

# MENTAL HEALTH AND RESIDENTIAL MOBILITY

Does moving during childhood result in worse mental health outcomes during early adulthood?

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## Contents

Abstract.....	3
1 Introduction .....	4
1.1 Background .....	4
1.2 Research Problem .....	5
1.3 Thesis Structure .....	5
2. Theoretical Framework.....	5
2.1 Literature Review .....	5
2.1 Conceptual Model.....	7
2.2 Hypotheses.....	7
3 Methodology.....	7
3.1 Dataset and Sample Selection .....	7
3.2 Variables.....	7
3.3 Data analysis scheme .....	9
4 Results.....	9
4.1 Data analysis .....	9
Conclusions .....	12
References .....	13

## Abstract

This study examines the relationship between childhood residential mobility and early adult mental health. Findings from previous research indicate a significant relationship between the two, even when accounting for various confounders. Important confounders include family structure, parental separation, and socio-economic status. This study uses data from the German Socio-Economic Panel (SOEP) to analyse the relationship between recorded moves during childhood and Mental Summary Score using the SF-12v2 questionnaire, with a specific focus on the role of family (dys)function and structure as a mediating variable. Results from the data analysis show no significant relationship between childhood residential mobility and early adult mental health, with only gender and number of siblings found to be significantly correlated with mental health outcomes. As these results contradict most of the literature on the topic, a re-evaluation of previous findings on this research topic may be suggested. However, due to methodological and sample limitations of the data analysis, any results are to be interpreted with extreme caution.

## 1 Introduction

### 1.1 Background

Mental health is gaining more and more prominence in the public discourse, especially amidst the Covid-19 pandemic (Kalcev et al., 2020). At the same time, academic research into mental health and its risk factors is gaining steam. One strand of this research is the investigation into the relationship between residential mobility and mental health. Although most studies seem to show a link between the two, methodological differences between studies make them difficult to compare and as such difficult to generalize their results. Furthermore, even though the link seems to be well documented, further research needs to be done into the dynamics and influencing variables behind this link. The research into the dynamics of the relationship between residential mobility and mental health can further the understanding of the mechanisms behind mental health outcomes and can allow relevant institutions to intervene more effectively by identifying vulnerable groups.

The concept of mental health is quite a vague one, with varying and multifaceted definitions. As such, research looking into mental health uses a variety of different indicators and definitions. The same is true for research on the relationship between residential mobility and mental health, with indicators ranging from the presence of diagnosed mental illnesses such as depression or anxiety (Mok et al., 2016), to self-assessed mental health problems and conditions (Tseliou et al., 2015), and self-rated mental health (Lin et al., 2012). These indicators can be broadly divided into two categories, the medical perspective, where the presence of one or more mental illnesses is used as an indicator of poor mental health, and the mental well-being perspective, where more emphasis is placed on subjective wellbeing and more holistic indicators of mental health. Besides these two types of indicators, another type of measure that is used in research related to and often referenced in research on this topic, especially on residential mobility and child/adolescent mental health, is negative behavioural outcomes, such as internalizing and externalizing behaviour, substance abuse and teen pregnancies (Jelleyman and Spencer, 2008). In the context of this study, mental health will be measured using a score derived from responses to a questionnaire on health.

Residential mobility refers to the movement of individuals and households from one residence to another. This often refers to moves within a locality, but within the research on residential mobility and mental health, it most commonly refers to any residential move within a country (Tseliou et al., 2015) For this study, the latter definition will be used. A related concept that is also associated with mental health is residential transience, which refers to a usually short time frame with unusually high residential mobility, although this may also refer to high residential mobility in general (Glasheen et al., 2019a). Residential transience is most commonly related to housing instability and homelessness (Glasheen et al., 2019b). In the context of this study, residential transience will be used to refer to (short) periods of high residential mobility with high levels of housing uncertainty.

As the study of the relationship between residential mobility and mental health involves a temporal component and the transition through life stages, especially when researching childhood residential mobility, it is useful to consider this research from the life course perspective. The life course approach looks at the long-term effects of events throughout different life stages (Kuh et al., 2003). As such, the main assumption of the life-course perspective is that events throughout all life stages have an impact on later life stages. Furthermore, it is assumed that exposure to different risks and/or repeated instances of the same risk will result in the accumulation of risk. Events and risks can be both biological and sociological in nature (Kuh et al., 2003). Such an approach can help our understanding of how a repeated event

(residential mobility) throughout a period of time (childhood) affects the risk of poor mental health outcomes at a later stage (early adulthood).

## 1.2 Research Problem

As most research on this topic focuses on mental health close to when residential mobility happens, this thesis will focus on the cumulative effects of childhood residential mobility on the mental health of young adults.

The following central research question will be used to guide the research:

- Does childhood residential mobility influence early adult mental health outcomes?

From this question a sub-question follows:

- Do household characteristics have a mediating effect on the relationship between childhood residential mobility and mental health outcomes?

## 1.3 Thesis Structure

After introducing the research background and problem in the introduction, the literature concerning the topic of research is elaborated upon in the theoretical framework, where a conceptual model is introduced which attempts to explain the dynamics influencing the relationship between childhood residential mobility and early adulthood mental health. The methodology section will introduce the dataset used, the variables selected for the analysis, and the methods used in the analysis. Following that, the results section will present the findings from the data analysis and discuss them in relation to the literature introduced in the theoretical framework. The conclusion will briefly summarise the contents of previous sections and attempt to answer the research question posed in the introduction, while also providing a discussion which reflects on the value and limitations of the study, as well as on potential future research.

## 2. Theoretical Framework

### 2.1 Literature Review

#### *2.1.1 Methodological differences*

There has been a lot of research done on the relationship between residential mobility and mental health, which generally seems to show a significant relationship between high residential mobility and poorer mental health. However, several methodological and semantic challenges, as well as the presence of numerous confounding variables, make the generalization, comparison and validity of these results quite difficult.

A major difference between different studies examining residential mobility and mental health is in the definition of mental health. Mok et al. (2016) studied the relationship between childhood residential mobility and the full spectrum of mental disorders, and found that higher childhood residential mobility resulted in an increased risk of most psychiatric disorders. Glasheen et al. (2019a) found support for the same relationship when examining residential transience among adolescents and depression. Other studies looked at self-rated mental health (Lin et al., 2012) and various behavioural and emotional problems (Jelleyman and Spencer, 2008), also finding the same relationship. As such, studies researching various aspects and definitions of mental health find a significant relationship with residential mobility.

However, the strength of this relationship varies and the factors influencing and explaining this relationship vary between studies.

Another differentiating factor between studies is the life course stage in which mental health is recorded, the length of time in which residential moves are recorded, and how long after the residential mobility period mental health is recorded. Most studies focusing on childhood residential mobility measure residential mobility either during early childhood or adolescence (Jelleyman and Spencer, 2008) with the recording period typically under 10 years (Tseliou et al., 2016). Mental health outcomes are typically measured after the residential mobility period.

### *2.1.2 Residential mobility and mental health*

Various explanations have been brought forward to explain the effects of residential mobility on mental health. Firstly, a residential move is often a stressor on the individuals involved, bringing with it a lot of uncertainty and worry (Oishi and Schimmack, 2010). The impact of this stress is often limited to the short-term but can have more long-lasting effects when multiple moves compound the stress (Vanhoutte et al., 2017). Besides it being a stressor in itself, a move also causes a loss in social capital due to the loss of established social networks (Gillespie, 2013), which plays an important part in maintaining mental health. This is especially important for children, as the formation of social relationships is vital for the development and well-being of children (Gifford-Smith and Brownell, 2003). Beyond having to adjust to a new environment and form new social connections every move, repeated moves in a short time may cause children to stop trying to build up new relationships and in the long term lose the social skills required to build a social network (Cotterell, 2007), which, as mentioned is important in maintaining mental health. The extent to which the social network is disrupted and social capital is lost due to a move is partially related to the distance moved and the resulting networks and environment (Brown et al., 2012). For children, the most important factor is if the distance of the move necessitates a school change, as this is where most of a child's social capital is concentrated. This has been argued to be the primary driver for the relationship between residential mobility and poor mental health in children (Gasper et al., 2010), however other research which includes school changes does not find the same relationship (Brown et al., 2012).

A difficulty in studying residential mobility and mental health is the high number of confounding variables, which affect both residential mobility and mental health, since residential moves coincide with a number of events and factors which also affect mental health. The most prominent example is the separation/divorce of parents. Separation often triggers a residential move as a new household is formed (Brown et al., 2012). At the same time, separation has a negative effect on the mental well-being of children (Wang et al., 2021). A similar effect can be seen for poverty, residential environment and familial dysfunction.

Family structure and dynamics are hugely important in the relationship between residential mobility and mental health, and are also very difficult to capture due to their complex nature. Besides separation, the relationship between parents and their children plays an important factor in moderating the relationship between residential mobility and mental health.

## 2.1 Conceptual Model

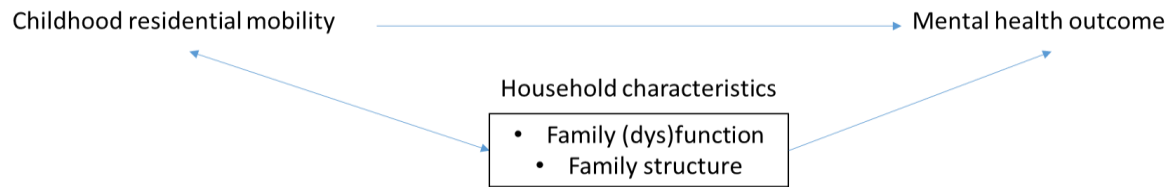


Figure 1: Conceptual model showing relationship between childhood residential mobility and mental health

The conceptual model (Figure 1) shows the main relationships between variables that will be used in this analysis. Childhood residential mobility is expected to have a direct relationship with later mental health outcomes. At the same time, household characteristics have a relationship with both childhood residential mobility and mental health outcomes. In the model, household characteristics act as both confounding and mediating variables, however, due to the limitations of the analysis, they will be treated only as mediating variables. As such, the conceptual model shows that childhood residential mobility has a relationship with mental health outcomes, which is both affected and channelled through household characteristics.

## 2.2 Hypotheses

Based on previous research, it is expected that there will be a relationship between increased residential mobility during childhood and poor mental health outcomes. Furthermore, it is expected that family structure and (dys)function partly explain the relationship between increased residential mobility during childhood and poor mental health outcomes. Residential mobility should remain a significant explanatory in explaining mental health outcomes, even when taking into account family structure and (dys)function.

## 3 Methodology

### 3.1 Dataset and Sample Selection

The data used in this paper was taken from the SOEP Core dataset, published by the Deutsches Institut für Wirtschaftsforschung (DIW Berlin). The German Socio-Economic Panel (SOEP) is a household panel study collecting data from around 15,000 households and 30,000 persons yearly since 1984. This dataset was chosen as it provides a large set of cases spanning a long time period, which allows the recording of residential moves across many different time periods.

The sample used in the paper was narrowed down from the initial dataset of over 150,000 individuals based on several criteria. Individuals had to be part of the study from birth to allow for the tracking of moves throughout all of their childhood. Furthermore, individuals had to be 18 or 19 years old the year the mental health score was measured and have valid results for all relevant variables. Out of all individuals in the dataset, only 236 cases fulfilled all the criteria.

### 3.2 Variables

#### 3.2.1 Mental Health

Mental health for this analysis will be represented by the variable SF-12v2 Mental Health Score. This is a computed variable based on 12 questions surrounding physical and mental health. The SF-12v2 has been shown as a valid and reliable instrument across various conditions and populations, including for mental health (Cheak-Zamora et al., 2009; Huo et al., 2018; Chum et al., 2016). This variable has been included in

the SOEP questionnaire bi-annually since 2002 (2002, 2004, ...). Only individuals of ages 18-19 answering this questionnaire will be included as cases. This is because this research aims to look at mental health outcomes during early adulthood.

### *3.2.2 Residential mobility*

In the SOEP dataset, moves are recorded annually. For the analysis, the sum of all years in which a move took place was recorded from birth until the age of 18. As the dataset only records whether any move took place within a year and not how many took place within a year, the variable may severely undercount the number of moves during childhood for respondents moving multiple times in one year. This is a major limitation of this paper. However, it should also be noted that individuals and households which are highly mobile within a short period of time are also more likely to move in general. As such, these cases will likely also have more recorded moves in the dataset. Nonetheless, results should be interpreted with this in mind. Another limitation of this measure is that the distance moved between residential changes is not considered. As such, a short move may not involve any change in social network or residential environment.

### *3.2.3 Family (dys)function*

For family (dys)function two main variables were considered. The first variable is fighting with parents. This measure is taken from a follow-up survey conducted for children growing up in SOEP households taking their first interviews as adults, where they were asked whether they fought with their parents at age 15 on a Likert scale, ranging from never to often. This question is asked for both the mother and father. For the analysis, the mean between the two parents was taken, except for cases where a mother or father was not present, in which case the score for whichever parent was present was taken. This approach does not allow for a gender comparison, which could provide for a more interesting interpretation. However, it does enable the inclusion of cases without one parent present, while still keeping the variable as ordinal/scale.

The next family dysfunction variable used in the analysis is the parental relationship/separation. For this, the measure number of years living with both biological parents until 15 years was taken and converted into a dummy variable, with individuals living for 15 years with both biological parents given a 1 and the rest given a 0. Although this measure does not directly measure divorce or separation, it serves as an adequate proxy variable.

### *3.2.4 Family structure*

Two variables were considered for family structure, death of parents and number of siblings. For the death of parents, the death of both the mother and the father during childhood was recorded. This was added together and turned into a dummy variable. The number of siblings measure was taken as a scale variable from the dataset.

### *3.2.5 Demographic characteristics*

A number of demographic characteristics were chosen as control variables. Gender, migration background and birth region were coded as binary variables, with values for the different variables being male and female, yes and no, and East Germany or West Germany respectively. Additionally, education level was recorded as a categorical variable with Upper Secondary Degree and Technical High School taken as reference variables, as both of these grant access to higher education. Furthermore, household income during childhood was included as a control variable. As the dataset does not take into consideration



inflation, household income was first divided into quintiles for every survey year. Then, the mean household income group during childhood is taken as the operating variable.

### 3.3 Data analysis scheme

A linear regression was used for data analysis, due to the dependent variable being a ratio variable and this regression method being within the skill level of a bachelor thesis student. Two models were used for the analysis. The first contains only our main independent variable, residential mobility, and the demographic characteristics to test the relationship between residential mobility and mental health with only control variables. The second contains the variables from model 1, with the addition of the family (dys)function and structure variables to test the mediating influence of the added variables.

## 4 Results

### 4.1 Data analysis

Collinearity diagnostics were run on both models, with no variables having issues with multicollinearity (all variables with  $VIF < 2$ ). Furthermore, no irregularities were found in the residual analysis. Only Model 2 was significant ( $\alpha = 0.05$ ) with a p-value for the F-test of 0.007, while Model 1 had a p-value of 0.057. Although Model 1 is not significant as a whole, it will still be used to compare to Model 2. The adjusted  $r^2$  values for Model 1 and 2 were 3.6% and 7.1%, respectively. While the low  $r^2$  value indicates that the model does not have a high explanatory power as a whole, the significant increase in  $r^2$  from model 1 to model 2 shows that family structure and dys(function) do significantly contribute to explaining mental health outcomes.

#### *Model 1*

For Model 1, only gender was significant, with all other variables, including recorded moves during childhood, being non-significant at the 5% level. This is interesting, as the main explanatory variable in the research is not significant. Various factors might explain the discrepancy in results between the literature and this data analysis. Firstly, although research has been done on the relationship between residential mobility and mental health, this specific indicator of mental health was not used in any such research. Different measures may lead to different results. Moreover, as mentioned in the methodology section, residential mobility was only captured once a year, underestimating mobility for children moving many times in one year. Since residential transience is even more heavily correlated to poorer mental health due to the repeated exposure to stressors within a short time frame, not measuring moves within a single year may heavily underestimate residential moves for cases with low mental health scores. Additionally, this might be explained by selection bias in the sample. As this sample only contains children of households that have participated in the survey for at least 18 years, it is likely to also contain more stable households, since less stable households would be more likely to drop out. This selection bias may be taken care of by the control variables included in the analysis. However, due to the complicated nature of the relationship between variables and the high number of potential confounders, variables filtering this bias may not be present in the current data analysis. Furthermore, although generally residential mobility is linked to worse mental health, in some cases the opposite may be true, due to improved education opportunities or a better residential environment as a result of a move (Oishi and Schimmack, 2010). This relationship is more likely to occur in a more stable household. Another limitation mentioned in the methodology section, the lack of data on the distance moved between moves, may also partly explain this result. Individuals moving within a neighbourhood, for example, may not experience any significant changes in environment or social networks, and only experience the initial stress of the move negatively.

On the other hand, a move further away would require bigger transitions, leading to more negative side effects of the move. As such, distance may be an important moderator in the main relationship explored in this study.

The significant negative relationship of gender with mental health scores in model 1 is also somewhat surprising, as gender is not mentioned as a relevant variable in the literature on residential mobility and mental health. The relationship is also present for the general population in the sample, with women having significantly lower mental health scores. In other studies on the SF-12 indicator, women were found to have lower mental health scores compared to men (Ruotolo et al. 2021). As such, this result may be due to the indicator used in the analysis.

#### *Model 2*

For Model 2, gender remained significant, with number of siblings also being significant. The significance of the variable “number of siblings” is also not entirely consistent with the literature, as it is not mentioned as a significant variable. Although it is not included in many papers on this topic, the papers that do include it do not find a significant influence of siblings on mental health. In the context of this research, an explanation for the significance of the variable might be that siblings lessen the impact of the loss of social capital, since they provide a stable relationship in an unstable environment. Another explanation might be that a high number of siblings may indicate a more stable household, since having more children may require a more stable living environment, which in turn may result in higher mental health scores. The wider literature on the relationship between the number of siblings and mental health is sparse and has varied results. Lawson and Mace (2010) report no significant relationship between the number of siblings and childhood mental health, while Yuan’s (2009) results indicate that one sibling decreases depressive symptoms and two or more siblings increase depressive symptoms. Liu et al. (2015) show significant differences for different gender pairings of siblings but also report no significant difference between different numbers of siblings for mental health.

Although residential mobility did not become significant in Model 2, its significance did increase. This could provide further support for the mediating influence of the factors introduced in the model. However, due to the limited sample size and low explanatory power of the model, it is difficult to draw conclusions from this. Furthermore, the direction of the relationship in both models is as expected from the literature, with a negative relationship between residential mobility and mental health. This relationship also increases when going from Model 1 to Model 2, indicating that such a relationship may indeed exist. Once again, however, the limitations of the analysis make it hard to draw conclusions.

#### *Non-significant variables*

There are a number of variables that are not significant to the 5% level, but still, somewhat approach it. Due to the relatively limited sample size and the high number of variables, it is more difficult to get a significant result. As such variables approaching levels of significance can provide some indication of the nature of the relationship between variables, but should still be interpreted with caution. The variable closest to significance in both models was migration background, indicating a relationship between having a migration background and higher mental health scores (Table 1). While migrants are usually associated with poorer mental health (Lecerof et al., 2015), children of migrants may benefit from social networks established by their parents. Furthermore, migrants usually are a select group with higher income and skills, which may provide a more stable environment for their children.

The variables father attending Secondary General School and having no degree are both close to significance with both having a positive relationship to mental health when compared to an Upper Secondary Education (Table 1). This result is quite surprising as a higher level of education is usually associated with better mental health. Since the significance for these variables is higher than those for the mother's education, this suggests a gender split in the importance of parental education, The gender split may be attributed to traditional gender roles and the father's position as a breadwinner, which means that his education is more important for the financial situation of the family.

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	46.553	4.540		10.254	.000
	Recorded moves during childhood	-.305	.370	-.054	-.825	.410
	Gender	-3.158	1.252	-.164	-2.522	.012
	Mean Income Quintile	.815	.922	.070	.884	.377
	Born in East or West Germany	-2.723	2.021	-.095	-1.348	.179
	Migration Background	3.283	1.758	.150	1.868	.063
	Father Secondary General School	2.519	1.963	.128	1.283	.201
	Mother Secondary General School	1.004	1.397	.052	.719	.473
	Father Intermediate School	1.039	1.870	.049	.556	.579
	Mother Intermediate School	-2.109	4.192	-.034	-.503	.615
	Father No School Degree	6.624	4.377	.106	1.513	.132
	Father Other School Degree	.148	3.118	.004	.047	.962
	Mother Other School Degree	-3.359	2.992	-.084	-1.123	.263
2	(Constant)	42.879	5.431		7.896	.000
	Recorded moves during childhood	-.400	.394	-.071	-1.015	.311
	Gender	-2.897	1.248	-.150	-2.320	.021
	Mean Income Quintile	.313	.937	.027	.334	.738
	Born in East or West Germany	-2.654	2.010	-.093	-1.321	.188
	Migration Background	2.947	1.746	.135	1.687	.093
	Father Secondary General School	2.588	1.948	.132	1.329	.185
	Mother Secondary General School	1.118	1.373	.058	.814	.416
	Father Intermediate School	1.474	1.846	.069	.798	.425
	Mother Intermediate School	-3.804	4.220	-.061	-.901	.368
	Father No School Degree	6.268	4.318	.101	1.452	.148
	Father Other School Degree	-.821	3.105	-.022	-.264	.792
	Mother Other School Degree	-2.975	2.963	-.074	-1.004	.316
	Number of Siblings	1.784	.562	.206	3.175	.002
	Fighting with parents at age 15	.774	.732	.068	1.057	.292
	Father or Mother Death	-3.309	3.071	-.071	-1.077	.282
	Lived with both parents 15 years	.232	1.675	.010	.139	.890

a. Dependent Variable: MCS: Summary Scale Mental (NBS)

Table 1: Estimated effect of childhood mobility on early adulthood mental health, with and without mediators

## Conclusions

The link between residential mobility and mental health has been well documented in the literature, with high residential mobility being associated with poorer mental health. This relationship has been explained by the stressful nature of a residential move, which can compound with multiple moves. Residential moves also disrupt social networks and cause a loss in social capital, reducing wellbeing. Furthermore, residential mobility often coincides with other stressful life events causing poorer mental health outcomes. In this paper, the relationship between childhood residential mobility and early adult mental health was examined. Family (dys)function and structure were taken as mediating factors. The results from the data analysis did not reflect the findings from the literature, with residential mobility not found to be significant. Sex and number of siblings were found to be significant, with women and a low number of siblings found to have poorer mental health. All of these findings do not correspond to or contradict existing research, suggesting that methodological mistakes have reduced the validity of the results. Another explanation is that the different mental health measure used in this analysis produced different results from other studies.

This research has some general and variable-specific limitations which make the interpretation of the results difficult. Firstly, the sample size was quite small, especially considering the high number of variables. Additionally, the main explanatory variable had two main limitations. It does not include multiple moves in a year and the distance of moves. As such, it was not possible to further explore the dynamics of the relationship, and whether the relationship may exist in a different form.

Based on the findings of this study, future research into the relationship between gender and mental health, and the number of siblings and mental health, as well as their interaction with childhood residential mobility should be considered, in order to validate these findings and further the understanding of the dynamics behind these relationships, should they exist. Furthermore, this study used a different measure to measure mental health than other research on this topic and produced a different result. Therefore, despite the already wide variety of individual measures of mental health used in this strand of research, future research into different types of mental health measures, beyond ones based on psychopathology, could yield more detailed and nuanced understandings of the relationship between residential mobility and mental health.

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