

The influence of limited financial resources on daily travel practices. A case study of low-income households with children in the Hanover Region (Germany)

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ARTICLE INFO

Keywords:

Low-income families
Transport affordability
Transport-related social exclusion
Daily travel
Social practice theory
Mobility

ABSTRACT

Being mobile is essential to participate in social life. However, as transport involves costs, this is a particular challenge for people on low incomes. Households with children are, especially, at an increased risk of poverty. To provide a deeper understanding of how financial poverty affects the daily travel practices of low-income families and how they cope with their limited financial resources, we conducted 16 qualitative problem-centred interviews with low-income families in Ronnenberg (Hanover Region, Germany). Although all the interviewees have to cope with limited financial resources, their daily travel practices differ. We identify four types of daily travel practices for these families: (1) car-centred, (2) car-reduced, (3) public transport oriented and (4) non-motorised. For a more detailed analysis on how poverty affects transport and participation, we use the practice theory perspective (Shove et al., 2012). Our analysis highlights that the car plays a significant role despite poverty for some families. However, other low-income families manage their daily life with public transport and non-motorised modes only. Our results show that low-income households with children have several strategies for organising and financing their daily travel practices. One strategy is direct and indirect support for travel from their social network. Furthermore, some families forgo leisure activities with entrance fees or higher travel costs.

1. Introduction

Being mobile is essential for participation in social life (Schwanen et al., 2015). Therefore, a lack of mobility can hinder access to social activities, goods or services and, thus, limit social participation (Kenyon et al., 2002). The link between transport and social participation has already been investigated in numerous studies on transport-related social exclusion (for an overview, see Lucas, 2012, 2019). From previous research, we understand social exclusion not as a bipolar phenomenon, but rather as a process in which individuals have lower levels of access to different areas of life compared to other persons or to earlier life phases (Schwanen et al., 2015). Thereby, people may be restricted in their mobility and social participation in a variety of ways, for example due to temporal, physical, mental, fear-based, societal, spatial infrastructural or financial constraints (Cass et al., 2005; Church et al., 2000; Kenyon et al., 2002).

We focus our research on the financial constraints of low-income households for three reasons: (i) the economic dimension is

omnipresent in previous research on transport-related social exclusion (Cass et al., 2005; Church et al., 2000; Kenyon et al., 2002; Schwanen et al., 2015), (ii) transport disadvantage is highly correlated with social disadvantage and, therefore, low-income households are more vulnerable to transport-related social exclusion than others (infas et al., 2019a; Social Exclusion Unit, 2003) and (iii) transport affordability can be a particular challenge for people on a low income (Lucas et al., 2016; Mattioli, 2017; Serebrisky et al., 2009).

Among those at increased risk of being affected or threatened by relative financial poverty are households with children and, especially, single parents (German Federal Ministry of Labour and Social Affairs, 2017). While there is research on families' daily travel and also on transport under poverty conditions, to the best of our knowledge there is no research with a specific focus on how poverty affects the daily travel practices of low-income households with children in the context of transport-related social exclusion. This study, therefore, explores the daily travel practices of low-income families in Ronnenberg, a city neighbouring Hanover in Lower Saxony (Germany), using 16 problem-

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centred interviews. The aim is to provide a deeper understanding of how financial poverty affects the daily travel practices of low-income families and how they cope with their limited financial resources.

The remainder of this article is structured as follows. Section two contains an overview of earlier research on families' daily travel practices, the impact of a low income on transport and the theoretical framework of social practice theory. Subsequently, we describe our case study and methodology (section 3). We then present a typology of low-income households with children by their daily travel practices (section 4) and explain these daily travel practices based on the three elements of materials, competences and meanings in more depth (section 5). The paper closes with a discussion and conclusions (section 6).

2. Research background: daily travel of low-income families and social practice theory

Time pressure, complex travel patterns and the need for arrangements with household members are characteristics of families' daily travel practices (Craig and van Tienoven, 2019; Grieco, 1995; Jensen et al., 2015; Manz et al., 2015; Rau and Sattlegger, 2018; Scheiner, 2016; Scheiner and Holz-Rau, 2017) and are particularly relevant to women and single parents (Scheiner and Holz-Rau, 2017).

For many families, the purchase of a car, triggered by key events, such as childbirth, may guarantee further flexibility and independence (Lanzendorf, 2010; Müggendorf et al., 2015), but for low-income families car ownership is linked to high financial stress (Belton Chevallier et al., 2018; Mattioli, 2017). Families with limited financial resources opt to own a car because they want to benefit from time savings and flexibility or they consider other transport modes as more expensive (Mattioli, 2017; Stanley and Stanley, 2004; Uteng, 2009). Some low-income families even experience forced car ownership (Mattioli, 2017), as affordable housing in Germany often entails car dependency and less centrality (Sterzer, 2017). When financing a car, low-income households accept financial restrictions in other areas of life, such as heating their home (Mattioli, 2017). Although some households with children voluntarily live without their own car (Lagrell et al., 2018; Sattlegger and Rau, 2016), this does not seem to be the case for low-income households (Brown, 2017). It is, therefore, more likely that low-income families find it difficult to afford a car (Mattioli, 2017; Social Exclusion Unit, 2003) and even a driving licence (Uteng, 2009). Thus, a low income and financial stress linked to car ownership are explanations for the decrease in car ownership among low-income groups (infas et al., 2018; Klein and Smart, 2020).

To take advantage of a car without owning one, families use motorised alternatives, such as getting a lift, delivery services or even taxis. Lifts from acquaintances are a common strategy to overcome the lack of a car (Belton Chevallier et al., 2018; Clifton, 2004; Grieco, 1995; Lovejoy and Handy, 2011; Uteng, 2009). However, to address this option, a social network with car access is necessary. This cannot be taken for granted and may lead to a high degree of dependence on others (Lagrell et al., 2018). For grocery shopping, carless families take advantage of home delivery services in order to transport heavy purchases (Lagrell et al., 2018). Taking a taxi is also reported amongst low-income groups in the UK and US, but rather as a last resort due to the relatively high costs (Clifton, 2004; Grieco, 1995; Hine and Mitchell, 2001; Titheridge et al., 2014).

Another important mode for low-income households without car access is public transport (Currie et al., 2009; Grieco, 1995; Hine and Grieco, 2003; Stanley and Stanley, 2004). However, the use of public transport is not easily affordable for those on a low income (Bondemark et al., 2020; Daubitz, 2016; Inguglia et al., 2020; McCarthy et al., 2017; Stanley and Stanley, 2004). Studies even show that when individuals cannot afford public transport tickets, illegal strategies, such as fare evasion, are practised (Daubitz, 2016; González et al., 2019; Perrotta, 2017; Schwerdtfeger, 2019).

Non-motorised transport modes, such as cycling and walking, are

considered cost-effective (Chandra et al., 2017; Grieco, 1995; Handy et al., 2014; Hilland et al., 2020; Sarrica et al., 2019). But the link between cycling and income appears to be complex and ambiguous in detail. Most studies find that a low income does not have any influence on cycling (Javaid et al., 2020). Some show that cycling is more common among people with higher incomes and education levels (Hudde, 2022), especially for leisure purposes (Goodman and Aldred, 2018). In Germany, for example, bicycle ownership increases with higher incomes (infas et al., 2019b). At the same time, other studies from the US and UK indicate that people who cannot afford a private car may rely on cycling (Chandra et al., 2017; Pooley et al., 2011). Although walking is inexpensive, and, thus, suitable for low-income people, compulsory walking can be a particular hurdle for households with children (McLaren, 2016). For example, Bostock (2001) shows that low-income mothers in the UK describe forced walking with children as arduous and time-consuming. Furthermore, some places cannot be reached on foot, as distances are too long or pavements unsafe (Chandra et al., 2017; McCray and Brais, 2007). To summarise, the limited financial resources of households with children can constrain the use of any transport mode except walking.

For a more in-depth investigation of how financial poverty influences low-income families' daily travel practices and their social participation, we use social practice theory (Reckwitz, 2002; Schatzki, 2001). This theory is increasingly being utilised in transport studies (see Kent, 2021 for an overview), for example, to study cycling (Spotswood et al., 2015), commuting (Meinherz and Binder, 2020) or parking (Kurnicki, 2021). Shove et al. (2012) suggest an element-based approach for social practices, which is commonly used in transport research (Kent, 2021). It contains three interwoven elements: *materials*, *competences* and *meanings*. *Meanings* "include symbolic meanings, ideas and aspirations" (Shove et al., 2012, p. 14); "emotion and motivational knowledge" (Shove et al., 2012, p. 23); and "the social and symbolic significance of participation" (Shove et al., 2012, p. 23). These *meanings* may also include associations with a specific activity or trip purpose, for example grocery shopping or commuting (Cass and Faulconbridge, 2016). *Competences* are "skill[s], know-how and technique[s]" (Shove et al., 2012, p. 14) that are required for practices. *Materials* contain "objects, infrastructures, tools, hardware and the body itself" as the carrier of practices (Shove et al., 2012, p. 23). *Materials* have different roles depending on the practices in which they are integrated (Shove, 2017). Shove (2017) suggests distinguishing between infrastructural *materials*, "things [that] are necessary for the conduct of a practice, but are not engaged with directly" (Shove, 2017, p. 156); *materials* as devices which are "things that are directly mobilised and actively manipulated" (Shove, 2017, p. 156); and resource-based *materials*, which include "things which are used up or radically transformed in the course of practice" (Shove, 2017, p. 156). It is essential that *materials*, *competences* and *meanings* are interwoven, may overlap with other practices and can change over time (Shove et al., 2012; Shove, 2017).

3. Case study and research methodology

This study is part of a transdisciplinary project¹ in the Hanover metropolitan region of Lower Saxony (Germany). There are 1.2 million people living in this region and nearly 25,000 in our study area of Ronnenberg (Region Hannover, 2020). Our study area has a relatively high share of people on low income compared to other municipalities within this region, with 11% of residents receiving social benefits to secure the minimum subsistence level (Region Hannover, 2015).

¹ The project Social2Mobility is funded by the German Federal Ministry of Education and Research (BMBF) with the aim of increasing social participation by strengthening mobility. The Hanover Region authority with its transport and social planning department is part of the project as well as the University of Kassel, and the transport planning office WVI in Braunschweig.

Ronnenberg has the lowest proportion of employees in the region who also work at their place of residence (12%), i.e. 88% of the working population commutes out of Ronnenberg (Region Hannover, 2015). In the entire Hanover region, nearly 80% of jobs are in the tertiary sector, close to 20% in the secondary sector and barely 1% in the primary sector (Federal Employment Agency, 2021). Ronnenberg offers shops for daily needs, such as grocery shops and chemists. There are also pharmacies, stationery shops and a few clothing shops. Some leisure facilities are located in Ronnenberg itself, such as an outdoor swimming pool, various sports clubs, playgrounds and local recreation areas. Nevertheless, the city of Hanover is where more, and especially more extravagant, leisure activities are possible, such as a zoo and cinema, and where residents

can purchase anything that goes beyond everyday needs and more specialised items. Ronnenberg borders the capital of Lower Saxony, Hanover, and is well connected to it by road, public transport (bus, trains and a tram line) and by cycle lanes and footpaths (Fig. 1). Thus, this study area allows us to examine reasons for mobility restrictions that go beyond a lack of transport infrastructure.

We used problem-centred interviews for an in-depth analysis of the daily travel practices of low-income families (Witzel and Reiter, 2012). We created a semi-structured interview guide with three sections: (i) daily travel and activities, (ii) social participation and (iii) assessment of poverty and its impact on daily travel and social participation. Moreover, we used a short, standardised questionnaire to collect

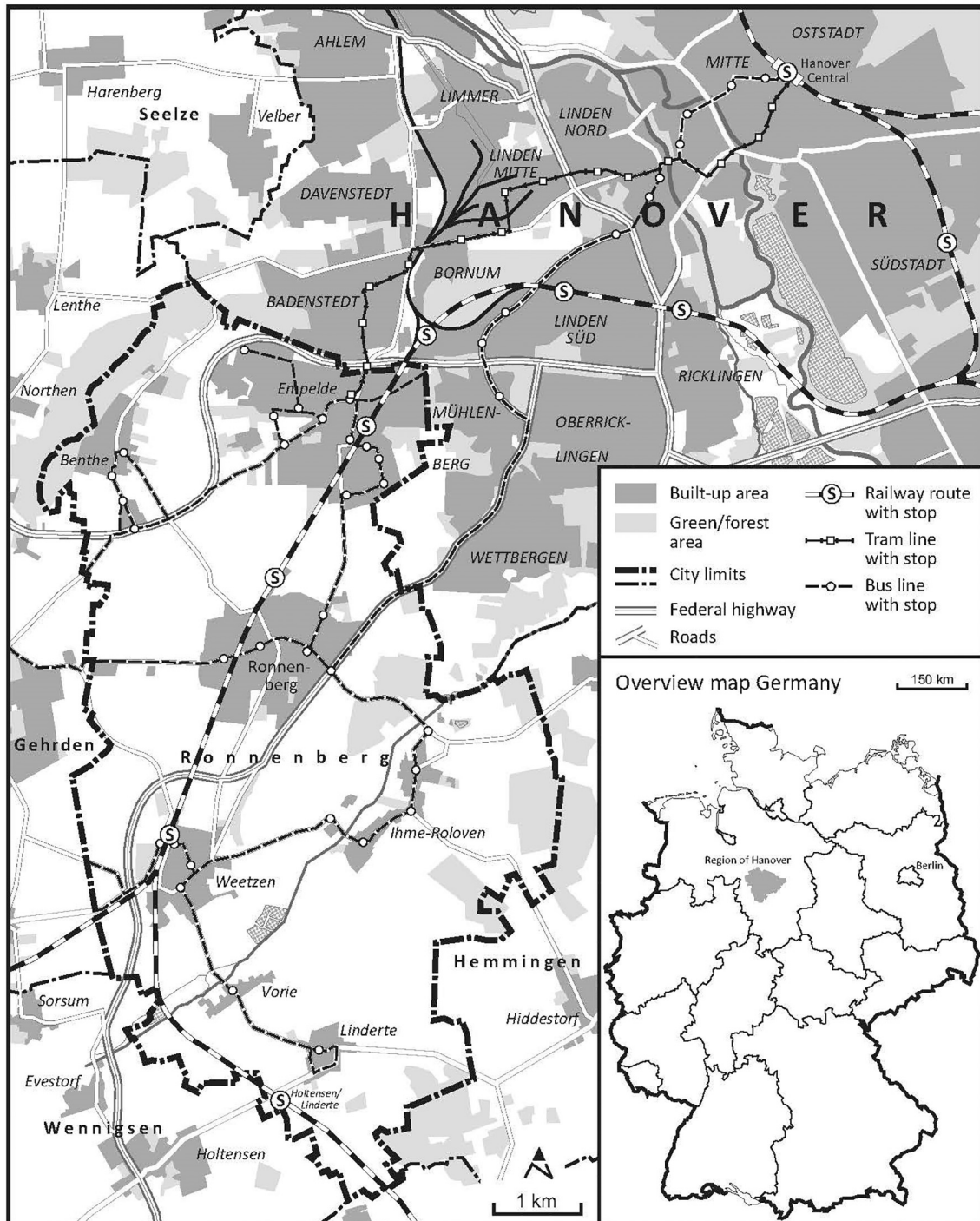


Fig. 1. Overview map of the research area (Cartography: Elke Alban).

sociodemographics and postscripts to record the context of each interview. All interviews were recorded and fully transcribed.

The interviewees in our study had to fulfil three criteria: (i) Ronnenberg as their place of residence, (ii) at least one child living in the household below the age of 15 and (iii) a low income. Via the questionnaire, we assessed whether the interviewees were affected or threatened by relative financial poverty, as they provided information about their work and financial situation (Table 1). Thereby, we did not set a fixed income limit as a criterion, but asked about the receipt of social benefits. People in Germany only receive these benefits if they can demonstrably not sustain themselves and their household financially. Furthermore, we interviewed people who were just above the social benefit threshold and people whose income situation will deteriorate in the near future because they have lost their job. In checking for the criterion of a low income, the first indicator was whether an interviewee had a Region S card. Only people who receive social benefits have this card. Secondly, the employees of the social organisations we worked alongside, and who were aware of the financial situation of their clients, were able to identify suitable interviewees. Organisations we worked with were: a social planning office, different church organisations, a food bank, a debt counselling service and a neighbourhood management office. Additionally, we distributed flyers in front of discounters and used the snowballing technique of asking those already interviewed for further interviewees (Flick, 2019). As an incentive, we provided free tickets for the zoo in the City of Hanover. This was, in all cases, the main reason for participation.

In total, the first author conducted sixteen face-to-face interviews with an average length of 63 minutes. We interviewed parents, including single parents aged between 26 and 46. The average household size in Germany is two persons per household (Federal Institute for Population Research, 2022). In our sample, parents lived with between one and five children. In families with two parents, we interviewed the person who felt comfortable participating in the interview, had the time and was confident in German, English or Polish. The location of the interviews varied, but, in most cases, the interviews took place at the respondent's home or a public playground.

The empirical survey started in March 2020. It was interrupted due to the Covid-19 pandemic, but resumed in July and concluded in September 2020. However, it is not our aim to examine the pandemic's impact on daily travel practices and social participation.

For the data analysis, we used qualitative content analysis (Kuckartz, 2014). This method enables existing theoretical knowledge to be linked

to the interview data. The deductive coding is based on the three elements *materials*, *competences* and *meanings* of the daily travel practices according to Shove et al. (2012). Additionally, the financial dimension of social exclusion was supplemented with inductive codes from the material itself. Subsequently, we used a type-building analysis (Kuckartz, 2014) and formed types across the elements by “comparing and contrasting the individual cases” (Kuckartz, 2014, p.104) with each other according to the following criteria: (i) the transport mode respondents usually use, (ii) the other options available to them and (iii) the reasons they reject alternatives. Please note that in couple households we interviewed only one parent. Therefore, the individual descriptions of one parent about their family's daily travel practices form the basis for the typification.

4. A typology of low-income families' daily travel practices

Although all low-income families in our study face financial challenges, they manage and finance their daily travel in different ways, i.e. the three elements of materials, competences and meanings interact differently. The type-building analysis reveals four types of daily travel practices: (1) car-centred, (2) car-reduced, (3) public transport oriented and (4) non-motorised. While the first two types of household have a car available, this is not the case for the third and fourth types. We discuss each type in the following subsections along four aspects: (i) type definition, (ii) impact of limited financial resources on daily travel, (iii) strategies for financing daily travel practices and (iv) our understanding of underlying key rationalities.

4.1. Car-centred

‘Car-centred’ low-income families (#7SM2, #10SM1, #13SM3) mainly organise their daily travel around their car, considering it essential for accessing workplaces and in their everyday life. They categorically reject other transport modes because these do not offer the same flexibility and time savings compared to a private car. Since the car is always available to them, these families regard the use of public transport as unnecessary and an additional financial expense (#7SM2, #13SM3):

“The car is just on the doorstep. You're already paying for it anyway, fuel, insurance, everything. (...) I don't really think about taking the train where you'd have to buy another ticket.” (#7SM2)

Table 1
Overview of the interviewees.

ID*	Age (years)	Single parent (x = yes)	Age of children (years)	Employment and financial situation				Low-income families' types of daily travel practices
				Works full time (x = yes)	Works part time (x = yes)	Complementary financial assistance	Personal net income (in EUR)	
#1M3	42		10, 14, 18	x		Receives social benefits	1500–2000	Non-motorised
#2F1	37		14			Receives social benefits	500–900	Non-motorised
#3SM1	36	x	3			Receives social benefits	900–1500	Car-reduced
#4M2	34		1, 8		x	Is on paid parental leave	800–1500	Car-reduced
#5M1	34		5			Receives unemployment benefit**	2000–2600	Car-reduced
#6M2	30		1, 5		x	Receives social benefits	1500–2000	Car-reduced
#7SM2	26	x	2, 6			Receives social benefits	900–1500	Car-centred
#8F1	32		0		x		900–1500	Public transport oriented
#9M1	37		9		x	Receives social benefits	1500–2000	Non-motorised
#10SM1	27	x	5			Receives social benefits	900–1500	Car-centred
#11SM3	46	x	3, 13, 21			Receives social benefits	900–1500	Non-motorised
#12M5	39		3, 14, 15, 18, 20		x	Receives social benefits	900–1500	Public transport oriented
#13SM3	38	x	8, 10, 14			Receives social benefits	1500–2000	Car-centred
#14SM1	40	x	12	x			1500–2000	Non-motorised
#15SM1	37	x	7		x	Receives social benefits	500–900	Public transport oriented
#16SM1	34	x	7		x	Receives social benefits	900–1500	Public transport oriented

* ID = #1–16 = number + M = Mother (female parent) or SM = Single Mother (female parent) or F=Father (male parent) + Number of children.

** Temporary payment of unemployment benefit after job loss.

The respondents only walk short distances in their residential environment (#7SM2, #10SM1, #13SM3). Cycling is not an option for them either because there are no suitable bicycles or trailers to carry goods or children (#10SM1, #13SM3). Moreover, their children do not yet cycle safely enough to participate in road traffic (#7SM2, #10SM1):

"I got a seat for my little one to sit on the back [of the bicycle]. I was fully motivated and wanted to ride my bike. But then I had the problem that my older one rides really well in the yard, but as soon as we go out on the road, he is really scared." (#7SM2)

The affordability of 'car-centred' travel practices is, firstly, related to high financial pressure as respondents indicate that they have to compare transport costs with costs for other basic needs, namely food:

"And sometimes I only have 50 euros a week with food and fuel. So, then it gets a bit tight (...). The most important thing is always the basics, that I can get to work [by car] and take [the child] to nursery. And that we have food." (#10SM1)

Secondly, there are financial constraints, as running costs for the car (for example refuelling) limit travel and, thus, may prevent social activities (#7SM2, #10SM1, #13SM3):

"I just stay very local and don't go very far. So, I already feel restricted. (...) If I could, I would drive further away (...) Maybe, just be out and about more often. And I can't do that the way I imagine it. That's why I feel restricted." (#10SM1)

In order to finance a car, the respondents explain that they need to handle their budget conscientiously. Some interviewees even need financial support from their social network. For example, relatives pay the running costs, such as car insurance (#10SM1), repair cars themselves to avoid workshop costs (#10SM1) or support them to save up reserves for sudden repairs (#7SM2). Indirectly, the social network supports the 'car-centred' families financially by inviting them over for dinner or by buying groceries (#7SM2, #10SM1). Moreover, friends take over the costs of going out or they engage in low-cost activities, such as barbecues, walks or visits to public playgrounds (#7SM2, #10SM1, #13SM3).

Our understanding of underlying key rationalities firstly involves the 'car-centred' families seeing their cars as necessary to cope with time pressure. An explanation for this is that exclusively single parents, whose time pressure is particularly high, belong to this type (Table 1). The interviewees report that without their own car they would not be able to take their children to different kindergartens (#7SM2), buy groceries efficiently (#7SM2, #10SM1, #13SM3) or commute from the more rural part of Ronnenberg to Hanover city centre (#13SM3). Although public transport use is estimated to be more cost-effective than car driving, time pressure outweighs this (#7SM2, #13SM3):

"Of course, I know that a bus and train ticket is a thousand times cheaper than a car. I know that very well. And I have also worked it out. But, nevertheless, I cannot say that the car is bad and the bus is better. Because of time." (#13SM3)

Another underlying key rationality we identify is, secondly, that the 'car-centred' families have positive emotions towards their cars and, at the same time, negative associations towards other transport modes. For instance, the car represented a place of retreat for a mother in her youth (#10SM1):

"But my car belonged only to me. And to me it was my space and my freedom somehow. And also the freedom to go anywhere." (#10SM1)

The 'car-centred' families also express pride in being able to afford a car despite low financial means (#7SM2, #10SM1). The car is seen as a luxury to which the 'car-centred' have become accustomed (#7SM2, #10SM1, #13SM3):

"It [the car] is a luxury item, but I don't think I could do without it nowadays." (#7SM2)

Negative associations related to public transport are, for example, based on a mother's general fear of public transport (#10SM1) and, for another, on an experience where using public transport did not allow her to get home quickly to her sick child (#13SM3). Another mother remembers the time without a car as exhausting because she had to carry groceries home on foot:

"You take these really big shopping bags because you don't want to go shopping every day. And then you lug this big bag plus a six-pack of water home. (...) That was exhausting. (...) I really couldn't do without a car, I don't want to do without one." (#7SM2)

4.2. Car-reduced

The 'car-reduced' type involves multimodal, low-income families who finance their own car but use it only occasionally and supplement it with other transport modes (#3SM1, #4M2, #5M1, #6M2). They give different reasons for owning a car. For example, the car is a gift from their partner (#3SM1), it is on credit (#6M2), they have several jobs (#4M2) or it was purchased before job loss (#5M1). In one case, the reason for reduced car use is that commuting to work is no longer necessary (#5M1) and, in another, the employer provides motorised transport (#4M2). In both of these cases, the respondents use alternatives like walking short distances to the kindergarten (#5M1) or lifts from relatives (#4M2). In the other two cases of the 'car-reduced' type (#3SM1, #6M2), the reduced car use leads to forced walking, cycling or staying at home, as public transport tickets are not always affordable:

"Yes, I sometimes decide not to go, when (...) I do not really have any money left for a ticket. (...) Because then I just cannot afford it. Or I - no, well, when it is that far, the car's tank is usually empty. (...) And then I just decide not to drive. Or to go by bike. Yes, it is not nice. It is really not nice because it is this extreme dependence. This financial dependence." (#3SM1)

The respondents' strategies to save costs include reduced car use, repairing cars and bikes themselves and financial support from relatives (#3SM1, #4M2). Additionally, the interviewees use general saving strategies, such as grocery shopping using offers and coupons (#6M2) or buy second-hand clothes (#4M2, #6M2). They also avoid leisure activities with entrance fees and prefer low-cost activities (#3SM1, #4M2, #5M1, #6M2):

"So, in theory, just to maintain friendships, we spend almost no money at all. (...) if we just sit outside on the lawn with camping chairs, something to eat, a blanket for the children with toys. We don't need to spend any money." (#4M2)

Our understanding of underlying key rationalities for the 'car-reduced' families is that, although they walk, cycle and use public transport, the car remains a kind of mobility guarantee for them, ensuring them access to places they cannot reach by other transport modes (#3SM1, #4M2, #5M1, #6M2):

"Otherwise [without a car], we wouldn't be able to visit our family." (#6M2)

The affordability of running costs is a hurdle to more frequent car use for them (#3SM1, #6M2). However, owning a car and only using it occasionally or when necessary seems sufficient for them (#3SM1, #4M2, #5M1, #6M2). Car ownership is described as a luxury they want to be able to afford (#3SM1, #6M2):

"In general, you don't really treat yourself. Therefore, I treat myself to the car. That's my luxury." (#3SM1)

Especially in the context of grocery shopping, the ‘car-reduced’ families emphasise the comfort of the car (#3SM1, #4M2, #5M1, #6M2):

“It is simply a luxury not to have to lug the shopping back home.” (#6M2)

In addition, car ownership is seen as a kind of guarantee for flexible departures in emergency situations:

“And if there is something wrong with [the child], [and we have to go to] the hospital (...) the car is simply indispensable. I am glad that I actually have one parked on the doorstep.” (#3SM1)

4.3. Public transport oriented

‘Public transport oriented’ families travel multimodally. They mainly use public transport, but also walk and cycle, for example for grocery shopping or as a low-cost leisure activity (#8F1, #12M5, #15SM1, #16SM1). The use of public transport ensures workplaces are accessible. While three respondents buy monthly season tickets for this purpose (#8F1, #12M5, #15SM1), one person buys single tickets because work schedules vary. This makes it unclear whether a monthly season ticket would be worthwhile (#16SM1):

“Because I work so oddly now. Last week, I had the whole week off. I never know whether it is worth it or not.” (#16SM1)

Similarly, season ticket holders question whether the monthly ticket is financially rewarding for them. Regular ticket inspections reinforce the decision to buy a ticket:

“I am extremely grateful (...) that my ticket is checked so often. (...) That it is worth spending this money (...), even if you have to skimp.” (#15SM1)

However, journeys that go beyond commuting or require the purchase of additional tickets for other household members may lead to fare evasion:

“For example, when we have an appointment (...) and we have no money, she [the wife] has no ticket. (...) I call a friend and say (...) please can you (...) lend me ten euros? (...) If he has nothing. (...) That’s it. What should we do? Sometimes (...), we go without a ticket. (...) Twice, I had to pay a fine.” (#8F1)

Three respondents (#8F1, #12M5, #15SM1) express the wish to get a driving licence in the future, which cannot be realised for financial reasons:

“I want to get one [a driving licence] and I’m already saving really hard. But as a single mum on unemployment benefit and a low income, it is not so easy to somehow put something aside.” (#15SM1)

The public transport oriented families have several strategies to afford public transport tickets. They administer the costs for their monthly season tickets as fixed costs (#8F1, #15SM1) and benefit from reduced tickets for welfare recipients (#12M5, #15SM1, #16SM1). Moreover, they buy cheap groceries to save money (#12M5, #16SM1) and they engage in low-cost activities, for example visits to public playgrounds, walks or meet at friends’ homes (#8F1, #12M5, #15SM1, #16SM1).

Our understanding of underlying key rationalities for the ‘public transport oriented’ families is, firstly, based on their need to commute to work by public transport (#8F1, #12M5, #15SM1, #16SM1). As they do not have driving licences and consider the distance between their place of residence and their workplace as too far for non-motorised transport modes, they have to finance public transport tickets, although this is not financially straightforward for them:

“The [price of a monthly season ticket] is a lot, a lot, but what should I do?” (#8F1)

Secondly, we identify that the ‘public transport oriented’ families are positively disposed towards non-motorised transport modes. They see walking and cycling, especially with the help of equipment such as trolleys and bicycle trailers, as sufficient and cost-effective to manage everyday life (#8F1, #12M5, #15SM1, #16SM1):

“To go grocery shopping (...), to buy things for school. (...) There are several activities for which we definitely use the bicycle” (#15SM1)

4.4. Non-motorised

The ‘non-motorised’ families mainly walk or cycle (#1M3, #2F1, #9M1, #11SM3, #14SM1). Two of the working respondents commute by bicycle (#9M1, #14SM1), another commutes on foot (#1M3), as the workplace is close to home. Similarly, they usually cover shopping trips by bicycle using baskets and bike trailers (#1M3, #9M1, #14SM1) or by walking (#2F1, #11SM3). Both cycling and walking are also undertaken as low-cost leisure activities (#1M3, #2F1, #9M1, #11SM3, #14SM1). In addition, the interviewees use public transport (#1M3, #2F1, #9M1, #11SM3, #14SM1) or take lifts with acquaintances in their cars for distances that are too far to cover by non-motorised modes (#1M3, #2F1, #9M1, #14SM1). Nevertheless, it is also evident that limited financial means affect mode use (#9M1, #11SM3, #14SM1):

“I can and I have to cycle to work. I could not afford to buy a train ticket every month.” (#14SM1)

Even though cycling and walking are certainly inexpensive transport modes, the respondents use strategies to finance non-motorised transport. They pass on bicycles within the family (#1M3, #2M1), buy spare parts in remnant shops (#1M3) or try to avoid repair costs as much as possible (#14SM1). When using public transport, those receiving social benefits buy discounted tickets (#1M3, #9M1, #11SM3) or occasionally borrow money from relatives (#2F1). In addition, the interviewees generally live frugally by purchasing groceries with offers and coupons and by performing low-cost leisure activities in allotments, gardens, public playgrounds or at home (#1M3, #2F1, #9M1, #11SM3, #14SM1).

Our understanding of underlying key rationalities for ‘non-motorised’ families is based firstly on their contentment with the infrastructure that enables them to manage their daily lives mainly in a non-motorised way (#1M3, #2F1, #9M1, #11SM3, #14SM1):

“I walk to work, it’s five minutes. (...) We are also really well connected by public transport. (...) Because you have the train, you have the bus, you have the tram here. That’s great. I can actually reach everything by bike.” (#1M3)

In addition, the families consider the use of trolleys, prams and bicycle baskets as well as trailers as adequate ways of carrying groceries home (#1M3, #2F1, #9M1, #11SM3, #14SM1):

“I have bicycle bags. I hook them onto the bike and have a big bike basket at the front. The bike can carry up to 180 kilos. So, from that point of view, it all works quite well.” (#14SM1)

Their satisfaction with being mobile in a non-motorised way explains, in addition to the fear of driving (#14SM1) and the financial constraints (#9M1, #11SM3), why none of them expresses the wish for a driving licence or car ownership, even though car ownership is seen as something that enhances job opportunities (#14SM1) and would make everyday life easier (#9M1, #11SM3, #14SM1).

Secondly, our understanding of underlying key rationalities includes the fact that the ‘non-motorised’ families have positive emotions towards their bicycles (#1M3, #2F1, #9M1, #14SM1):

“It [the bike] is 18 years old and it works. It has actually accompanied me everywhere (...). So, if it was really broken or gone or something. That would not be good. (...) I would suddenly no longer be flexible. Not at all. So, everything would come to a standstill for me. (...) I simply need it.” (#14SM1)

5. Linking low-income families’ daily travel practices with the element-based approach

Our subsequent analysis with the element-based approach (Shove et al., 2012) shows how limited financial resources appear in the elements *materials*, *competences* and *meanings* of low-income families’ daily travel practices (Fig. 2). These three elements are interwoven and form different types of low-income families’ travel practices (see section 4). We also discuss them separately below and across types to make financial aspects visible in a more differentiated way on the element level.

5.1. Materials

The availability of an adequate transport infrastructure is one prerequisite for travelling. This includes a built environment that makes it possible to use certain transport modes, such as cycling, walking, public transport or a car and also provides accessibility, for example with a sufficient frequency of public transport. Most interviewees confirm the relatively well developed transport infrastructure (see Fig. 1 in section 3). For example, one interview partner (#1M3), who is mobile without a private car, says that she can reach everything on foot, by bike or by public transport. Since the body itself is a carrier of travel practices, its condition, such as fitness or physical integrity, essentially influences which forms of travel can be carried out and which cannot. None of the interviewees reported physical limitations that prevent certain forms of mobility. Rather, it should be emphasised that walking and cycling have positive effects on the body and are practised for this reason, particularly by the ‘non-motorised’ type.

Financial constraints faced by low-income families are strongly based on *materials*, as investments in devices and resources are necessary. Especially with cars, the costs go beyond the purchase of a vehicle, as other car-related materials, such as spare parts, summer and winter

tyres, fuel and costs related to the material of a car, i.e. taxes, insurance, repairs and parking tickets, have to be financed. The high costs and related financial pressure associated with the material of a car are particularly evident in the ‘car-centred’ and ‘car-reduced’ types. Similar to the car but on a smaller scale, bicycles also incur costs for spare parts, repairs, trailers and bicycle baskets. These vehicles and the costs associated with them are barriers to mobility. For example, one interviewee reports that she does not ride a bicycle because she cannot afford a bicycle trailer for her children (#6M2). The use of public transport involves costs for the interviewee via the purchase of tickets. Holders of a Region S card, i.e. welfare recipients, can purchase tickets at lower prices (#1M3, #3SM1, #6M2, #7SM2, #8F1, #9M1, #10SM1, #11SM3, #12M5, #13SM3, #15SM1, #16SM1). In cases where a ticket could not be financed but public transport was still used, fare evasion fines were incurred, leading to additional financial pressure (#8F1). From our analysis, we also derive that even walking incurs costs when equipment like prams or shopping trolleys are needed.

5.2. Competences

Basic skills are necessary for travel, such as the ability to walk, cycle or drive as well as the knowledge of how to use public transport. Low-income families do not cycle together if one family member lacks the required skills. This is the case when the children cannot cycle safely and there is no possibility of transporting them in a bicycle trailer (#6M2, #7SM2, #10SM1) or when one of the parents feels too insecure when cycling (#12M5) or cannot ride a bike (#8F1). Also, to drive a car, basic skills are necessary for practising. For example, driving licences are relatively expensive and, for the ‘public transport oriented’ and ‘non-motorised’ types, a major hurdle before buying and financing the running costs of a car. We also discover that an essential prerequisite for daily travel practices is the ability to estimate the costs of transport modes realistically and to cope with limited financial resources. In this context, the social network is important, as it can financially support daily travel practices directly and indirectly. For example, relatives pay for fuel, give bicycles or offer lifts to carless households. Furthermore, it is essential for low-income families to schedule and organise everyday life efficiently and in a financially viable way so that work, shopping, childcare and leisure are manageable. We conclude that the *competence*

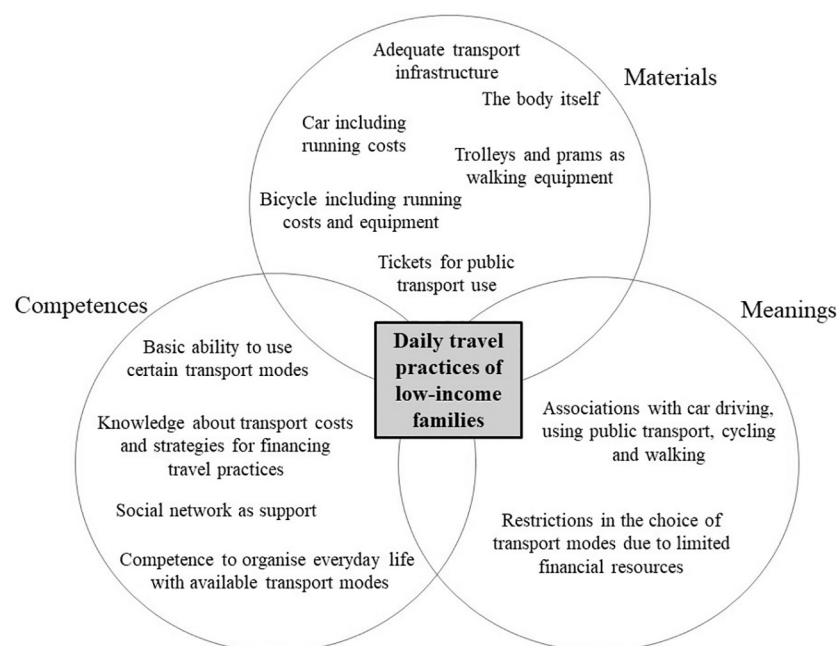


Fig. 2. The three elements of low-income families’ daily travel practices (own figure based on Shove et al. (2012)).

to finance, organise or borrow materials for travel enhances low-income families' travel options and thus their social participation.

5.3. Meanings

The low-income families interviewed attribute great symbolic meaning to the car. This is apparent when 'car-centred' and 'car-reduced' families, although living in poverty, finance a car and accept constraints in other areas of their life, such as weighing up fuel costs against food costs. Also, the 'public transport oriented' low-income families believe a car would improve their mobility and make everyday life easier. Accordingly, they indicate that they want to obtain a driving licence and drive a car in the future. Even the 'non-motorised' families, who do not express the wish to get a driving licence, associate car ownership in general with having money, better job opportunities and being able to offer their children more. Thus, car ownership seems to be a high priority for mobility and participating in society. We conclude that car driving is seen as something luxurious which some low-income families want and can afford ('car-centred' and 'car-reduced'); others want, but cannot afford ('public transport oriented'); and the latter neither can nor want to afford ('non-motorised').

The 'car-centred' families perceive public transport as inflexible and evaluate this transport infrastructure as insufficient. For them, public transport implies unnecessary, additional costs besides financing their own cars. The opposite is true for the other three types who use public transport in and around Ronnenberg. They express general satisfaction with the public transport infrastructure. The 'car-reduced' families perceive public transport as a cost-effective alternative to car driving. The 'public transport oriented' type values it because it allows them to reach their workplaces. The 'non-motorised' families are, for financial reasons, rare but satisfied public transport users. The meanings attributed to the non-motorised modes also show that the 'car-centred' families differ from the other three types. All families, except the 'car-centred', describe walking and cycling as healthy and inexpensive transport modes and for this reason consciously use them as their main or supplementary modes. In addition, they consider cycling a convenient means of making day trips to the countryside. Finally, we note that 'car-centred' and 'car-reduced' families express positive emotions towards their cars as 'non-motorised' families do to their bicycles. No interviewees expressed these emotions towards walking and public transport.

6. Discussion and conclusions

Households with children have an increased risk of being affected by financial poverty and are particularly vulnerable to transport-related social exclusion. Therefore, the aim of our study is to provide a deeper understanding of how financial poverty affects the daily travel practices of low-income families and how they cope with their limited financial resources. To explore this, we conducted 16 interviews with low-income families in Ronnenberg (Hanover Region, Germany), which we analysed by using qualitative content and type-building analysis (Kuckartz, 2014).

Despite all low-income families having to cope with limited financial resources, their daily travel practices differ. We identify four types of low-income families' travel practices: (1) car-centred, (2) car-reduced, (3) public transport oriented and (4) non-motorised. While the low-income families of the first two types finance a car, the latter groups organise their everyday life using non-motorised and public transport modes.

We used a practice-theoretical perspective of *materials*, *competences* and *meanings* of low-income families' daily travel practices with the aim of making financial poverty visible. For low-income families, financial investment in *materials*, such as cars, public transport tickets and bicycles, is a serious challenge. Similar to Mattioli (2017), our study shows that savings for car ownership and use are made in other areas of life, for

example in food and leisure. Our findings confirm that the cost of a driving licence is the first financial barrier to car driving (Uteng, 2009). Furthermore, as Daubitz (2016), González et al. (2019), Perrotta (2017) and Schwerdtfeger (2019) maintain, the costs of public transport tickets are challenging for low-income families.

To finance, organise or borrow *materials* for travel practices *competences* are necessary. These include knowledge of travel costs, saving strategies and also the ability to weigh up travel costs against costs in other areas of life. Our study confirms the importance of social networks as suggested by related research (Belton Chevallier et al., 2018; Clifton, 2004; Grieco, 1995; Hine and Grieco, 2003; Lovejoy and Handy, 2011; Uteng, 2009). Thus, we conclude that the social network can compensate transport disadvantages through direct and indirect financial support.

The *meanings* of daily travel practices are based on personal experiences or expectations. Many respondents view car driving as a daily convenience. Even families without a car make use of lifts from acquaintances occasionally. However, our results also show that non-car owners consider cycling and walking as adequate transport modes and bicycle trailers, bicycle baskets, trolleys or prams as sufficient to transport things. Thus, as already pointed out in studies on walking or cycling (Chandra et al., 2017; Handy et al., 2014; Hilland et al., 2020; Sarrica et al., 2019), the interviewees regard non-motorised modes as cost-effective and healthy. The use of a car in the form of a taxi by low-income groups as described in studies from the UK and US (Clifton, 2004; Grieco, 1995; Hine and Mitchell, 2001; Titheridge et al., 2014) as well as the use of delivery services (Lagrell et al., 2018) cannot be confirmed, as neither appears in the daily travel practices of our interviewees.

Regarding the interrelationships between the elements, our results illustrate that limited financial resources are evident in all three elements (section 5) and that these elements interact with each other differently, resulting in four types of low-income families' travel practices (section 4). Moreover, our analysis proves that the elements of different practices overlap and shape each other. This is particularly evident in the practice of grocery shopping. For example, the 'car-centred' and 'car-reduced' are more comfortable carrying their shopping by car, while the 'public-transport oriented' and 'non-motorised' perceive bicycles with trailers and baskets as sufficient for that. In particular, the fact that all types save money for transport on groceries demonstrates how closely these practices are interwoven. Furthermore, our analysis shows that the financial aspects within the three elements lead to certain strategies pursued by low-income families to finance their daily travel practices (section 4). These strategies are closely linked to leisure activity practices, which are restricted by financial circumstances in two ways. Firstly, leisure activities mainly take place locally so that families can reach them inexpensively and in a non-motorised way. More distant destinations are rarely undertaken in order to keep fuel or public transport costs low. In this context, cycling and walking are not only mentioned as cost-effective ways of getting to leisure destinations, but also as inexpensive leisure activities in their own right. Secondly, our analysis reveals that all low-income families interviewed save money on their leisure activities. They avoid activities with an entrance fee, such as amusement parks, cinemas or swimming pools. Instead, they engage in low-cost activities, like visiting local public playgrounds and meeting friends at home or in private gardens instead of in cafés or restaurants. Thus, certain transport journeys do not take place, as the price of the activity at the destination prevents travelling there. The incentive for a free zoo visit being the main reason for participating in this study underlines these findings. We conclude that low-income families experience trade-offs between transport costs and the costs of basic needs, such as food. They are also limited in their social participation in terms of leisure and, thus, experience transport-related social exclusion.

The limitations of our study are as follows. The results are not representative of all low-income families in the Hanover Region and of all suburban locations, as the transport infrastructure may vary, which

makes complementary results possible. Moreover, it is conceivable that the global Covid-19 pandemic has affected the results (Vos, 2020), although this was not obvious in the interviews. Regarding the use of practice theory, future studies might use other empirical methods, such as observations, or use other approaches than the element-based approach for data analysis to see if they provide complementary results. We also suggest that asking for household rather than personal net income and interviewing multiple household members could provide deeper insights into low-income families' travel practices. Finally, since low-income families experience serious financial pressure from transport costs, future studies should investigate in detail which measures would be appropriate to strengthen both transport and the social participation of those on low income in the long term.

Authors statement

This manuscript or a very similar manuscript has not been published, nor is under consideration by any other journal.

Declaration of Competing Interest

None.

Acknowledgements

The German Federal Ministry of Education and Research has funded this work [grant number 01UR1803B]. Firstly, the authors would like to thank all the interviewees for their cooperation as well as all the social institution employees who assisted in the interview recruiting process. Secondly, we would like to thank our project partners and our working group for their support, Elke Alban for creating the map, Laura Trost and Stefanie Kompat for their assistance in transcribing the interviews and Alison Hindley Chatterjee for her English language check. Finally, yet importantly, we would like to thank the reviewers.

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