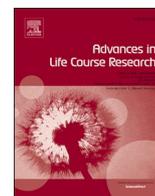


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## Intergenerational social mobility and health in Russia: Mind over matter?

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## ABSTRACT

The consequences of changing one's socio-economic status over the life course—i.e. social mobility—for individual health are not well understood. Theories of the health implications of social mobility draw on the human perception of one's changing conditions, but empirical studies mostly examine the health implications of moving from objectively defined indicators of parental socio-economic position such as education, occupation, or income, to own socio-economic position in adult life. Little is known about the consequences of individuals' own assessment of changes in socio-economic position for health outcomes. In this study, we examine the association of social mobility and health in a unique sample of the Russian population after the transition to a market society. We take a broad perspective on social mobility, putting emphasis on subjectively perceived social mobility. Results show that individuals' objective characteristics only partially explain the variation in their subjective perceptions of intergenerational mobility. Net of social origin and destination variables, subjective social mobility is associated with individuals' health outcomes, as measured by the 12-Item Short Form Health Survey. Those who perceive being upwardly mobile report better health, and downward mobility is associated with poorer health. The association holds for mental and physical health, for perceived downward and upward social mobility, and for a general subjective measure of mobility and a subjective measure prompting respondents to only think of mobility in terms of occupation. These findings are robust to controlling for a rich set of socio-demographic predictors on childhood adversity, contemporaneous material wellbeing, and family-related circumstances. We conclude that a conventional focus on single socio-economic status dimensions such as occupation might be too narrow to capture the health consequences of social mobility.

## 1. Introduction

Arguably the most important finding of the social sciences in recent times is that of loss and decline manifested in reduced upward social mobility (Jackson & Grusky, 2018): when it comes to material wellbeing, individuals cannot expect anymore to do better than their parents did—in some contexts, they even have to expect doing worse (Bukodi, Paskov, & Nolan, 2020; Chetty et al., 2017). While research has shown that worse socio-economic conditions are bad for one's health, it is less clear how such a process of intergenerational mobility affects the health of individuals, particularly when it comes to the individual perception of the mobility experience. Existing studies mostly concentrate on health consequences of moving from objectively defined indicators of parental socio-economic status such as education, occupation, or income to own socio-economic position in adult life (Campos-Matos & Kawachi, 2015; Präg & Gugushvili, 2020b; Präg & Richards, 2019; Ward et al., 2018), but there are hardly any studies on the consequences of individuals' own

assessment of changes in socio-economic position for health outcomes.

Individuals' perceptions of social mobility experience might be as much or even more important than their actual intergenerational trajectories. The major theoretical explanations of mobility effects are based on psychological mechanisms in individuals' perceptions and their implications for health (Gugushvili, Zhao, & Bukodi, 2019). Existing research demonstrates that individuals' behaviors, health, and wellbeing are shaped not only by what happens personally with them, but also how they perceive their own experiences in relation to the social context in which they live (Gugushvili, Reeves, & Jarosz, 2020; Pickett, 2001; Snyder-Mackler et al., 2020). Intergenerational downward and upward mobility might have different consequences for individuals' health depending on the overall level of changes happening in a society. Downward mobility, for instance, in the context of overall deterioration of socio-economic conditions might not be as detrimental for health compared to the situation when overall conditions are improving (Mackenbach, 2019). That individual-level experiences of mobility

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might not be the only important drivers of health is also suggested by recent evidence showing that mobility patterns at a population level are crucially linked to the levels of health (Gugushvili & Kaiser, 2020; Venkataramani, Chatterjee, Kawachi, & Tsai, 2016; Venkataramani, Daza, & Emanuel, 2020).

With this study we contribute to the existing research on health consequences of intergenerational social mobility and advance the state of knowledge in this field by investigating the health implications of perceived intergenerational mobility in Russia. Our first contribution is to examine two indicators of perceived social mobility – occupational mobility as well as a more general perception of individuals how well they have done in life in comparison to their parents. Comparing the results based on these two measures allows us to gauge whether occupation is too narrow of an indicator of social mobility when it comes to health consequences. Second, we contribute by examining the case of Russia, a society that underwent rapid transformations in the last decades with corresponding changes in the levels of social mobility (Gerber & Hout, 2004; Gugushvili, 2017b; Jackson & Evans, 2017). The consequences of these macro-level transformations on health outcomes is relatively well-documented (Doniec et al., 2019; Irdam et al., 2016; Walberg, McKee, Shkolnikov, Chenet, & Leon, 1998), but how the mobility processes at an individual-level affected health are much less well understood.

Previous studies on the implications of social mobility have investigated distinct areas of health and wellbeing and relied on a wide range of outcomes such as ones based on formal diagnostic criteria (Präg & Richards, 2019) and vitality status (Tiikkaja & Hemstrom, 2008), while others examined self-rated health (Campos-Matos & Kawachi, 2015), mental health (Houle & Martin, 2011), or subjective wellbeing (Zhao, Li, Heath, & Shryane, 2017). These diverse approaches might be responsible for the partially contradictory findings in the literature. Our third contribution, therefore, is using two extensively validated multi-item measures of both physical and mental health to obtain a comprehensive understanding of the links between social mobility perceptions and health in the population under study. It is also worth mentioning upfront that in line with a long tradition of mobility research the term “effect” in “mobility effects” is to be understood in a statistical rather than causal sense in the present study.

Improving the understanding of links between social mobility and health has policy implications for efforts to improve population’s wellbeing and reduce health inequalities. Identifying relations between subjective perceptions of mobility and health that go beyond those of objective measures of mobility can broaden our comprehension of mobility processes and raise questions for future research to help identify aspects of social mobility not captured in the standard objective measures, e.g. wealth and assets or social status. Our research also contributes to emerging scholarship on the links between individuals’ own understanding how they perform in life in comparison to their parents and various political attitudes and behaviors such as redistribution preferences, support for income differences and specific welfare state programs, or voting patterns (Day & Fiske, 2017; Gugushvili, 2016; Schmidt, 2011).

## 2. Theoretical framework

### 2.1. General theories of social mobility and health

Theorizing about the consequences of individuals’ social mobility experiences has been one of the foundational areas of sociological inquiry. Industrialized societies have been constantly evolving – industries collapse and are replaced with new ones, resulting in a changing occupational structure and corresponding spatial and social mobility of individuals across generations and over the life course (Lipset & Zetterberg, 1959). Because industrialization was primarily associated with socio-economic progress and improving living standards, some of the greatest thinkers in sociology tried to explain the implications of

upward social mobility on individuals’ lives. Emile Durkheim’s (1897) theory posited that dramatic social and economic changes, often resulting in the higher levels of social mobility, could have contributed to individuals’ moral confusion and sense of disintegration from a society.

The “dissociative thesis” proposed by Pitirim Sorokin (1927) is the most influential theory of health and wellbeing consequences of social mobility. This perspective sees upward social mobility as an important change in the life course by which individuals deviate from expected continuity associated with their social origins. Experiencing upward mobility might be good for improving socio-economic conditions, but adjusting to an unfamiliar socio-economic environment, while also severing links with the familiar and more natural past environment, can be taxing (Friedman, 2014). Conversely, the more recent “rags to riches” thesis, stemming mainly from social psychology research, suggests that upward social mobility could lead to better health outcomes by, among other reasons, generating a sense of control of life (Poulton et al., 2002), boosting psychological well-being from overcoming difficulties in the journey out of less advantaged socio-economic positions (Tedeschi & Calhoun, 2004), and developing a sense of gratitude among individuals to the existing system for making the attainment of their present status possible (Daenekindt et al., 2018; Tumin, 1957; Watkins, Woodward, Stone, & Kolts, 2003).

Social theory changed its views on social mobility when the “golden age” of social mobility after the Second World War had come to an end. In the prism of post-liberal theory of social stratification (Goldthorpe, 2016; Jackson & Grusky, 2018), mobility began to be viewed in terms of growing stagnation and downward intergenerational mobility. This coincided with the emergence of new theoretical explanations of negative health and wellbeing implications of downward social mobility experience. The main idea of the so called “falling from grace” thesis (Newman, 1999) is that the experience of downward intergenerational mobility implies an undesirable change in class-related norms and practices as well as a loss of an ascribed socio-economic position at birth. The transmission of socio-economic advantages across generations is still quite common, therefore downward mobility may be perceived by those experiencing it as undeserved and unjust, particularly by those who started from the highest ladder rungs in the socio-economic hierarchy (Dennison, 2018).

### 2.2. Subjective perception of intergenerational mobility: going beyond mobility in socio-economic status

Research on the consequences of intergenerational mobility for health and wellbeing is still inconclusive. One explanation why there is little consensus in this field is because different scholars operationalize social mobility in different ways: social class (Chan, 2018), education (Steiber, 2019), social status (Cardano, Costa, & Demaria, 2004), and income (Okamoto, Avendano, & Kawachi, 2019) have all been used in past research. Indeed, socio-economic status and derived concepts such as social mobility are complex and multi-faceted constructs that are difficult to measure comprehensively. Furthermore, different indicators of socio-economic status (e.g. education, occupation, social class, or income) may capture various aspects of socio-economic status (e.g. financial, social, and intellectual) and activate different mechanisms in their effects on health (Darin-Mattsson, Fors, & Kåreholt, 2017; Duncan, Daly, McDonough, & Williams, 2002; Shavers, 2007). Thus, results can vary depending on socio-economic status indicators used in a study (Geyer, 2006).

The health consequences of intergenerational mobility hence differ starkly across studies. Findings range from no effects of intergenerational mobility (Präg & Richards, 2019) to important effects of upward but not downward mobility (Campos-Matos & Kawachi, 2015) or the reverse (Nicklett & Burgard, 2009), or both (Gugushvili et al., 2019). A possible reason for these inconsistencies might be the fact that they draw on different types of indicators of socio-economic status to gauge

intergenerational mobility.

Subjective perceptions of intergenerational mobility might be a better indicator of intergenerational mobility than objective measures (Präg & Gugushvili, 2020a). Researchers have always struggled to measure socio-economic status in a way that captures all the salient aspects in a tractable fashion, yet it is easily imaginable that individuals can do this calculus intuitively in their heads, taking into account idiosyncratic aspects of social-economic position that objective measures cannot easily or precisely capture. Indeed, a long tradition of research has documented an association between subjective assessments of socio-economic status and health, showing that subjective appraisals of current socio-economic status are still predictive of health even when comparing participants who have the same objective socio-economic position (Hoebel & Lampert, 2020; Präg, 2020; Zhao, Du, Li, Wu, & Chi, 2021). This can be interpreted in a way that the subjective report of socio-economic position captures aspects of socio-economic status that are not easily measured with objective indicators of socio-economic status. Similarly, individuals likely understand intergenerational mobility in much broader terms than only mobility measured separately in occupational, educational, or income attainment – the conventional dimensions of research in this field. Social mobility research demonstrates that individuals' life chances are independently affected by different measures of social origins (Bukodi, Bourne, & Betthäuser, 2017; Bukodi, Erikson, & Goldthorpe, 2014) and therefore, if anything, individuals would be more likely to perceive own intergenerational mobility through this multidimensional perspective.

For understanding the difference between objective social mobility and individuals' perceptions of their mobility, Duru-Bellat and Kieffer (2008) conducted qualitative interviews among individuals with various types of mobility experience, and found that subjectively upward mobile people predominantly emphasized personal merit in their success. People who subjectively overestimated their objective trajectories, as a rule mistook objective stability for upward mobility. Further, inconsistencies between subjective perception of mobility and objective mobility experience might stem from people's tendency to consider their own success in more broader terms than occupational attainment (Duru-Bellat and Kieffer (2008). When asked if labor market status was the main feature of their life success, more than half of respondents said no. Subjective intergenerational comparison to parents likely refers to non-economic aspects of life, such as personal relationships and general satisfaction with life. For instance, it is known that married people are happier than the non-married, which might also affect individuals' perception of intergenerational mobility (Stack & Eshleman, 1998). Those who are divorced and had ensuing problems in personal relationships might consider this aspect while answering to a question of how well they have done in life in comparison to their parents. Having children is another area of individuals' lives that can play an important role in intergenerational comparisons with parents (Cetre, Clark, & Senik, 2016). Last but not least, as predicted by social learning theory (Bandura, 1977), own behaviors, including those related to health, can be one of the areas through which individuals compare to their parents.

### 2.3. Post-communist transition, social mobility, and health

In this study we use data from Russia, the most populous country in Eastern Europe and Eurasia. Russia has experienced major political, economic, and social changes since the end of the 1980's. The transition from communism to a market economy had important effects on Russia's socio-economic structure: the transition deteriorated labor market conditions, welfare state provisions, and general economic wellbeing, leading many to experience worse living conditions than their parents did (Gugushvili, 2017a; Jackson & Evans, 2017). Although the country's economy recovered since the 2000's, the well-known scarring effects of major crises are likely to have long-term negative socio-economic consequences (Giuliano & Spilimbergo, 2013). In addition to social and economic implications, the transition had major consequences for

population health in Russia. The dramatic reforms towards a market economy, known as the "shock therapy" approach (Hall & Elliott, 1999), led to the rapid privatization of state-owned companies, large-scale layoffs and mass unemployment, drops in the average standard of living, and political and civil instability. In turn, this had direct and indirect effects on a substantial increase in mortality and overall deterioration of population health (Azarova et al., 2017; Billingsley, 2012).

These dramatic changes not only affected individuals' own mobility trajectories in terms of occupational, educational, and income attainment, but also contributed to general perceptions of worsening socio-economic environment, particularly in the first decade of the transition (Marshall, 1996). In Russia, perhaps more than in other post-Soviet countries, the communist past represented not only relative material prosperity, but also social and political order and geopolitical prestige (Lipman, 2013). Evidence from public opinion surveys suggests that since the 1990's, the former communist system consistently enjoyed widespread support in the population and many harbored positive feelings towards this politico-economic system and its leaders (Ekman & Linde, 2005; Gugushvili & Kabachnik, 2019). The Communist Party of the Russian Federation, unlike the voting patterns observed in other post-communist countries, has consistently enjoyed support from considerable parts of the electorate (Rabotiazhev & Solov'ev, 2008). Longing to the previous past was not only characteristic of the older population, also adolescents in Russia expressed Soviet nostalgia (Nikolayenko, 2008). These feelings of loss that have come with the fall of communism might influence the way Russians perceive their mobility trajectories in ways that objective measures will only insufficiently capture.

While studying the effect of subjective perceptions of social mobility on health in the Russian context, it is also important to account for individuals' intra-generational mobility experiences. One of the main components of a life course approach to health is that stressful life events and the length of time spent in different socio-economic positions matters for individuals' later life health outcomes (Ben-Shlomo & Kuh, 2002; Pollitt, Rose, & Kaufman, 2005). Mere comparisons between parental and offspring social class might underestimate social mobility effects that have taken place during the careers of the children. For instance, different individuals who occupy the same socio-economic position in social hierarchy, irrespective of their social origins, might have experienced downward or upward mobility during their lifetimes and this experience can be reflected both in health status and how individuals perceive own intergenerational social mobility experiences. Further, health effects of being in a certain destination, e.g. a salariat occupation, might be stronger when participants have spent more time in this destination. The Russian transition to a market economy upended many people's occupational careers and life courses, hence taking intra-generational mobility into account is key for understanding mobility effects in the Russian context.

## 3. Research design

### 3.1. Data

We use representative survey data, PrivMort, for the European part of Russia collected by the Russian Public Opinion Research Center (VCIOM) in 2016 within a multi-disciplinary project whose main objective was to investigate the post-communist morbidity and mortality crisis by means of a cross-sectional retrospective cohort study (Irdam et al., 2016). The survey covers 44 administrative and territorial units of European Russia, where more than 100 million people live, about 70 % of Russia's total population (see online supplementary materials, Table S1, for the names of the territorial units and their respective populations). The PrivMort's response rate was 48 %. To be included in the survey, respondents had to be born before 1972. This selection criterion is not an important part of our study but it ensured that survey respondents were of working age when the major politico-economic

transformation started in the beginning of the 1990's. Hence, the sample includes only those aged 43 years and over. In addition to information on respondents' mobility perceptions and their socio-demographic and socio-economic characteristics, the survey collected data on respondents' parental characteristics, including their occupational and educational attainment. Overall, our analytical sample consists of 2,511 individuals. Women are overrepresented in the dataset (68.2 % of the sample), which corresponds to the major differences in life expectancy at birth between men (66 years) and women (77 years) in Russia (World Bank, 2017). We therefore account for gender in all analyses, along with respondents' age and retirement status.

### 3.2. Health outcomes

All survey respondents were asked questions from the 12-Item Short Form Health Survey (SF12) which was originally developed for the Medical Outcomes Study—a multi-year study of patients with chronic conditions in the United States (Tarlov, 1989). SF12 is cross-nationally validated and widely used internationally and has been also tested and successfully employed in the Russian context (Dissing et al., 2013). With its twelve items, the goal of SF12 is to generate health-related information for eight health dimensions: (a) physical functioning (measured with two items), (b) role limitations due to physical health problems (two items), (c) bodily pain, (d) general health perception, (e) vitality, (f) social functioning, (g) role limitations due to emotional problems (two items), and (h) mental health (two items). These eight measures then are aggregated into two main components of SF12: a physical component score and a mental component score. We followed the rules of Ware, Kosinski, and Keller (1996) for calculating composite scores potentially ranging from 0 and 100, with higher scores indicating better health. The correlation between the two scores is quite weak ( $r = 0.12$ ), indicating that the two measures tap at distinct dimensions of health. Range and density of specific scores for our sample are shown in Fig. 1A. Question wording and response distributions for all included items can be found in the online supplementary materials, Figs. S1 and S2.

### 3.3. Key predictors: subjective intergenerational mobility

All survey respondents were asked two questions related to their intergenerational mobility perceptions. First, respondents were asked to

compare the status of their present or last job to the job their fathers had when respondents were 14 years old. The following answer options were provided: (a) much higher status, (b) higher, (c) about equal, (d) lower, (e) much lower, (f) never had a job, and (g) don't know what my father did, father never had a job, or never knew father. The survey questionnaire did not include an analogous question for mothers. Further, respondents were asked whether they agree or disagree with the following statement: "I have done better in life than my parents." Response options comprised "strongly disagree," "disagree," "neither disagree nor agree," "agree," or "strongly agree." Unlike the first question on subjective perception of occupational mobility, this measure does not necessarily imply intergenerational mobility in terms of occupational status or in terms of any other specific indicator of socio-economic position.

We transformed answers for these two questions into two categorical variables, reflecting occupational downward ("lower"/"much lower") and upward ("higher"/"much higher") mobility and immobility ("about equal"), and general intergenerational downward ("strongly disagree"/"disagree") and upward ("agree and strongly agree") mobility and immobility ("neither disagree nor agree"). Levels of perceived occupational and general mobility are quite similar, as shown in Fig. 1B and C, but the gap between these two forms of perceived mobility is substantial. For instance, the perceptions of general social mobility of more than a quarter of individuals included in the sample do not correspond to their perceptions of occupational intergenerational mobility. Fig. 1D suggests that 16.3 % and 11.5 % of individuals, respectively, think they have experienced better and worse occupational mobility outcomes than what they declared in terms of general intergenerational mobility.

### 3.4. Key control variables: Social origin and destination

If respondents' fathers did not exit the labor market for good before 1980, respondents were asked to report their fathers' occupation during the 1980's, 1990's, and 2000's. We used answers for the 1980's to measure fathers' occupation for two main reasons. First, this period comes closest to respondents' years of youth, and second, data for this period contained the highest share of valid occupational codings. Occupations were classified in one-digit International Standard Classification of Occupation (ISCO) codes (ILO, 2010), which allowed us to generate crude hierarchical occupational groups. In the first group we combined managerial and professional occupations such as legislators

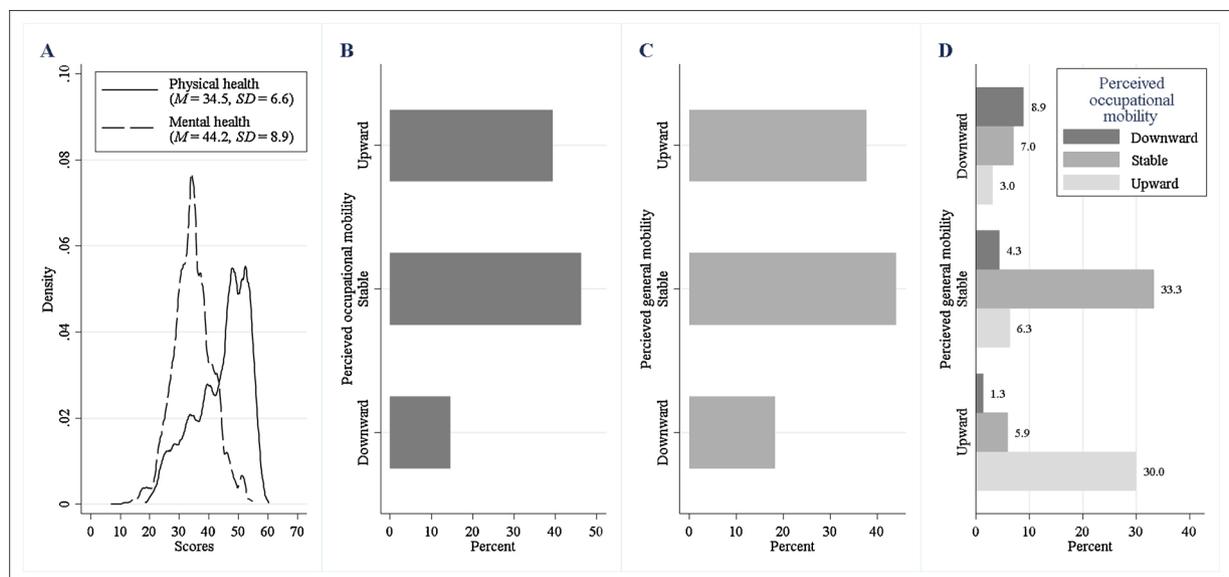


Fig. 1. Descriptive statistics for the key variables.

Source: Authors' calculations based on PrivMort (2016) dataset.

and senior officials. The second category combined all elementary jobs which are widely considered to be the most inferior occupations. We classified all other occupations in the middle category, which serves as the reference group in our models. We used only paternal rather than maternal occupation information from data because the subjective occupational mobility variable described above explicitly asked respondents to compare their jobs with those of their fathers, and due to the earlier retirement age of women in Russia, occupational data are available for more fathers than mothers.

For respondents, we utilized occupational information derived from questions similar to the ones used for the fathers, yet for individuals who were already retired during the 2000's, we used information about their occupational belonging from the 1990's or 1980's. To account for a dose-response relationship between life course socio-economic position and health we also created a variable on individuals' intra-generational occupational trajectories: (a) individuals who always held professional occupations (or those who entered the labor market only after 1980 and stayed in professional occupations thereafter); (b) individuals who always held intermediate occupations (or those who entered the labor market only after 1980 and stayed in intermediate occupations thereafter); (c) individuals who always held elementary occupations (or those who entered the labor market only after 1980 and stayed in elementary occupations thereafter); (d) individuals who experienced upward intra-generational mobility in occupational status by moving from non-professional to intermediate or professional occupations; (e) individuals who experienced downward intra-generational mobility in occupational status by moving from non-elementary to intermediate or elementary occupations; (f) all other occupational trajectories in the 1980's-2000's.

To account for the well-known effects of education on health (Cutler & Lleras-Muney, 2006; Galama, Lleras-Muney, & van Kippersluis, 2018), in full models we account for the highest level of education respondents and their parents attained. For both groups, the survey classifies the level of education into eight categories: (a) incomplete elementary; (b) complete elementary or incomplete secondary; (c) complete academic secondary; (d) complete vocational secondary without general high school leaving exam; (e) complete vocational secondary with general high school leaving exam; (f) incomplete higher; (g) complete vocational higher; and (h) complete academic higher. We recode this information on parents' and respondents' educational attainment into primary (a-b), secondary (c-f), and tertiary education (g-h).

### 3.5. Additional explanatory factors

Additional factors which are not covered by occupational and educational characteristics of individuals and their parents might explain the link between subjective perception of mobility and health. These additional characteristics might be particularly important for the subjective perception of general mobility. First, we control for childhood deprivation, reported retrospectively by respondents. Respondents answered the question: 'When you were a child, were things so poor in your household that you sometimes went to bed hungry? If yes, how often did this happen?' The variable on childhood deprivation takes a value of 1 if respondents stated that they occasionally or often went to bed hungry or if their living conditions were very poor so that they were constantly hungry. To further account for individuals' contemporaneous socio-economic position, we used the survey question which asked respondents if households where they lived in the 2000's had a car, a *dacha* (weekend house), a garden, or none of these. We assigned the value of 1 if respondents had none of the listed items for our resulting variable. We also created a dummy variable if respondent have ever been unemployed but looking for work continuously for 6 months or longer.

Further, to account for any potential effect of perceived intergenerational mobility stemming from family and health-behavior domains,

we also present models controlling for individuals' marital status, whether they have children, if their parents (mothers for daughters and fathers for sons due to the major gender differences in life expectancy) died younger than the age reached by respondents at the time of the interview. Descriptive statistics for explanatory factors are shown in online supplementary materials, Table S2.

### 3.6. Statistical analyses

Our analyses proceed in several steps. In a first step, we separately regress downward and upward intergenerational occupational and general mobility perceptions on objective measures of social mobility and socio-demographic controls using linear probability regressions. Unlike logistic regressions, these models allow us to compare derived point estimates and coefficients of determination, R-squared, across different models (Mood, 2010). Objective social mobility is operationalized by separately cross-tabulating individuals' origin and destination occupational and educational attainment as described in the key control variables' section. In a second step, we analyze the bivariate relationship between subjective mobility and our health outcomes.

In a third step, we conduct multivariable regression analyses of social mobility and health drawing on OLS regressions. Detecting the effects of intergenerational mobility on various behavioral, attitudinal and health consequences has been notoriously difficult (van der Waal, Daenekindt, & de Koster, 2017). The main challenge is that variables of social origin, destination, and mobility itself are linearly correlated. Although this problem can be mitigated by the application of diagonal reference models, with the subjective measures of social mobility used in the present study we do not face the same statistical challenge. We comprehensively account for social origins and destinations in our regression models, but subjective perception of mobility is not linearly related to those parameters. This is especially true for the perception of general mobility which might encompass a much broader set of pathways than the subjective perception of mobility in occupational status. We estimate our models as follows: First, we show the associations between subjective mobility and the mental and physical health outcomes accounting for participants' current occupation to control for destination, and further accounting for age and age-squared, sex, and retirement status. Second, we add paternal occupation and parental education to control for social origin. Third, we replace the destination variable for participants' occupation with a set of dummies capturing the participants' career trajectory to account for the role of intra-generational mobility. Finally, we add participants' education to the equation. The final model should be interpreted with caution, as education is a pathway variable in the social mobility process according to the widely accepted status attainment model by Blau and Duncan (1967). Controlling for education might hence bias the coefficients of interest and we only present this model as a courtesy for interested readers.

In a fourth step, we present regression results for disaggregated health outcomes, distinguishing between eight underlying dimensions of mental and physical health. In a final step, we aim to explain the health effects of subjective mobility by adding confounding and mediating variables to the equation.

For all analyses, we analyze a data set based on a multiple imputation process using chained equations in Stata 16 (White, Royston, & Wood, 2011), analyzing 20 sets of imputed data-sets and combining the estimates using Rubin's (1987) rules. The aim is to compensate for the extent of missing data in our central social origin variables—paternal occupation and education.

In terms of the selected functional form of regression models, since our aggregate measures of physical and mental health are continuous and are close to a normal distribution (see Fig. 1A), in the main analysis we fit linear regressions with robust standard errors and fixed effects for 44 territorial units of Russia where interviews were conducted (in online supplementary materials, Table S3, we also present results with standard errors clustered around 44 territorial units).

4. Results

4.1. How are subjective perceptions of mobility related to objective measures?

Table 1 shows point estimates from linear probability models in which downward and upward social mobility perceptions are regressed against objective measures of intergenerational mobility and other socio-demographic controls. Setting immobile individuals in intermediate occupations as the reference, we see that those who experience downward mobility from professional and intermediate occupations are, respectively, more and less likely to perceive themselves as being downwardly and upwardly mobile. In turn, those who moved up to intermediate and professional occupations are, respectively, less and more likely to perceive themselves as being downwardly and upwardly mobile. Remarkably, immobile individuals in the professional occupations are more likely than immobile individuals in the intermediate occupations to perceive themselves as being downwardly mobile. The described

associations are quite similar for occupational and general social mobility perceptions.

We also see that objective upward mobility from primary and secondary to tertiary education is linked to the individuals' lower and higher likelihood of perceiving themselves as being, respectively, downwardly and upwardly mobile when compared to the secondary educated immobile individuals. In addition, those who are immobile with primary education are less likely to perceive themselves as being downwardly mobile, while immobile with tertiary education are more likely to thinking themselves as being upwardly mobile. Age, gender, and retirement status are not related to individuals' perceptions of mobility. The derived values of adjusted R-squared from these regressions suggest that models explain only up to 9% of the variation in subjective downward mobility perceptions and only up to 14 % of the variation in subjective upward mobility perceptions. Apparently, other circumstances in individuals' lives not accounted in our models are important for individuals' perceptions about their intergenerational mobility experiences.

Table 1

Occupational and general mobility perceptions regressed on objective measures of social mobility and socio-demographic controls, estimates from linear probability regression models (robust standard errors in parentheses).

	Occupational mobility perceptions				General mobility perceptions			
	Downward		Upward		Downward		Upward	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.06 (0.19)	-0.05 (0.19)	0.21 (0.26)	0.33 (0.27)	0.72*** (0.22)	0.69** (0.22)	0.07 (0.27)	0.16 (0.27)
<i>Occupational mobility</i>								
Elementary → elementary (ref. immobile intermediate)	-0.02 (0.06)	—	-0.07 (0.09)	—	0.00 (0.08)	—	-0.06 (0.08)	—
Intermediate → elementary	0.08* (0.04)	—	-0.16*** (0.04)	—	0.14** (0.05)	—	-0.12** (0.04)	—
Professional → elementary	0.56*** (0.15)	—	-0.29*** (0.07)	—	0.32* (0.16)	—	-0.09 (0.14)	—
Elementary → intermediate	-0.10*** (0.02)	—	0.08 (0.05)	—	-0.09** (0.03)	—	0.09 (0.05)	—
Professional → intermediate	0.23*** (0.05)	—	-0.14*** (0.04)	—	0.22*** (0.05)	—	-0.16*** (0.04)	—
Elementary → professional	-0.10** (0.03)	—	0.39*** (0.08)	—	-0.10* (0.04)	—	0.35*** (0.08)	—
Intermediate → professional	-0.06** (0.02)	—	0.26*** (0.03)	—	-0.08*** (0.02)	—	0.23*** (0.03)	—
Professional → professional	0.11** (0.04)	—	-0.06 (0.04)	—	0.10* (0.04)	—	-0.03 (0.04)	—
<i>Educational mobility</i>								
Primary → primary (ref. immobile secondary)	—	-0.09* (0.04)	—	-0.01 (0.05)	—	-0.15** (0.05)	—	0.05 (0.05)
Secondary → primary	—	-0.03 (0.09)	—	0.12 (0.11)	—	-0.02 (0.11)	—	0.11 (0.11)
Tertiary → primary	—	-0.05 (0.15)	—	-0.07 (0.14)	—	-0.10 (0.19)	—	-0.10 (0.15)
Primary → secondary	—	-0.06 (0.03)	—	0.10** (0.04)	—	-0.13*** (0.04)	—	0.13*** (0.04)
Tertiary → secondary	—	0.16*** (0.05)	—	0.01 (0.04)	—	0.05 (0.05)	—	-0.00 (0.04)
Primary → tertiary	—	-0.08** (0.03)	—	0.38*** (0.04)	—	-0.20*** (0.03)	—	0.42*** (0.04)
Secondary → tertiary	—	-0.05 (0.03)	—	0.32*** (0.04)	—	-0.18*** (0.03)	—	0.34*** (0.04)
Tertiary → tertiary	—	0.05 (0.03)	—	0.15*** (0.03)	—	-0.04 (0.03)	—	0.16*** (0.03)
Age	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.01* (0.01)	-0.01 (0.01)	0.01 (0.01)	0.00 (0.01)
Age-squared	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Male (ref. female)	-0.00 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.03 (0.02)	-0.02 (0.02)
Retired	0.00 (0.02)	0.00 (0.02)	0.01 (0.03)	0.02 (0.03)	0.03 (0.02)	0.03 (0.02)	0.00 (0.03)	0.01 (0.03)
Adjusted R-squared	0.09	0.06	0.14	0.12	0.08	0.07	0.13	0.14
Number of imputations	20	20	20	20	20	20	20	20
Observations	2,511	2,511	2,511	2,511	2,511	2,511	2,511	2,511

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. All models include regions' fixed effects. Source: Authors' calculations based on PrivMort (2016) dataset.

#### 4.2. Bivariate associations between perceived intergenerational mobility and health

In online supplementary materials, Table S4, we present bivariate associations between SF12 physical and mental health scores and perceived occupational and general mobility with Kruskal-Wallis H tests. These explorative results do not suggest that there are major differences in physical and mental health scores based on individual's occupational and more general mobility perceptions. Median values of both physical and mental health are quite similar to each other across different patterns of perceived mobility perceptions, yet the observed differences are statistically significant. Box-plots in Fig. S3 also indicate that the interquartile range is larger for physical health and there are a number of outliers for the mental health score. Yet, the observed bivariate associations do not account for the socio-demographic composition of samples with different perception of intergenerational mobility as well as their social origin and destination characteristics.

#### 4.3. Subjective perception of mobility, social origins and destinations

In Table 2, we start our multivariate analyses by first accounting for the subjective perception of mobility in occupational status, followed by the subjective perception of more general intergenerational mobility. In Models 4, along social origin and destination variables participants' educational attainment is also accounted for.

The perception of upward occupational mobility is significantly linked to better physical health, while the perception of downward occupational mobility is negatively linked to mental health. In both instances, respondents' social origin and destination variables as well as intra-generational occupational trajectories do not substantially affect mobility coefficients in Models 1–3. The results are largely unaffected also in Models 4 for both physical and mental health, when respondents' educational attainment is accounted for. For the subjective perception of general mobility in Models 1–3, we observe the similar patterns as for subjective occupational mobility—those who think that they have done better in life than their parents have better physical health, while those who think they have done worse have also worse mental health. The general perception of both downward and upward mobility remain statistically significant when individuals' educational attainment is included Models 4. The magnitude of the coefficient is also largest for downward general mobility perception (e.g.  $-1.73$ ,  $p < 0.001$  in Model 4 for mental health) than for every other mobility parameter in Table 2.

Both fathers' and individuals' own professional occupational attainment predict better mental health, but we do not find that objective occupational mobility between 1980's to 2000's is systematically related to individuals' health outcomes. We also do not find that parental education matters for individuals' health, while respondent's own education is linked to better physical health. Unexpectedly, we also observe that secondary education in comparison to primary education is linked to worse mental health outcomes. To check for the salience of multicollinearity in Tables S5 and S6 of the online supplementary materials, we present models without subjective social mobility and variance inflation factors (VIF, and tolerance, the reciprocal of the VIF) for all independent variables included in Model 4 of Table 2. VIF values are all markedly below the rule-of-thumb threshold of 10, after which multicollinearity in a model is commonly seen as problematic (Cohen, Cohen, West, & Aiken, 2003). A comparison of the model coefficients further shows that relationships between intra-generational mobility and health outcomes are similar irrespective of whether subjective intergenerational mobility, social origin, and destination are accounted for or not.

Men's reported health appears to be better than women's health and this applies both to physical and mental health scores. Results are similar when models are fit separately by gender, in online supplementary materials, Table S7. Age is unrelated to mental health in Table 2, for physical health, the main effect of age has only a weak association, but

its quadratic term has a consistent and negative effect, suggesting that physical health deteriorates after the threshold of age of around 53 is reached. In online supplementary materials, Table S8, we exclude about 20 % of individuals from the analytical sample who were older than 75 years, but this did not change substantive results. Individuals' retirement status is a strongly negative predictor of their physical health. There is a significant difference between physical and mental health models in terms of explained variance. Adjusted R-squared values suggest that up to one-third variation in physical health is explained by the independent variables, while this share is only up to 12 percent for the mental health outcome. The main reason for this difference is individuals' age, which is the strongest predictor of physical health, but it is much less important for explaining mental health. When comparing model fit across subjective mobility indicators, the adjusted R-squared values are almost identical for each mobility indicator, suggesting that both indicators perform similarly when predicting health.

#### 4.4. Subjective perception of mobility and disaggregated components of health

In Fig. 2, we present results from regression models in which the outcomes are the eight disaggregated components of the SF12 measure, namely in terms of physical health—physical functioning, physical limitation, bodily pain, and general health, and in terms of mental health—vitality, social functioning, emotional limitation, and general mental health. We fit two types of models and only show coefficients for the two types of subjective mobility. The regressions control for the variables included in Models 4 of Table 2. For perception of occupational mobility, we demonstrate that downward mobility is related to worse health in relation to general health, emotional role, and the general mental health sub-scores. The significant and positive association of health with upward occupational mobility are also observed in the case of physical and social functioning. On the other hand, for the general perception of mobility, downward mobility remains a significant negative factor for all dimensions of health apart from physical pain. The perception of upward general mobility is also linked with better health but only for, as was the case for occupational mobility, physical and social functioning.

#### 4.5. Can the health effects of subjective mobility perceptions be explained?

In Fig. 3, we examine the factors potentially underlying the association between perceived occupational and general mobility and health. Point estimates presented are derived from regression models which consecutively introduce individuals' following characteristics: (a) childhood deprivation, (b) contemporary material wellbeing, (c) long-term unemployment, (d) marital status, (e) having children, and (f) parents dying younger than respondents.

The results suggest that the described individual-level variables have no effect on the links between subjective intergenerational mobility and health. The effect sizes of both perceived occupational and general downward mobility for all considered aspects of physical and mental health do not change after accounting for the remaining variables. Even their simultaneous inclusion in the model does not lead to any differences in the effect of downward and upward mobility perception on physical functioning and limitation, general health, vitality, social functioning, emotional limitation, and mental health. Full results for all included variables can be found in online supplementary materials, Table S9. The strongest negative effects on health were observed for marital status (e.g. being a widow) and childhood deprivation, while the magnitude of the coefficients is higher for physical rather than for mental health.

Table 2

SF12 Physical and mental health aggregate score regressed on subjective job and general mobility perceptions, estimates from OLS regression models (robust standard errors in parentheses).

	Physical health								Mental health							
	Occupational mobility				General mobility				Occupational mobility				General mobility			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Intercept	47.9*** (3.76)	47.0*** (3.85)	46.8*** (3.87)	46.5*** (3.88)	48.4*** (3.75)	47.4*** (3.83)	47.2*** (3.86)	47.0*** (3.88)	34.8*** (3.71)	34.7*** (3.77)	33.9*** (3.79)	33.5*** (3.77)	35.8*** (3.69)	35.6*** (3.75)	35.0*** (3.76)	34.6*** (3.75)
<i>Occupational mobility</i>																
Downward (ref. immobile)	-0.08 (0.48)	-0.05 (0.49)	-0.07 (0.50)	-0.16 (0.50)	—	—	—	—	-0.92 (0.48)	-1.12* (0.48)	-1.20* (0.48)	-1.20* (0.48)	—	—	—	—
Upward	1.11** (0.34)	1.10** (0.34)	1.12** (0.35)	0.94** (0.36)	—	—	—	—	0.33 (0.33)	0.45 (0.33)	0.55 (0.32)	0.35 (0.33)	—	—	—	—
<i>General mobility</i>																
Downward (ref. immobile)	—	—	—	—	-0.49 (0.43)	-0.50 (0.43)	-0.52 (0.45)	-0.56 (0.45)	—	—	—	—	-1.60*** (0.40)	-1.77*** (0.41)	-1.78*** (0.41)	-1.73*** (0.40)
Upward	—	—	—	—	0.96** (0.33)	0.98** (0.34)	0.99** (0.34)	0.81* (0.35)	—	—	—	—	0.49 (0.32)	0.60 (0.33)	0.66* (0.33)	0.49 (0.33)
<i>Father's occupation</i>																
Professional (ref. intermediate)	—	-0.83 (0.53)	-0.83 (0.55)	-0.79 (0.56)	—	-0.82 (0.52)	-0.81 (0.55)	-0.78 (0.55)	—	0.90 (0.53)	1.05 (0.55)	1.05 (0.55)	—	1.02* (0.51)	1.14* (0.54)	1.15* (0.54)
Elementary	—	-0.37 (0.68)	-0.40 (0.70)	-0.45 (0.71)	—	-0.39 (0.68)	-0.43 (0.71)	-0.47 (0.71)	—	-0.13 (0.50)	-0.34 (0.51)	-0.40 (0.51)	—	-0.18 (0.49)	-0.40 (0.49)	-0.45 (0.50)
Not working	—	-1.15 (1.32)	-1.06 (1.20)	-1.13 (1.18)	—	-1.20 (1.33)	-1.13 (1.19)	-1.19 (1.18)	—	-0.77 (0.87)	-1.01 (0.91)	-1.10 (0.90)	—	-0.91 (0.87)	-1.17 (0.91)	-1.25 (0.90)
<i>Parental education</i>																
Secondary (ref. primary)	—	0.80 (0.45)	0.69 (0.44)	0.54 (0.44)	—	0.84 (0.45)	0.73 (0.44)	0.58 (0.44)	—	-0.36 (0.40)	-0.33 (0.39)	-0.38 (0.39)	—	-0.27 (0.40)	-0.26 (0.39)	-0.29 (0.39)
Tertiary	—	0.68 (0.48)	0.64 (0.49)	0.33 (0.52)	—	0.75 (0.49)	0.70 (0.49)	0.40 (0.52)	—	0.06 (0.44)	0.07 (0.43)	-0.25 (0.44)	—	0.17 (0.44)	0.16 (0.43)	-0.12 (0.44)
<i>Respondent's occupation</i>																
Professional (ref. intermediate)	0.59 (0.33)	0.59 (0.34)	—	—	0.62 (0.32)	0.60 (0.33)	—	—	1.05*** (0.31)	0.88** (0.32)	—	—	0.98** (0.31)	0.78* (0.31)	—	—
Elementary	-0.85 (0.53)	-0.80 (0.53)	—	—	-0.88 (0.53)	-0.81 (0.54)	—	—	-0.52 (0.48)	-0.42 (0.49)	—	—	-0.43 (0.48)	-0.32 (0.48)	—	—
<i>Respondent's occupation in the 1980 s–1990 s–2000s</i>																
Always professional (ref. always intermediate)	—	—	0.46 (0.36)	0.20 (0.36)	—	—	0.46 (0.35)	0.20 (0.36)	—	—	0.86* (0.34)	0.57 (0.35)	—	—	0.76* (0.35)	0.51 (0.35)
Always elementary	—	—	-0.75 (0.71)	-0.23 (0.73)	—	—	-0.76 (0.73)	-0.25 (0.73)	—	—	0.32 (0.64)	0.23 (0.65)	—	—	0.36 (0.64)	0.26 (0.65)
Upwardly mobile	—	—	0.15 (0.77)	0.03 (0.77)	—	—	0.13 (0.77)	0.03 (0.78)	—	—	-0.01 (0.66)	-0.24 (0.66)	—	—	-0.05 (0.66)	-0.25 (0.66)
Downwardly mobile	—	—	-0.97 (0.65)	-1.03 (0.64)	—	—	-0.95 (0.65)	-1.01 (0.65)	—	—	-1.05 (0.58)	-1.13* (0.57)	—	—	-0.94 (0.57)	-1.01 (0.56)
All other trajectories	—	—	1.04 (1.69)	0.77 (1.68)	—	—	0.89 (1.71)	0.64 (1.70)	—	—	0.53 (1.65)	0.24 (1.64)	—	—	0.30 (1.61)	0.08 (1.60)
<i>Respondent's education</i>																
Secondary (ref. primary)	—	—	—	1.82* (0.78)	—	—	—	1.86* (0.77)	—	—	—	-1.46* (0.61)	—	—	—	-1.42* (0.62)
Tertiary	—	—	—	2.45** (0.79)	—	—	—	2.45** (0.79)	—	—	—	-0.12 (0.62)	—	—	—	-0.23 (0.63)
Age	0.29* (0.12)	0.30* (0.12)	0.31* (0.13)	0.25 (0.13)	0.28* (0.12)	0.29* (0.12)	0.30* (0.12)	0.24 (0.13)	0.08 (0.12)	0.09 (0.12)	0.11 (0.12)	0.16 (0.12)	0.06 (0.11)	0.06 (0.12)	0.08 (0.12)	0.13 (0.12)

(continued on next page)

Table 2 (continued)

	Physical health								Mental health							
	Occupational mobility				General mobility				Occupational mobility				General mobility			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Age-squared	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00* (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Male (ref. female)	1.51*** (0.31)	1.51*** (0.31)	1.47*** (0.31)	1.51*** (0.31)	1.52*** (0.31)	1.48*** (0.31)	1.51*** (0.31)	1.51*** (0.31)	1.86*** (0.30)	1.89*** (0.30)	1.89*** (0.30)	2.01*** (0.30)	1.87*** (0.30)	1.92*** (0.30)	1.92*** (0.30)	2.02*** (0.30)
Retired (ref. working)	-2.38*** (0.43)	-2.32*** (0.43)	-2.38*** (0.43)	-2.31*** (0.43)	-2.36*** (0.43)	-2.35*** (0.43)	-2.29*** (0.43)	-2.29*** (0.43)	-0.76* (0.38)	-0.74 (0.38)	-0.77* (0.38)	-0.69 (0.38)	-0.71 (0.38)	-0.67 (0.38)	-0.70 (0.38)	-0.63 (0.38)
Adjusted R-squared	0.33	0.33	0.33	0.34	0.33	0.33	0.34	0.34	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12
Number of imputations	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Observations	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. All models include regions' fixed effects.

Source: Authors' calculations based on PrivMort (2016) dataset.

5. Discussion

In this study, we explored the links between the subjective perception of intergenerational social mobility and individual health. This research question is important inasmuch as scholarship on objective intergenerational mobility did not produce conclusive evidence on its implications for health. We derived a further motivation to conduct this study from the observation that the most popular theoretical links between social mobility and health are channeled through socio-psychological mechanisms. In other words, if mobility really affects health based on pathways predicted by, for instance, the influential dissociative or “falling from grace” theories, then individuals must have a full awareness of their experience of downward or upward social mobility. Although the link between objective mobility and its subjective perceptions is usually strong (Berger & Engzell, 2020; Gugushvili, 2020b; Kelley & Kelley, 2009), individuals' perceptions are not perfectly correlated with their objectively measured experiences. For instance, in nationally representative survey data for France, about 60 % of men were immobile in terms of occupational social class, but only slightly more than a quarter perceived their situation as similar to their father's in subjective terms (INSEE, 2003).

Using PrivMort data from post-communist Russia, we observed a major mismatch between the perceptions of occupational and more general social mobility. The perceptions of general social mobility of one in four individuals did not accurately reflect their perceptions of occupational intergenerational mobility. The variation in both of these measures, however, could be only partially explained by objective indicators of intergenerational mobility, which suggests that subjective perceptions of mobility are determined by much broader characteristics and circumstances in individuals' lives. Expectedly, downward and upward intergenerational mobility in occupational and educational attainment was associated with corresponding perceptions of downward and upward intergenerational mobility. Yet, we also revealed that intergenerationally immobile individuals with professional occupations were more likely to report subjective downward mobility than immobile individuals with intermediate occupations. One of the explanations for this could be that professional groups were hit particularly hard by the overall deterioration of socio-economic conditions related to post-communist transition in Russia (Gerber, 2012).

To answer our main research question about the effect of subjective mobility on health, the PrivMort survey allowed us to investigate internationally validated measures of physical and mental health as outcome variables taken from the SF12 survey instrument; differentiate between subjective occupational mobility and more general intergenerational mobility perceptions; and compare upwardly and downwardly mobile individuals to those who considered themselves as being intergenerationally immobile. We were also able to account for social origin and destination variables in terms of educational and occupational attainment as well as individuals' intra-generational mobility trajectories starting from the 1980's. Our analyses have revealed that subjective perception of intergenerational mobility is indeed associated with individuals' health outcomes and this effect holds for mental and physical health, occupational and general mobility perceptions, and downward and upward subjective social mobility.

The effect of mobility or its perceptions should be more vividly reflected in mental rather than physical health. As described above, most theoretical explanations of health consequences of social mobility predict effect of mobility via psychological mechanisms. For instance, those who perceive that they have experienced downward movement in the social hierarchy may be disheartened or have lower subjective well-being due to an unusual life course trajectory and unmet family expectations (Day & Fiske, 2019). When we analyzed the cumulative physical and mental health scores of SF12, both dimensions were significantly related to subjective social mobility, but when we further disaggregated physical and mental health scores into eight subcomponents, negative effects of downward mobility were strongly linked with individuals'

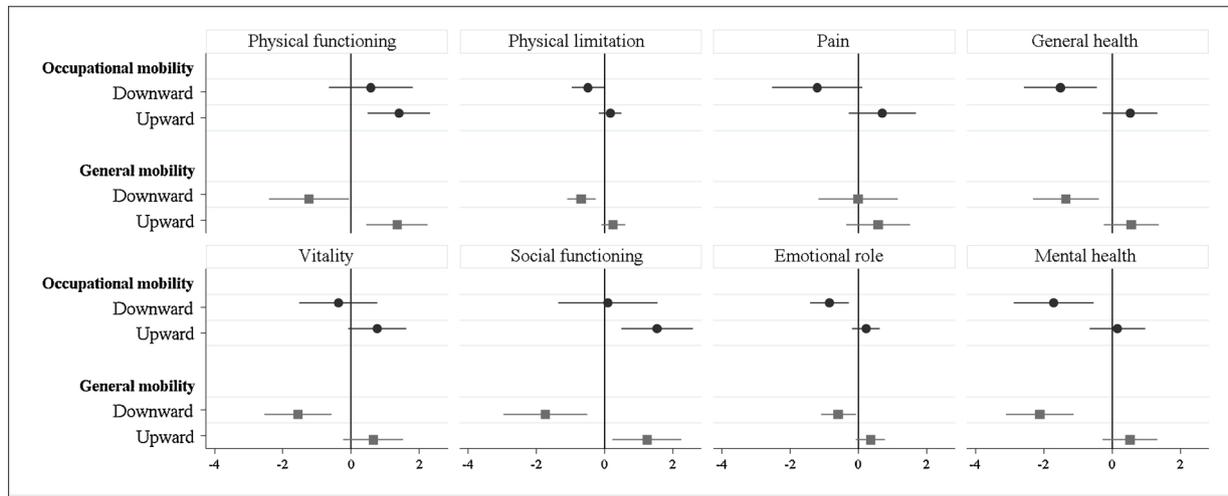


Fig. 2. SF12 components regressed on subjective occupational and general mobility perceptions, estimates from OLS regression models. Error bars denote 95 % confidence intervals based on robust standard errors. Reference category is the group of immobile individuals. Notes: Regressions controlling for variables shown in Table 2, Models 4, N = 2,511. Source: Authors' calculations based on PrivMort dataset.

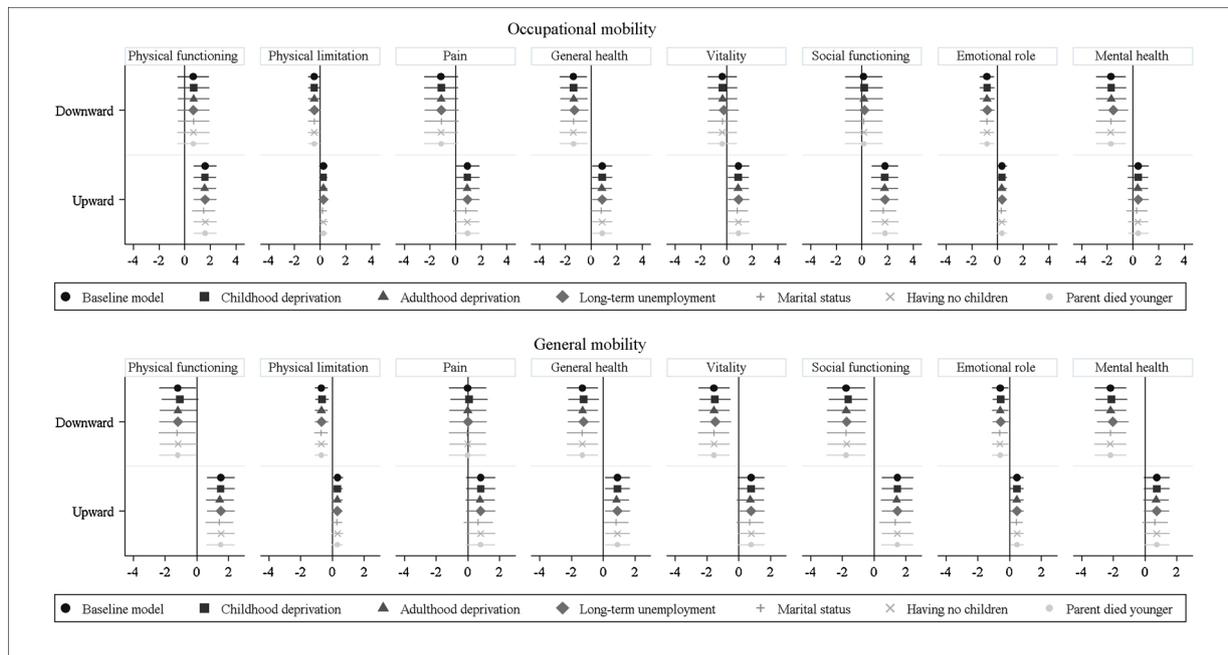


Fig. 3. Explaining the effect of perceived general intergenerational mobility. Coefficients from OLS regression. Error bars denote 95 % confidence intervals based on robust standard errors. Reference category is the group of immobile individuals. Notes: Regressions controlling for variables shown in Table 2, Models 4, N = 2,511. Source: Authors' calculations based on PrivMort (2016) dataset.

vitality status, social functioning and general mental health, while the effects were less visible for experiencing pain and assessing physical functioning. This is also in line with previous research which shows that intergenerational mobility effects are not imprinted in the wear and tear of the body measured by allostatic load among individuals in Britain (Präg & Richards, 2019). The analysis of separate dimensions of physical and mental health arguably provides more detailed information about the links between subjective social mobility and health than the analysis of the aggregated measures.

We have revealed that both the occupational and the broader intergenerational mobility perceptions have significant links with health outcomes. This suggests that individuals view their lives in broader perspective than only the attainment of occupational position. Family circumstances, social network, stable environment, among other aspects

of life, might be important when individuals consider how well they have done in life when compared with their parents (Berger & Engzell, 2020; Gugushvili, 2020b). However, after introducing in regression models many factors which could be associated with subjective mobility, we did not see any decline in the effect of this type of mobility on health. Furthermore, it might be the case that even if individuals do not experience downward intergenerational mobility in occupational terms, they might be still affected negatively by the deteriorating broader aspects of life, such as high prevalence of unemployment, inadequate welfare state services, high crime levels, etc. Existing literature on class-based social mobility consequences on health should be adjusted to include broader perceptions of individuals' intergenerational mobility.

We have also shown that the perception of downward mobility is

more consistently related to physical health, while the perception of upward mobility is more consistently related to mental health. The finding on the effect of downward mobility is closer to an expectation from the “falling from grace” theory of social mobility consequences (Newman, 1999) rather than to alternative theoretical expectations. One of the explanations of this association comes from research in social psychology which demonstrates that losing something valuable (or worsening economic circumstances) has more detrimental effects for individuals than gaining the same valuable items (or improving economic conditions) have positive impact (Hobfoll, Johnson, Ennis, & Jackson, 2003). The effect of downward mobility perceptions for health outcomes can be also explained via mechanisms described by the theory of relative risk aversion (Breen & Goldthorpe, 1997). This approach assumes that individuals seek to ensure via various types of investments that their children acquire a socio-economic position which is at least as advantageous as that from which they originate. Consequently, a more important life goal for individuals is to avoid downward social mobility rather than experience upward social mobility (Gugushvili, 2020a). On the other hand, the finding on the positive effect of upward mobility on mental health is in line with insights from social psychology literature which predict that individuals’ ability to overcome socio-economic disadvantages by moving up in social hierarchy is associated with the greater locus of control and sense of achievement and gratitude which in turn are known to be important explanations of psychological wellbeing (Poulton et al., 2002; Tedeschi & Calhoun, 2004; Tumin, 1957; Watkins et al., 2003). This also implies that upward mobility once it occurs, or if individuals believe that it did, must have more significant mental health implications than downward mobility.

For social origin variables, we did not identify that individuals’ health was systematically affected by parental occupation and education. For individuals’ education, we saw that more educated had better physical health, while for mental health this association was not straightforward. The retirement status from all types of occupations was also associated with worse physical health, but individuals’ own occupational attainment did not matter. Intra-generational occupational mobility variables were generated from ISCO 1-digit codes, which did not allow us testing the effects of more precise and validated measures of occupational social class such as the European Socio-economic Classification class schema (Rose & Harrison, 2007).

Our study has some other limitations. Like in other research using observational data, we cannot assert causal associations in our findings. Since we examined the Russian population, all of whom were potentially exposed to a chance of experiencing, or just perceiving, upward or downward social mobility, there is a lack of exogenous variation in factors affecting subjective social mobility. The results might be also affected by common method variance (CMV) (Lindell & Whitney, 2001), which means that the self-reported aspects of mental health in our survey and a negative assessment of one’s life in comparison to their parents are spuriously affected by an unobserved factor, such as pessimism or depression. To rule out CMV, in online supplementary materials, Table S10, we conducted a factor analysis of the 12 health measures reported by individuals along with their subjective perceptions of occupational and general mobility. This exercise demonstrated that health and social mobility items load on different factors, which suggests that the issue of CMV is not a major methodological concern in our study (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In addition, models in which we accounted for parental health did not differ in their substantive conclusions than models without this control. Future research should aim to replicate our finding of links between subjective social mobility and health using non-self-reported health measures such as biomarkers to further rule out a confounding through common method variance.

Furthermore, the cross-sectional nature of the health and social mobility measures available in the dataset and the absence of (quasi-) experiments that convincingly manipulate subjective mobility does not allow us to rule out the possibility of reverse causation between our

dependent and independent variables as predicted by health selection theory (Elstad & Krokstad, 2003). However, recent evidence from ten European countries suggest that in older age, social causation becomes the dominant mechanism, while the role of health selection gradually weakens (Hoffmann, Kröger, & Pakpahan, 2018). This matters for our results as participants’ average age is 63 years. Further, in the models in Fig. 3 we account for participants’ childhood deprivation (an important correlate of childhood health) which leaves our substantive findings unaffected.

Having discussed the results of the study and their main limitations, we conclude by mentioning the broader implications of the findings we have derived. Russia suffered from the post-communist transition in the early 1990’s, and this experience presumably has long-lasting effect of individuals’ perceptions of downward social mobility. In a way, if post-communist transition had implications why many individuals perceived themselves as being downwardly mobile, this would be an indication how major societal changes affect perceptions of social mobility. In more recent years, while Russia and other post-communist countries have partially recovered from the earlier crisis, Western welfare democracies face their own major challenges in terms of economic performance, income inequality, and even regarding the legitimization of democratic institutions (Foa & Mounk, 2017). Jackson and Grusky (2018) in their recently proposed post-liberal theory of stratification argue that as children are not expected to achieve a standard of living as high as that of their parents, loss and decline have become ubiquitous in the contemporary Western welfare democracies and they should be one of the central components of modern social theory. Findings of this study complement the understanding of health implications of loss in terms of downward social mobility and highlight that the subjective perception of decline might be no less important a factor for social wellbeing than a decline in objective socio-economic indicators.

### Ethics approval

Ethics approval for the analysed dataset was obtained from the University of Cambridge Department of Sociology ethics committee.

### Declaration of Competing Interest

The authors report no declarations of interest.

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### Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.alcr.2020.100390>.

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