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Analysing the effects of residential mobility behaviours on the composition of personal network in Switzerland

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Abstract

Individual life courses are marked by residential mobility often associated with family and workplace changes and therefore likely to be related to the types of personal relationships people develop and maintain. Evidence about the relationship between residential mobility behaviours over the life course and personal network composition is however scarce. This study investigates this relationship among 747 individuals living in Switzerland using regression models and standard deviational ellipse for analysing all residential locations in Switzerland and their duration over the life course. Results show that people with low residential mobility have personal networks centred around the partner and vertical family ties (parents and children), confirming that strong intergenerational ties develop in close proximity. By contrast, longer distance residential moves at the regional level are associated with small personal networks centred around peers and horizontal ties (such as friends and siblings). The network composition of people with mobility experiences at the national level does not differ from the network composition of non-movers when controlling for socio-demographic characteristics. Likewise, networks including in-laws and extended family members and large mixed networks including both family and friends were not associated with a particular residential mobility trajectory. The density of the Swiss transport system enabling people to stay connected to family and friends may partly explain the weak association between residential mobility behaviours and the composition of personal networks.

KEYWORDS
ellipse, personal network, residential mobility, social ties

1 | BACKGROUND

Individuals' life courses are characterised by residential changes, which are usually motivated by a triggering event such as a job change, the arrival of a child, a divorce, or retirement. These residential changes occur on different spatial scales, ranging from relocation within the same catchment area to inter-regional and international migration. These spatio-temporal characteristics of residential behaviours significantly vary according to individual characteristics and life stages. While the determinants of residential mobility choices related to life course transitions, such as parenthood and job change, are well documented in the spatial mobility literature (e.g., Kulu & Steele, 2013; Müggenburg, Busch-Geertsema, & Lanzendorf, 2015), research that examines the relationship between residential behaviours over the life course and the composition of personal networks remain scarce. First, few studies have analysed the multiple relationships that exist between social network characteristics and residential location choices (Lubbers et al., 2010; Mulder, 2018; Ryan, Sales,

Tilki, & Siara, 2008; Viry, 2012; Widmer & Viry, 2017). Second, studies focusing on the reciprocal influence of social ties and residential mobility often focus on a specific type of ties (neighbours, friends, parent–child, etc.) (Dawkins, 2006; South & Haynie, 2004). Third, the populations studied are often specific groups, such as highly mobile individuals (international migrants or professional elite) or young people (Herz, 2015; Larsen, Urry, & Urry, 2016; Ryan, Sales, Tilki, & Siara, 2008; South & Haynie, 2004). Finally, most network studies measure residential mobility behaviours at one point in time and largely ignore the whole sequence of moves and their duration over the life course (Viry, 2012). This approach fails to examine long-term effects of residential mobility behaviours on personal relationships.

Switzerland is an interesting context for analysing how residential mobility behaviours are related to personal networks. The country is characterised by a dense highway network and by a highly efficient, well-functioning public transport system, including a railway network of about 7000 km providing train transportation in urban agglomerations, suburbs, and mountainous regions. The coverage, access, and transportation speed of this system make it possible to live in one city and work in another. This phenomenon is also emphasised by the geographical concentration of the Swiss population, as distances between two neighbour cities rarely exceed 50 km. This high-speed transport system (inter-city trains, highways) makes it possible for a large part of the population living in peripheral areas to work in a metropolitan area. In this context, many employed people prefer long-distance commuting than moving to another region, leading to a form of sedentary life associated with many daily trips, of which the long commute distance is the most emblematic feature (Drevon & Gumy, 2020; Hausser, Drevon, Gumy, & Kaufmann, 2020). This behaviour is even reinforced by Swiss federalism, which discourages individuals to move in order to avoid changing school and health systems, as well as linguistic barriers due to the territorialization of national languages (German, French, Italian, and Romansh), which has for consequence that many long-distance moves involve a change of linguistic area (Viry & Kaufmann, 2015). However, some researchers in Switzerland note that long-distance commuting is linked to a process of national metropolisation (Dessemontet, Kaufmann, & Jemelin, 2010), which widens the employment areas. In Switzerland, internal migration is currently declining in favour of the development of new forms of spatial mobility, which are no longer necessarily local, but are increasingly accompanied by long-distance commuting.

Migrating, staying still, or frequently travelling has important implications for personal relationships, such as developing new ties in new places and maintaining family and friendship ties at the place of origin. In this perspective, this article provides new insights into the relationships between residential mobility behaviours of individuals residing in Switzerland and the composition of their personal networks. Personal networks are defined here as the set of people the respondents perceive as *very important* in their lives over the past year (Aeby, Gauthier, & Widmer, 2019). We expect that there is a close relation between spatio-temporal characteristics of residential mobility behaviours and the composition of personal networks. The composition of personal networks, with a focus on either close family members (partner, parents, and children), extended family members (e.g., uncle, aunt, cousins, and in-laws), or friends, is expected to influence residential mobility behaviours. Conversely, residential mobility behaviours are expected to impact the type of very important personal relationships people develop over their lives. The analysis is based on a calendar survey on life trajectories and personal networks conducted on a representative sample of 803 individuals living in Switzerland in 2011 and belonging to two birth cohorts (1950–1955 and 1970–1975). Respondents were asked about their personal ties and their places of residence from their birth to the date of the interview. The article is organised in three parts. The first part presents the literature review on residential mobility and the composition of personal networks, followed by the hypotheses. The second part is devoted to the presentation of the data and methods used, while the third part presents the analysis, key results, and the final discussion.

2 | LITERATURE REVIEW

The literature review covers domains concerning the personal networks, residential mobility, and the role of distance for the composition of the personal networks.

2.1 | Personal network composition and migration

The analysis of the links between migration and social networks is the subject of numerous studies, particularly in relation to the process of globalisation. This literature shows that migration, and physical distance from family and friends, is not associated with a clear break of significant relationships developed in the place of origin. Affection, support, and a strong sense of family belonging or friendship can be maintained with people living in other parts of the country or the world through the widespread use of telecommunications along with occasional visits (Baldassar, 2016; Bryceson & Vuorela, 2002; Cronin, 2015). People are using telecommunications with (emotionally) important family and friends living away to create a continuous connection to everyday life (Dekker & Engbersen, 2014; Uy-Tioco, 2007; Valentine, 2006; Wilding, 2006). While this virtual connectedness, sometimes in nearly real time, does not substitute for physical co-presence, it facilitates a sense of emotional closeness and belonging over long distances. Mobile individuals and their families are therefore less bounded by physical proximity, resulting in increasingly blurred spatial divisions (Kaufmann, 2011). The territorial organisation of social life, such as moving closer to grandparents or to family-friendly areas when having a child, would be more uncertain, since individuals and their household members can now travel faster. Through what Wellman (2001) calls "person to person" connectivity, residentially mobile people develop individualised personal networks by creating new ties in their host region, while choosing to maintain strong ties with selected people in their region of origin. A burgeoning literature on transnational and diasporic communities emphasises spatial mobilities as a central feature of social and family life (Blanchard &

Markus, 2004; Bryceson & Vuorela, 2002; Hiller & Franz, 2004). This literature shows that personal relationships are more fluid and changing as people move to different areas and cultures. Social obligations towards friends and family are expected to be a matter of negotiation and choice more than strictly determined by social structures and norms (Mason, 2004). This process is even more marked for migrants who build new relationships and negotiate social obligations to existing ones across multiple, sometimes transnational, places. Empirical studies show complex changes in migrants' personal networks, which reflect their selection and adaptation processes in the new environment (e.g., Herz, 2015; Lubbers et al., 2010).

2.2 | Social network composition and geographical distance between significant family members

While people who are close emotionally may be geographically far away, spatial mobilities do not eliminate the friction of distance. Studies that examined the spatial distribution of personal networks have stressed the decrease of contact and support provided with the increase of geographical distance (Frei & Axhausen, 2007; Mok, Wellman, & Carrasco, 2010; Mulder & van der Meer, 2009). Maintaining distant ties requires important resources (time, money, and mobility access), and the further away the respondent and network members live, the less they communicate (in-person but also remotely) and socialise together, with evidence of rapid (non-linear) decay as distance increases. Support provision is less sensitive to distance than contact, but a similar trend is observed. Using a small sample of respondents living in East York, a borough of Metropolitan Toronto, Mok and Wellman (2007), for example, found that the probability of providing different kinds of support was highest when the respondent and her/his network's members lived within 20 miles from each other. Beyond this distance, this probability remained stable. Research also shows that peripheral relationships (extended kin, neighbours, colleagues, and distant friends) are more vulnerable to physical distance than relationships with parents, children, and siblings (Lubbers et al., 2010; Pollet, Roberts, & Dunbar, 2013; Widmer & Viry, 2017; Wrzus, Hänel, Wagner, & Neyer, 2013). Vertical family relationships (parents and children) are more likely to be maintained over large distances than horizontal relationships such as siblings and friends (Carrasco, Hogan, Wellman, & Miller, 2008; Daw, Verdery, & Patterson, 2019; Widmer & Viry, 2017). This is usually explained by normative expectations and the density of connections among (immediate) family members that enforce mutual obligations. This literature not only emphasises the continuing importance of spatial proximity for social interaction and the fact that some (more vulnerable) relationships are likely to turn non-significant after migration. It also reveals that individuals consider as emotionally important some people with whom they interact little or occasionally, because of distance, time, or financial constraints. This is in line with the literature on transnational families showing that migrants and families can exchange affection and care and sustain a sense of being emotionally close with others living far away (Baldassar & Merla, 2013; Bryceson & Vuorela, 2002; Ryan, 2011; Uy-Tioco, 2007; Valentine, 2006).

Some studies have also shown a disruptive effect of long-distance moves on family development. Couples who move frequently over long distances were found to have a higher risk of union dissolution than less-mobile couples (Boyle, Kulu, Cooke, Gayle, & Mulder, 2008; Frank & Wildsmith, 2005; Shapira, Gayle, & Graham, 2019). Migrants may also defer partnership and childbearing, because of the costs and stress associated with the environmental change (Jensen & Ahlburg, 2004). Concerning residential sedentary living, research highlights the important role of spatial proximity and residential stability for the development and maintenance of family ties. Studies across Western European countries have shown that family life continues to be strongly spatially embedded (e.g., Duncan & Smith, 2006; Noah, 2015). While an increasing number of individuals develop a family in different regions or countries, many Europeans lives in the same region as their parents (Hank, 2007; Malmberg & Pettersson, 2007). Factors such as intergenerational transmissions and support (e.g., grandchild care), a strong regional attachment, and a good transportation system (facilitating commuting rather than relocating) are particularly strong in Switzerland (Viry, Kaufmann, & Widmer, 2008) and contribute to residential stability. Many strong family and friendship ties located in a particular place act as a force that might deter migration (David, Janiak, & Wasmer, 2010; Kan, 2007). An important location-specific social capital reflects an investment in locality that makes residential mobility costlier. The presence of children in the household exacerbates this tendency (Cooke, 2008). Parents tend to move over short distances, mainly for reasons related to the characteristics of the dwelling or the residential environment. Only a minority of the European population, often highly qualified young people and employees in professional and managerial positions, move to another region or country for a job or higher education (Schneider & Meil, 2008; Waters, 2006). The spatial dispersion of social networks is often typical of immigrants who migrate long distances. This is partly because migration decision reflects unequal needs and resources among the population. Individuals who are not forced to migrate for economic or political reasons and those who do not have the required resources and skills (e.g., money and education) may be reluctant to move away from their relatives and community.

2.3 | Residential mobility motivations and the life course

Residential mobility is likely to occur after, or in anticipation of, having a child. Parents often move to adjust the housing situation to the family needs. In metropolitan areas, this may trigger moves to outside inner-city areas, especially to suburbs with larger and more affordable homes, greener spaces, and less congestion, pollution, and crime. In some cases, moves motivated by children are also aimed to live closer to grandparents for childcare support (Blaauboer, Mulder, & Zorlu, 2011; Michielin & Mulder, 2008). In recent years, mobility

studies have increasingly adopted a life course approach to investigate how changes in the family situation relate to residential behaviours (Boyle, Kulu, Cooke, Gayle, & Mulder, 2008; Coulter, van Ham, & Findlay, 2016). This literature has shown that changes in the family structure are important determinants of the decision to move, especially over short distances. Leaving the parental home, union formation and separation are all family events that trigger moves.

While these studies highlight the importance of residential mobility for family development, family changes can also hamper residential migration, especially job-related long-distance moves. Being married and having school-aged children are associated with a lower propensity of moving (Michielin & Mulder, 2008), and the probability of a move decreases after a second birth and with increasing family size. Another well-known finding is that the probability of moving to a city declines after childbirth, because cities are usually regarded as less suitable residential environments for bringing up children compared with suburban and rural areas (e.g., Kulu, 2008). Empirical evidence suggests that family and residential behaviours interact in a two-way process, as residential mobility and the residential environment can also influence family events. For example, compared with urban dwellers, people living or moving to rural and suburban environments may develop higher fertility intentions, since they interact with more parents and live in residential contexts seen as more appropriate for families.

Most research on migration and its links to family and intimate ties have focused on the distance moved (and sometimes the frequency of moves) by comparing migrants with less-mobile people. In a life course approach, some mobility studies have used holistic residential and housing trajectories (Pollock, 2007; Spallek, Haynes, & Jones, 2014), sometimes drawing on the mobility biographies approach (Müggenburg, Busch-Geertsema, & Lanzendorf, 2015; Scheiner, 2007), for analysing longer term effects and timing of mobility, but, to our knowledge, none of these studies have investigated the links between residential mobility behaviours and the composition of personal networks. The objective of this article is to bridge this divide by examining the whole sequence of moves within Switzerland and their duration over the life course and how they are related to personal network composition. According to the literature review, we expect that long-range and spatially dispersed residential mobility behaviours are associated with personal networks centred around partners, parents, and children, while short-range residential mobility behaviours are associated with personal networks centred around extended family members (grandparents, uncles and aunts, and cousins) and horizontal non-family ties (neighbours, colleagues, and friends).

3 | DATA AND METHOD

3.1 | Data

The analysis is based on an ad hoc survey, *Family times*,[1] conducted among a representative sample of 803 Swiss residents from two birth cohorts (1950–1955 and 1970–1975) in 2011. Based on computer-assisted personal interviewing (CAPI), respondents provided information about their family, occupational and residential trajectories. All residential stations were reported. Each station is characterised by its location (municipality of residence) and its duration (duration of residence). When respondents had resided abroad at a given time during their lives (8% of the sample), only the country of residence was asked. Because this data limitation does not allow for a precise measurement of residential mobility behaviour abroad, only residential stations in Switzerland were used for the final analysis. The final sample is composed of 742 individuals who have only resided in Switzerland during their life time. Participants were also asked to provide a list of persons they considered as having played a *very important* role in their lives over the past year, even if the respondent had not gotten along with them: "Who are the individuals who, over the past year, have been very important to you, even if you have not got along well with them?" They were informed that the term "important" referred to people who had played a role in their life during the past year. This network approach has the advantage to go beyond blood family members (e.g., household and parents) and include a broader set of relationships, such as friends, colleagues, neighbours, and extensive kin (e.g., in-laws, uncles and aunts, and cousins) (Widmer, 2016; Widmer, Aeby, & Sapin, 2013).

In terms of gender, the composition of the sample is well-balanced (51% females, 49% males). For the other socio-demographic characteristics, the composition of the sample is relatively contrasted (Table 1). A majority of people have a stable partner (85%). Only 15% of the sample is composed of singles. Seventy-seven percent of the respondents have at least one child, and a significant proportion of respondents (39%) have two children. Vocational education is the highest level of education reached by a majority of respondents (63%). Twenty percent of the respondents completed a university degree (tertiary education). The sample is largely composed of people of Swiss nationality (82%). The distribution of the sample according to the two cohorts (1970–1950) is relatively balanced. Thus, the sample is mainly composed of Swiss nationals, people in couple, and who have at least one child. This implies a potential over-representation of ties associated with the partner and children in the composition of the personal network. At the life-course level, the two cohorts provide sufficient information to account for residential changes over the life course.

3.2 | Measuring residential mobility behaviours

The residential mobility behaviours were constructed from the successive locations of the residential stations and their durations, using the standard deviational ellipse method (Schönfelder & Axhausen, 2010). According to this approach, a respondent's ellipse is constructed based on a set of points that refers to all of their residential stations. Each point is weighted according to the time spent in each residential station. Thus, an ellipse summarises the individual's residential mobility behaviour throughout their life course through the size of the ellipse, which reflects both the extent and dispersion of the

TABLE 1 Sample description

	Number	Share
Gender		
Female	383	51%
Male	364	49%
Total	747	100%
Couple situation		
Have a partner	636	85%
Single	111	15%
Total	747	100%
Number of children		
Childless	169	23%
1 child	117	16%
2 children	288	39%
At least 3 children	173	23%
Total	747	100%
Education		
Lower secondary	75	10%
Vocational	471	63%
Upper secondary	48	6%
Tertiary	146	20%
Missing	7	1%
Total	747	100%
Nationality		
Swiss	616	82%
Abroad	131	18%
Total	747	100%
Cohort		
1970	387	52%
1950	314	42%
Missing	46	6%
Total	747	100%

residential space. The size parameter corresponds to the spatial extent of the residential mobility behaviour from the location of each of the residential stations. This geometric indicator makes it possible to distinguish residential mobility behaviours depending on the spatial dispersion of residential stations (Scott & Janikas, 2010). This allows us to distinguish types of residential mobility behaviours characterised by a relative geographical concentration of residential places from those characterised by their significant dispersion. From the size of the ellipses, the main types of residential mobility behaviours are identified using a discretisation method based on the Jenks algorithm (Antoni, Klein, & Moisy, 2012). This method, known as the "natural breaks" method, minimises the variance of the size scores within the types and maximises them between the same types. The analysis presented below aims to measure the relationships between the main types of residential mobility behaviours identified and the composition of personal networks.

3.3 | Measuring the personal network composition

In this study, personal networks refer to the set of individuals who are considered meaningful or very important in some regard from the respondent's perspective (Widmer, Aeby, & Sapin, 2013; Widmer 1999; Widmer, 2016). They are related to their social, emotional, and symbolic significance for the respondent. Such significance may or may not be associated with regular interactions: personal networks are therefore not necessarily interactive networks. The measure of the personal network composition was based on the frequency of citation of eight different types of social ties. The first type refers to the partner, the second to ascending filiations (parents and grandparents); the third to descending filiations (children and grandchildren); the fourth to siblings, the fifth to in-laws (e.g., mother or brother-in-law), the sixth to second degree family (e.g., nephews, uncles, aunts, and cousins), the seventh to friends, and finally the eighth to co-workers. The analysis of personal network composition was first based on a principal component analysis (PCA). The goal of PCA is to extract the important information from the initial variables, to represent it as a set of new orthogonal variables called principal components (Abdi & Williams, 2010). Second, a cluster analysis was applied to PCA factors to identify types of personal network composition. Their relationships to types of residential mobility behaviours are then estimated using multinomial logistic regressions. An important limitation of the data is that the composition of personal networks was only measured at the time of the interview. We know from relevant literature that the composition of personal networks varies significantly over the life course, including after migration (Bidart & Lavenu, 2005; Lubbers et al., 2010; Rivera, Soderstrom, & Uzzi, 2010; Wrzus, Hänel, Wagner, & Neyer, 2013).

4 | RESULTS

4.1 | Types of residential mobility behaviours

The analysis of residential mobility behaviours over the life course using standard ellipses deviation shows four main types of residential mobility behaviours (Figure 1). These four types are strongly structured by the five main Swiss agglomerations: Zurich, Geneva, Basel, Lausanne, and Bern.

- The first type corresponds to micro-local behaviours (*Micro-local:* 37% of the sample). These people tended to stay close to their place of origin. This type is characterised by small ellipses and a very limited dispersion of residential stations.
- The second type corresponds to local residential behaviours (*Local:* 20%). This second type is particularly structured by the main Swiss agglomerations. In comparison with the first type, the size of the ellipses is more important, but the spatial distribution of the residential stations is smaller than in residential stations being close to the place of origin.

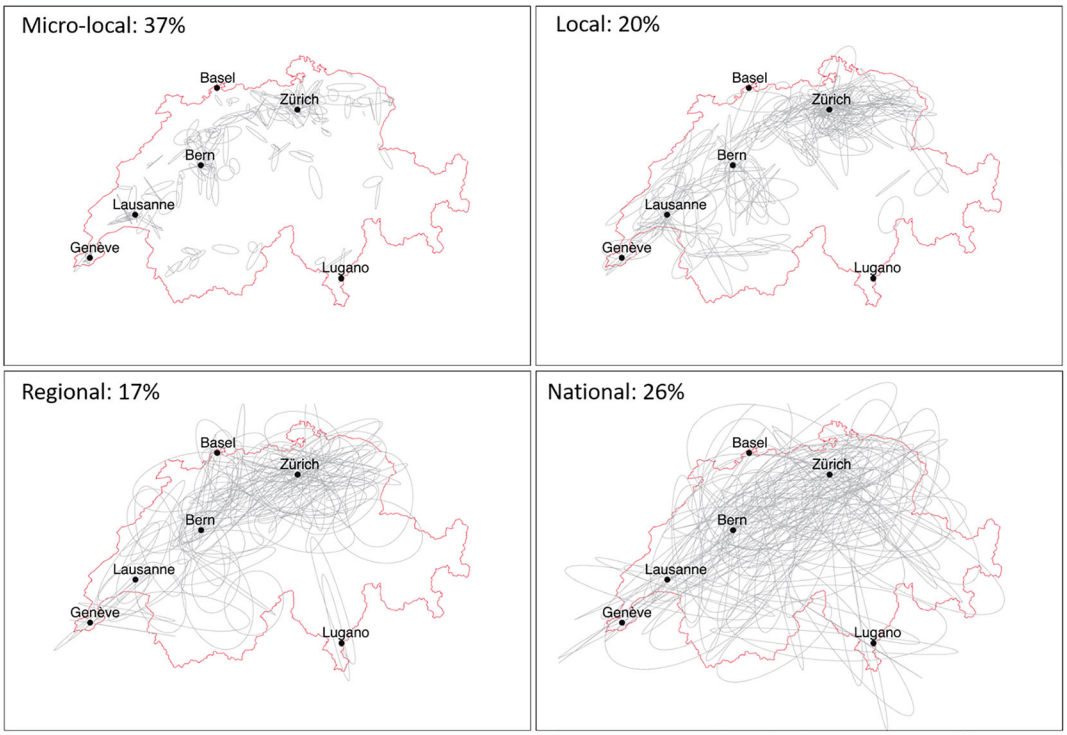

FIGURE 1 Types of residential mobility behaviours

- The third type corresponds to moves at the regional scale (*Regional:* 17%) and is characterised by ellipses of a larger size. Moves are likely to occur between the main Swiss agglomerations and their areas of influence, especially within the Swiss linguistic regions.
- The fourth type corresponds to behaviours at the Swiss national scale (*National:* 26%). This type includes people who migrated across Swiss linguistic regions.

The types identified through the standard deviational ellipse show the diversity of residential mobility behaviours from a spatio-temporal point of view. More than half of the respondents (57%) have lived close to their place of origin (*Micro local and local*), confirming the important residential sedentarity of the Swiss population. Conversely, other individuals (43%) display residential mobility behaviours that are more spatially dispersed at the regional and national levels (*Regional and national*). In order to better characterise these types of residential mobility behaviours, Table 2 presents the distribution of socio-demographic characteristics according to the four types of residential mobility behaviours identified. As indicated by Cramer's V tests, the relationships between socio-demographic characteristics of individuals and types of residential mobility behaviours are relatively weak. However, we observe that women are more likely to display regional and national residential types than men who are more likely to have lived close to their place of origin. This is in line with previous European studies showing that heterosexual couples live closer to the men's parents than to the women's parents (Blaauboer, Mulder, & Zorlu, 2011; Løken, Lommerud, & Lundberg, 2013). The family situation is also weakly associated with the types of residential mobility behaviours. Singles display longer range, more dispersed residential type than partnered individuals, while parents do not differ significantly from non-parents in their residential mobility behaviour. More important differences are observed in the level of education. People with a low level of education are over-represented among those displaying micro-local type, while highly educated people have more often a national mobility behaviour. This confirms well-known findings that highly educated people are more likely to move frequently over long distances (Coulter, van Ham, & Findlay, 2016). The reasons may be twofold. First, achieving a higher education degree often requires leaving the hometown. Second, highly educated individuals are more likely to have specialised jobs that may not be available in the place of origin. There are also marked differences between Swiss and foreign nationals. The former are over-represented among those with regional and national types of residential mobility behaviour. Conversely, people of foreign nationality are more represented in the micro-local and local types. Finally, results show that people born in the 1970s are more likely to have residential mobility behaviour at micro-local levels than those born in the 1950s. By contrast, the older cohort is more likely to have moved across linguistic regions of Switzerland than the younger cohort.

In order to characterise the four types of residential mobility behaviours due to the type of residential environments (degree of urbanisation) in which respondents have lived throughout their residential trajectories, we computed the average number of years spent in the different residential environments. Based on the typology of Swiss municipalities (Joye, 1985), we considered six main types of

TABLE 2 Residential mobility behaviours by socio-demographic characteristics

	Types of residential mobility behaviours			
	Micro-local	**Local**	**Regional**	**National**
Gender: Cramer's V = 0.09747				
Female	45%	52%	56%	56%
Male	55%	48%	44%	44%
Total	100%	100%	100%	100%
Couple situation: Cramer's V = 0.09747				
Have a partner	87%	90%	82%	81%
Single	13%	10%	18%	19%
Total	100%	100%	100%	100%
Number of children: Cramer's V = 0.01275				
Childless	38%	39%	44%	35%
1 child	23%	22%	23%	23%
2 children	17%	18%	10%	16%
At least 3 children	22%	20%	23%	26%
Total	100%	100%	100%	100%
Education: Cramer's V = 0.1018				
Lower secondary	16%	5%	8%	6%
Vocational	61%	68%	64%	64%
Upper secondary	6%	5%	10%	6%
Tertiary	17%	21%	18%	24%
Total	100%	100%	100%	100%
Nationality: Cramer's V = 0.229				
Swiss	72%	85%	90%	91%
Abroad	28%	15%	10%	9%
Total	100%	100%	100%	100%
Cohort: Cramer's V = 0.1758				
1970	65%	53%	55%	43%
1950	35%	47%	45%	57%
Total	100%	100%	100%	100%
Number	278	147	127	195

residential environments: (1) metropolitan centres (Zurich, Geneva, Basel, Bern, and Lausanne), (2) medium urban centres, (3) small urban centres, (4) suburban areas, (5) peri-urban areas, and (6) rural areas.

4.2 | Loosely contrasted residential environments

The analysis of the average distribution of time spent in different types of residential environments by types of residential mobility behaviours reveal several differences (Table 3). On average, all individuals surveyed tended to spend most of their lifetime in suburban contexts (28% of lifetime) and rural contexts (26%). The average lifetime spent in metropolitan centres (14%), peri-urban areas (13%), medium urban centres (11%), and small centres (8%) is more limited. Overall, the residential trajectories of people living in Switzerland is marked by a higher average time spent in urban areas (61% of lifetime). This result confirms migratory phenomena from low-density areas to suburban and urban areas. However, the high level of accessibility provided by the Swiss transport infrastructure allows people to commute from rural areas to urban centres and their suburbs. While suburban and rural residential contexts have a relatively even distribution of average lifetime across residential mobility behaviours, we observe substantial differences for the other residential contexts. Compared with the rest of the sample, individuals with the *Micro-local* type were less likely to reside in medium (8%) and small (7%) centres. Individuals with the *Local* type tended to reside in rural areas (29%) and are under-represented in metropolitan (11%) and medium (9%) centres. Individuals with the *Regional* type differ only marginally from the rest of the sample. These individuals lived more in metropolitan centres and suburban areas and have the lowest average share of a lifetime associated with rural areas (22%). Those displaying a *National* type are more likely to be associated with metropolitan and medium centres (17% and 15%, respectively). The relatively weak association between the different residential types and environmental contexts (referring to χ^2) reflects an urbanisation process that is particular to Switzerland, which tends to become one large urban region (Dessemontet, Kaufmann, & Jemelin, 2010). However, the results show that residential types characterised by long-distance moves (*Regional and National*) are more likely to be associated with metropolitan and medium urban centres than shorter-range residential types (*Micro-local and Local*).

4.3 | Personal network composition

PCA and cluster analysis identified four types of personal network composition (Table 4). The choice of the number of groups tends to limit small groups (<10%) and to favour the interpretability of groups depending on the variables used in the analysis. A four-group typology was selected for its clarity, parsimony and homogeneity (Lapointe & Legendre, 1994). Table 4 shows the distribution of citations of ties according to the types identified from the clustering.

The first type *Family-centred* network (50% of the sample) is characterised by a large network size (5.6 persons on average, the largest of all types) and a high frequency of citation of children (37%) and the partner (27%). Parents (15%) and siblings (12%) are also relatively important. Conversely, friends play a limited role (7%) in the composition of this type of personal networks. The second type *Peer-centred* networks (21%) are relatively small networks (2.8 persons, the smallest among all types) that are characterised by being centred around horizontal ties such as friends (48%) but also siblings (23%). Some ties of these networks are also with colleagues (5% of citations). In contrast to the previous type, the partner, parents, children, and all other types of ties are rarely cited. The third type *Mixed* network (17%) is the second largest type of personal networks (5 persons on average). This type is strongly oriented towards friends (44% of citations), colleagues (11%), and the partner (20% of citations). The vertical family ties are moderately cited (Parents 9%; Children 13%). Compared with the previous groups, the fourth type labelled *Extended*

TABLE 3 Distribution of average living time in residential environments by types of residential mobility behaviours

			Types of residential mobility behaviours				
		All respondents	Micro-local	Local	Regional	National	χ^2
Residential environment	Main urban centres	14%	13%	11%	14%	17%	0.013313
	Medium urban centres	11%	8%	9%	11%	15%	0.020903
	Small centres	8%	7%	10%	11%	6%	0.026398
	Suburban area	28%	31%	28%	28%	23%	0.012486
	Periurban area	13%	14%	12%	13%	13%	0.0014926
	Rural area	26%	27%	29%	22%	27%	0.0087621
	Total	100%	100%	100%	100%	100%	

TABLE 4 Types of personal network by citation of ties

	Personal network types			
	Family centred	Peer centred	Mixed	Extended
Number	377	159	124	87
Average size of the personal network	5.6	2.8	5.0	3.4
Share of sample	50%	21%	17%	12%
	Ties			
Partner	27%	5%	20%	15%
Parents	15%	6%	9%	10%
Children	37%	7%	13%	18%
Grandparents	0%	0%	0%	1%
Grandchildren	1%	0%	0%	2%
Siblings	12%	23%	2%	11%
In-law	0%	0%	1%	21%
Extended family	1%	6%	0%	8%
Friends	7%	48%	44%	14%
Co-workers	0%	5%	11%	0%

network (12%) is characterised by a relatively small network (3.4 persons on average) and an important number of relationships with in-laws (21%). This type is also strongly oriented towards extended family members (e.g., uncles, aunts, cousins, and grandchildren), which represent 8% of the citations. In this last type, children (18%), partner (15%), and friends (14%) are also present.

The typology presents four contrasting types of networks. The main differences concern the proportion of vertical versus horizontal family ties, the orientation towards family versus friends and colleagues, and finally the proportion of in-laws and extended family members.

4.4 | Relationship between types of residential mobility behaviours and the composition of personal networks

The analysis of the relationship between types of residential mobility behaviours and the composition of personal networks is based on two multinomial logistic regression models (Table 5) with network types as outcomes and types of residential mobility behaviours as predictors. The first model (M1) only includes these variables of interest. The second model (M2) adds respondents' socio-demographic characteristics as control variables.

The reference groups correspond to the largest categories of both network types and types of residential mobility behaviours (*Family-centred* network and *Micro-local* type). As the composition of personal networks may have also influenced residential mobility experiences, these regression models cannot be regarded as strictly causal, but rather as a way to test the strength of the relationship between the types of residential mobility behaviours and the composition of personal networks.

The results of the first model (M1) show that individuals with a "*Peer-centred*" type of network oriented towards friends and siblings (horizontal ties) are more likely to have a residential behaviour at the *Regional* or *National* levels (odds ratios of 2.2 and 1.6, respectively) compared with individuals with a network oriented towards the vertical family. *Mixed* and *Extended* types of networks are more often associated with the *Regional* residential behaviour. In other words, individuals with a network focused on partner, children, and parents

TABLE 5 Multinomial logistic regressions between personal network composition and types of residential mobility behaviours

	Personal network profiles (ref. Familial)					
	Peer centred		Mixed		Extended	
	OR	Sig.	OR	Sig.	OR	Sig.
M1						
Types of residential mobility behaviours (ref. Micro-local)						
Local	1.2		1.7	*	0.9	
Regional	2.2	***	1.8	*	1.8	*
National	1.6	**	1.6		0.9	
M2						
Types of residential mobility behaviours (ref. Micro-local)						
Local	1.4		1.5		0.8	
Regional	2.4	***	1.4		1.7	
National	1.3		1.3		0.7	
Gender (ref. female)						
Male	0.7		1.1		0.4	***
Education (ref. vocational)						
Lower secondary	0.9		0.4		0.6	
Upper secondary	0.7		2.3	**	0.5	
Tertiary	1.3		2.9	***	0.5	*
Couple situation (ref. Have a partner)						
Single	10.8	***	0.8		1.4	
Number of children (ref. 2 children)						
Without child	3.0	***	1.9	**	1.7	
1 child	1.4		0.6		1.0	
3 children and more	1.1		0.6	*	0.9	
Cohort (ref. 1970)						
1950	1.2		0.8		1.3	
Nationality (ref. Swiss)						
Abroad	0.9		0.6		1.2	

Abbreviation: OR, odds ratio.

Note: Method: multinomial model. OR >1 indicates increased probability. OR <1 indicates decreased probability. *N*: 747.

(*Family-centred*) are less likely to develop residential behaviours at the regional level. *Micro-local* residential behaviours therefore tend to favour personal networks centred on vertical family ties (parents and children) and the partner.

The second model (M2) shows that the effects of the types of residential mobility behaviours on the types of personal network are partly explained by socio-demographic characteristics. In other words, the types of personal network are significantly associated with socio-demographic characteristics, which reduces the effect of the types of residential mobility behaviours. When we control for socio-demographic characteristics, only the *Peer-centred* type of personal network is significantly associated with mobility behaviours at the regional level. The results of this second model show significant effects of gender, education, and family situation on personal network composition. Compared with men, women are more likely to have *Extended* networks centred around in-laws and extended family members. Compared with less-educated people, participants with an upper secondary and tertiary education are more likely to have a *Mixed* personal network centred around family, friends, and co-workers. Singles and people without children tend logically to be embedded in *Peer-centred* personal networks, centred on friends and siblings. Not having children is also associated with the *Mixed* personal networks, oriented towards friends but also the partner. The birth cohort and nationality have no significant effect on the composition of personal networks.

Finally, while socio-demographic variables and the family situation explain a major part the composition of personal networks, the effect of regional residential mobility behaviour is significantly associated with peer-centred networks oriented towards siblings and friends. This last result is interesting and contradicts previous research suggesting that long-distance residential mobility would be associated with networks of vertical ties (parents and children), which are known

to be less dependent on physical proximity than horizontal ties (e.g., friends, siblings, and co-workers).

5 | CONCLUSION AND DISCUSSION

This research examined the relationships between the spatio-temporal characteristics of residential mobility behaviours over the life course and the composition of personal networks in Switzerland. The analysis identified contrasting types of residential mobility behaviours at different spatial scales from *Micro-local* to *National*. Contrary to our hypothesis, long-distance and spatially dispersed residential behaviours are not associated with personal networks centred on vertical family ties (parents and children), which are known to be less dependent on physical proximity than horizontal ties (e.g., friends, siblings, and co-workers). When controlling for socio-demographic characteristics, the results indicate that people with residential behaviours scattered at the regional level have more often small personal networks centred around friends and siblings compared with those who stayed close to their hometown. Individuals with a vertical family-oriented personal network rather tend to have short-range residential mobility (Micro-local). More generally, differences in the composition of personal networks between mobile and less mobile individuals were largely explained by differences in socio-demographic characteristics between these groups. For example, while people who moved beyond the micro-local spatial scale within Switzerland are more likely to develop large personal networks including both friends and family (*Mixed*), this effect is largely driven by highly-educated people and people without children who tend to be more mobile than less-educated people and parents, respectively.

Not much support was found for long-term effects of the dispersion and spatial range of residential behaviours within Switzerland on the composition of personal networks. A first possible explanation is that selection and adaptation processes in the new environment weaken the effects of migration on network composition in the long run. While some important relationships with friends and family may turn non-significant after migration, migrants can develop strong ties with new friends and extended family (e.g., in-laws) in the new place. Despite observing a high turnover in the relationships of Argentinian migrants after migration to Spain, Lubbers et al.'s (2010) longitudinal study demonstrated that the overall composition and size of their personal networks remained relatively stable over time. Our results provide additional evidence for similar mechanisms.

A second possible interpretation of our results is related to the characteristics of the Swiss context. The small size of the country, combined with the very good accessibility provided by the transportation systems, makes it possible to travel quickly throughout the country to visit friends and family. The weak association between network composition and the types of residential mobility behaviours can therefore be interpreted by the easy access to daily long-distance mobility that enable to maintain a large diversity of personal ties (Viry, Kaufmann, & Widmer, 2008). The more pronounced association between micro-local residential mobility behaviours and the importance of vertical family ties suggests that strong intergenerational ties are more likely to depend on spatial proximity. Living in the immediate vicinity of parents' home would facilitate frequent interactions linked to the various forms of intergenerational support, such as childcare support from grandparents and elderly care from adult children. This result is in line with previous evidence showing that the birth of one or more children tends to limit the residential mobility options by favouring proximity to grandparents who can provide various types of support (Coulter, van Ham, & Findlay, 2016; Kulu, 2008). Finally, our findings challenge the view that sibling ties are more vulnerable with increasing distance.

Several limitations of the study can be identified. An important data limitation is that the composition of personal networks was only measured at the time of the interview, while personal networks are known to vary significantly over the life course and after residential relocation. Future studies would do well to take multiple data points over the life course to better understand the two-way relationship between residential and personal network changes. Moreover, the study focused on personal networks and important relationships. It would be interesting to investigate the effects of residential trajectories on a larger set of personal relationships and different types of ties (services, support, and companionship). Finally, the main limitation concerns the fact that the places of residence were only accurately collected in Switzerland. Consequently, our analysis does not take into account places of residence abroad. Future studies should collect residential data abroad to analyse the effects of both national and international migration over the life course on personal network composition.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTE

[1] More information: https://forsbase.unil.ch/project/study-public-overview/15316/2/

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