Children's velo-mobility – how cycling children are 'made' and sustained

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Abstrakt

Sustainable mobility plays a dominate role in low carbon futures and cycling is an integral element. Children are 'carriers' of social practices and crucial for future sustainable mobility. Moreover cycling is important for children's independent mobility and geographical experience.

Dominating approaches in transport research, including cycling, understand travel behaviour individualistic and lack to grasp the relational complexities which are inevitable when considering children's mobilities. Furthermore has children's cycling largely been studied as independent mobility and active school travel. How cycling is learned and constituted, and how cycling skills are consolidated, extended and turned into a stabilized practice remains unstudied.
Approaching cycling as a social practice can cross the gulf between individual- and social-level approaches. Besides it can shed light on how travel behaviour is produced, reproduced and change.

Drawing on in-depth interview data from the region of Copenhagen, Denmark, among families with children (N=24) the paper provides insight into how corporations, negotiations and experiments that involve child, parents, and the locale socio-spatial environment take place. It introduces a three-step model for conceptualizing children's cycling deriving from processes of gradually enlarging the geographical experience and partial embodying of know-how of traffic power relations and mobility technology. The paper examines how parents' perception of risks are transgressed by cycle training and how cycling is fitted into complex household routines. By shedding light on the sensitive mechanisms that 'make' and sustain cycling children the paper inform a discussion of urban planning and transport policy measures important for stabilizing sustainable mobility.

Introduction

Sustainable mobility plays a dominate role in low carbon futures in which cycling is an integral element. Recently research has shown that cycling among the adult population is decreasing nationally but also that huge geographical difference in the development of cycling exists (Nielsen *et al,* 2014). In the biggest cities cycling has increased, whereas in places with a peripheral location to the largest urban areas cycling has decreased.

Differences in demography, socio-economy and attitudes explain a great part of people's transport mode choices. But there are also interrelations with urban form and neighbourhood structures that can explain the differences in people's cycling behaviour. For instance can parameter like flat terrain, short distances to retail centres, high population density, a fine-meshed and well-connected road network explain why adults are likely to choose the bicycle as daily transport mode (Nielsen *et al,* 2013; Nielsen & Skov-Petersen, 2014).

Even though children do share life conditions with adults they are also a distinctive social group. Existing knowledge on children's cycling is limited and factors forming children's cycling are likely to differ from those condition adults' cycling as Mitra (2013) points to.

Before anything else children are influenced by and dependent upon their parents (or caretakers) and the structures of daily life in families. In general daily life has become more fragmented in time and space. The tendencies of individualizing daily schedules and spatio-temporal patterns have reduced the collectively shared temporal-and-spatial structures. These tendencies also impact the daily life in families with children and make it more complex. Thus daily life in families is often characterized by a series of activities spread over a relatively large geographical area (Jarvis, 2005; Hjorthol, 2008). For instance has it become increasingly common for children to attend organised leisure outside the immediate neighbourhood (Zeiher, 2001).

The high level of spatial-temporal complexity in daily life has increased the travel needs of the population and especially in families with children. The car is used to handle the complexity of enacting daily activities with huge impacts on children's travel patterns. How children's active and independent travel has been reduced during the last decades is well studied all over the Western European countries (Hilmann *et al,* 1990; O'Brien *et al,* 2000; Fyhri *et al*, 2011; Villanueva *et al,* 2013)

Research has appointed the household to be an important context in children's daily lives in general (Jupp, 2008) and in daily transport mode choices specifically (Pooley *et al*, 2011). For instance are parent-child travel interactions crucial in processing children's independent mobility (Kulmann, 2011).

Even through children actively contribute in shaping their daily lives they also lack autonomy and are dependent upon their parents. Decisions in households are dominated of adult-centred agendas and structures. Studies on children's mobility and daily transport -escorted and independent- has pointed to the crucial role of parents (e.g. Lang et al 2011). Parents are important barriers and facilitators of children's mobility, as Alparone & Pacilli (2012) wrap up in a literature review. Parents make decisions and shape children's mobilities so they fit into the households' daily transport patterns and needs. For instance are parents' own transport modal choices crucial to children's travel mode. The younger the child, the more it dependent it is on parents' modal choices.

But beyond the single household and the dynamics in the family children's transport is also socially embedded. Much movement is undertaken in groups, children enjoy company with peers and take detours to make it possible (Mikkelsen & Christensen, 2009). Children's transport is thus influenced by peers and embedded in local transport culture. Recently has the phenomena of 'chauffeuring' been debated intensely, that is the implications of a growing number of car-driving parents on the school routes. For instance has a study from New Zealand described how car-driving parents create situations chaotic and dangerous situations for children and parents who choose soft transport modes (Lang *et al,* 2011).

In the light of these issues, this paper explores how children learn to cycle, what it take to become a cyclist and why only some children become skilled cyclists in a young age. It explores how parents and the local

social and built environment shape children's daily transport and consequently enable and constrain cycling. This is done with focus on the roles of parents play in the process of how cycling is learned and how cycling competences are accumulated.

The paper contributes to shed light on parts of the contingent and heterogeneous interrelations forming children's cycling. By scrutinising how children's cycling is formed in the context of local urban design, local transport cultures, and parental practices new knowledge will be provided. Such new knowledge is critical for improving the understanding of the social-environmental influences on children's cycling, in order to facilitate the development of appropriate policy and programs for a future sustainable cycling culture.

Methodology and data

The paper builds on data from a research project, which aims to identify what enables and hinders daily cycling in families with children. It focuses on children's utility cycling, e.g. school and leisure cycling in everyday life. It explores the crucial socio-spatial parametres for creating more cycle-friendly everyday lives.

Informants were recruited among participants in a national survey (N=1970) on Danes transport modal choice and behaviour which made it possible to target adults with children in the selected age group living in areas of varying degrees of complexities considering residential density, housing styles, local traffic design and conditions and location in urban structure.

The paper uses in-depth interview data from the region of Copenhagen in the months of April to June among 17 parents with children aged 10 to 14 years old as we presume that children are likely to become independent cyclists at this age. According the Council for Secure Traffic will children of 10 to 12 years of age reach a level of cognitive matureness that makes them capable of overviewing the traffic environment. Furthermore do 10 to 14 years old children share living conditions, which make it possible to conceive them as a social group: They mostly attend local schools and youth clubs and their territorial range from home is 1,5 to 2 kilometres on average (Matthew 1992).

Interviews were conducted as individual home interviews of 1-2 hours of length, often with the spouse and children around listening, commenting and complementing. 17 interviews have been conducted with 9 women and 8 men. 4 of them were single parents of which 3 were men. All but one household have access to a car, and half of them have two cars. The informants have provided information of 20 children of which 12 were girls and 8 were boys. Three households had two children in the appointed age group.

The themes for the interviews were daily spatial and temporal routine of the family, travel mode choices, children's cycling and parents' cycling in childhood and youth. The interviews have produced knowledge on parents' perceptions of children's cycling and what matters for children being able to cycle independently. They have also produced information on how children's cycling behaviour relates to the family's transport patterns and to the local socio-spatial environment. During the interview the child's daily routes –and related problems and episodes– were mapped which allowed for assessments of the cycling-friendliness of the local environment.
Before the interviews preparatory ethnographic rides studying the spatial structure of the residential area were conducted. These rides provided insight on how bicycle-friendly the environment is (both physically and socially). When making the appointment for the interview information on location of the school the child attends was obtained and the (probable) route from home to school was visited and its traffic situation and design assessed. Situations or places of particular interests or problems, appointed by the informants during the interview have been investigated on bicycle afterwards.

Analysis and results

Parents of this study explain how their children learned to cycle as a learning process proceeded in three separate steps.

"Level 1 cyclists" is the first step in the learning process. It consists of the initial process of learning to cycle and is about learning how to keep the balance and to master the technology as such. Often this is done on a starter's bicycle with small wheels and stabilizers on. Parents assist the learning process of their children who are in the pre-school age. The parents tell about the importance of the appropriate timing for dismantling the stabilizers and that too early dismantling can course incidents and accidents that set cycle training on stand-by for a while.

"Level 2 cyclists" is the second step in the learning process and concerns cycling to school. It contains gradual development towards independent school cycling and can be described as three sequential steps. The first part of the learning process is about training the school route which often is assisted by parents. Firstly parents cycle on their child's outer side towards the car traffic. They proceed the training with their children in the front, which makes it possible to supervise and assess their child's cycling behaviour and skills. How long this process lasts differs. Some parents tells about a long process starting in good cycling weather and gradually integrated more weather types into the training. Other parents tell about a short intensive training period.
The next part of the learning process implies independent cycling from school to home. The journey home is considered feasible for the first step of independent cycling because the time is not as strict as in the morning. The child can ride at easy with no hurry and also is car traffic less intense and traffic environment much calmer than in rush hours. Agreements that the child text the parent when leaving school and arriving home are widespread.
The last part of the school cycling learning process comprise of full independency on the school route, which also includes the journey to school in the morning with fixed time for arrival and denser traffic. Often do the children reach this step when the habit of texting parents no longer seems necessary.

"Level 3 cyclist" is the final part of the learning process. It is the final enhancement of children's territorial range where more and more locations gradually are added to the list of places to cycling to independently. This includes journeys to friends' homes, leisure activities, and many other places. At this level the independent school travel is transformed to independent travel in various and diverse geographies beyond the well-known bikescapes of the daily school route. When children have accumulated cycling skills that make them capable to cycle independently to "everywhere" in daily life they have become cyclists and cycling has become an easy transport mode choice.

In the study the parents refer to these three steps as important to go through in order to become a cyclist. But the learning process for the individual child is not linear. It contains relapses due to minor or major accidents in bicycle, changes in daily routine in households etc.

All the children in the study have learned to cycle and do cycle on a regular basis as Level 2 cyclists. However, they are different steps in the learning process and their cycling skills differ. Some are close to become independent Level 3 cyclists, others are quite far from. A few still are accompanied by their parents when cycling to school, others cycle independently but yet only from school to home.

Digging into the narratives of the individual child's learning process interesting differences occur. The critical point seems to be how much the child has trained cycling. This is important for sustaining and developing the required skills and move on to the next level of cycling.

Children who have cycled to kindergarten have developed good cycling skills and are often quite trained and prepared when school cycling starts. Further do siblings impact the learning process. There is a

tendency that older siblings facilitate and promote the speed of the learning whereas younger siblings do the contrary.

These differences in skills, training intensity and family composition do also impact the age the child has at the levels. Level 1 cyclists – learning to cycle – takes place at the age of 3 to 6 years of age. Level 2 cyclists – school cycling – takes place at the age of 5 to 12 years of age. For school cycling siblings and friends play an important role as facilitators of independent cycling by providing companionship. The daily training on school routes forms a solid point of departure for developing cycling skills. Intensive cycling is dependent on school routes' feasibility for cycling, e.g. not too short or too long. Among the children in the study the passage from being Level 2 to becoming Level 3 cyclists seems to be crucial. This process starts around the age of 11 and continues from then. For some children it is a process that terminates in few years, and the child (or youngster) become a full independent cyclist. For other children this process lingers on with limited progress.

To understand what is important for children to proceed all the way through the process of learning to cycling and why some children become independent cyclist in a young age and others do not parents' are key. In the study parents play a crucial role in facilitating the learning process, even though children also do accumulate their cycling skills in contexts outside the household, e.g. in the kindergarten, in school, with peers and peers' parents. Parents are important for learning about the traffic dynamics, which is an integral part of all steps of the learning process. Besides formal traffic rules, parents pass on important experience-based knowledge to their children about principles for cyclists' conduct. Parents learn their children to overview the traffic situation carefully, how to react to and embody confuse situations and how to response to ambiguous environments where traffic rules need situated interpretations.

Parents are important for facilitating children's cycling capacity and environmental understanding. However, the role of parents is conditioned by a major issue, namely parents' perception of risk and safety. Especially for children's independent cycling are safe and confident parents crucial.
In the study parents feel safe when either they conceive of the local physical environment or the local transport culture among other families as supportive. The local physical environment is supportive when the routes in children's daily life have speed regulation for motorised traffic, sparse motorised traffic and cycling supportive design (cycling paths and the like). The local transport culture is supportive when other children cycle and when local social norms prescribes that children's transport is conducted by bicycle, and that children master independent cycling at a young age.
A Dutch study (Hoekstra *at el*, 2010) that assessed the importance of local social norm for parents travel mode choices for their children. The study concluded that local social norms have a varying impact on parents. They are quite influential for some parents' perception of traffic safety and impact their travel mode decisions, whereas other parents are less influenced. Nevertheless is the household's daily life is embedded in local social norms for children's transport and daily life is less complicated when the family's practice is aligned with the local norm. When not aligned reflections about deviations and inventing coping strategies are fostered.

Half of the families in the study live in local environments that are supportive to children's cycling. However in the remaining part of the sample parents are dealing with constraints that stems from their perception of unsafe and non-supportive environments for children's cycling. The perceived supportiveness of the local environment belongs to varying degrees of the more or less supportive nature of the local environment's social and physical aspects. That be anchored in parents' articulations about non-supportive transport culture and in non-supportive local physical environments that be for instance "dangerous" spots on the school route. Some parents are stressing one aspect more than the other. Others underline both aspects. Interestingly did not any of the parents perceive of their local environment as being non-supportive in all aspects. They identified obstacles for children's independent cycling but did not whatsoever find children's cycling unattainable.

The non-supportive aspects of the local socio-physical environment give rise to parents' dormant insecurity that is a shared condition of parenthood which some parents are more exposed to than other. For instance do the parents of the two children that do not cycle independent from school yet explain that their perception of local environments with difficult intersections and high speed of through traffic to derive from them being very particular about caring for their children than the majority of parents which children do cycle independent to school.

When the parents in the study feel unsafe about their children's cycling they deal with their risk perception in two different ways. One group of parents act and try to transgress their unsafety feelings. These parents assess that cycle training is needed to transgress their own risk perception and unsafe feelings. Through prioritized training they prepare their children to the traffic challenges. They do so because they either have explicit wishes or daily life needs for having independent and mobile children. When they experience that their children are capable of handling difficult traffic situations these parents gain confidence in the child's traffic ability and cycling skills. They take care of developing and sustaining their children's cycling skills and it is just a question of time when their children are being let off as independent cyclists. Another group of parents do not focus on finding measure for transgressing their unsafety feelings. Instead of training their children's cycling they limit their children's action range on bicycle and take them by car. They also give directions for which unsafe routes to avoid on bicycle and they delimit "safe routes" which are detours. These parents do not support the process towards independent cycling and will in all likelihood not let off their children as independent cyclist in a young age.

Conclusion and discussion

This study has investigated the sequential steps for children to become independent cyclists as well as the role of parents and the local socio-physical environments in facilitating, learning and conditioning children's cycling. Children learn to cycle and become independent cyclist through a generic learning process that takes place in three steps. When reaching the last step they have become cyclists, what we have termed Level 3 cyclists. Then they will possess a certain level of skills and cycling will by an easy and 'natural' transport mode choice. The accumulation of children's cycling skills involves a gradual acquisition of bodily skills and of using travel technologies. For some children in the study the process of learning to cycle is simple and linear, but this is not the case for all.

Parents often play a key role in children's cycling. Parents facilitate the learning process. But most importantly is parents' perception of traffic safety and that they find the environment suitable for cycling. This is key for children's independent cycling age and how the learning process proceeds.
Half of the parents in this study do not feel unsafe. They perceive of the local socio-physical environment as being supportive, and their children are steadily proceeding through the learning process. They will most likely become cyclists in a young age. The other half of the parents are challenged by local surroundings of low support due to local transport cultures and partly non-regulated traffic environments. When the local socio-physical environment is less supportive parents feel more unsafe and are more likely to set up restrictions for their children cycling. Thus when parents are unsafe they play a key role for forming their children's cycling and their support and facilitation for transgressing the perceived barriers is crucial.

When parents conduct supporting acts, like prioritizing training for transgressing perceived barriers, it is likely that their children will become Level 3 cyclists at a relatively early age. When parents do not act supportively children's independent cycling become vulnerable. It is uncertain if these children will become cyclist as long as the parents have the custody of them. The parents are likely to continue finding cycling a too risky mode of transport due to their perception of the low support of the environment and of the insufficient cycling skills of their child. However, the emancipation from parents' authority in the years of early youth will offer children other opportunities to become Level 3 cyclists all though they will still need to practice and experience the complex traffic environment detached from parental support.
Parents are aware of the perspectives of gradually losing control and this makes them anxious. They are worried about their children's travel mode options and how they will handle the longer travel distances

when they are to start a post-secondary education programme. In the generation of the parents choosing cycling as travel mode was easy and trouble-free. But the parents in this study are not convinced that their children will be able to celebrate the cycling as a vehicle for flexible, liberating, comfortable and cheap transport as they benefitted from themselves in their youth.

This study has also produced knowledge on of the Danish cycling culture. Children are heirs of transport cultures and are important indicators for a culture's composition and sustainability. Many of the children of this study hold the capability of carry on the cycling culture. They are in the middle of a process for developing future potentials for cycling. They will gain the required competence and appropriation that will make cycling a strong mobility option.
But the study has also appointed tendencies in contemporary children's cycling that display elements of a culture at risk. These tendencies of vulnerability in some children's cycling are important because of the close linkage between mobility patterns practiced in childhood and those dominating in adult life. Children's experience with cycling in childhood is forming important take-off for their future mobility patterns.

Fortunately many Danish children grow up in local environment that supports children's independent cycling. The long planning tradition of place-making for people creating liveable neighbourhoods and secure and safe school routes by regulating motorized traffic and promoting cycling-friendly urban design through prioritising soft, active transport, short distance, co-location of central service is key in understanding why Danish children cycle independently.
Spatial planning that promotes children mobility on bicycle is of great value for future generation and it is important for the contemporary generation of children. It gives children a distinctive position in society as citizen in own right. It makes it possible for children to start outbuilding their cycling skills from a young age and creates an important starting point for carrying on the cycling culture. Cycling supportive physical environments often fosters robust local cycling cultures among children and calms down parental risk perception. Further does it make cycling an option for daily mobility in the cases where the local transport cultures are less bicycle-based. In the vulnerable cases where unsafe parents do not support children's cycling can cycling promoting efforts by the school be an important supplementary support for the children and their families.

Acknowledgements

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