The Generational Gift: The Effects of Grandparental Care on the Next Generations' Health and Well-being^{*}

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Abstract

Health and well-being in the family context can be affected by care giving arrangements. Following parental care and daycare, grandparents are the third most important care givers for children in many Western societies. Despite the relevance of grandparental care, there is little evidence on the causal effects of this care mode on the next generations' health and well-being. In this paper, we fill this gap by investigating the causal impact of regular grandparental care on the self-reported health and (domain-specific) satisfaction of both parents and children. To do so, we exploit geographic distance to grandparents as a source of arguably exogenous variation and use representative German panel data for families with children under the age of eleven. Our results suggest positive effects on parental satisfaction with the child care situation, as well as mothers' satisfaction with their leisure time. However, we also find negative effects on children's health, particularly for elementary school aged children and for boys.

Keywords: grandparental child care, parental well-being, child health, parental health JEL classification: D1, I21, I31, J13, J14

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1 Introduction

Health and well-being are central priorities for policymakers (see, for example, Helliwell et al., 2024; OECD, 2023a; UN, 2022), as they are not only human rights but also important drivers of human capital accumulation (e.g., Currie, 2020), labor force participation (e.g., Frijters et al., 2014), and, ultimately, economic growth (e.g., Well, 2007). In addition to the individual level, health and well-being are relevant study objects due to their intergenerational transmission and persistence (e.g., Coneus and Spiess, 2012; Datta Gupta et al., 2023). Therefore, it is important to study health in the family context and the influence of interfamilial interactions. This provides a better understanding of how the larger family impacts the health of individual members, in this case children and their parents. One important interaction is caregiving, for example grandparents caring for their grandchildren. Grandparental care is the third most important care option, following parents and daycare, in many OECD countries (OECD, 2019).¹ However, the extent of grandparental care varies considerably due to country-specific differences in daycare settings and female labor force participation. For instance, in Germany, a country with relatively low maternal employment rates and a universal daycare system, approximately one in four children under the age of eleven receives regular care from their grandparents (Section 2). Despite the expansion of daycare slots over the last decades in Germany, the importance of grandparental care has remained relatively stable over time (see Gambaro et al., 2024).

Despite the continuous importance of grandparents in providing child care, its effects on parental and child health and well-being have received little attention in the literature.² In this paper, we fill this research gap by adopting a double-generation perspective and estimating the effects of grandparental care on parental and child health and well-being.³ Identifying a causal relationship between grandparental care and these outcomes poses a challenge due to the endogeneity of the care decision. To overcome this, we utilize distance to grandparents as an instrumental variable (IV), assuming that the proximity to grandparents only affects parental and child outcomes through the provision of care. Using this instrument, one might have concerns regarding the validity of the exclusion restriction. The main threats to validity include differences between families living closer or further away from grandparents and strategic relocation patterns. We return to this issue in detail below, providing evidence that we can exclude

¹The term "daycare" refers to all forms of formal child care provided by professionals outside the family. The term "parental child care" refers to all child care provided by the child's mother or father. "Grandparental care" describes the situation in which grandparents care for their grandchildren on a regular basis, i.e., excluding emergency care.

 $^{^{2}}$ For a literature overview, primarily focusing on studies that display non-causal associations between grand-parental care and parental and child health, see Hank et al. (2018).

³Health and well-being are two closely related concepts that are difficult to distinguish from each other. The WHO defines "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1948). Therefore, in this study we use the terms health and well-being as measures of physical and mental health as well as overall and domain-specific life satisfaction. Such subjective evaluations are considered valid, reliable and cost-effective means of health assessment (Kaplan and Baron-Epel, 2003).

major concerns regarding the exogeneity of the instrument. For example, we combine the IV approach with entropy balancing to ensure comparability between families residing close and far from grandparents and we show that our results are robust to relaxing the exclusion restriction. Additionally, we demonstrate that neither parents nor grandparents strategically relocate around the time of childbirth.

Our analysis is based on a sample of families with children below eleven using *pairfam*, a representative panel data set for Germany surveyed between 2009 and 2020. We consider outcomes at the parental and child levels. Specifically, we evaluate parents' subjective health and various dimensions of well-being, including life satisfaction and domain-specific satisfaction such as satisfaction with their leisure or the child care situation. For children, we use a parent-assessed health measure. Underlying reasons why grandparental care may have effects on children and their parents can be manifold. In terms of parental outcomes, one hypothesis is that grandparental care increases parental satisfaction with leisure activities by providing parents with more time for activities unrelated to child care. A contrasting hypothesis is that grandparental care reduces health and well-being of parents by increasing emotional stress between the grandparents and parents, as relationships within the family are prone to emotional conflicts and disagreements about child rearing (Clark et al., 2020). Additionally, grandparental care may be less stable or continuous compared to other forms of care due to the grandparents' potential illness⁴ or other obligations, which could result in higher levels of parental stress. Regarding child outcomes, we consider two competing hypotheses. The first hypothesis posits that grandparental care may negatively impact a child's health. Previous research has shown mixed results for (non-)cognitive skills, with a slight tendency toward negative effects (e.g., Danzer et al., 2020; Zhang et al., 2021). Supporting this hypothesis, Ao et al. (2021) demonstrate that grandparents in China are less strict about limiting children's TV viewing time compared to parents, potentially reducing time spent on structured sports and outdoor activities, which could negatively affect the child's health. The opposing hypothesis suggests that grandparental care could have positive effects on the child's health. This hypothesis is based on the notion that grandparents may have more time to dedicate solely to the child, providing focused attention and care. In general, the intensity of grandparental care – even if provided regularly – may not be significant enough to substantially impact child and parent outcomes. Therefore, it remains an empirical question of whether grandparental care has implications for the next generations' health and well-being.

Overall, our results provide evidence that, grandparental care is beneficial, particularly for maternal well-being. We show that grandparental care increases maternal satisfaction with

⁴Eibich and Zai (2024) show that grandparental care has adverse effects for grandparents' self-reported health, limitations in daily activities and depressive symptoms. These health challenges may result in grandparents being more likely to cancel their caregiving commitments unexpectedly, potentially disrupting child care arrangements.

child care and leisure by 9 and 11 percent, respectively, compared to the mean. Furthermore, we find substantial increases in fathers' satisfaction with child care (19%). The effects on satisfaction with child care are mostly driven by parents with higher education. However, we do not find evidence that grandparental care affects parental health, life satisfaction or other domains of satisfaction. By contrast, our analysis shows that grandparental care has a negative impact on children's health. These effects are more pronounced for boys and might be explained by differences in the afternoon program organized by schools/daycare centers compared to grandparents.

While the effects of grandparental care on the grandparents themselves have been studied extensively, less attention has been given to the outcomes for parents and children.⁵ Therefore, our study makes three contributions. First, we contribute to the literature on the effects of various care modes, in this case grandparental care, on parental outcomes by studying the effects of grandparental care on parental health and well-being. The existing literature on the effects of other care modes – particularly daycare – on parental outcomes is vast and primarily focuses on maternal employment (for an overview, see Müller and Wrohlich, 2020), fertility (e.g., Bauernschuster et al., 2016), health (e.g., Barschkett and Bosque-Mercader, 2024; Herbst and Tekin, 2014), maternal well-being (e.g., Kröll and Borck, 2013; Schmitz, 2019) and the integration of migrant mothers (e.g., Gambaro et al., 2021). Research on grandparental care and parental outcomes has mainly centered on maternal employment and fertility, indicating that the availability of grandparents leads to an increase in maternal employment (Aparicio Fenoll, 2020; Bratti et al., 2018; Compton and Pollak, 2014; Kanji, 2018) and a shift in the timing of fertility (e.g., Eibich and Siedler, 2020). We contribute to this literature by considering wellbeing outcomes and subjective health, thereby focusing on other aspects that may be affected by grandparental care. As discussed above and supported by related research, both positive and negative effects may be observed for the different outcomes, highlighting the importance of considering a broad range of outcome variables to get a more comprehensive understanding of the effects of grandparental care.

Second, we add to the literature on the impact of different modes of care on child outcomes, which has previously mostly focused on daycare or parental care (for studies in the German context, see e.g., Barschkett, 2022; Cornelissen et al., 2018; Felfe and Lalive, 2018). The current body of causal evidence on informal care's influence on children is limited and primarily centered around (non-)cognitive skills. Comparing children cared for by grandparents with those

⁵Caring for grandchildren positively influences grandmother's verbal fluency (e.g., Arpino and Bordone, 2014). However, it also reduces grandparents' participation in social activities (e.g., Arpino and Bordone, 2017) and grandmother's labor supply (e.g., Backhaus and Barslund, 2021; Frimmel et al., 2020). Finally, Danielsbacka et al. (2019) find a decrease in grandparents' reported limitations with activities of daily living but no change in reported overall health, life satisfaction or depressive symptoms. By contrast, Eibich and Zai (2024) demonstrate that grandparental care adversely affects grandparents' physical functioning, subjective health and depressive symptoms, particularly among grandmothers.

attending formal child care, Del Boca et al. (2018) find a positive association between grandparental care and children's cognitive skills for children from more advantaged households, while observing a negative association for children from less advantaged households. In a comparison of children cared for by grandparents and those primarily cared for by their parents, Ao et al. (2021) find that children in grandparental care exhibit a greater external locus of control. Additionally, Zhang et al. (2021) report that these children demonstrate lower abilities in walking, talking, counting, and toilet training. Danzer et al. (2020) also show that care provided by mothers or formal institutions is superior to informal care arrangements regarding children's development. Furthermore, the study by Kaufmann et al. (2022) finds an increase in preschool children's test scores of 11- to 12-year-old boys when switching from grandparental care to after-school care. By contrast, evidence on the causal impact on children's health is limited.⁶ We contribute to this literature by providing evidence on the causal effects of grandparental care on child health. As discussed above, the empirical evidence on (non-)cognitive skills suggests that this effect could operate in both directions and exhibit heterogeneity across groups.

Third, our study provides novel evidence on these specific outcomes for Germany, a context that offers valuable insights applicable to other countries. While existing literature has primarily focused on the United States or other European countries (for a summary see, e.g., Hank and Buber, 2009), Germany presents a particularly interesting case for several reasons. Firstly, Germany is characterized by a highly subsidized universal daycare system that has expanded significantly over recent decades, mirroring trends in many other OECD countries. Secondly, despite this expansion of publicly funded child care, we demonstrate that approximately a quarter of children are still regularly cared for by their grandparents (Figure 1).⁷ A comparison of 26 European countries by Zanasi et al. (2023) shows that Germany's share of grandparental care is on par with the average of these countries. Thirdly, despite Germany's relatively low maternal full-time and high part-time employment rates compared to other EU countries (Eurostat, 2023), Germany has seen a trend of defamilization over the last years (e.g., Zagel and Lohmann, 2021). This unique combination of universal daycare, substantial grandparental involvement, and low full-time maternal employment provides a distinct setting for studying the effects of grandparental care.

The remainder of this paper is structured as follows: In section 2 we describe the institutional setting in Germany. Section 3 gives an overview of the data used. In section 4 we present the empirical strategy. Section 5 reports the main findings, discusses the robustness of the results

 $^{^{6}}$ Sadruddin et al. (2019) provide a comprehensive overview of non-causal evidence on the relationship between grandparental care and child health.

⁷These findings align with Zanasi et al. (2023), demonstrating that over 23 percent of grandparents provided weekly childcare in Germany in 2020.

and presents the results of our mechanism analysis. Finally, section 6 concludes the paper.

2 Institutional setting

In Germany, regular grandparental care has played a significant role for many years (see Figure A.1). Figure 1 demonstrates that in 2018/19, grandparents provided care for approximately 20 to 30 percent of children under the age of eleven, across different age groups.

Figure 1: Actors and institutions involved in care of children younger than 11 in Germany



Note: A child is counted as cared for by the grandparents in this graph if the child is cared for by its grandparents in the morning or afternoon or both. The same applies for the other actors. The category 'only parents' is exclusive, as it includes only children not cared for by any other caregiver. The categories 'grandparents,' 'siblings,' and 'daycare/school' are not mutually exclusive; a child can belong to one, two, or all three of these categories. *Source:* Pairfam (2018/19), weighted, own calculation.

To understand the role of grandparental care in Germany and its evolution, it is important to consider other forms of child care that are also utilized, as well as trends in parental employment. Historically, Germany has had low rates of female employment, while full-time employment for men has consistently been prevalent. However, in recent decades, there has been a notable increase in maternal employment in Germany. The percentage of working mothers has risen from 61.2 percent in 2006 to 73.8 percent in 2021 (e.g., OECD, 2023b).⁸ This increase in maternal employment has been facilitated by a substantial expansion of publicly funded daycare since the 1990s (e.g., Müller and Wrohlich, 2020). While enrollment in daycare for children above three

 $^{^{8}}$ In comparison, the average female employment rate in OECD countries was 72.3 percent in 2021 (e.g., OECD, 2023b).

years old has become almost universal (92 percent in 2022) since 2000 (Statistisches Bundesamt, 2022), about 70 percent of children are in full-time care (Autorengruppe Bildungsberichterstattung, 2020). Attendance rates for children below three years old are significantly lower but have increased from below 5 percent in 1990 to approximately 35.5 percent in 2022 (Statistisches Bundesamt, 2022). Daycare fees in Germany are relatively low, and some states have even abolished them (e.g., Huebener et al., 2020; Schmitz et al., 2017). Most daycare centers in Germany are operated by non-profit organizations or municipalities (Spiess, 2008). However, during a child's first year, parents usually care for their child themselves while being on paid parental leave, which can last up to 14 months (see Figure 1). Other forms of regular child care that have experienced significant increases in usage in recent years are all-day schools or after-school care programs for elementary school children. The proportion of children up to age 12 in all-day schools or related programs has increased from 9.8 percent in 2002/03 to 49.2 percent in 2022/23 (Bundesministerium für Bildung und Forschung, 2024).

Next to formal care arrangements, grandparents play an important role in the "care puzzle" (see Gambaro et al., 2024). Figure 2 shows the distribution of various care modes for different age groups of children pooled from 2009 to 2020. The majority of young children (aged 0 to under 3 years) are primarily cared for by their parents. In the morning, the second most commonly used option is a combination of parental and daycare, which applies to approximately 25 percent of children. This is followed by a mix of parental and grandparental care, which accounts for about 15 percent. In the afternoon, the combination of parental and grandparental care is the second most frequently chosen option (20 percent), while only about 10 percent of children receive care from both parents and daycare. Therefore, for this age group, we define exclusive parental care as the alternative to grandparental care.

Older children (aged 3-5.5 years and 5.6-10 years) are predominantly cared for by a combination of parents and daycare/school (70-80 percent). However, there are significant differences between morning and afternoon arrangements: in the morning, 90-95 percent of children receive care from either daycare or school, whereas in the afternoon, the majority of children are exclusively cared for by their parents (around 50 percent). When parents do not provide exclusive care, it is observed that most families opt for a combination of parents and daycare/school (30 percent) or a combination of parents and grandparents (almost 20 percent). The least common option is a combination of daycare/school and grandparents, which is chosen by less than 10 percent of families in the afternoon. Consequently, it can be concluded that the most prevalent alternative to grandparental care for older children is either sole parental care or parental care combined with daycare or a school program in the afternoon.

Figure 2: Care patterns



Note: The figures show the care use by age group. Overall care use takes all actors either caring for the child in the morning or afternoon or both into consideration. *Source:* Pairfam (2009-2020), weighted, own calculation.

Parents + Daycare/School + Grandparents

3 Data

For the analysis, the "Panel Analysis of Intimate Relationships and Family Dynamics" (*pair-fam*) dataset is utilized (Huinink et al., 2011). The participants in this study are surveyed on an annual basis, which allows us to examine variations both between and within individuals (Huinink et al., 2011). While Pairfam interviews all generations separately, our study relies exclusively on information provided by parents, who report on themselves, their children, and grandparents. Additional details about the dataset can be found in Appendix B.

Grandparental Care Variable. The main explanatory variable in our analysis is grandparental care. We have information on grandparental care for each child separately, both in the morning and afternoon. However, our data does not distinguish between grandmothers and grandfathers as caregivers. To conduct our analysis, we create a binary variable that indicates whether a child is regularly cared for by their grandparents in the morning, afternoon, or both, but we do not have information on the number of hours. In order to examine parental wellbeing⁹ and health, we use a binary variable. This variable is set to one if at least one child of the parent in question is cared for by grandparents in the morning, afternoon, or both.¹⁰ The use of grandparental care within families remains relatively stable over time, so most of the variation in this variable comes from comparisons between different families.

Parental Health and Well-being. We analyze various variables related to subjective parental health and satisfaction in our study. The first variable, called health, is an ordinal variable that ranges from 1 (very bad health) to 5 (very good health). This self-assessed, subjective health measure is an aggregate measure of various health dimensions including physical and mental health. To evaluate well-being, we consider six satisfaction variables, all of which are ordinal variables measured on an 11-point Likert scale ranging from 0 (very dissatisfied) to 10 (very satisfied). The first variable measures general satisfaction with life. Additionally, *pairfam* includes several variables capturing domain-specific satisfaction, such as satisfaction with school, education, or career; satisfaction with leisure activities, hobbies, and interests; satisfaction with the relationship with one's partner; satisfaction with work-life balance; and satisfaction with the child care situation for each child. All these variables have been surveyed annually since 2009, except for satisfaction with work-life balance, which has been included only since 2013.

The table including our main results for parental outcomes (Table 1 in Section 5) includes the sample averages for all our outcome measures in column 4. In general, mothers and fathers report similar levels of health and satisfaction across most outcomes. Both groups perceive their health as good, with mothers averaging a score of 3.6 and fathers averaging 3.8. Moreover,

⁹Except for the satisfaction with child care, as this variable is collected at the child level.

¹⁰This approximation is valid because in 97 percent of the households in our sample, either none or all of the children are cared for by the grandparents.

individuals in our sample exhibit relatively high levels of satisfaction, ranging from 5.9 to 8.4. The sample sizes vary for different outcome variables as they are surveyed in different survey waves, with relationship satisfaction being surveyed only among individuals in a relationship and child care satisfaction measured at the child level. However, using a harmonized sample for outcomes surveyed in the same waves does not affect the results of our analysis.

Child Health. We also analyze the impact of grandparental care on the health of children. To measure this impact, we consider the assessment of children's health by their mother or father. Similar to parental health, this variable is ordinal, ranging from 1 (very bad health) to 5 (very good health). In Table 2 (Section 5), which reports our main regression results, column 4 displays the sample means for each age group, as well as the pooled mean across all age groups. On average, parents rate their children's health as very good, with a mean of 4.4. Interestingly, the perception of health is very similar across all three age groups.

Measurement of the instrument. We use the distance to grandparents as an instrument to measure grandparental care, as explained in Section 4. In the *Pairfam* data, we have information about the geographical distance between the household and all four grandparents (if they are still alive)¹¹. The distance is categorized into six categories¹². Based on this, we construct a binary variable that is equal to one if at least one grandparent lives closer than 30 minutes, and zero otherwise. We use this binary variable because the relationship between distance and the extent of grandparental care provided is unlikely to be linear. For example, the difference between living 10 or 30 minutes away should have a greater impact than the difference between 3 hours and 20 minutes. We chose 30 minutes as the cutoff because it is a reasonable distance that still allows commuting within one day when providing care to a grandchild.¹³

The distribution of the ordinal distance variable used to construct our instrument and the grandparental care variable can be seen in Figure B.2. This figure shows the percentage of children in grandparental care based on the minimum distance between the child and the grandparents. In our sample, approximately 69 percent of households live less than 30 minutes away from at least one grandparent, indicating that most children live close to at least one grandparent.¹⁴ Additionally, we observe that the percentage of households using grandparental care increases non-linearly as the distance decreases.¹⁵

 $^{^{11}}$ Only 0.02 percent of children under the age of 11 have no living grandparents.

¹²The six categories are: "we live in one house", "less than 10 minutes", "10 minutes to less than 30 minutes", "30 minutes to less than 1 hour", "1 hour to less than 3 hours" and "3 hours or more".

¹³In robustness checks, we test whether our results are sensitive to two different definitions of the instrument (e.g., using an ordinal instrument and one hour as the cutoff). See Appendix E.

 $^{^{14}}$ Studies based on other data sources corroborate these findings for Germany and other European countries. For example, Isengard (2013), analyzing SHARE data, reports that 62% of adult children reside within 25 kilometers of their parents, which closely aligns with the European average of 68%.

¹⁵It appears that some (8%) of those households in our sample, who live further than three hours away from all grandparents, still report using grandparental care regularly. We exclude these households in a robustness check, and it does not affect our results. The results are available upon request.

Control Variables. To account for other observable factors that might confound the effect of grandparental care on the health and well-being of both parents and children, our models include a comprehensive set of control variables at various levels: (grand-)parental, child, and household. Specifically, we include socio-economic characteristics of the parents, such as education, age, income, gender, federal state of residence, and migration background. Furthermore, we include detailed information about the household situation, such as the number of children in the household and the age of the youngest child. For a complete list of control variables for each outcome variable, please refer to Table B.1.¹⁶ In order to ensure the robustness of our findings, we conduct additional tests where we vary the set of included control variables, such as excluding potentially endogenous variables like income, and demonstrate that our results remain consistent.

Samples. We conduct analyses at both the child and parent levels. To evaluate the effects on parental health and satisfaction, our analysis is limited to individuals who have at least one child. Each parent constitutes one observation. The analysis of parental satisfaction with child care and child health is conducted at the child level. Additionally, we only include families where at least one parent was born in Germany. If both parents were born outside of Germany, it is highly likely that none of the four grandparents lives in Germany, making regular child care unavailable (e.g., Gambaro et al., 2018). We observe the samples at the parental level and the child level from 2009 to 2020^{17} .

Our final sample for analyzing parental outcomes consists of 16,056 observations for fathers (corresponding to 4,043 fathers) and 19,844 observations for mothers (corresponding to 4,788 mothers). The sample for analyzing child health includes 44,339 observations, corresponding to 11,714 children. Detailed summary statistics can be found in Table B.2.

4 Empirical strategy

Identifying a causal effect of grandparental care on parental health and satisfaction and child health faces potential endogeneity threats. The choice for grandparental care is endogenous. Thus, it may be influenced by unobserved characteristics that also influence the outcome variables, resulting in an omitted variable bias. One example of such an unobserved variable is a grandparent's preference for taking care of their grandchild. This preference likely affects the amount of support grandparents offer and may directly impact the outcomes we are interested

¹⁶Several control variables in our dataset contain missing values, attributable to either non-response or the inconsistent inclusion of certain questions across survey waves. We impute time-invariant control variables (e.g., migration background) with values from previous waves. To address potential bias from systematic non-response patterns, we employ mean imputation for continuous variables and create an additional category for missing values in discrete and binary variables to include observations with non-responses in a robustness check.

¹⁷For 2020, we only include households surveyed before March 15, prior to the onset of the COVID-19 pandemic in Germany.

in. Another threat is reverse causality, where parental well-being may influence the amount of support they need from grandparents and consequently the demand for grandparental care. Similarly, the health of children likely influences the decision to seek help from grandparents. For instance, parents with children who have poor health may worry that taking care of such children would be burdensome for grandparents, or they may rely on grandparents because other non-parental care options are not feasible.

Therefore, estimating an ordinary least squares (OLS) specification may yield biased and inconsistent estimates of the effect of grandparental care, failing to capture any causal relationship. Both upward and downward biases in OLS estimators are possible. For example, if only healthy children receive grandparental care, the OLS estimator is expected to be upward biased. Conversely, if parents with low subjective well-being are more likely to seek help from grandparents due to greater need for assistance, the OLS estimator would be downward biased.

To address the endogeneity problem, we employ an instrumental variable (IV) approach. We can use an instrument that determines the endogenous regressor (GPC_{it}) , but only affects the dependent variables (y_{it}) through its effect on this independent variable (grandparental care). In this study, we use the distance to the grandparents as an instrument, which has also been utilized by Del Boca et al. (2018) and Compton and Pollak (2014).

In the first stage of our two-stage least squares (2SLS) approach, we regress the grandparental care variable on our instrument and the exogenous control variables:

$$GPC_{it} = \gamma_1 + \gamma_2 D_{it} + X'_{it} \gamma_4 + \varepsilon_{it} \tag{1}$$

Here D_{it} equals one if the household lives less than 30 minutes away from at least one grandparent, and 0 otherwise. The variable of interest, grandparental care (GPC_{it}) , is a binary variable, and X'_{it} represents our vector of control variables (e.g., including year and state fixed effects), as shown in Table B.1 and described in Section 3. The first stage regression is estimated using OLS. Since the dependent variable is binary, this corresponds to a linear probability model (LPM, see Appendix E).

In the second stage, the fitted values of the linear probability model from the first stage, denoted as \widehat{GPC}_{it} , are included as the main explanatory variable:

$$y_{it} = \beta_1 + \beta_2 \widehat{GPC}_{it} + X'_{it} \beta_3 + \mu_{it}$$

$$\tag{2}$$

In this regression, y_{it} refers to different parental health, satisfaction, and child health outcomes

described in Section 3.¹⁸ X'_{it} is again our vector of control variables, which remains the same as in the first stage regression. The standard errors μ_{it} are clustered at the household level for the regressions of parental satisfaction with the child care situation and child health.¹⁹

 β_2 is our coefficient of interest, which represents the 2SLS estimator. By definition, it estimates the local average treatment effect (LATE). It measures the effect on the compliers, i.e., those families whose utilization of grandparental care is (not) induced by a (large) small distance to the grandparents.

Our sample comprises three types of subjects based on their response to the instrumental variable: i) always-takers, ii) never-takers, and iii) compliers.²⁰ Observable always-takers are families who utilize grandparental care despite living at a considerable distance from the grandparents. Conversely, observable never-takers are individuals who do not use grandparental care even when living in close proximity to the grandparents. Compliers cannot be identified at the individual level because compliers with a large distance are indistinguishable from never-takers with a large distance, and compliers with a small distance are observably identical to always-takers with a small distance. To address this, we employ the method proposed by Marbach and Hangartner (2020). By subtracting the weighted covariate mean of observable always-takers and never-takers from the covariate mean of the entire sample, we can deduce the covariate mean for compliers.

Table B.3 presents a comparison of covariate means and standard deviations across subject types. Our sample consists of 8% always-takers, 69% never-takers, and 23% compliers. While compliers share similarities with always-takers and never-takers in certain aspects, they differ significantly in others. For instance, complier mothers exhibit comparable rates of employment and high educational attainment to always-takers, whereas never-takers demonstrate substantially lower rates of employment and educational attainment. Additionally, on average complier grandparents are older than always-takers and never-takers, suggesting that – in line with previous research (e.g., Backhaus and Barslund, 2021; Frimmel et al., 2020; Tanskanen et al., 2021) – particularly grandparents who are retired deliver care to their grandchildren. If grandparents in the complier group are, on average, older, this may suggest that they are also in poorer health. Consequently, if worse grandparental health negatively affects parents' well-being, it

¹⁸All outcomes are measured using ordinal variables. Ferrer-i Carbonell and Frijters (2004) demonstrate that life satisfaction can be treated as cardinal, offering the advantage of easier interpretation compared to methods that treat variables as strictly ordinal. Following established practices in the literature, we treat these variables as cardinal in our analysis.

¹⁹This is because the observations of different children in one household might be correlated with each other, and, as a result, the i.i.d. assumption would not hold. Robust standard errors are used for all other parental outcomes.

²⁰Theoretically, the population in an IV approach consists of four groups, the fourth being defiers. Defiers are individuals who would only use grandparental care if they lived far away from the grandparents, but this scenario is unlikely in our context. As is common in the literature, we assume that there are no defiers in our sample.

may indicate that we are underestimating the impact on parental satisfaction. Conversely, this could mean that we are overestimating the negative effect on child health. However, an additional analysis controlling for grandparental health does not provide evidence to support this. Given that the LATE measures the treatment effect specifically for compliers, these socioeconomic disparities among the three groups suggest that extending the results to always-takers or never-takers may not be appropriate.

For the distance to grandparents to be considered a valid instrument, it must meet several conditions. Of particular importance are the relevance and exogeneity assumptions of the instrument. Relevance means that the instrument must be sufficiently correlated with the endogenous regressor, grandparental care. Arguably, the distance to the grandparents satisfies the relevance condition as a shorter distance facilitates grandparental care. The correlation between the instrument and the endogenous regressor is shown in Figure B.2 and tested in the first stage regression, where the endogenous variable is regressed on the instruments and the exogenous covariates (Table C.1). The robust first stage F-statistics displayed in the main regression tables in Section 5 are at least 67, but in most regressions, they far exceed this value. This supports our argument.²¹

The more critical assumption is the exogeneity assumption of the instrument, which requires that the instrument is not correlated with the error term and thus influences the outcome variable only through the endogenous regressor. It seems plausible that distance affects child health only through grandparental care. This relationship is less straightforward for parents, as for example healthier grandparents might be more likely to provide child care and grandparental health might also directly affect parents' health and satisfaction (and potentially even children's health). We provide evidence through several robustness checks that we are likely to isolate the effect of grandparental care on parental health and satisfaction and child health. In Section 5.3, we provide a detailed discussion on the validity of this instrumental variable approach, including the plausibility of the exogeneity assumption, as well as the robustness of our results.

5 Results

5.1 Main results

First Stage. We begin the discussion on the effects of grandparental care by focusing on the first-stage effects. In all the specifications, the impact of distance on grandparental care is consistently significant and of similar magnitude (Table C.1 in the Appendix). Living within a half-hour distance from at least one grandparent increases the likelihood of receiving grand-

 $^{^{21}}$ We tested three additional potential instruments using a pension reform in Germany, the parents' birth order, and the gender of the oldest sibling of both parents. All three instruments proved to be weak (small first stage F-statistic).

parental care by approximately 24 percentage points (depending on the sample). This indicates that our instrument is highly relevant, i.e., there is a strong correlation between the instrument (distance) and the endogenous variable (grandparental care).

Parental health and well-being. The effects of grandparental care on parental health and satisfaction are presented in Table 1. The findings for mothers are summarized in the upper panel, while those for fathers are presented in the lower panel. Grandparental care has a positive and statistically significant impact on three satisfaction domains of mothers: education and career, leisure, and the child care situation. Specifically, it leads to a 7 percent increase in satisfaction with education/career, an 11 percent increase in satisfaction with leisure, and a 9 percent increase in satisfaction with the child care situation, when compared to the mean.²² In terms of magnitude, the effect sizes are comparable to the impact of an increase in daycare availability for children three years and older on maternal life satisfaction (Schmitz, 2019). The insignificant coefficients for the other satisfaction and health variables should not be interpreted as null effects since the standard errors are sizable. Therefore, we cannot infer the direction of the effects.

The absence of a significant effect on life satisfaction can be attributed to the predictive ability of specific satisfaction outcomes in different areas for overall life satisfaction. Table D.1 illustrates the correlations between life satisfaction and all the satisfaction domains examined in our study. It is clear that satisfaction with the partner relationship carries the highest explanatory weight, while satisfaction with the child care situation is of least importance. As the coefficient for the relationship and work-life balance satisfaction effect is negative (though not statistically significant), the positive effects in the three other domains are not strong enough to outweigh the importance of relationship satisfaction, ultimately resulting in an insignificant impact on life satisfaction.

A comparison of the IV and OLS estimates reveals that the OLS estimator underestimates the impact of grandparental care on satisfaction with education/career, leisure, and child care. One possible explanation for this is that parents with generally low well-being are more likely to seek assistance and therefore rely more heavily on grandparental care.

Next, we analyze the impact of grandparental care on paternal health and satisfaction, using the same variables. Similar to mothers, grandparental care has a statistically significant and positive effect on fathers' satisfaction with the child care situation. However, this effect is much larger in magnitude. Specifically, there is an increase of approximately 19 percent compared to the average. On the other hand, when grandparents provide child care, fathers' satisfaction with their career and education decreases by 6 percent compared to the average. There is no

 $[\]frac{22}{Mean}$ The percent changes are calculated by relating the coefficients to the corresponding sample means, i.e., $\frac{\beta_{IV}+Mean}{Mean}$.

Outcomes	Grandpare OLS	ental Care IV	F-Statistic	Sample Mean	Obs.
Mother's Health	0.027 (0.027)	-0.138 (0.121)	456.458	3.627	9,025
Mother's Satisfaction with:					
Life	0.018 (0.042)	-0.040 (0.196)	456.712	7.752	9,024
Education, Career	0.187^{***} (0.059)	0.477^{*} (0.273)	453.623	7.179	8,875
Leisure	0.021 (0.061)	0.684^{**} (0.274)	456.622	6.344	9,024
Relationship	0.048 (0.061)	-0.110 (0.275)	437.976	7.596	8,338
Work-life balance	-0.274^{***} (0.099)	-0.071 (0.368)	237.039	6.428	3,293
Child care situation	0.069 (0.073)	0.736^{*} (0.437)	146.479	8.414	11,412
Father's Health	0.014 (0.031)	-0.054 (0.139)	281.177	3.796	6,217
Father's Satisfaction with:					
Life	0.025 (0.047)	0.162 (0.216)	280.507	7.785	6,215
Education, Career	0.067 (0.057)	-0.454^{*} (0.264)	291.429	7.454	6,208
Leisure	-0.041 (0.066)	-0.174 (0.303)	282.508	6.468	6,216
Relationship	-0.027 (0.072)	-0.260 (0.344)	281.892	7.695	6,212
Work-life balance	-0.084 (0.103)	-0.422 (0.403)	179.398	5.899	3,104
Child care situation	0.234^{***} (0.087)	$1.567^{***} \\ (0.501)$	81.138	8.415	7,399

Table 1: Effects of Grandparental Care on Parental Health and Well-being

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses. For the outcome "Child care", robust standard errors clustered at the household level. The outcome variables are all ordinal variables on a scale from 0 (very dissatisfied) to 10 (very satisfied). General: general life satisfaction, Education, career: satisfaction with education and career, Leisure: satisfaction with leisure and hobbies, Relationship: satisfaction with the relationship with the current partner, Work-life balance: satisfaction with the proportion of time that individuals spend on the job or for vocational training or university education relative to the time that individuals spend on personal life, Child care: satisfaction with the child care situation (on child level, all other outcomes on parental level). The regressions include the control variables listed in Table B.1 column (b) for the outcome "Child care" and (c) for all other outcomes. Source: Pairfam (2010-2020), weighted, own calculation.

significant impact on the remaining measures of health and well-being. It is worth noting that while there is a strong positive effect on satisfaction with child care, this effect does not translate into overall life satisfaction. Satisfaction with education and career has more explanatory power than satisfaction with child care, as shown in Table D.1.

Child Health. Table 2 presents the effects on children's health, specifically focusing on general health across three distinct age groups. It is important to remember that the alternative to grandparental care differs depending on the age group. For children under the age of three, the alternative is typically sole parental care. However, this changes for older children. For them, the alternative is either half-day daycare or school in combination with sole parental care in the afternoon, or all-day daycare and school combined with parental care.

The reported coefficients indicate that grandparental care has a negative effect on the health of children below the age of 11. Specifically, we find that grandparental care leads to an 8 percent increase in children's health problems compared to the sample mean. This effect appears to be primarily driven by children of elementary school age, as the coefficient for this subgroup estimation is similarly significant and of similar magnitude to the coefficient for all children combined. However, for children in other age groups, the coefficient is not statistically significant. The decline in health is sizable, when considering that daycare attendance – on average a more intensive care mode – leads to similarly sized declines in health (Baker et al., 2008; Barschkett, 2022).

Table 2 also allows for a comparison between the OLS and IV estimates. We note that the OLS estimate (column 1) consistently underestimates the impact of grandparental care on health across all age groups. The OLS estimates suggest that there is no effect on the health of children who receive grandparental care. This finding supports our hypothesis that parents of children with poor health are less likely to seek assistance from grandparents.

	Grandpa OLS	rental Care IV	F-Statistic	Sample Mean	Obs.
Child health					
0-2.9 years	0.026	-0.404	66.900	4.450	1,904
	(0.047)	(0.255)			
3-5.5 years	0.030	-0.180	111.015	4.414	$3,\!257$
	(0.036)	(0.166)			
5.6-10 years	-0.025	-0.385***	170.219	4.406	7,093
	(0.032)	(0.135)			
0-10 years	0.000	-0.343***	199.120	4.406	12,254
	(0.026)	(0.127)			

Table 2: Results: Child health

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors clustered at the household level in parentheses. The general health variable is an ordinal variable on a scale from 1 (bad health) to 5 (good health). The regressions include the control variables listed in Table B.1 column (a). *Source:* Pairfam (2010-2020), weighted, own calculation.

5.2 Mechanisms

In the following section we provide suggestive evidence for different potential mechanisms which might drive the effects of grandparental care on family health and well-being. To this end, we conduct various subsample analyses to investigate treatment heterogeneity and examine the relationship between the use of formal and grandparental care.

First, in Table D.2, we examine the relationship between attending (all-day) daycare or school and receiving care from grandparents.²³ This analysis shows that children who are cared for by their grandparents are less likely to attend all-day daycare or school. This negative relationship aligns with Figure 2, suggesting that in the afternoon, children are typically cared for by only two caregivers: either parents and grandparents or parents and daycare/school. Additionally, there is a shortage of (all-day) daycare and all-day school slots (Gambaro et al., 2024), indicating that grandparents fill the gap in formal care in the afternoon for children three years and older and in the morning for children below the age of three. If children who receive care from their grandparents in the afternoon are less likely to attend afternoon programs at school, the negative effect of grandparental care on the health of elementary school-aged children may be attributed to the different activities organized by grandparents compared to schools. While allday schools include homework supervision, sports, arts, music, and playtime in their afternoon curriculum (e.g., Ministry of education of North Rhine Westphalia, 2024), less is known about the activities carried out by grandparents and their grandchildren. If grandparents focus less on sports (and other outdoor) activities than schools do, this might explain why grandparental care

²³Similar to Figure 1, the different care settings are not mutually exclusive; for example, a child may attend all-day daycare or school while also receiving care from their grandparents.

has negative effects on child health. Additionally, around 10% of children aged three and older are cared for by parents, grandparents, and daycare/school in the afternoon. Bratsch-Hines et al. (2015) demonstrate that social competencies of children are lower when they experience greater instability of caregivers across childcare settings. Consequently, if children interact with multiple caregivers in different care environments within a single afternoon, this may be too stressful for some, potentially leading to poorer (mental) health outcomes.

To further discuss possible mechanisms, we now proceed with subsample analyses based on child age, parental education, gender of the child, and grandparental age, providing suggestive evidence for different mechanisms. As we only interpret the estimates in the main specification that are statistically significant, we conduct subsample analyses only for these outcomes. We begin by analyzing child health within two specific subgroups. As established in the literature (e.g., Conti et al., 2016), there are known differences in child outcomes based on the child's gender. Therefore, we estimate separate models for boys and girls. Our findings indicate that the negative health effects are primarily associated with boys, as the coefficient for boys is larger in magnitude and statistically more significant (see Table D.5). Next, we divide the sample based on the median grandparental age, which is approximately 64 years. Table D.5 demonstrates that health issues resulting from grandparental care are most noticeable among children who are cared for by grandparents below the median age. This might be due to the fact that grandparents below the median age are more likely to be actively employed, whereas older grandparents are more likely to be retired. As retirement frees up the time resources of grandparents and facilitates the provision of child care (e.g., Tanskanen et al., 2021), retired grandparents may have more time for outdoor activities, cooking healthy meals, and experience less stress, all of which could lead to a higher quality of care.

Additionally, we estimate the effects of grandparental care on parents for different child age groups. The results are presented in Tables D.3 and D.4. Grandparental care has a positive effect on mothers' satisfaction with education and career, particularly when they have very young children. Moreover, the effect on satisfaction with leisure is mostly observed among mothers with children of elementary school age (5.5 to 10 years). This finding could possibly be explained by the limited availability of all-day school slots and the opportunity for mothers to schedule their leisure time in the afternoon with the assistance of grandparental care – as also seen in Table D.2. The effect on maternal satisfaction with child care is mostly driven by mothers with children below school age, while for fathers, the estimates for satisfaction with the child care situation are at least significant on the 5% significance level across all age groups and especially large in magnitude for fathers with children below the age of 3. By contrast, we cannot conclude which child age group drives the results for satisfaction with education and career.

Differentiating by parental educational degrees reveals that the positive effect on mothers' satisfaction with education/career and child care is more pronounced for mothers with a university degree compared to those without (Table D.3). This may be because highly educated mothers tend to work longer hours and consequently face more challenges in balancing child care and work responsibilities without support from grandparents. Hence, it appears that grandparents are more likely to provide support to highly educated mothers in reconciling child care and work commitments. This finding is in line with other research which shows that the availability of grandparental care leads to an increase in mother's labor supply (Aparicio Fenoll, 2020; Bratti et al., 2018; Compton and Pollak, 2014; Kanji, 2018). As for fathers, the situation is similar: the positive effect on satisfaction with child care is mainly observed among fathers who have a university degree (Table D.4).

5.3 Validity of the instrument and robustness

In this section, we provide several robustness checks to further corroborate our findings and test the validity of the instrument. The results of the robustness checks are depicted in Table E.2 for mothers, Table E.3 for fathers, and Table E.4 for children and show that our findings are generally stable across specifications, although sometimes less statistically significant. Effects on mothers' satisfaction with leisure and child care, fathers' satisfaction with child care, and children's health turn out to be robust across specifications, while the effects on parents' satisfaction with education and career are not as robust.

First, it can be argued that demand for child care increases the likelihood of families living closer to their grandparents (e.g., Chen and Zhang, 2018). To test this hypothesis, we investigate whether the distance between parents and grandparents decreases around the time of a child's birth, indicating that either parents moved closer to the grandparents or grandparents moved closer to the parents. The reason for a systematic moving behavior could be to facilitate grandparental child care, which would make distance an endogenous variable. However, our investigation of moving behavior in the year before and after the birth of the firstborn or any child shows no systematic movement towards the grandparents (see Table E.1). We further restrict the sample to households that did not move during the observation period. This ensures that we exclude any households that may have moved closer to the grandparents specifically to facilitate child care. The coefficients in our analysis remain stable and significant, with the exception of satisfaction with education and career.

As households living close to the grandparents and those living further away seem to differ in some of their characteristics (see Table E.5), we combine our IV estimation with entropy balancing (Hainmueller, 2012), a matching strategy that balances controls more effectively than propensity score methods. First, we conduct this matching step and then we run our regular IV estimations. The main idea of entropy balancing is to assign a weight to observations in the "control group" (families living further than 30 minutes away), causing the "control group's" distributions of the selected covariates to match those of the "treatment group" (families living closer than 30 minutes) on the mean. Consequently, our set of covariates has the same means in both groups. These weights are then applied to our IV estimations. The effects remain very similar; we still depict highly significant effects on children's health, parental satisfaction with child care, and maternal satisfaction with leisure. However, the negative effect on paternal satisfaction with education and career is no longer statistically significant.

We provide additional evidence that our specification isolates the impact of grandparental care on parental well-being by utilizing a sample of childless households. Specifically, we directly regress our outcomes on the distance to the "grandparents"²⁴ which should not exhibit an effect if grandparental care is the only important channel. The results reveal that the point estimates are negligible in magnitude and that there are no statistically significant effects of distance on well-being for both childless women and men.²⁵

Next, we only consider the distance to an individual's parents-in-law (rather than the distance to any grandparent) as an instrument when estimating the effects of grandparental care on parental outcomes. The rationale behind this is that the relationship extends beyond child care and is typically closer to one's own parents than to one's parents-in-law (e.g., Del Boca et al., 2018). Therefore, if the distance to one's own parents has any effect on parental satisfaction through factors other than child care that we cannot account for, this should be eliminated when using the distance to the parents-in-law. In general, the results are similar to our main findings, but they are less statistically significant due to substantially smaller sample sizes. The effects on parental satisfaction with their career are smaller and no longer statistically significant.

Although we have demonstrated that grandparental care appears to be the primary channel through which distance affects child and parental outcomes, we further test the robustness of our results by relaxing the exclusion restriction. Following the approach of Conley et al. (2012), we provide bounds on the second-stage effect of grandparental care on parental and child outcomes, allowing for a degree of endogeneity in the instrument. We begin by estimating the reduced form effect of the instrument (Tables E.2, E.3, and E.4, column 2 "Relaxing exclusion restriction"). Subsequently, we calculate the bounds for the second-stage effects (Tables E.2, E.3, and E.4, columns 3 and 4 "Relaxing exclusion restriction"), permitting the direct effect of the instrument on our outcomes (γ) to range from zero (perfectly exogenous) up to 30% of the reduced form

²⁴Referring to the parents or parents-in-law of childless adults, who represent our grandparent generation.

 $^{^{25}}$ Because individuals in childless households are generally younger than parents in households with children in *pairfam*, we exclude the youngest quartile of the sample in additional regressions to ensure comparability between the childless sample and our main sample. Even in these analyses, we still do not find any effects of distance on well-being.

effect.²⁶ The bounds for the second-stage estimate exclude zero as long as the direct effect of the instrument (γ_{max}) is less than 30% of the reduced form effect. However, child health is only robust to allowing the direct effect to be at most 21% of the reduced form effect, while parental satisfaction with education and career is less robust to endogeneity. We conclude that most of of our effects remain robust even under a substantial degree of instrument endogeneity.

To account for the fact that the length (in years) of exposure to grandparental care may affect the results, we construct a grandparental care variable that averages past (over the past three years) and current grandparental care.²⁷ The findings closely align with our baseline estimates for most outcomes.

Additional robustness checks, such as employing a placebo outcome, excluding households living further than 3 hours away but using regular grandparental care, using different definitions of the instrument, and including or excluding additional control variables or imputing missing values, further support the robustness of our results. Correcting for multiple hypothesis testing yields a p-value of 0.077 for maternal satisfaction with leisure while parental satisfaction with education and career is no longer significant. This demonstrates that our results for maternal satisfaction with leisure hold up even when accounting for the number of hypotheses tested.²⁸ Overall, the results regarding parental satisfaction with child care, maternal satisfaction with leisure, and child health are the most robust, while the results regarding parental satisfaction with career should be interpreted with caution.

6 Conclusion

Our analysis contributes to the existing literature on the determinants of health in the family context and the intergenerational effects of regular grandparental care on the outcomes of parents and children. Our results are particularly interesting because grandparental care continues to play an important role in the "care puzzle" for many families, despite efforts to expand formal care options. Furthermore, we extend the literature on the effects of grandparental care by estimating the causal effects on family health and well-being, as measured by the subjective health and well-being of mothers, fathers, and children. To overcome endogeneity between grandparental care and our outcomes, we employ an instrumental variable approach, using the distance to the grandparents as our instrument, which we combine with entropy balancing. We

²⁶We implement this using Stata's *plausexog* command, employing 30% of the reduced form effect as γ_{max} (Clarke and Matta, 2018).

²⁷In this regression, we use the average distance between grandparents and the family over the past three years as the instrument.

 $^{^{28}}$ To implement the correction for multiple hypothesis testing, we apply the Romano Wolf procedure (Romano and Wolf, 2005) using the Stata command *rwolf*. As *rwolf* can only be conducted within one data set, we ran the test only for parental satisfaction outcomes (excluding satisfaction with child care as it is part of another subsample of the data set), separately for mothers and fathers.

also provide various robustness checks to support the validity of our instrument.

Using a representative German panel data set, our results provide evidence of mainly positive effects on various aspects of parental satisfaction, but negative effects on children's subjective health. Specifically, we show that grandparental care leads to improvements in parental satisfaction with child care and maternal satisfaction with leisure. Therefore, grandparenting is beneficial for the parent's generation, particularly for mothers. This is plausible because, on average, mothers are still the primary caretakers and thus benefit the most. Through this effect, it may also have long-term benefits for the child's development, as maternal well-being has been found to positively impact child outcomes (see Datta Gupta et al., 2023). In the short term, however, grandparental care seems to have adverse effects on children's health.

The positive effects of grandparental care on parents' satisfaction with child care and mothers' satisfaction with leisure are highly robust, regardless of the various specifications, sample restrictions, and instruments used. However, the effects observed for parental satisfaction with their education and career are less stable and should therefore be interpreted with caution. When comparing our effects to the impact of daycare attendance on maternal life satisfaction, as illustrated for instance by Schmitz (2019), it becomes evident that our effects, ranging from 9 to 11 percent, are of similar magnitude.

Additionally, we provide evidence that grandparental care has a negative impact on the health of elementary school children (8 percent). Studies on the health effects of other forms of care, such as daycare, yield mixed results. For instance, in their study, Cornelissen et al. (2018) identify positive health effects of daycare that are of larger magnitude compared to our findings. Specifically, they report a 25 percent reduction in the need for "compensatory sports" upon entering school. On the other hand, Baker et al. (2008) uncover adverse health effects resulting from a major expansion of daycare in Quebec, Canada, amounting to 9 percent compared to the average. Similarly, Barschkett (2022) demonstrates that daycare attendance results in shortterm increases in infectious disease prevalence, followed by comparable long-term decreases, with effects similar in magnitude (5-6 percent) to those observed for grandparental care. Since this is the first piece of causal evidence concerning the impact of grandparental care on overall child health, it is not possible to make direct comparisons with other estimates on this care mode.

Overall, our results indicate that in addition to parental care and daycare, regular child care provided by informal caregivers such as grandparents also has an impact on parents, children, and the family as a whole. In addition to our analysis, to fully understand the underlying mechanisms behind these effects, a more detailed analysis is needed. To investigate further, for instance, data that includes the activities grandparents engage in with their grandchildren would be necessary (Sadruddin et al., 2019). Additionally, like other forms of care, more information on the quality of the time spent in child care is required (Milovanska-Farrington, 2021). Lastly, it is important to examine the long-term effects to determine whether the positive effects on maternal satisfaction improve child outcomes and other maternal factors, thereby demonstrating additional indirect effects of grandparental care. The method employed in this paper is an instrumental variable approach. Since this method only reveals effects for compliers, and we demonstrate that in our setting compliers differ from always-takers and never-takers in specific characteristics, caution is necessary when generalizing the results to other populations. A key advantage of studying the research question within the German context is that the development of formal child care mirrors trends in many other countries, while the use of informal child care aligns with the European average. This similarity facilitates the extension of our findings to other European countries.

Our paper provides evidence that family health and well-being can be affected by interfamilial interactions. Hence, policymakers should not only focus on daycare, but also on informal care when aiming to improve societal health. Considering the positive effects of grandparental care on parental well-being, discussions could be held on implementing national insurance credits for grandparents who care for dependent children, which would contribute to their retirement income, similar to what has been done in the UK. Additionally, introducing grandparental leave and benefits, as seen in Sweden (Olsen, 2024), could be measures to support grandparental care. However, considering the mixed findings regarding the effects of grandparental care on grandparents' health and well-being (Danielsbacka et al., 2019; Eibich and Zai, 2024), it is crucial to also account for the grandparents' perspective before implementing policies that promote grandparental care. Considering the negative effects of grandparental care on some children's health, our results might also suggest that too many care modes in one day could have negative effects on children. To address this, politicians could consider policies that support longer daycare hours, shorter working days, or other measures to reduce the "child penalty" that employed parents may face when the opening hours of daycare centers do not align with their working schedules (e.g., Jessen, 2022).

References

- Ao, X., Chen, X. and Zhao, Z. (2021), 'Is care by grandparents or parents better for children's non-cognitive skills? Evidence on locus of control from China', IZA DP No. 14183.
- Aparicio Fenoll, A. (2020), 'The uneven impact of women's retirement on their daughters' employment', *Review of Economics of the Household* 18(3), 795–821.
- Arpino, B. and Bordone, V. (2014), 'Does grandparenting pay off? The effect of child care on grandparents' cognitive functioning', *Journal of Marriage and Family* 76(2), 337–351.
- Arpino, B. and Bordone, V. (2017), 'Regular provision of grandchild care and participation in social activities', *Review of Economics of the Household* 15(1), 135–174.
- Autorengruppe Bildungsberichterstattung (2020), Bildung in Deutschland 2020. Ein indikatorengestützter Bericht mit einer Analyse zu Bildung in einer digitalisierten Welt, Bielefeld:
 WBV Publikation.
- Backhaus, A. and Barslund, M. (2021), 'The effect of grandchildren on grandparental labor supply: Evidence from Europe', *European Economic Review* 137, 103817.
- Baker, M., Gruber, J. and Milligan, K. (2008), 'Universal child care, maternal labor supply, and family well-being', *Journal of political Economy* **116**(4), 709–745.
- Barschkett, M. (2022), 'Age-specific effects of early daycare on children's health'.
- Barschkett, M. and Bosque-Mercader, L. (2024), Building health across generations: Childbirth, childcare and maternal health, Technical report, HEDG, c/o Department of Economics, University of York.
- Bauernschuster, S., Hener, T. and Rainer, H. (2016), 'Children of a (policy) revolution: The introduction of universal child care and its effect on fertility', *Journal of the European Economic* Association 14(4), 975–1005.
- Bratsch-Hines, M. E., Mokrova, I., Vernon-Feagans, L., Investigators, F. L. P. K. et al. (2015), 'Child care instability from 6 to 36 months and the social adjustment of children in prekindergarten', *Early Childhood Research Quarterly* **30**, 106–116.
- Bratti, M., Frattini, T. and Scervini, F. (2018), 'Grandparental availability for child care and maternal labor force participation: Pension reform evidence from Italy', *Journal of Population Economics* **31**(4), 1239–1277.
- Bundesministerium für Bildung und Forschung (2024), 'Neue kmk-statistik für ganztagsschulen 2022/2023'.

 $\label{eq:urrel} \textbf{URL:} https://www.ganztagsschulen.org/SharedDocs/Kurzmeldungen/de/m-o/neue-kmk-statistik-fuer-ganztagsschulen-2022-2023.html$

- Chen, Y. and Zhang, X. (2018), 'When mommies become nannies: The effects of parental retirement across generations', *SSRN* **3146737**.
- Clark, S. J., Singer, D. C., Schultz, S. L., Gebremariam, A. and Freed, G. L. (2020), 'When parents and grandparents disagree', C.S. Mott Children's Hospital National Poll on Children's Health, University of Michigan. 36(5), August 2020.
- Clarke, D. and Matta, B. (2018), 'Practical considerations for questionable ivs', The Stata Journal 18(3), 663–691.
- Compton, J. and Pollak, R. A. (2014), 'Family proximity, childcare, and women's labor force attachment', *Journal of Urban Economics* **79**, 72–90.
- Coneus, K. and Spiess, C. K. (2012), 'The intergenerational transmission of health in early childhood—Evidence from the German Socio-Economic Panel Study', *Economics & Human Biology* **10**(1), 89–97.
- Conley, T. G., Hansen, C. B. and Rossi, P. E. (2012), 'Plausibly exogenous', Review of Economics and Statistics 94(1), 260–272.
- Conti, G., Heckman, J. J. and Pinto, R. (2016), 'The effects of two influential early childhood interventions on health and healthy behaviour', *The Economic Journal* **126**(596), F28–F65.
- Cornelissen, T., Dustmann, C., Raute, A. and Schönberg, U. (2018), 'Who benefits from universal child care? Estimating marginal returns to early child care attendance', *Journal of Political Economy* **126**(6), 2356–2409.
- Currie, J. (2020), 'Child health as human capital', Health Economics 29(4), 452–463.
- Danielsbacka, M., Tanskanen, A. O., Coall, D. A. and Jokela, M. (2019), 'Grandparental childcare, health and well-being in Europe: A within-individual investigation of longitudinal data', *Social Science & Medicine* 230, 194–203.
- Danzer, N., Halla, M., Schneeweis, N. and Zweimüller, M. (2020), 'Parental leave,(in) formal childcare and long-term child outcomes', *Journal of Human Resources* 57(6), 1826–1884.
- Datta Gupta, N., Jessen, J. and Spiess, C. K. (2023), 'Maternal life satisfaction and child development from toddlerhood to adolescence', *IZA Discussion Paper 16155*.
- Del Boca, D., Piazzalunga, D. and Pronzato, C. (2018), 'The role of grandparenting in early childcare and child outcomes', *Review of Economics of the Household* **16**(2), 477–512.

- Eibich, P. and Siedler, T. (2020), 'Retirement, intergenerational time transfers, and fertility', European Economic Review 124, 103392.
- Eibich, P. and Zai, X. (2024), 'Are the grandparents alright? the health consequences of grandparental childcare provision', *Journal of Population Economics* **37**(4), 71.
- Eurostat (2023), Part-time and full-time employment statistics. Accessed: 2025-03-158. **URL:** $https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Part-time_and_full-time_employment_statisticsData_sources$
- Felfe, C. and Lalive, R. (2018), 'Does early child care affect children's development?', Journal of Public Economics 159, 33–53.
- Ferrer-i Carbonell, A. and Frijters, P. (2004), 'How important is methodology for the estimates of the determinants of happiness?', *The economic journal* **114**(497), 641–659.
- Frijters, P., Johnston, D. W. and Shields, M. A. (2014), 'The effect of mental health on employment: evidence from australian panel data', *Health Economics* 23(9), 1058–1071.
- Frimmel, W., Halla, M., Schmidpeter, B. and Winter-Ebmer, R. (2020), 'Grandmothers' labor supply', *Journal of Human Resources* 57(5), 1645–1689.
- Gambaro, L., Kreyenfeld, M., Schacht, D. and Spieß, C. K. (2018), 'Lebenszufriedenheit von Geflüchteten in Deutschland ist deutlich geringer, wenn ihre Kinder im Ausland leben', *DIW Wochenbericht* 85(42), 905–916.
- Gambaro, L., Neidhöfer, G. and Spiess, C. K. (2021), 'The effect of early childhood education and care services on the integration of refugee families', *Labour Economics* **72**, 102053.
- Gambaro, L., Schäper, C. and Spiess, C. K. (2024), 'Crowded-out? changes in informal childcare during the expansion of formal services in germany', *Social Policy & Administration*.
- Hainmueller, J. (2012), 'Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies', *Political analysis* 20(1), 25–46.
- Hank, K. and Buber, I. (2009), 'Grandparents caring for their grandchildren: Findings from the 2004 Survey of Health, Ageing, and Retirement in Europe', *Journal of Family Issues* 30(1), 53–73.
- Hank, K., Cavrini, G., Di Gessa, G. and Tomassini, C. (2018), 'What do we know about grandparents? Insights from current quantitative data and identification of future data needs', *European Journal of Ageing* 15(3), 225–235.
- Helliwell, J. F., Layard, R., Sachs, J. D., De Neve, J.-E., Aknin, L. B. and Wang, S. (2024), World happiness report 2024, Vol. 1, University of Oxford: Wellbeing Research Centre.

- Herbst, C. M. and Tekin, E. (2014), 'Child care subsidies, maternal health, and child-parent interactions: Evidence from three nationally representative datasets', *Health Economics* 23(8), 894–916.
- Huebener, M., Pape, A. and Spiess, C. K. (2020), 'Parental labour supply responses to the abolition of day care fees', *Journal of Economic Behavior & Organization* 180, 510–543.
- Huinink, J., Brüderl, J., Nauck, B., Walper, S., Castiglioni, L. and Feldhaus, M. (2011), 'Panel analysis of intimate relationships and family dynamics (pairfam): Conceptual framework and design', ZfF–Zeitschrift für Familienforschung/Journal of Family Research 23(1).
- Isengard, B. (2013), " der apfel lebt nicht weit vom stamm": Wohnentfernungen zwischen eltern und ihren erwachsenen kindern in europa', *Comparative Population Studies* **38**(2), 263–290.
- Jessen, J. (2022), 'Culture, children and couple gender inequality', *European Economic Review* **150**, 104310.
- Kanji, S. (2018), 'Grandparent care: A key factor in mothers' labour force participation in the UK', Journal of Social Policy 47(3), 523–542.
- Kaplan, G. and Baron-Epel, O. (2003), 'What lies behind the subjective evaluation of health status?', *Social science & medicine* **56**(8), 1669–1676.
- Kaufmann, K., Özdemir, Y. and Ye, H. (2022), 'Spillover effects of old-age pension across generations: Family labor supply and child outcomes', **IZA DP No. 15388**.
- Kröll, A. and Borck, R. (2013), 'The influence of child care on maternal health and mother-child interaction', CESifo Working Paper Series 4289.
- Marbach, M. and Hangartner, D. (2020), 'Profiling compliers and noncompliers for instrumentalvariable analysis', *Political Analysis* 28(3), 435–444.
- Milovanska-Farrington, S. (2021), 'The effect of parental and grandparental supervision time investment on children's early-age development', *Research in Economics* **75**, 286–304.
- Ministry of education of North Rhine Westphalia (2024), Ganztags- und Betreuungsangebote. Accessed: 2024-04-12.

 ${\bf URL:}\ https://www.schulministerium.nrw/ganztags-und-betreuungsangebote$

- Müller, K.-U. and Wrohlich, K. (2020), 'Does subsidized care for toddlers increase maternal labor supply? Evidence from a large-scale expansion of early childcare', *Labour Economics* 62, 101776.
- OECD (2019), Education at a Glance 2019. URL: https://www.oecd-ilibrary.org/content/publication/f8d7880d-en

- OECD (2023a), Health at a Glance 2023. URL: https://www.oecd.org/en/publications/health-at-a-glance-2023₇a7afb35 – en.html
- OECD (2023b), OECD family database. Accessed: 2024-04-15. URL: http://www.oecd.org/social/family/database.htm
- Olsen, J. M. (2024), 'Swedes take a new step in parental leave. grandparents can now get paid to take care of grandkids', The Associate Press.
 URL: https://apnews.com/article/sweden-parental-leave-grandparents-stepparents-a2dc2a77530cf8f52a39bc8c830482ec
- Romano, J. P. and Wolf, M. (2005), 'Exact and approximate stepdown methods for multiple hypothesis testing', *Journal of the American Statistical Association* **100**(469), 94–108.
- Sadruddin, A. F., Ponguta, L. A., Zonderman, A. L., Wiley, K. S., Grimshaw, A. and Panter-Brick, C. (2019), 'How do grandparents influence child health and development? A systematic review', *Social Science & Medicine* 239, 112476.
- Schmitz, S. (2019), 'The impact of publicly funded childcare on parental well-being: Evidence from cut-off rules', *European Journal of Population* 36, 171–196.
- Schmitz, S., Spieß, C. K. and Stahl, J. F. (2017), 'Day care centers: Family expenditures increased significantly at some points between 1996 and 2015', *DIW Economic Bulletin* 7(42), 411–423.
- Spiess, C. K. (2008), 'Early childhood education and care in germany: The status quo and reform proposals', *Zeitschrift für Betriebswirtschaftslehre* pp. 1–21.
- Statistisches Bundesamt (2022), Statistiken der Kinder- und Jugendhilfe Kinder und tätige Personen in Tageseinrichtungen und in öffentlich geförderter Kindertagespflege am 01.03.2022, Wiesbaden.
 - $\label{eq:urrel} \textbf{URL:} https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Soziales/Kindertagesbetreuung/Publikation Kindertagesbetreuung/tageseinrichtungen-kindertagespflege-5225402227004.pdf?_{blob=publicationFile}$
- Tanskanen, A. O., Danielsbacka, M., Hämäläinen, H. and Solé-Auró, A. (2021), 'Does transition to retirement promote grandchild care? evidence from europe', *Frontiers in psychology* 12, 738117.
- UN (2022), Transforming our world: The 2030 agenda for sustainable development, Technical report, United Nations, https://sdgs.un.org/publications/ transforming-our-world-2030-agenda-sustainable-development-17981. Accessed: 2022-12-13.

- Well, D. N. (2007), 'Accounting for the effect of health on economic growth', *The quarterly journal of economics* **122**(3), 1265–1306.
- Wetzel, M., Schumann, N. and Schmiedeberg, C. (2021), 'New weights for the pairfam anchor data - pairfam technical paper'.
- WHO (1948), Official records of the world health organization no. 2: Summary report on proceedings, minutes and final acts of the international health conference held in new york from 19 june to 22 july 1946, Technical report, United Nations, World Health Organization, Interim Commission, https://apps.who.int/iris/handle/10665/85573. Accessed: 2022-12-13.
- Zagel, H. and Lohmann, H. (2021), 'Conceptualising state-market-family relationships in comparative research: A conceptual goodness view on defamilization', *Journal of Social Policy* 50(4), 852–870.
- Zanasi, F., Arpino, B., Bordone, V. and Hank, K. (2023), 'The prevalence of grandparental childcare in europe: a research update', *European Journal of Ageing* **20**(1), 37.
- Zhang, J., Appleton, S., Song, L. and Liu, B. (2021), 'Who looks after the kids? The effects of childcare choice on early childhood development in China', Oxford Bulletin of Economics and Statistics 83(3), 619–640.

Appendices

A Graph on grandparental care



Figure A.1: Development of grandparental care (2009-2020)

Note: The graph shows the development of grandparental care for children below the age of 6. A child is counted as cared for by the grandparents if the child is cared for by its grandparents in the morning or afternoon or both. *Source:* Pairfam (2009-2020), weighted, own calculation.

B Further information on the data

Pairfam. Pairfam respondents are equally distributed among the birth cohorts 1991–1993, 1981–1983, and 1971–1973 and the first wave of the sample consisted of 12,400 respondents (Huinink et al., 2011). These individuals are called "anchor persons." Approximately one half of the anchors are male, and the other half are female. In addition, if anchors and anchors' partners agreed, partners were surveyed from the first wave onwards. The response rate for partners lies at about 52 percent.²⁹ Pairfam is a multi-actor survey. In addition to anchors

²⁹Analyses show that anchors whose partners participate and anchors whose partners do not participate do not differ systematically in most of their socio-economic characteristics. Thus, the partner sample can be considered as good as random.

and partners, children (aged 8 to 15 years) and parents of anchors are surveyed separately. Furthermore, anchors and partners are questioned about their children (biological, adopted, foster, and stepchildren of anchors living in one household) and parents in their own questionnaires in detail (Huinink et al., 2011). This detailed information on three generations makes *pairfam* particularly suitable for our analysis. Since the child survey only includes children above the age of 7 and the parent survey suffers from a low response rate, we focus on the information obtained from the anchor and partner questionnaires in our analysis.

Summary Statistics. Table B.2 includes summary statistics of selected control variables (based on the sample on child level), showing mean and standard deviation across all observations. It can be seen that 23 percent of children in the sample are cared for by the grandparents on a regular basis³⁰ and almost 70 percent of families live close to at least one grandparent.

The sample is, on average, highly educated, as in almost half the families at least one partner holds a university degree. Generally, *pairfam* includes a slightly more highly educated sample than the German population (Wetzel et al., 2021). In terms of migration background, 12 percent of children have at least one parent who was born outside Germany. Half the children in the sample are girls and children are on average 5 years old. Furthermore, 91 percent of parents are cohabiting.

 $^{^{30}}$ In the *pairfam* wave 12, parents of school children are only questioned about care arrangements in the afternoon. Thus, we defined school children in wave 12 to be cared for by grandparents only if they are cared for by them in the afternoon. This means that there is a very small share of children that are cared for by the grandparents in the morning before school that are counted as not in grandparental care if they are not also in grandparental care in the afternoon. Figure 2 shows that this is only a very small share of school children.

			To estimate	effect	s on
			Children's	Pare	ents'
Variable	Definition	Type	(a)	(b)	(c)
Parental Variables					
Age	Mother's age	Cont	\checkmark		
	Individual age	Cont		\checkmark	\checkmark
Post-secondary education	Highest degree in household, 1-3 Individual education, 3 levels	Ord Ord	\checkmark	\checkmark	\checkmark
Boligion	One parent religious	Bin	\checkmark		
Rengion	Individual religion, 1-7			\checkmark	\checkmark
Minutian bashaman d	One parent has direct background	Bin		\checkmark	
Migration background	Individual has direct background	Bin		\checkmark	\checkmark
Partner information	Partner answered questionnaire	Bin	\checkmark		
Parental goals	Importance nutrition and exercise, 1-10	Ord	\checkmark		
Pregnancy	Mother is pregnant	Bin	\checkmark	\checkmark	\checkmark
Cohabitation	Parents live together	Bin	\checkmark	\checkmark	\checkmark
	One parent is widowed	Bin	\checkmark	\checkmark	
WIGOWNOOD	Individual is widowed	Bin			\checkmark
Only child	At least one parent is only child	Bin	\checkmark		
Only only	Individual is only child	Bin		\checkmark	\checkmark
Child Variables					
Sex	Child's sex	Bin	\checkmark	\checkmark	
	Children in HH: male, female, mixed	Cat			\checkmark
Child age	In months	Cont	\checkmark	\checkmark	
C C	Age of youngest child in months	Cont			\checkmark
	Total	Cont	\checkmark	\checkmark	
Number children in UU	Nr. children 0-2 years	Cont			\checkmark
Number children in 1111	Nr. children 3-5 year	Cont			\checkmark
	Nr. children 6-10 year	Cont			\checkmark
	Nr. other children	Cont			\checkmark
Birth order	Age in comparison to sibling's age	Ord	\checkmark	\checkmark	
Damaana waa	Child (0-5 years) in daycare	Bin	\checkmark	\checkmark	
Daycare use	Number of children (0-5 years) in daycare	Cont			\checkmark
$Grandparent \ Variables$					
School education	Anchor's mother, 1-3	Ord	\checkmark	\checkmark	\checkmark
School education	Anchor's father, 1-3	Ord	\checkmark	\checkmark	\checkmark

Table B.1: Control variables

Continued on the next page

			To estimate effects o		s on
			Children's	Pare	ents'
Variable	Definition	Type	(a)	(b)	(c)
Age	Mean of all living grandparents	Cont	\checkmark	\checkmark	\checkmark
Household (HH) Variables					
Household income	logarithmic, in 1000€	Cont	\checkmark	\checkmark	\checkmark
Year	number according to wave number	Cat	\checkmark	\checkmark	\checkmark
Federal state	1-16	Cat	\checkmark	\checkmark	\checkmark
Community size	1-7	Ord	\checkmark	\checkmark	\checkmark

Table B.1 continued

Note: This table shows which variables are used to estimate the effect of grandparental care on: (a) Child's health (b) Parental satisfaction with childcare (c) Other parental satisfaction outcomes. Types: Bin (binary), Cat (categorical), Cont (continuous), Ord (Ordinal). *Source:* Pairfam, 2009-2019.

	Percentage/Mean (SD)
Grandparent care	23.32~%
Grandparents live 30 min or closer	68.85~%
Mother's labour force status (in percent)	
Mother not working	36.33~%
Mother working part-time	42.67~%
Mother working full-time	18.88~%
Household's highest parental school degree (in percent)	
No/ lower secondary degree	5.92~%
Upper secondary/vocational degree	45.51~%
University degree	48.57~%
One parent has migration background	11.90~%
Household net income (in Euro)	3416.56(2430.79)
Age mother (in years)	34.02(7.90)
Sex child: male	50.88~%
Number of children in household	$2.04 \ (0.99)$
Age child (in years)	4.90(3.10)
Cohabitation with partner	91.07~%
Observations	29,177

Table B.2: Summary Statistics

Note: Conditional on non-missing sample. Source: Pairfam 2010-2020, weighted, own calculations.



Figure B.2: Grandparental care by distance

Note: The figures show the share of children cared for by grandparents by the distance between the child's household and the closest living grandparent. A child is counted as cared for by the grandparents in this graph if the child is cared for by its grandparents in the morning or afternoon or both. *Source:* Pairfam (2009-2020), weighted, own calculation.

Variable	Always-taker	Never-taker	Complier
Proportion	0.081	0.694	0.225
Mother not working	0.220(0.015)	0.404(0.004)	$0.241 \ (0.010)$
Mother working part-time	0.447(0.018)	0.392(0.004)	0.481(0.010)
Mother working full-time	0.281(0.015)	0.187(0.003)	0.273(0.009)
No/ lower secondary degree	0.040(0.007)	0.050(0.002)	0.016(0.004)
Upper secondary/vocational degree	0.312(0.017)	0.509(0.004)	0.225(0.011)
University degree	0.647(0.017)	0.442(0.004)	0.760(0.011)
One parent has migration background (share)	0.094(0.010)	0.071(0.002)	0.124(0.006)
Household net income (in Euro)	3723.667 (82.227)	3275.983(18.304)	3912.180 (49.352)
Age mother (in years)	$33.201 \ (0.375)$	33.982(0.055)	36.277(0.172)
Number of children in household	1.767(0.031)	2.151(0.008)	2.075(0.020)
Age child (in years)	4.691(0.103)	4.971(0.027)	5.073(0.065)
Cohabitation with partner (share)	0.831(0.014)	$0.911 \ (0.002)$	$0.931 \ (0.007)$
Grandparents' age	63.637(0.298)	62.470(0.063)	65.238(0.173)

Note: Conditional on non-missing sample, except grandparental health. Means and standard deviations of the different groups are produced using Stata's command *ivdesc*. SDs in parentheses. *Source:* Pairfam 2010-2020, weighted, own calculations.

C First stage results

	Child	Sample Mother	e: Father
Distance	$\begin{array}{c} 0.241^{***} \\ (0.017) \end{array}$	$\begin{array}{c} 0.239^{***} \\ (0.013) \end{array}$	$0.238^{***} \\ (0.016)$
Observations F-statistic Adjusted R-squared	$\begin{array}{c} 12,\!254 \\ 198.640 \\ 0.106 \end{array}$	$6,196 \\ 484.553 \\ 0.151$	$\begin{array}{c} 4,489 \\ 365.483 \\ 0.154 \end{array}$

Table C.1: First stage results

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. The outcome variable in these regressions is grandparental care and the variable of interest is our instrument, the minimum distance between the family and the grandparents. The different columns show the first stage regression for three different samples: children, mothers, fathers. Robust standard errors in parentheses. Conditional on no missings in the outcome and control variables (see Table B.1). Source: Pairfam (2010-2020), weighted, own calculation.

D Additional analyses

Satisfaction with	Mothers	Fathers
Education, Career	0.140***	0.190***
T .:	(0.015)	(0.015)
Leisure	(0.0148)	(0.014)
Relationship	0.274***	0.240***
TTTTTTTTTTTTT	(0.015)	(0.015)
Work-life balance	0.075^{***} (0.011)	0.090^{***}
Child care situation	0.070***	0.064***
	(0.016)	(0.014)
Obs.	5,628	5,947

Table D.1: Domain-specific and life satisfaction

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. The table shows results of regressions of mother's and father' life satisfaction on variables capturing domain specific satisfaction. Robust standard errors in parentheses. *Source:* Pairfam (2010-2020), weighted, own calculation.

	OLS	Obs.
0-2 years in daycare	-0.075**	2,884
3-5.5 years in allday daycare	(0.022) - 0.100^{***}	4,201
5.5.10 years in allday school	(0.021)	6 996
5.5-10 years in anday school	(0.020)	0,820
3-10 years in allday daycare/school	-0.075^{**} (0.022)	12,439

Table D.2: Relationship between formal and informal care usage

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. OLS regression with daycare/ allday care or school as dependent variable and grandparental care as independent variable. The regressions include the control variables listed in Table B.1 column (a). Robust standard errors in parentheses. *Source:* Pairfam (2010-2020), weighted, own calculation.

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Table D.3:	Subsample	Analysis:	Mothers	satisfaction

	Grandparental Care	F-Statistic	Sample Mean	Obs.
Satisfaction with education, career				
Children's age 0-2.9 years 3-5.5 years	$1.108^{**} (0.509)$ 0.223 (0.421)	$133.319 \\ 166.761$	7.130 7.227	$3,059 \\ 3,442$
5.6-10 years	$0.644^{*} (0.375)$	258.128	7.156	$4,\!676$
Mother's education University degree No university degree	$0.540^{*} (0.286)$ 0.542 (0.480)	258.383 186.995	$7.657 \\ 6.947$	$3,233 \\ 5,642$
Satisfaction with leisure				
Children's age 0-2.9 years 3-5.5 years 5.6-10 years Mother's education University degree No university degree	$\begin{array}{c} 0.760 \ (0.514) \\ 0.326 \ (0.430) \\ 1.051^{***} \ (0.388) \end{array}$ $\begin{array}{c} 0.653^{**} \ (0.323) \\ 0.791^{*} \ (0.448) \end{array}$	$137.629 \\ 167.983 \\ 256.239 \\ 260.417 \\ 188.761$	6.087 6.181 6.374 6.378 6.314	3,161 3,503 4,738 3,295 5,729
Satisfaction with child care				
Children's age 0-2.9 years 3-5.5 years 5.6-10 years	$\begin{array}{c} 1.002 \; (0.969) \\ 1.055^{*} \; (0.635) \\ 0.561 \; (0.439) \end{array}$	$\begin{array}{c} 45.329 \\ 71.036 \\ 140.636 \end{array}$	$8.550 \\ 8.436 \\ 8.347$	2,015 3,071 6,326
Mother's education University degree No university degree	$1.061^* (0.544) \\ 0.810 (0.832)$	$71.454 \\ 66.700$	8.445 8.372	$5,995 \\ 5,417$

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses. For the outcome satisfaction with "Child care", robust standard errors clustered at the household level. The outcome variables are all ordinal variables on a scale from 0 (very dissatisfied) to 10 (very satisfied). Leisure: satisfaction with leisure and hobbies, Child care: satisfaction with the child care situation (on child level, all other outcomes on parental level). The regressions include the control variables listed in Table B.1 column (b) for the outcome satisfaction with "Child care" and (c) for all other outcomes. Source: Pairfam (2010-2020), weighted, own calculation.

	Grandparental Care	F-Statistic	Sample Mean	Obs.
Satisfaction with education, career				
Children's age				
0-2.9 years	$0.317 \ (0.350)$	162.288	7.473	2,545
3-5.5 years	-0.353(0.292)	239.321	7.435	2,550
5.6-10 years	$0.308\ (0.332)$	201.099	7.372	$3,\!059$
Father's education				
University degree	$0.086\ (0.202)$	369.099	7.734	2,858
No university degree	-0.360(0.452)	120.324	7.174	$3,\!327$
Satisfaction with child care				
Children's age				
0-2.9 years	2.073^{**} (0.809)	43.094	8.654	$1,\!426$
3-5.5 years	$1.152^{**}(0.465)$	82.938	8.371	2,071
5.6-10 years	$1.651^{***} (0.504)$	65.136	8.327	$3,\!902$
Father's education				
University degree	1.490^{***} (0.451)	77.731	8.406	4,273
No university degree	1.370(0.904)	30.941	8.394	$3,\!126$

Table D.4: Subsample Analysis: Fathers' satisfaction

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses. For the outcome "Child care", robust standard errors clustered at the household level. The outcome variables are all ordinal variables on a scale from 0 (very dissatisfied) to 10 (very satisfied). Education/career: Satisfaction with education and career, Child care: satisfaction with the child care situation (on child level, all other outcomes on parental level). The regressions include the control variables listed in Table B.1 column (b) for the outcome "Child care" and (c) for all other outcomes. Source: Pairfam (2010-2020), weighted, own calculation.

	Grandparental Care	F-Statistic	Sample Mean	Obs.
Child's gender Boys	-0 428** (0 180)	126 285	1 699	6 614
Girls	-0.231 (0.143)	120.205 145.452	1.540	6,385
Grandparents' health GP age above median GP age below/equal median	-0.305** (0.147) -0.459** (0.204)	$\frac{138.292}{84.372}$	$1.550 \\ 1.622$	7,257 5,742

Table D.5: Subsample Analysis: Child health

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. GP = Grandparent. Robust standard errors clustered at the household level in parentheses. The general health variable is an ordinal variable on a scale from 1 (bad health) to 5 (good health). The regressions include the control variables listed in Table B.1 column (a). *Source:* Pairfam (2010-2020), weighted, own calculation.

E Robustness Checks

In the year before child birth	General movement	Move towards	Move away from
Considering any grandparents	$0.0037 \\ (0.019)$	$0.0032 \\ (0.017)$	-0.0098 (0.016)
Observations	22,251	22,251	22,251
Considering mother's parents	$0.0182 \\ (0.017)$	0.0193 (0.013)	-0.0034 (0.012)
Observations	$22,\!250$	$22,\!250$	22,250
Considering father's parents	-0.0126 (0.016)	-0.0162 (0.013)	0.0004 (0.012)
Observations	20,904	20,904	20,904
In the year after child birth	General movement	Move towards	Move away from
In the year after child birth Considering any grandparents	General movement 0.0033 (0.015)	Move towards 0.0154 (0.013)	Move away from -0.0038 (0.013)
In the year after child birth Considering any grandparents Observations	General movement 0.0033 (0.015) 22,251	Move towards 0.0154 (0.013) 22,251	Move away from -0.0038 (0.013) 22,251
In the year after child birthConsidering any grandparentsObservationsConsidering mother's parents	General movement 0.0033 (0.015) 22,251 0.0220 (0.013)	Move towards 0.0154 (0.013) 22,251 0.0099 (0.011)	Move away from -0.0038 (0.013) 22,251 0.0114 (0.010)
In the year after child birthConsidering any grandparentsObservationsConsidering mother's parentsObservations	General movement 0.0033 (0.015) 22,251 0.0220 (0.013) 22,250	Move towards 0.0154 (0.013) 22,251 0.0099 (0.011) 22,250	Move away from -0.0038 (0.013) 22,251 0.0114 (0.010) 22,250
In the year after child birthConsidering any grandparentsObservationsConsidering mother's parentsObservationsConsidering father's parents	General movement 0.0033 (0.015) 22,251 0.0220 (0.013) 22,250 -0.0104 (0.013)	Move towards 0.0154 (0.013) 22,251 0.0099 (0.011) 22,250 0.0057 (0.011)	Move away from -0.0038 (0.013) 22,251 0.0114 (0.010) 22,250 -0.0136 (0.010)

Table E.1: (Grand-)parental moving behavior before and after the birth of a child

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Estimated using OLS. Standard errors in parentheses. All regressions include individual and household controls described in Table B.1 column (a). The sample size differs to that in the main specification as the analysis includes also parents before child birth. *Source:* Pairfam (2009-2020), own calculations.

	Grandparental Care	F-Statistic	Sample Mean	Obs.
Satisfaction with education, career				
Main estimate	0.477^{*} (0.273)	453.623	7.179	8,875
Exclusion of movers	0.308(0.277)	473.168	7.255	6,894
Entropy balancing	$0.743^{**}(0.343)$	348.973	7.089	8,875
Childless households	0.145 (0.131)		7.337	1,132
Distance to parents-in-law	0.149(0.372)	193.423	7.272	4,730
Average current and past GPC	$0.550^{*}(0.305)$	633.553	7.199	5,545
Exclusion of HH far away using GPC	$0.477^{*}(0.273)$	453.623	7.179	8,875
Discrete instrument	0.234(0.227)	652.290	7.179	8,875
Binary instrument (< 1h vs \geq 1h)	0.079(0.323)	376.465	7.179	8,875
Including emot. closeness	0.315(0.279)	433.025	7.177	8,866
Including freq. contact	0.228(0.329)	307.670	7.179	8,875
Including pre-birth satisfaction	$1.300^{**}(0.525)$	98.061	7.087	2,348
Including labor force status	0.371(0.271)	440.043	7.181	8,829
Excluding income	$0.559^{*}(0.288)$	370.413	7.209	8,241
Controls with replaced missings	0.509** (0.202)	952.475	7.047	$17,\!872$
Relaxing exclusion restriction	Reduced form effect $0.115^* (0.066)$	$\beta_{lowerbound}$ -0.212	$\beta_{upperbound}$ 1.044	γ_{max} 0.035
Satisfaction with leisure				
Main estimate	0.684^{**} (0.274)	456.622	6.344	9,024
Exclusion of movers	0.417(0.286)	468.028	6.363	7.006
Entropy balancing	0.869^{**} (0.345)	351.303	6.281	9,024
Childless households	0.087 (0.151)		7.062	1,134
Distance to parents-in-law	$0.818^{**}(0.392)$	189.783	6.461	4,805
Average current and past GPC	0.402 (0.313)	640.455	6.312	$5,\!654$
Exclusion of HH far away using GPC	$0.684^{**}(0.274)$	456.622	6.324	9,024
Discrete instrument	$0.536^{**}(0.226)$	661.348	6.335	9,024
Binary instrument ($< 1h vs > 1h$)	0.544^{*} (0.323)	378.558	6.335	9,024
Including emot. closeness	$0.538^{*}(0.280)$	436.855	6.335	9,015
Including freq. contact	$0.610^{*}(0.335)$	311.422	6.335	9,024
Including pre-birth satisfaction	0.606(0.555)	96.607	6.237	2,415
Including labor force status	$0.661^{**}(0.277)$	445.549	6.338	8,978
Excluding income	0.964^{***} (0.295)	374.334	6.358	8,405
Controls with replaced missings	0.524^{**} (0.205)	957.031	6.328	$18,\!120$
Relaxing exclusion restriction	Reduced form effect 0.187^{***} (0.067)	$\begin{array}{c} \beta_{lowerbound} \\ 0.004 \end{array}$	$\beta_{upperbound}$ 1.373	γ_{max} 0.056
Satisfaction with childcare				
Main estimate	$0.736^{*}(0.437)$	146.479	8.414	11,412
Exclusion of movers	$0.969^{*}(0.538)$	104.940	8.467	8,414
Entropy balancing	$1.322^{**}(0.590)$	142.183	8.322	11,412
Distance to parents-in-law	0.756(0.684)	38.427	8.468	5,886
Average current and past GPC	0.735(0.530)	119.062	8.446	$6,\!678$
Exclusion of HH far away using GPC	$0.736^{*}(0.437)$	146.479	8.407	11,412
Discrete instrument	$0.725^{**}(0.365)$	202.672	8.407	11,412
Binary instrument (< 1h vs \geq 1h)	0.805(0.534)	129.650	8.407	11,412
Including emot. closeness	0.604(0.436)	139.005	8.406	11,407
Including freq. contact	0.638(0.536)	97.592	8.407	11,412
Including labor force status	$0.747^{*}(0.445)$	145.824	8.453	10,058
Excluding income	0.941^{**} (0.448)	130.162	8.426	12,318
Controls with replaced missings	1.014** (0.417)	143.409	8.359	$13,\!131$
Relaxing exclusion restriction	Reduced form effect 0.155^{***} (0.053)	$eta_{lowerbound} \ 0.024$	$eta_{upperbound} \ 1.229$	γ_{max} 0.046

Table E.2: Robustness: Mothers' satisfaction

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses. For the outcome "Child care", robust standard errors clustered at the household level. The outcome variables are all ordinal variables on a scale from 0 (very dissatisfied) to 10 (very satisfied). Child care: satisfaction with the child care situation (on child level, all other outcomes on parental level), Leisure: satisfaction with leisure and hobbies. The regressions include the control variables listed in table B.1 column (b) for the outcome "Child care" and (c) for all other outcomes. Source: Pairfam (2010-2020), weighted, own calculation.

	Grandparental Care	F-Statistic	Sample Mean	Obs.
Satisfaction with education and career				
Main estimate	-0.454^{*} (0.264)	291.429	7.454	6,208
Exclusion of movers	-0.499** (0.250)	351.779	7.460	5,064
Entropy balancing	-0.356(0.357)	218.880	7.425	6,185
Childless households	-0.147(0.212)		7.715	938
Distance to parents-in-law	0.131(0.256)	256.907	7.411	4,404
Average current and past GPC	$-0.528^{*}(0.281)$	438.966	7.525	4,033
Exclusion of HH far away using GPC	$-0.462^{*}(0.264)$	290.426	7.421	6,185
Discrete instrument	-0.047 (0.217)	435.389	7.421	6,185
Binary instrument (< 1h vs \geq 1h)	-0.723*** (0.271)	323.697	7.421	6,185
Including emot. closeness	-0.648^{**} (0.277)	264.468	7.421	6,183
Including freq. contact	-0.951^{***} (0.347)	181.016	7.421	6,185
Including pre-birth satisfaction	-0.638^{*} (0.377)	95.704	7.646	2,079
Including labor force status	$-0.512^{*}(0.263)$	283.768	7.422	6,168
Excluding income	-0.540^{**} (0.267)	309.134	7.413	6,520
Controls with replaced missings	0.152(0.224)	643.003	7.259	14,760
	Reduced form effect	$\beta_{lowerbound}$	$\beta_{upperbound}$	γ_{max}
Relaxing exclusion restriction	-0.134** (0.063)	-1.089	0.121	-0.040
Satisfaction with childcare				
Main estimate	1.567^{***} (0.501)	81.138	8.415	7,399
Exclusion of movers	$1.595^{***}(0.526)$	82.004	8.438	5,702
Entropy balancing (binary instrument)	2.012^{***} (0.495)	84.412	8.269	7,399
Distance to parents-in-law	1.898^{***} (0.551)	53.900	8.417	5,328
Average current and past GPC	1.342^{**} (0.554)	89.261	8.407	4,441
Exclusion of HH far away using GPC	1.567^{***} (0.501)	81.138	8.401	$7,\!399$
Discrete instrument	1.576^{***} (0.415)	103.139	8.401	7,399
Binary instrument (< 1h vs \geq 1h)	1.719^{***} (0.587)	73.219	8.401	7,399
Including emot. closeness	1.411^{***} (0.520)	73.587	8.401	7,399
Including freq. contact	1.460^{**} (0.644)	52.007	8.401	7,399
Including labor force status	1.480*** (0.481)	84.420	8.473	6,720
Excluding income	$1.575^{***}(0.496)$	81.147	8.394	7,781
Controls with replaced missings	1.513^{***} (0.457)	119.702	8.301	13,756
Relaxing exclusion restriction	Reduced form effect 0.334^{***} (0.058)	$eta_{lowerbound} \ 0.561$	$\beta_{upperbound}$ 2.112	γ_{max} 0.100

Table E.3: Robustness: Fathers' satisfaction

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses. For the outcome "Child care", robust standard errors clustered at the household level. The outcome variables are all ordinal variables on a scale from 0 (very dissatisfied) to 10 (very satisfied). Child care: satisfaction with the child care situation (on child level, all other outcomes on parental level), Leisure: satisfaction with leisure and hobbies. The regressions include the control variables listed in table B.1 column (b) for the outcome "Child care" and (c) for all other outcomes. Source: Pairfam (2010-2020), weighted, own calculation.

IV: Grandparental Care	,	F-Statistic	Sample Mean	Obs.
Main estimate	-0.343*** (0.127)	199.120	4.406	12,254
Exclusion of movers	-0.236^{*} (0.139)	198.456	4.431	$9,\!594$
Entropy balancing (binary instrument)	-0.279^{**} (0.121)	278.104	4.418	12,999
Average current and past GPC	-0.293^{**} (0.138)	201.649	4.441	8,949
Exclusion of HH far away using GPC	-0.322^{**} (0.128)	210.135	4.418	12,999
Discrete instrument ($< 30 \text{min vs} \ge 30 \text{min}$)	-0.221** (0.105)	265.742	4.418	12,999
Binary instrument (< 1h vs \geq 1h)	-0.245(0.153)	178.608	4.418	$12,\!999$
Including emot. closeness	-0.369*** (0.132)	195.532	4.418	12,996
Including freq. contact	-0.469^{***} (0.162)	140.999	4.418	12,999
Including labor force status	-0.310^{**} (0.128)	209.655	4.429	11,701
Excluding income	-0.320^{**} (0.130)	194.716	4.417	13,866
Controls with replaced missings	-0.141 (0.098)	310.305	4.417	$28,\!397$
	Reduced form effect	$\beta_{lowerbound}$	$\beta_{upperbound}$	γ_{max}
Relaxing exclusion restriction	-0.074^{**} (0.030)	-0.566	0.026	-0.022
Placebo: Birth weight	156.638 (250.410)	111.613	3,395.2	7,842
Placebo: Low birth weight	-0.037 (0.096)	111.613	0.054	$7,\!842$

Table E.4: Robustness: Child health

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors clustered at the household level in parentheses. The general health variable is an ordinal variable on a scale from 1 (bad health) to 5 (good health). The regressions include the control variables listed in Table B.1 column (a). *Source:* Pairfam (2010-2020), weighted, own calculation.

	Distance
No / lower school degree	-0.0458
,	(0.0381)
University degree	-0.161***
	(0.0272)
Migration background	-0.104***
0	(0.0385)
log(income) in 1000€	-0.0395^{*}
	(0.0237)
Age	-0.00575*
	(0.00332)
Children's sex	0.00571
	(0.0138)
Nr. children 0-2	0.0681^{**}
	(0.0269)
Nr. children 3-5.5	0.0688^{***}
	(0.0260)
Nr. children 5.5-10	0.0191
	(0.0169)
Nr. other children	0.000814
	(0.0170)
Grandparent's age	0.00124
	(0.00225)
Pregnant	0.0307
	(0.0235)
Cohabitation with partner	0.0338
	(0.0298)
Widowed	0.140
	(0.0862)
Mother is single child	0.0526^{*}
	(0.0279)
No school degree (grandm.)	0.0366
	(0.0589)
Upper school degree (grandm.)	-0.0458
	(0.0337)
No school degree (grandf.)	-0.0570
	(0.0718)
Upper school degree (grandf.)	-0.0642^{**}
	(0.0327)
Children < 6 in Kita	-0.0441**
	(0.0174)
Age youngest child	0.000462
	(0.000388)
Observations	9259

Table E.5: Balancing table

Note: * p < 0.10, ** p < 0.05, *** p < 0.01. Estimated using OLS based on the sample used in the regressions for maternal satisfaction. Robust standard errors clustered at the household level in parentheses. Regression includes individual and household controls described in Table B.1 column (c). Source: Pairfam (2009-2020), own calculations.