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Author(s): Luoma-Halkola, Henna; Jolanki, Outi

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Aging well in the community: Understanding the complexities of older people's dial-a-ride bus journeys

Henna Luoma-Halkola^{a,*}, Outi Jolanki^{b,c}

^a Tampere University, Faculty of Social Sciences, Kalevantie 4, 33100 Tampere, Finland

^b Tampere University, Faculty of Social Sciences, Arvo Ylpön katu 34, 33520 Tampere, Finland

^c University of Jyväskylä, Department of Social Sciences and Philosophy, Keskussairaalankatu 2, 40014 Jyväskylä, Finland

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ABSTRACT

Older peoples' independent living in their own homes and their ability to move around and maintain social relations in their communities have been acknowledged as important aims to support their well-being. In this article, we study Special Transport Services as a means to support older persons with 'aging in place' – that is, within their communities. From “go-alongs” (shared dial-a-ride bus journeys) and “sit-down interviews” (at participant's home or a café) with 12 older people living in a Finnish suburb, we explored their everyday dial-a-ride bus trips to the local mall. We used actor-network theory and the concept of motility to show how at first glance what appeared to be simple dial-a-ride journeys were in fact produced by a complex and fluid actor network consisting of people, rules, norms, practices, technical devices, as well as other objects and tools. Associations between various human and non-human actors compensated for the functional limitations experienced by the participants, but also created difficulties during the journeys. Our main finding is that the actor network of dial-a-ride bus did physically help older people be more mobile, but at the same time the service required a wide range of know-how and skills. We argue that developing a truly age-friendly environment – with inclusive services to help older individuals age well within their community – requires a detailed understanding from *their* perspective of the actor networks that produce those services. When planning old age services, there is a need to engage with older people from different social backgrounds to develop services that are genuinely supportive and easy to use for a heterogeneous group. Our findings can be utilized in developing physical and social environments that better support older people's mobility and enable them to *age well in the community*.

Introduction

'Aging in place' has become a global policy goal adopted in many countries whose populations are increasingly older (Kröger & Bagnato, 2017; Mestheneos, 2011; WHO, 2004). Yet, though one's own home is experienced by many to be the best place to age, for some it can become a place of isolation because of barriers to mobility in the neighborhood (Clarke & Gallagher, 2013; Sixsmith & Sixsmith, 2008). In this article, we study special transport services (STs)¹ as a means of supporting meaningful activities in the daily life of older people who are aging in place with mobility restrictions.

According to the WHO (World Health Organization, 2004, 9) the goal of aging in place is “meeting the desire and ability of people, through the provision of appropriate services and assistance, to remain

living relatively independently in the community in his or her current home or an appropriate level of housing”. With regards to the present study, this definition emphasizes the importance of (i) the community environment and (ii) the services that support older people to age in place. Helping older persons to carry on living in their own home without having to move into residential care simply due to an unsupportive environment is an important goal, but critical views point out that for older persons themselves 'aging in place' can have ambiguous meanings. Home can have multiple meanings which depend on social relationships with the neighborhood, the support provided by services, and physical attributes of the actual housing and built environment (Wiles, Leibing, Guberman, Reeve, & Allen, 2011). Since neighborhood and community are some of the key elements in supporting older people's independence, resilience, and well-being (Gardner, 2011;

* Corresponding author.

E-mail addresses: henna.luoma-halkola@tuni.fi (H. Luoma-Halkola), outi.jolanki@tuni.fi (O. Jolanki).

¹ STs = special transport services

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Narushima & Kawabata, 2020; Netherland, Finkelstein, & Gardner, 2011), it is clear that the ability to participate in activities and social circles outside the home are essential requirements to age *well* in place.

Several studies have shown that to better understand meaningful ways to support aging in place, it is important to understand not only the physical quality and accessibility of housing, but also the means of transportation that link it to the wider community (Greenfield, 2012). Similarly, other aging in place studies have shown that it is not only poor health and insufficient income that contribute to older people's need to relocate, but also social isolation and lack of transport (Smith, 2009). Other important considerations to bear in mind are that the relationship between older people and places of aging do not remain static but constantly change (Lewis & Buffel, 2020), and that there are also non-human factors and services within local communities that may support independent living and community engagement (Lehning, 2014). Moreover, age-friendly initiatives vary according to the regional policy adopted by local governments, so there is a need to study the local initiatives and policy practices from a wider range of cultural and regional contexts (Lehning, 2014).

Our research adds to the literature on aging in place and transportation in later life by studying STSs as a way to support older people within their communities. Although STSs have been adopted in many countries to tackle the transport challenges of aging societies (Nelson, Wright, Masson, Ambrosino, & Naniopoulos, 2010), more research is needed on how exactly they support travel in older people's daily lives and what skills and abilities are required to be able to use them. Our study also adds a new perspective to aging in place literature by exploring the *non-human* aspects of aging in place and studying older individuals as *participants* in a network of human and non-human actors (Andrews & Duff, 2019).

To fill in these gaps in the research, we studied how older people make their everyday dial-a-ride bus journeys to the local mall where they run errands and engage with the community. We explored the specifics of dial-a-ride bus journeys by using actor-network theory (ANT)² and the concept of motility to analyze the "go-alongs" (shared dial-a-ride bus journeys) and "sit-down interviews" (at participant's home or a café) with older people in a Finnish suburb. ANT allowed us to trace associations between various human and non-human actors during the bus journeys (Latour, 2005), while motility allowed us to interpret how older people operate within the actor network of dial-a-ride according to their individual skills, abilities, aspirations, and the contextual constraints (Flamm & Kaufmann, 2006).

Using public buses and special transport services later in life

Previously, there has been extensive research on the difficulties older people with physical, cognitive and/or sensory deficits experience when using regular public buses (e.g. Jensen, Iwarsson, & Ståhl, 2002; Risser, Iwarsson, & Ståhl, 2012; Rosenkvist, Risser, Iwarsson, Wendel, & Ståhl, 2009). These studies stress the importance of considering the full range of physical and social barriers (Broome, McKenna, Fleming, & Worrall, 2009) that older persons face on public buses, and that this must be done in a detailed manner across the entire travel chain (Carlsson, 2004) when exploring transport solutions in later life.

Considerably less is known about the specific demands of using STSs (also referred to as community transport or paratransit), which are a form of flexible or demand responsive transport targeted at people who have difficulties using regular public or private transport (Nelson et al., 2010). These services can vary in their degree of flexibility regarding whether they provide door-to-door, curb-to-curb, and/or hail and ride transport, and whether the service has fixed schedules and a fixed origin and destination. There are also differences in how the booking systems are organized, what vehicles are used (i.e. minibuses or vans), and who

organizes the service (i.e. a voluntary organization or public authorities) (Broome, Worrall, Fleming, & Boldy, 2012; Nelson et al., 2010). In this study, the empirical case is a dial-a-ride door-to-door minibus service, which is targeted at people with mobility restrictions as part of the public transport system. Passengers can book a ride in advance or hop on from a fixed bus stop.

Previous research has suggested that although STSs can support older people's independence and community engagement (Hagan, 2020; Luoma-Halkola & Häikiö, 2020; Musselwhite, 2017), they do not necessarily fulfill all mobility needs later in life (Musselwhite, 2017). Spontaneous travel at the discretion of the user remains difficult due to restricted zones, timetables, and the need to book a ride in advance (Glasgow & Blakely, 2000; Musselwhite, 2017). STSs also commonly provide transport mainly to local services, while discretionary travel for fun is also important for older persons (Musselwhite, 2017).

Other research has looked at how STSs compare to fixed-route buses for older people. Jensen et al. (2002) found that STSs were less demanding for older people than regular low-floor buses or service route traffic in Sweden. Nevertheless, older people still faced some problems when using STSs, but they were able to find ways to overcome these – either by themselves or with the help of the bus driver. Meanwhile, Broome et al. (2012) studied the impact of replacing a fixed-route with a flexible-route bus service in Australia. Participants used the new service more and were more satisfied with it, but there was some dissatisfaction with the telephone service, as it was deemed complicated and it was sometimes hard to get through to operators.

Studies on transport safety have shown that older people with disabilities may sometimes even injure themselves during STS journeys. These injuries include wounds, contusions, and even fractures and concussions, which are caused by accidents such as hitting a foot when entering the vehicle with a wheelchair or falling off the wheelchair (Bylund, Wretstrand, Falkmer, Lövgren, & Petzäll, 2007; Wretstrand, Bylund, Petzäll, & Falkmer, 2010). These findings suggest that the specific characteristics of STSs must be fully considered when analyzing and developing these services further.

Cultural norms also shape transport choices and may create barriers for using STSs. Some older persons feel, for instance, that STSs are only for the "less well off" (Musselwhite, 2017, 53) or for the "old-old" (Glasgow & Blakely, 2000), while older men may feel that STSs are more suitable for women (Ahern & Hine, 2012).

Actor-network theory and motility

To make sense of older people's dial-a-ride bus journeys, we draw from Brembeck, Hansson, and Vayre (2016) who, like us, used ANT and the concept of motility in their ethnographic study of daily shopping trips among families and older people. They showed how various objects, such as shopping lists, money, shoes, and bags had both a functional and symbolic meaning for older persons. The shopping trips were largely driven by routines, but when those broke down – for example, due to health problems – new skills were developed and certain items were used to overcome the problem. Service users were thus very inventive in finding ways to continue making their habitual consumer trips.

The central tenet of ANT is that agency is distributed across a network of human and non-human actors. Actions and actors do not refer only to intentional human action, but "anything that does modify a state of affairs by making a difference is an actor" (Latour, 2005, 71). This means that objects and things can also be actors. Some scholars have also identified norms, values, ideas, and collective constructions as having the capacity to transform relations in actor networks (Fox & Alred, 2016). In this article, the term 'actor' thus refers to anything that transforms a state of affair in connection to older individuals' bus journeys.

ANT provides a methodological approach for understanding the complexity of reality (Bosco, 2014). It has been used for studying the

² ANT = actor-network theory

complexity of people's daily travel, especially in the field of human geography. These studies have shown how people's everyday journeys are formed through complex interactions between resources and constraints created by actor-networks, consisting of a wide variety of things, such as online route planners, traffic jams, public transport schedules, mobile phones, and road signs (Peters, Kloppenburg, & Wyatt, 2010). These studies also indicate that everyday travel is fabricated through shifting relations between actors, for example, through the process of adjusting a car seat to a comfortable height to support the capabilities of an aging body (Schwanen, Banister, & Bowling, 2012) or using a removable child seat to enable working parents to take their child to nursery in turns (Schwanen, 2007). In summary, these studies illustrate that ANT provides a useful perspective for studying the complexity and fluidity of travel in people's day-to-day contexts.

The concept of motility (Flamm & Kaufmann, 2006; Kaufmann, Bergman, & Joye, 2004) helped us to explore how older people operate as part of the dial-a-ride actor network based on their own interpretations. In this article, motility refers to the potential individuals interpret they have for moving in *physical space*. This potential may (or may not) be transformed into actual travel through 'appropriation', which involves evaluating mobility options in relation to personal aspirations, values, and needs as well as interpreting one's personal skills and access to mobility options. These skills include both physical and cognitive abilities and the acquired knowledge and organizational skills required to plan traveling. This know-how is specific to each mode of mobility and is accumulated through past experiences (Flamm & Kaufmann, 2006; Kaufmann et al., 2004).

Although motility is an established theoretical framework, it has been "relatively unexplored" (Shliselberg & Givoni, 2018, 281). Motility has been used to research people's mobility choices and potential in different daily life contexts. For example, studies have explored daily mobility and rhythms of families in France (Drevon, Gerber, & Kaufmann, 2020), involuntary immobility in rural Tajikistan (Blondin, 2020), and metrorail commute in South Africa (Bergman & Bergman, 2019). These studies illustrate that people's mobility potential varies across contexts in terms of contextual constraints, mobility options and the specific know-how required to use them. Moreover, Blondin (2020) showed how motility can also vary between individuals within the same context, as some participants with physical vulnerabilities were unable to travel to the closest village to reach services due to high physical demands of the trip. This highlights the importance of studying how people build their personal relationships with their surroundings and what skills and abilities are required to be mobile. Previous studies also emphasize the need to explore how people prepare for their travel besides the actual travel. For instance, Drevon et al. (2020) showed that coordinating the daily activities of families required versatile know-how and complex planning *before* the actual travel. In summary, motility provides a comprehensive framework for exploring people's possibilities to plan, organize and undertake travel in their daily lives, making visible the local contextual constraints, available mobility options and the know-how required to use them.

Data and methods

The site of research

Since the 1990s, Finland has promoted independent living of older people in their own homes and communities, while aiming to reduce the number of people residing in institutional care (Anttonen & Häikiö, 2011; Anttonen & Karsio, 2016; Kröger & Bagnato, 2017). This has also involved developing accessible housing and living environments (Ministry of the Environment, 2013).

The present study was carried out in the suburb of Hervanta in the city of Tampere, in Southern Finland. The city has 241,000 residents and Hervanta is the largest suburb with almost 25,000 residents. The suburban center has public and private services with good pedestrian and

public transport access. The latter consists of regular fixed-route buses and dial-a-ride minibuses, which run door-to-door. In addition, subsidized taxi services are available to people with functional limitations based on the [Act on Disability Services and Assistance \(380/1987\) \(2020\)](#) or [Social Welfare Act \(2014/1301\) \(2020\)](#).

This study focuses on the dial-a-ride minibuses targeted at those who have difficulty using regular public transport. The fare is the same as for a normal bus and there is a senior discount available between 9 am and 2 pm. The service provides door-to-door transport within certain zones. A ride can be reserved beforehand by calling the bus staff, and the bus picks up passengers from their doorsteps. Alternatively, one can hop on from a fixed bus stop, including the mall, from which dial-a-ride buses leave at hourly intervals. There are four dial-a-ride zones that operate only during weekdays, and each zone has a different phone number. Passengers can be helped on and off the bus if needed, so each bus also has an assistant with the driver. The assistant also carries passengers' bags to the doorstep or even to the elevator in apartment buildings if needed. The minibuses can take about 10–13 passengers, depending on how many walkers and wheelchairs are also on board.

Data collection

For the purposes of this study, go-alongs and sit-down interviews were conducted with 12 dial-a-ride bus users by the first author in the autumn of 2019. Go-alongs involve combining interviewing and participant observation while being on a tour in participants' familiar environment (Carpiano, 2009; Kusenbach, 2003). In this article, go-alongs entailed dial-a-ride bus journeys, which enabled observing the journeys first-hand while also accessing participants' own interpretations of their situated daily conduct. To deepen this knowledge, also traditional interviews were conducted in a static sit-down setting at participants' homes or a café. This combination revealed concrete aspects of participants' mobility that would otherwise have been very hard to obtain merely from traditional interviews. Our data thus contains both transcribed interviews and field notes.

Participants were recruited from two local community centers ($n = 5$) and a mall ($n = 2$); three more were recruited by the existing participants; and the last two were recruited during a dial-a-ride journey. All twelve participants (seven women, five men) had used the service regularly for several years. They used the service weekly and some of them multiple times in a week. They were 58–84 years of age (mean 74.9) and either lived in an apartment on their own ($n = 8$), or with a spouse or sibling ($n = 4$). Eleven of the participants had a physical mobility impairment; one used the service as she was unable to lift grocery bags onto regular buses; and eight used an assistive device (walker, walking stick, and/or a crutch).

The first author joined each participant for a one- or two-way bus journey. The participants chose the destination, pace, and duration of the journeys. The resulting analysis focused on travels to a local mall, since that was the most common target of the journeys. The mall was an important place for the participants, as it enabled them to run errands, spend time, and socialize (see also Alidoust, Bosman, & Holden, 2019). Its manifold services included three grocery stores, a pharmacy, a post office, a bank, cafés, restaurants, and slot machines; there was also a public library and health center nearby.

The sit-down interviews were conducted either at a café or in the participant's home, and they were audio-recorded and transcribed. To understand the role of dial-a-ride transport in participants' wider day-to-day contexts, they were first asked questions about their daily lives and routines in general: what did they usually do during a normal day and week? Where did they usually go? How? After that, questions were asked specifically about the dial-a-ride service: why and when did the participants start using the service? What was the meaning of the service for them? Where did they usually go with it? How often? How did they use the service in practice? Follow-up questions and additional inquiries based on observations from the go-along bus journeys were used to elicit

discussion about specific details. The interviews ranged from 30 to 60 min. The entire time spent with each participant (including the go along) varied; the shortest meeting lasted approximately one hour and the longest over eight hours.

Field notes were written by the first author immediately after each bus journey taken. Observations and field notes were conducted from the perspective of ANT (Latour, 2005), which involved making detailed observations about how human and non-human actors produced the bus journeys. Therefore, making the observations and field notes constituted already the initial ‘processes of interpretation and sense-making’ (Emerson, Fretz, & Shaw, 1995, 8).

The study received a research permit from the City of Tampere and follows the ethical guidelines set out by the Finnish National Board on Research Integrity and Finnish law. Participation was voluntary and participants signed a letter of consent based on information outlining the purpose of the research, data management, and participants’ rights. Bus staff were also informed about the research beforehand, and other passengers were given out information leaflets on the bus.

Data analysis

Our analysis involved a detailed description of the dial-a-ride bus journeys using actor-network theory (Latour, 2005). The first step involved categorizing the data based on different phases of the journey: (1) *planning and booking the ride*; (2) *getting ready and waiting for the bus*; (3) *reaching and boarding the bus*; (4) *the journey to the mall*; and finally (5) *returning home from the mall*.

The second step involved identifying events that took place during each phase and mapping how these events were produced by a network of human and non-human actors. By ‘actor’, we refer to anything that changes the state of affairs related to bus journeys, whether a human, object, or norm. Mapping human and non-human actors sometimes required tracing them to other places and times (Latour, 2005). For example, paying the fare required topping up a bus card beforehand.

The findings provide a detailed description of associations between actors (Latour, 2005), which were then interpreted in terms of motility (Flamm & Kaufmann, 2006; Kaufmann et al., 2004) and detailed in the discussion chapter.

Findings

Here we report our findings regarding how manifold human and non-human actors produced the different phases of the dial-a-ride bus journeys, including 1) planning and booking the ride, 2) getting ready and waiting for the bus, 3) reaching and boarding the bus, 4) the journey to the mall, and 5) returning home from the mall.

Planning and booking the ride

To make their dial-a-ride journeys to the mall, participants needed to acquire or possess knowledge about the bus service and the mall, plan the journey, and book the ride.

Initially, participants had acquired knowledge about the rules and norms of the dial-a-ride service that enabled them to evaluate whether or not it was for them:

I saw there was this bus in our yard and the person, the assistant, said I could try it. At the time I thought it was only meant for really old people with, you know, a walking stick – like really old people [...]. That was before I realized it’s actually for anyone who can’t get around. (Interviewee 6)

This reflects how older persons evaluate their mobility options according to perceived norms, and how objects, such a walking stick, can symbolically represent old age. Nevertheless, now all the participants perceived the dial-a-ride as a suitable transport option for people with

mobility restrictions.

The participants had extensive practical knowledge about the timetables, zones, booking, and payment practices of the dial-a-ride service, as well as hidden knowledge. For example, they knew that at specific times of the day or month the bus was often full. They had learnt all this from acquaintances, information booklets, the internet, bus staff, and their own experiences of using the service over the years.

This practical knowledge was needed to plan the travel. Buses were running from 9 am–3:30 pm on weekdays but participants usually caught the bus before 2 pm to get the senior discount. Occasionally some tried to run their errands within one hour since then the ride back home was free. Finances and bus timetables were thus influential actors shaping travel.

To plan the journey, participants also used knowledge on geographical surroundings and the services at the mall:

So I always make sure I get the 9 am bus, go to the library, then I come here [the mall]. If I get the books out quickly then do my food shopping, I can still make it back for the 10 am bus. And if it’s difficult to find the books, then I go for a walk and maybe come here [a café] for a coffee...

(Interviewee 7)

The participant artfully linked the geographical knowledge regarding the proximity of the library and café to what was known about the bus timetables, in order to run errands smoothly and change plans quickly if necessary.

To book a ride, all the participants called the bus staff from their mobile phone. Participants used various items to access the phone number: for example, some had saved it on their phone, and others kept the information booklet to hand – one participant also used a magnifying glass to read the booklet with. These tools allowed participants to compensate for their cognitive and sensory abilities.

The participants had various ways of coping with busy phone lines. The bus staff would start taking reservations at 9 am, but one participant usually called two minutes early to avoid the jam. Another participant found that using a mobile phone meant it was easier to call back:

You don’t have to type out the number every time you call back, you just push one button.

(Interviewee 1)

During the calls, the shared history between participants and the bus staff played a significant role:

And the staff, the bus assistant and driver, yeah [laughs] they’ve all learned our first names, so they know who it is. When I phone them, they recognize my voice and say “Oh, it’s Toivo”.

[...] And they remember the address and stairway to go to. (Interviewee 12).

Planning and booking the ride was produced by a complex actor network. Participants had knowledge about the *norms*, *rules*, and *practices* of the service, which proved crucial in planning their trips. Various *tools*, such as *information booklets* or *magnifying glasses*, enabled accessing information regarding the service. Participants also considered *finances* and *surroundings at the mall* when they planned the trip. They used a *mobile phone* to call the *driver/assistant* to book the ride.

Getting ready and waiting for the bus

After booking the ride, the passengers needed to get ready and go wait for the bus outside on time. During the shared dial-a-ride outings, the participants frequently checked the time from their watches or mobile phones and knew when we needed to go wait for the bus – they

had developed routines around the bus journeys.

The bus leaves at 9 am [to pick passengers up], so I have an alarm go off at 9 am, put my shoes and jacket on, and go downstairs. (Interviewee 6).

Participants chose what to take with them depending on the purpose of the trip. This included objects that compensated for functional limitations, such as two-wheeled shopping trolley bags to transport heavy items.

An elevator was needed to go downstairs as it could accommodate assistive aids. Participants preferred to wait in spots where they could see the bus arrive; either sitting on their walker or a bench if there was one. In cold weather the participants tried to stay warm by using a seat cover outside or waiting just inside the door. It was important that the bus staff knew their routines:

I've told that I can't stand outside in the cold, so I wait just inside the foyer. They know this and stop right outside where they can see me. Then I just get up from where I'm sitting and go. But sometimes if I book the 10 am bus, it might get there three, fifteen, or even twenty minutes past. (Interviewee 4).

A sheltered place to wait was essential as it was uncertain when the bus would arrive. The reported waiting time varied between a few minutes to 40 min. However, waiting also gave participants the time to do other things like socialize with neighbors, take the garbage out, or smoke a cigarette.

Participants prided themselves on having never been late unlike some other passengers. According to them, the bus would only wait for a few minutes, but the bus staff would actively try to ensure everyone was picked up – checking the stairway, ringing the doorbell, calling them on the phone or even coming back later. They might also almost scold those who were late so that the service could run on time, “Yeah, they certainly keep the flock together”. (Interviewee 5).

Many human and non-human actors were helping participants get ready for the bus. The *rules* and *practices* of the service dictated that it was important to be on time, and various *tools* helped in this – for example, a *watch* to keep track of time and an *elevator* to get downstairs. The *bus staff* played a crucial role by helping the passengers and upholding the *rules*.

Reaching and boarding the bus

To provide door-to-door transport, the dial-a-ride bus needs to reach the passenger's doorstep. Sometimes obstacles, such as cars parked directly outside a doorstep, made it difficult for the bus to stop there. Some housing companies had a parking ban to prevent this. Also, weather conditions, particularly in the winter, posed obstacles:

They don't keep [name of a path] open over the winter. I had to struggle through knee-deep snow and slush once when the bus couldn't get through last winter. (Interviewee 10).

While some entrances had difficult ramps, slopes, or heavy doors, others were more accessible with automatic doors, good ramps, and level surfaces. Two participants had asked their housing companies to build a ramp to enable them to get around with walkers, while another said that a nurse had demanded modifications be made:

This front door and inner door were modified when I got back from hospital. The nurse came with me to see if I'd be able to carry on living here or if they'd need to take me back to the hospital. The housing manager was also there, and the nurse told them there'd need to be a remote control for the doors and a ramp fitted over the doorstep so I'd be able to get round in a wheelchair if I still needed to use one. [...] And this is all thanks to the person from the hospital; I

wouldn't have thought of asking for them myself, as I didn't know any of these possibilities were even available to me...

(Interviewee 9)

When boarding the bus, passengers need to take a step upwards. Some participants got on without any support, others grabbed two stanchions inside the bus, and some needed assistance. The bus assistant helped passengers on if needed and lifted their walkers in.

The previous buses were better as they had a lower ground clearance. This bus is a little higher though, and when someone has weak legs, it's good that they [bus assistant] can give you a hand up, from under the arm. Then people can get on and off the bus more easily. (Interviewee 12)

Once on the bus, all participants used a travel card to get a senior discount.³ The travel card needs to be acquired from the public transport office in the city center, even if it can be topped up at any kiosk in the mall.

Before starting the journey, the bus staff would ensure all the passengers were seated and that those in the front had attached their seat belt. Even though the dial-a-ride bus is a type of STSS, it did not quite meet all the needs of everyone with mobility difficulties; for instance, seats were a problem for one participant: “And the seats are so low, I have difficulties sitting down because my knees really hurt when I stand up and sit down...” (Interviewee 12).

Boarding and getting seated on the bus required the collective effort of many human and non-human actors: *steps, travel cards, doors, ramps, bus staff, stanchions* and *seats*. Occasionally obstacles, such as *snow* or *cars* created challenges for passengers to reach the bus. Some *participants* had advocated modifications at their *entrances*, which involved negotiations with *housing managers* and *housing companies*.

The journey to the mall

The bus journeys were not just a means for participants to reach the mall but also an important way for them to engage with their communities. While some passengers sat quietly throughout the journey, others participated in discussions ranging from general chit-chat to very personal issues. Sometimes the passengers even made friends in these journeys.

Interviewee 6: And we became such good friends there [on the bus] that we exchanged email addresses, so he has my phone number and I have his. [...]

Researcher: So you really get to know to people on it?

Interviewee 6: Yes. If someone says something that I might know about, then we start talking and we might have some things in common...

Participants appreciated this sociable aspect to bus rides, which even helped some of them cope with difficult life experiences and loneliness.

...people have been asking me how I'm so bright and cheerful. Well, it's because it gives me mental support. I always feel more lively when I catch the dial-a-ride. It's not just a bus trip. For me, it's like going to church even though I don't actually ever go to church. I don't need to go to church... (Interviewee 12)

The bus staff helped to make the atmosphere on board sociable and welcoming. The relationship between the bus staff and the passengers was reciprocal, as both talked about their personal lives and swapped favors and small gifts, such as candies. There were many social activities

³ Except for the one participant who had not yet reached the retirement age. She had a regular monthly ticket.

on the bus: telling jokes, following sports on someone's phone, and even playing a harmonica and singing.

I phoned the other dial-a-ride bus and [first name of assistant] answered it. And then we sang, the whole bus sang their name-day song. We can do that. It's our own little community that bus.

(Interviewee 6)

The bus was clearly not just a way to get from one place to another, but a mobile community for staff and passengers, and an important meeting place with its own complex social network.

Some participants had identified specific norms and rules for socializing. Discussions about politics and religion were avoided and the passengers respected the privacy of personal information shared on the bus: "There are unwritten rules that personal things shared on the bus stay on it [the bus] and won't go any further." (Interviewee 6)

The bus thus provided a community of trust, and catching it involved detecting and abiding by these rules of social interaction, and putting up with the differences between passengers and unpleasant interactions: "Some of the grannies there are a bit withdrawn and would probably prefer I didn't talk, but some like it..." (Interviewee 12).

Some participants also enjoyed the changing scenery during the bus journeys. The route was determined by the bus staff, but their flexibility had on rare occasions enabled spontaneous discretionary travel for fun according to passengers' own liking:

...one morning there were three or four of us [on the bus], we started talking about the new residential area Lintuhytti [...] and the women started asking about it. So I said to [first name of driver] why don't we take a look. The driver asked everyone if they didn't mind going to see Lintuhytti, and they agreed [...], so we went and had a look [...] on our way to the mall.

(Interviewee 7)

At the mall, the bus staff helped passengers leave the bus if needed. After that, reaching the mall was easy as the stop was just outside the entrance, which had automatic doors and suitable ground surfaces that enabled moving with assistive devices.

Bus journeys formed a mobile community created by a network of actors involving *passengers* and *bus staff*, the *scenery* seen from the *window*, and the *norms* and *rules* of social interaction. Occasionally socializing was also built around *gifts*, *musical instruments* and watching *sports matches* via someone's *mobile phone*. While passengers appreciated socializing, they also had to accept individual preferences of *other passengers*. After the ride, *bus staff*, *assistive devices*, *ground surfaces* and *automatic doors* helped passengers to reach the mall safely.

Returning home from the mall

To return home, the passengers needed to get ready and go wait for the bus. According to the participants, the ride home from the mall could not be pre-booked. Instead, the passengers were admitted on a first-come, first-served basis, with buses leaving every hour on the hour. The participants knew this timetable, and would usually get to the bus stop early.

Interviewee 6: So we go and wait there and the quickest ones win. They get as many as they can on the bus. Ten get on the bus and when it's full, it leaves. If you're not one of those ten, you have to wait for the next.

Researcher: Do people often have to wait for the next bus?

Interviewee 6: Not often but sometimes. [...] I know the bus leaves at eleven, so I just try to get there by ten to. There can be such a group waiting there sometimes, that after a while they all start elbowing each other and saying they were there first.

Being on time was important, and the participants usually waited at benches inside the mall. Since the benches were often full, some would sit on their walkers. The benches were not just resting spots but also a place for socializing and so important that the passengers had even fought for them:

Researcher: I was wondering, well actually I noticed when I was recruiting participants that this is where people wait [points at two benches]...

Interviewee 5: It's certainly meant for that and actually they took the other bench away at one point, but we kicked up a fuss – collaboration is power – and it came back.

Some participants had called the mall manager and demanded the bench back. They clearly interpreted that the benches were meant for dial-a-ride bus users.

Weather permitting, some participants preferred to wait outside. The advantage of waiting outside or near the entrance was that it was easier to see the bus stop:

Those with a walker can park themselves near the door and see when the bus arrives. But they always come early, so you can sit on the bench and watch, check the time, and then aha it's ten o'clock, so time to go to the bus – it's out front now. (Interviewee 1)

When boarding the bus, the bus staff would remember regular passengers' addresses and ensure they didn't get on the wrong bus. They would lift passengers' bags and walkers and help passengers on board. This was important, as many participants could not manage their bags themselves. The dial-a-ride bus seemingly had more permissive norms regarding bringing groceries than regular buses:

It's nice here on the dial-a-ride bus that you can buy a multi-pack of toilet paper and get it on board, and don't need to get a bigger bus, where there's not so much space for that, and people don't like it if you get on with large bags.

(Interviewee 6)

Thus, the bus was an important means to transport groceries home. The bus usually dropped passengers off at their doorsteps unless there were obstacles. Occasionally, participants were also happy to be left at the curb, which depended, for example, on the weight of their groceries or the season:

Every now and then I'll tell them if I have a very heavy load so I don't want them to leave me on [street name] as there's a slope, and during the winter I want to be left in front of the door. I don't want to walk on a slippery slope.

(Interviewee 7)

The bus assistant helped the passengers and even carried their bags to the elevator if needed. Participants appreciated their helpfulness and pointed out situations when the bus staff had been particularly flexible in meeting their needs.

Interviewee 11: But the staff on the buses, they deserve all our gratitude. [...]

Researcher: What makes them so good?

Interviewee 11: They're so, how can I say, willing to help. [...] Was it last week or the week before when I was at the mall, and when I came back, I was feeling ill for some reason and I asked the bus assistant if they could make sure I got home OK because of that. Well they brought me all the way home. Then I asked if they could call my daughter. I gave them my phone and they found the right phone number. I talked with my daughter and asked if she could come over.

And then she came [laughs] and she of course knew what was wrong with me – I had not drunk enough [water] apparently.

Reaching home was also facilitated or hindered by various objects. An elevator helped the participants to get upstairs even with heavy groceries and assistive devices. However, some entrances had obstacles. For example, heavy front doors made it difficult to get through with a walker.

Returning home from the mall required a complex actor network. *Passengers* were admitted on a first-come, first-served basis according to the *rules* of the service. If there were more *passengers* than *seats*, the *passengers* needed to negotiate who goes first. Various actors provided assistance: for example, *walkers* and *trolley-bags* helped carry heavy groceries, and *benches* offered an opportunity for resting and socializing. The benches had also been claimed by passengers as their rightful space at the mall – involving struggles with *other people*. Multiple actors assisted or hindered older people's ability to board the bus and reach their home, such as *doors*, *ground surfaces*, *bus staff*, *ramps*, and *elevators*.

Discussion

We studied special transport services (STS) for older people with mobility restrictions as a way to help them age in place within their existing community. Drawing from go-alongs (shared dial-a-ride bus journeys) and sit-down interviews (at participant's home or a café) with 12 older people in a Finnish suburb, we explored the complexities of their dial-a-ride bus journeys to the local mall. Our study shows how what at first glance appeared simple dial-a-ride journeys for older persons were actually produced by a complex and fluid actor network of *people*, *rules*, *norms*, *practices*, *technical devices*, *documents*, and other *objects* and *tools* that either facilitated or hindered their travel. The bus journeys even formed a mobile community that highlights the immense importance of the social aspect of these bus journeys. The participants did not use the service simply as a vehicle to run errands, but it allowed them to manage social contacts and provided valued social encounters and activities, which corresponds to previous research (Green, Jones, & Roberts, 2014; Hagan, 2020; Musselwhite, 2017). Our central finding is that the dial-a-ride actor network compensated well for older people's restricted physical abilities but required a wide range of know-how and skills.

Here we have interpreted our findings further through the concept of motility, since it enables us to explore in more depth how older people used the bus service and operated as part of the actor network in terms of their skills, abilities, aspirations, and level of access to the service (Flamm & Kaufmann, 2006; Kaufmann et al., 2004). Appropriating any mode of mobility involves evaluating its functional and symbolic suitability in relation to an individual's personal needs, values, and aspirations (Flamm & Kaufmann, 2006). In our study, all the participants found the dial-a-ride bus service suited them as they interpreted it as being meant for people like themselves with poor mobility. Functionally, they described the service as "a lifeline", since it supported their desire to manage their daily lives independently in spite of various mobility restrictions. In line with previous research (Hagan, 2020; Musselwhite, 2017), we found the bus enabled them to run errands independently and to engage with their communities. On rare occasions, the bus also allowed spontaneous discretionary travel for fun, which has been found to be important to older individuals (Musselwhite, 2017). The ability to connect with the wider neighborhood and community like this has been shown to be crucial for the resilience and well-being of older people who 'age in place' (Gardner, 2011; Netherland, Finkelstein, & Gardner, 2011).

When people appropriate a mode of transport, they also interpret their skills and access to transport, which are highly intertwined aspects of motility (Flamm & Kaufmann, 2006). The resulting actor network we uncovered compensated well for participants' restricted physical abilities. The door-to-door aspect of the service and the bus staff's

helpfulness were particularly important in supporting older people's access. This corresponds with previous research, which has shown that major obstacles to traveling on buses for older people include long distances to bus stops, difficulties with entry and exit, and unhelpful drivers (Broome, Nalder, Worrall, & Boldy, 2010). In our study, the bus staff cultivated a friendly and patient atmosphere that normalized assistance as an acceptable and commonplace part of dial-a-ride journeys. This is important, since previous research has shown that older persons may have difficulties accepting help due to the emphasis of self-reliance in individualistic societies (Portacolone, 2011). Non-human actors also made the bus journeys possible: a foyer kept passengers warm and a bench enabled them to rest and socialize while waiting for the bus.

Our findings show that access to the bus was a process that depended on the fluid configuration of this actor network, illustrating how the relations between older people and their living environments are not static but constantly changing (Lewis & Buffel, 2020). Some participants could, for example, get on the bus unassisted, but needed help when they had bags full of groceries. Equally, the bus would usually take passengers directly to their doorstep, but sometimes snow, building work, or parked vehicles might prevent this. These shifting associations between actors could create challenges, but in this study, we found that the participants were able to overcome these difficulties either individually or with help from bus staff (see also Carlsson, 2004). Yet, it is important to consider these challenges since people have varied skills and abilities, which shape the (in)ability to anticipate and overcome challenges related to travel (Flamm & Kaufmann, 2006).

As well as physical abilities, motility involves the know-how required to use a mode of transport accumulated through previous experiences (Flamm & Kaufmann, 2006). Our findings show that using the dial-a-ride service was no exception, requiring specific know-how and skills related to this. When planning and organizing the bus journeys, participants synthesized their knowledge of how the service operated with estimations of their geographical surroundings and with habitual activities at the mall. This involved also detecting and abiding by the rules and norms regarding how passengers were expected to act when riding the bus. For example, the participants knew that they were supposed to wait for the bus outside on time and that certain discussion topics were to be avoided in the bus. This was not difficult for participants, as bus travel to the mall had been part of their weekly routine for several years. This illustrates that people accumulate experiences related to travel throughout their lifetime, and as Flamm and Kaufmann (2006) argue, these personal 'mobility biographies' will shape their travel in later life.

Participants used such a wide range of know-how, in fact, that not all of it was necessarily *required* to use the service. According to Flamm and Kaufmann (2006), this kind of expertise nevertheless enables anticipating disturbances, estimating how to time one's travel, and exercising self-control in challenging situations. This became apparent in our study too, as the participants also had some *hidden* knowledge about the dial-a-ride service that allowed them to anticipate various difficulties (such as uncertainty regarding when the bus would arrive) and to plan alternative strategies. In line with Brembeck et al.'s (2016) study, the participants were very inventive and made use of various items to conquer these challenges. The participants can be seen as experts of the dial-a-ride service who were also otherwise very capable. They were able to not only overcome obstacles on the journeys, but also advocated for changes in their housing companies and the mall, detected norms of social interaction, endured differences with other passengers, and participated in social struggles.

The wide range of knowledge and skills utilized by the participants raises the question: does everyone who is unable to use regular private or public transport have the required skills and abilities to use the dial-a-ride bus? According to Flamm and Kaufmann (2006) motility is a resource that is unevenly distributed between individuals who live in different contexts and have varied mobility biographies, abilities, and skills. It is important to consider such differences in a heterogeneous

group of older people when planning services to support them to age in place.

We argue that to support older people to age well in their communities, there is a need to create a detailed understanding of how their services and living environments are produced by networks of human and non-human actors and assess how older people will be able to make use of this network. Thus, our study highlights the need to pay attention to *specific details* of old age services and living environments as well as to abilities and know-how required to use them in order to ensure that diverse older persons will be able to benefit from them. In our study, specific characteristics of the actors – e.g., the height of a bus seat, helpfulness of the bus staff, heaviness of a door, and size of text – really mattered to our participants. Our study, in line with previous research (Carlsson, 2004), has shown that to create a truly supportive transport service, the entire travel chain must be thoroughly scrutinized from the perspective of the people who use it.

We propose that the combination of ANT and motility can provide a useful methodological approach for exploring older individuals' ability to access places and services that are vital for them to organize their daily lives independently and to engage with their communities. In this article, we focused on older people's *actualized* daily travel, but motility also involves individuals' *potential* to be mobile that they may or may not decide to fully actualize (Flamm & Kaufmann, 2006). This potential has value in itself, since it provides freedom to choose where and when people want to go – to live their lives according to their own aspirations and lifestyles. Motility thus enables exploring how older people's potential to reach places, services, events, and other people is formed when they build their personal relationships with their communities and neighborhoods, taking into account their aspirations, abilities, know-how, available mobility options, and contextual constraints. ANT then enables conducting a very *detailed* analysis of how older individuals' relations with manifold 'things' and other people in their surroundings support or hinder their daily travel and activities.

ANT can also provide a valuable approach for aging in place research to explore the complexity and fluidity of older people's daily lives more widely, since it makes visible the multiplicity of human and non-human actors that are required for aging in place. Future research needs to address these actor-networks in different contexts, since various places of aging have their own context-specific characteristics (Lehning, 2014). For example, our study illustrated that the local climate can create specific challenges for daily travel; snowy winter conditions sometimes prevented the bus from reaching passengers' doorsteps, and the participants deployed various strategies to cope with the cold weather during their journeys. Due to the local communication technology system, using the dial-a-ride service required owning and knowing how to use a mobile phone, since there are no public phone boxes and hardly any landlines in Finland. The dial-a-ride service also had specific norms and rules that the passengers were expected to follow, requiring know-how specific to that particular STSs. The ability to produce these kinds of rich and nuanced contextual explanations is in fact a key strength of ANT.

Similarly, future research on transport in later life should study STSs in different contexts and also address how different groups of older people with various functional limitations (i.e. cognitive or sensory deficits) are able to use them, since our study focused on older people with mainly physical deficits. Moreover, the participants in our study had several years' experience of using the dial-a-ride service, which had allowed them to accumulate extensive know-how about the service. Future research needs to address what kind of challenges people may face when they start using such service and how they learn to use it. In addition, it would be important to look at why people who would benefit from the service do not use it and why people stop using it. This knowledge is needed to plan services to support older people with various needs to *age well in their community*.

Conclusion

Our study sheds light on the complexities of using STSs in old age and the non-human aspects of aging in place. Based on go-alongs and sit-down interviews with dial-a-ride bus users, the study showed how the bus journeys were a result of interactions between manifold human and non-human actors. The dial-a-ride actor network consisted not only of the *rules, norms, and practices* of the service, but also certain *objects and tools* that either supported or hindered its users – such as mobile phones, steps, benches, foyers, and trolley-bags. Many *humans* were crucial to the bus journeys – the bus staff assisted passengers in many ways and the bus rides themselves involved meaningful social interaction between acquaintances and strangers. On the other hand, participants had also engaged in social struggles with other people related to their bus travel.

Our main finding is that the dial-a-ride network compensated well for older people's restricted physical abilities, but using it nevertheless required a wide range of know-how and skills. This raises the question: is everyone who would need such service able to use it? Our findings highlight the need to consider what kind of knowledge, skills, and abilities are required to use services that are meant to support older people to age in place. People who oversee policy and plan old age services and age-friendly environments must take into consideration the heterogeneity of older people who have varied abilities, know-how, and functional limitations (i.e. physical, sensory, and cognitive deficits).

Our research also shows that *specific details* of supportive services and living environments matter to older persons and can facilitate or hinder their ability to make use of them. In order to create services and living environments that truly support older people to age well in their communities and enable them to be mobile and maintain their social relations, it is important to fully understand the complex actor networks that shape them. This is best achieved by focusing on diverse older people's own interpretations of how they use these services. Older persons must thus be recognized as agents who should be actively involved as co-producers in planning the services that they will be using.

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Declaration of Competing Interest

None.

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Appendix A. Supplementary data

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