]?
 Jovan: So that people can walk.
 But children were also coconscious of the dangers within motorised transportation.
 Researcher: Why do we need traffic lights?
 Jack: To stop the cars.
 Researcher: What will happen if we don't have traffic lights?
 Jack: They just go and crash. They crash into cars.

These excerpts show that young children are not only wary of motorised transport, but learn from an early age that pedestrians are secondary users of most spaces and need to be protected by traffic calming mechanisms such as pedestrian crossings and traffic lights (Bianchetti and Sampieri, 2014). (See Figs. 6 and 7 for an example of how children often used traffic calming mechanisms). Another interesting strategy many children used was to use areas between road networks for locating people or green spaces, signalling an understanding that some areas are purposefully designed without cars and roads. The child who created the city in Fig. 10 clearly does this, with a designated green-space in the centre of her city, where trees and flowers grow and where animals are present. Similarly, Figs. 6 and 7 also show road networks without people and areas of housing and people without roads through them. This illustrates an understanding that they recognise that there are pedestrianised spaces in a vehicle dominated city like Dunedin.

The examples discussed here point to four important aspects all participating children discussed with us. First, pre-schoolers generally had a positive attitude towards cars and other motorised vehicles irrespective of the different modes they personally engage with for travel (see also Kopina and Williams, 2012). Second, motorised transport is essential for reaching different destinations and making use of the available social and environmental affordances within a city and beyond (Whitzman et al., 2010). Third, the sheer movement of motorised transport is fascinating, mysterious and fun, while simultaneously recognising and being aware of the associated dangers of motorised vehicles (Tranter, 2010). Fourth, the colourful cars driving through the city make the city more fun. Colourful urban environments have a high standing on children's agendas, although mainly discussed in relation to colourful nature experiences (Ergler et al., 2015; Freeman and Tranter, 2011).

7.3. Young children's views on alternative transport modes: glimpses of hope?

Our young participants made it very clear that cars, trucks and utes (pick-up trucks) are essential for keeping the city running and for moving people and goods around. They clearly noticed and replicated in their imagined cities the current urban design of their actual city and many others that are based on individual motorised transport receiving preferential treatment in terms of public investment and space allocation. Thus, their discussions and the views they voiced on alternative modes, such as public transport or active transport, carried different connotations, if they featured at all in their discussions.

While some children explicitly highlighted the need for compact cities with diverse destinations in walking distance or shared that they "enjoy walking" to 'Kindy' [early childhood education centre, short for Kindergarten] and other destinations, others alerted us during the mat discussions that they only walk "on the snowing day [...as] it is slippery for cars". Being a car passenger seems to be the norm for the majority of children. Many children do not walk beyond getting into the car or from the parking space to their destinations, which lays the foundation for their car-centred perspective (Mitchell et al., 2007; Collins et al., 2009; Hausteine et al., 2009). However, they are still aware of people walking when they pass them in their vehicle as the majority placed sidewalks and people walking on sidewalks in their cities. Their reasoning was "that people can walk" or "people walk on concrete". All the children who took us on a walk around their neighbourhood alerted us to sensory affordances and possibilities that come from paying attention to the micro-cosmos of their neighbourhood (Ergler et al. in press). One boy connected walking with a mode of transport that allowed him to pet cats along the way. While walking was a frequent part in the conversations with children, it seemed that walking was a matter of fact in cities and many did not engage explicitly with the benefits of walking, such as increased physical activity or environmental literacy (Malone, 2007; Riazzi and Faulkner, 2018), at all. Children exhibited a similar matter-of-fact engagement with public transport.

While many of the children placed a bus in their city, they were a bit more ambivalent about their use and who is a frequent user. Some of the children took a bus to kindergarten and saw public transport as an important part of their city's transport system. Others linked buses more to 'school buses' "taking children to school", while one boy considered buses as a convenient way to get "home when you come back from a tramping [hiking] trip". In contrast, Andrew suggested that "there is no need of buses, because my Mom and Dad takes a car to drive". While Andrew disregarded the need of a public transport system outright, other children focused more on the low status of bus passengers and disregarded their use upon this basis. Benjamin, for example, started off with the positive aspect of buses "taking people to different places when people don't have cars", but then he also reminded us of the notion of the bus as a 'loser cruiser' (Fitt, 2018). Benjamin told us people take the bus when they "waste their money and they don't have enough money". While the participating children often had something to say about public transport by bus, they were comparatively silent when it came to reasoning the need for a tram or train connection, although they enjoyed putting train tracks, stations and trains in their cities. One reason may be that Dunedin does not have a tram or train system as part of the public transport system, but does have a scenic railway catering to tourists. One participant, Jack, when asked about his placement of train tracks and whether we need them in the city initially denied the need for train tracks in the city area, however, upon further reflection stated that trains are actually needed "if they [people] go to the different place they can go on the train. Or they can go in the car." This quote illustrates that rather than trains being used for transport within an urban area, in Dunedin the perception is that trains are for transport to other

places.

Children associated biking, scootering and skateboarding with being a fun and leisure activity rather than for getting from A to B per se. Nonetheless, a few children rode their bikes to or scootered to kindergarten and other destinations. Jack for example, showed us where they store bikes in his education facility and George proudly told us that she rides her “new dragon scooter” to Kindy, while Alex revealed that he sits “on the back of the bike while my dad rides it [to the Saturday Farmer's Market]”. Jessica simply wanted bikes “for the people” without going into any further detail as to why bikes are needed. In contrast, Andrew placed bikes in his city because he “see[s] bikes on the road”. However, for the majority biking, scootering or skateboarding was a playful, fun activity you do in the afternoon or weekends. Some children went to special places like “the tennis court”, “the park” or “footpaths [sidewalks]” for a safe ride, while others focused more on the benefits and enjoyable aspects of biking, scootering and skateboarding. Andrew for example asked us “Do you know riding skateboards and riding bike is also sports” and Ethan told us that bikes “give you energy” and others revealed that bikes “are fun” during the walks.

These examples clearly demonstrate that children replicate the motor vehicle dominant transport system they encounter on a daily basis. They put their experiences to work when building and discussing their cities. To ensure they can engage in alternative visions for transport we conclude that children need to be exposed to alternative modes of transport at a young age as only a few children discussed alternative transport visions. For example, although not a realistic transport possibility, one boy suggested having big dogs to ride around in cities and another one suggested having a helicopter service to “take us on a ride”. A rocket ship also featured among the alternative suggestions. In contrast, the demand for a tram system was less explicitly verbalised, but children nonetheless included trains in their visions. Those who discussed the necessity of train transportation had generally been on a train or had watched trains previously. One participant who went on a family train trip had an intimate knowledge of how they operated and wanted a lever so that their movements could be controlled and they could go in different directions:

Jack: “Are there different train tracks?”

Researcher: Why do you want different ones?

Jack: “For turning.”

Researcher: You can draw some if you want?

[Draws a lever]: “For turning the tracks.”

Researcher: You know a lot about train tracks don't you?

Jack: “They're the only thing I know. I went on a train one time when I was four.”

To be able to move away from simply regurgitating the known and engage creatively and playfully with the future of the transport system, exposure to and the experiencing of alternative modes is important.

Those children more exposed to alternative transport options appeared more confident while leading the neighbourhood walks. The child who took the researcher on the longest walk, both in terms of distance and time, often participated in nature walks through the same reserve with their kindergarten, which was located nearby. In addition, his mother often took him for additional walks throughout the week. This child was extremely confident about the route to take, even though there were multiple different paths to choose from throughout the bush walk. He directed the route throughout with very little input from his mother. In contrast, some of the children were less confident and it was clear that they were less familiar with their neighbourhood. Children who walked to kindergarten regularly were able to navigate the route, and able to orientate themselves very well. This illustrates the importance of children knowing their neighbourhoods intimately through pedestrianisation, whereas auto transport modes appear to give children less ability to orient themselves.

8. Conclusion

We have argued that children need to be introduced to and experiment with alternative modes of transport in their early years to be able to imagine alternative city futures to install the desire and hope for moving away from the auto-dominant city and towards more sustainable, liveable urban environments. In doing so, we have made the voices of an absent cohort in mobility or transport debates heard. These voices showed that it is important to gain insights into and understand very young children's conceptualisations and understandings of their current transport system as our participants replicated and regurgitated the dominance of the automobility system (Urry, 2004). They embodied, even at their young age, the auto-dominant city; they already believe that motorised transport is important for keeping their city physically and socially running. Therefore, it is not surprising that vehicles and the infrastructure they need as well as the perceived inferiority of active and public transport dominated children's maps and the discussions. Children's experiences shaped their attitudes towards alternative modes of transport and their values. Moreover, children exhibited a fascination with mobility and transport related activities and services that seems to have lasting impressions given the remaining dominance of the vehicle transport and in many places resistance to change beyond flagship examples such as the *Superilles* in Spain. Although young children recreated and were fascinated by the auto-dominant city, some suggested hopeful interventions as glimpses of creative or alternative modes made their way into their idealised transport system as the inclusion of scooters, cycles and the example with the dog indicated. However, these examples were usually suggested by children who already experience the city differently such as being a cyclist, bus or bike passenger. On such foundations, we suggest that in order to extend the current understanding of doing/being/ thinking transport systems, children need to be exposed to and be allowed to experiment with alternative modes of transport in their early years to enhance their imaginary horizons. We suggest awareness raising campaigns should be undertaken to encourage parents and caregivers to expose children to a diversity of transport modes in their early years as socialisation plays an important role in young children's capacity building and intellectual potential. However, occasional outings using alternative modes should just be the beginning for changing current travel practices and allowing for a diversity of transport imaginaries. Alternative forms of transport education and experimental learning should also be introduced in early childhood centres to pay tribute to the fact that attitudes, norms and values are already developed in the early years of a child's life (Borg et al., 2019; Hausteine et al., 2009).

In conclusion, our study is the first to create a platform for adults to use in listening to young children's experiences and to reveal children's embodiment of the dominant transport norms and their attitudes towards different modes of transport through their own lived experiences. In future, to unpack the differences between cities and gain more in-depth insights in young children's experiences, understandings and visions for their transport system much more research is required – not only for young able bodied children, but pre-school aged children with a range of abilities and from different socio-cultural contexts as well as children being exposed to a diversity of urban forms, transport modes and transport cultures.

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Author credit

We prefer not to include a credit author statement as this is a team project and all authors contributed to the paper in the order of authors.