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Using mixed methods for the analysis of individuals: a review of necessary and sufficient conditions and an application to welfare state attitudes

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Abstract When studying individuals, when is the combination of qualitative and quantitative methods better than just one method alone? Whereas the debate in macro-level research, such as in political science about comparing nations, has made progress in identifying meaningful logics for a combination of methods, it is yet unclear how these logics can be applied to the study of individuals. Individual-level dynamics are in tendency less inert than those of nations or organisations. Therefore, a combination of methods is more difficult to justify in individual-level analysis since differences in measurement results could be due to changes in the dynamics rather than due to the application of different techniques. In contrast, the assumption of unit homogeneity seems to be more easily met for individuals than for countries or other higher-level aggregates, facilitating a comparison of like and like. First, this article presents a compilation of conditions scattered across the literature for the analysis of individuals, according to which a mixed-method is preferable to a single-method approach. Second, the application of these conditions is illustrated with an analysis of the impact of intergenerational relationships on welfare state attitudes in Germany on the basis of survey and focus group data.

Keywords Mixed methods · Multi-method approach · Welfare state attitudes · Individuals

1 Introduction

One of the current debates in social science methodology concerns mixed-method research, i.e. how to combine different kinds of research methods to investigate an overarching research problem. Of course, it may be a universal piece of advice always to use a qualitative and a quantitative technique to study a social phenomenon according to the idea "more is better". However, does the additional usage of a different technique always enhance our understanding? Underlying a thought-through multi-method study is the notion that two different

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research methods can be complementary to each other. Only in certain circumstances, the combination of two methods overcomes their respective weaknesses and leads to a higher level of understanding of a social phenomenon.

The first objective of this article is to present conditions for a multi-method approach with a special focus on the study of individuals. The resulting manual provides other researchers with a check-list for deciding whether to embark on a multi-method study. The second objective is to illustrate the application of the conditions with a concrete example about attitudes towards the welfare state research.

The article starts from a a debate that is very prominent in political science and that has mostly been about aggregate-level research where the research unit is typically a nation (see for an overview Munck and Snyder 2007). We take up arguments from that current debate in political science and collect further arguments from several disciplines, such as educational science, health care research, psychology and sociology. A discussion about mixed methods should be sensitive to the level of aggregation for two reasons: first, the carrier of information in individual-level analyses is subjected to different kinds of pressures and changes than units in aggregate-level research. Most importantly, individual-level dynamics are in tendency not as inert to changes as organisations, meaning that differences in measurement results from two techniques used in sequence could be a reflection of changed dynamics rather than of two different measurements. Second, the assumption of unit homogeneity seems to be more easily met with individuals than with nations or other higher-level aggregates, facilitating a comparison of like and like in individual-level analyses.

In order to answer the question under which circumstances a multi-method approach is superior to a mono-method approach in a study of individuals, we deliver our ideas in three steps: (1) We present a comparison from a methodological viewpoint of mixed method studies for the analysis of aggregates and for individuals (2) we put forward a compilation of conditions in a two-step procedure for the mixed-methods approach to be superior to a single-method approach for studying individuals; (3) we illustrate the suggestions with an application to the relationship between intergenerational solidarity and attitudes towards the welfare state in ageing societies. Overall, a mixed-method approach is probably often preferable to a single-method approach in many individual-level research projects.

2 Combining qualitative and quantitative approaches for the study of individuals

In this section, we introduce some basic concepts and compare the analysis of individuals and higher-level aggregates along the concepts of congruence and unit homogeneity.

2.1 Definition of concepts

First of all, “qualitative methods” comprise all empirical research techniques that aim at understanding the outcomes in a few cases, techniques which are sometimes also called “case-oriented methods” (Mahoney 2008). They aim at investigating causal mechanisms in one or a few particular case(s). In contrast, “quantitative methods” stand for all those approaches in which the interest lies in identifying causal relationships in a well-defined population (Lin 1998) and which are also called “population-oriented” (Mahoney 2008) methods (for a discussion of qualitative and quantitative methods see Hanson 2008). Whereas the advantages of qualitative methods are the detailed descriptive study and the discovery of new social phenomena that the researcher has not been aware of, the advantage of quantitative methods is the validation of the empirical scope of the theoretical model and of relevant variables. It is

easy to think of examples of qualitative and quantitative methods in research on individuals. Qualitative methods are, for instance, in-depth interviews, focus groups, participant observations and the text analysis of diaries or personal letters. Quantitative methods are typically sample-based surveys, mostly in a standardised manner, or field and lab experiments in which researchers manipulate independent variables under controlled circumstances.

Second, a "research project" is one coherent organisational effort at investigating a certain social phenomenon. Often, the research project is guided by one or a set of over-arching research questions. A research project can be simplified into several analytical steps, each one of which is guided by a specific research question. Each specific research question can be answered by employing one empirical (qualitative or quantitative) study that is carried out in sequence or simultaneously with the other(s).

Third, a "mixed method approach" (or: multi-method approach) signifies the usage of at least one qualitative and one quantitative method in sequence or in parallel within one research project. The opposite of a mixed method approach is a mono-method approach in which only either qualitative methods or quantitative methods are used.[1]

2.2 Individual-level versus aggregate-level research

Mixed methods can be employed at different levels of aggregation. They can be applied to aggregates, such as organisations, states, or regions. This is, by now, very common for example in comparative political science where nations are often the unit of analysis. To give an example, combining comparative case studies and cross-national statistical analyses, Lieberman (2003) investigated why South Africa and Brazil had different tax systems even though they shared otherwise similar characteristics. Also, a multi-method approach is feasible for the analysis of individuals. This is very common in other disciplines, such as educational research, but not so much in political science, even though the earliest classics of behavioural political research used quantitative and qualitative techniques (Campbell et al. 1960; Lipset et al. 1956).

There are two aspects that are important when comparing the use of mixed-methods for individual-level and aggregate-level analyses: the congruence of social dynamics across time and unit homogeneity.

2.2.1 Congruence

Combing two or more different research methods often implies a certain sequence of the application of methods. If there is a sequential design, the level of congruence across time of the social dynamics under study matters. Congruence refers to the degree to which the dynamics of the social phenomenon remain stable across time. There are three factors which threaten congruence in the individual- and the aggregate-level analyses differently: (1) the pace of social change, (2) researchers' effects and (3) ethical/practical problems in re-approaching the unit of observation for a second time. If congruence of a social phenomenon is very low and two different methods are combined in sequence, it is unclear whether differences in

[1] A mixed-method approach can further be described with the help of three dimensions: level of mixing (partially mixed = mixing only happens at interpretation phase, fully mixed = mixing happens in the same phase of a research circle), time orientation (whether collection is concurrent or sequential), and emphasis on approaches (whether one method dominates over the other) (Leech and Onwuegbuzie 2009) Another aspect is that a mixed-method study consisting of a qualitative and a quantitative study can be followed by a further mixed method study which builds on the input of the preceding one (Lobe and Vehovar 2009).

measurement results are due to the actual change or due to the complementary unravelling capacities of the two techniques.[2]

An argument against the combination of methods in a study of individuals is that the world changes so quickly that non-congruence in results can just mean that the dynamics have slightly changed between the individuals in two consecutive analyses. This point gains in importance against the background of the high number of secondary (quantitative) analyses, whose data were collected years ago and whose interpretations are melted with the findings of primary data from qualitative methods conducted later on. In contrast to this, case-studies of the aggregate-level have the advantage of being able to draw on data that stem from the same time as the data used for quantitative methods. Even there, researchers have to make some assumptions about this matter. For instance, they can assume that observable patterns are the result of what individuals do whose behaviour can be approximated by a "representative agent" (Kittel 2006).

Researchers of the aggregate-level perspective (Lieberman 2005) suggest clarifying inconsistencies in quantitative analysis by conducting a case analysis. But findings of individual-level analyses might be affected by repeated interviewing, such as the modification of attitudes that would not have occurred without the recurring interviews (this is also known as the panel effect). For countries, which are investigated in case-studies in aggregate-level studies, this does not pose a problem as those effects only apply to individuals. Pieces of country evidence do not react to being studied.

Moreover, the individual-level researcher can rarely ask an individual from a quantitative sample again. Practically, it can be very difficult, time-consuming and laborious to go back to a survey respondent. Especially, ethical reasons and privacy of the respondent speak against the repeated contact with respondents for which the contact details must be saved (Leahey 2007). Higher levels of congruence for studying the same unit twice is thus an advantage of aggregate-level multi-method studies.

2.2.2 Unit homogeneity

Unit homogeneity refers to the level of homogeneity of the carriers of information in an empirical analysis. According to King et al. (1994, p. 91), "two units are homogenous when the expected values of the dependent variables from each unit are the same when our explanatory variable takes on a particular value." A weaker notion of unit homogeneity is that the causal effect is constant across all homogenous units (King et al. 1994, p. 93). In other words, unit homogeneity is likely to exist if one can exchange one carrier of information with another and still get the same dynamics within the interactions between various carriers of information. To illustrate this point with an example from physics: many laws predict the dynamics of certain atomic elements without the expectation that one specific atomic element behaves differently from the next.

Unit homogeneity is an assumption that cannot be easily tested. If researchers knew that two units of analysis obeyed to different dynamics, they would not treat them as the same units of analysis. The problem of a lesser degree of unit homogeneity is severe already when one type of methods is applied to a set of units that are falsely assumed to be homogenous. But when combining the usage of several methods, researchers find a problem even worse

[2] For mono-method studies, this matters in a different way because differences in measurement results stem from the same technique having been employed several times and are due to either a phenomenon of low-level congruence or a research technique characterised by a low level of reliability.

because comparing the results from several methods that may be based on units that differ increases the danger of false conclusions.

When discussing the social science analysis of individuals versus the analysis of higher-level aggregates, we can expect that states, organisations and other such structures are—in tendency—less likely to have unit homogeneity than individuals.[3] The reason is that social scientists are not primarily interested in the inner workings of the human body. Thus, the internal differences between humans are not likely to matter for their social interactions that social scientists are interested in whereas social differences can be observed and controlled for in order to create conditional independence. Organisations, states, parties and the like, in contrast, are social creations in themselves. Thus, the differences within organisations are likely to affect the social dynamics that these organisations find themselves in. For example, the historical past of an organisation is likely to make an organisation unique in its reactions to the social environment and to make it differ from itself at another point in time. Simply speaking, the analysis of individuals is more likely to be a comparison of apples and apples whereas the higher-level analysis is more likely to be in danger of being an analysis of apples and pears. For example, Ebbinghaus (2005) criticises that countries in comparative quantitative studies are neither equal in size, nor in their characteristics. Political and historical processes might indirectly influence those study's interpretations and thus distort any results in a "too-many" country study.

Thus, the assumption about unit homogeneity is likely to be more easily (but not always) met in individual-level analysis. This is important for the discussion of applying mixed-methods to individuals because analysing one set of individuals with one method can be more fruitfully combined with analysing a different set of individuals with another method.

3 Conditions under which a mixed-method approach is superior

Given that a multi-method study of individuals is not always advisable, can we compile conditions that would allow for a meaningful combination of qualitative and quantitative methods in the study of individuals? We propose two necessary conditions[4] that a researcher planning a multi-method study has to check first. If these two conditions are met,[5] at least one sufficient condition out of six should be met in order to make a multi-method approach superior to a mono-method approach (for a detailed discussion of this "additional" value of a multi-method design see Miller and Gatta (2006)).

[3] This is only a statement about tendency. Some individual-level dynamics, such as those pertaining to political decision-making, may also reveal a large degree of unit heterogeneity (see for example Lau 2003).

[4] The term "condition" should not be taken as something like an exogenous factor. These conditions can be influenced by researchers themselves. For instance, researchers can re-adjust research questions during their research in order to fit their questions to their multi-method design.

[5] Additionally, we need to assume: (a) that the social phenomenon under investigation exists irrespective of the researcher(s). This is a clear assumption of the positivist tradition; other approaches like constructivism do not allow for a meaningful combination of different kinds of empirical methods. This assumption allows the same researcher to approach a certain social phenomenon from different sides without altering its meaning significantly (for a different view see (Sale and Brazil 2004; Sale et al. 2002)); (b) that there is an interest in causation (see Faletti and Lynch 2009). Causation always entails an interest in the step-by-step mechanisms that link two phenomena as well as in the scope of these mechanisms (see for an overview of causation in qualitative and quantitative traditions Mahoney 2008). In contrast, some studies in political marketing that try to segment voting populations would not be a good area of applications because the main interests may—justifiably in that context—lie in pure association (Smith and Hirst 2001).

3.1 First-level necessary conditions

3.1.1 The nature of the social phenomenon under investigation

The social phenomenon of interest must bear a certain degree of inertia in the characteristics in order to allow a mixed-method approach; ideally, the phenomenon under study should be measurable at several points in time to allow for a sequential application of methods. For example, if researchers want to study the emotional reactions of voters to the German chancellor Angela Merkel's public speeches in the run-up to the 2009 elections, the measurement is restricted to that time only. Depending on the degree of inertia, more or fewer research methods can be applied to the research problem. The more time-invariant the dynamics of the phenomenon under study, the more chances researchers have to approach it from different angles or at different points in time. If the knowledge about the phenomenon suggests highly time-variant dynamics, a multi-method design can still be conducted with the simultaneous application of techniques, which may, however, not always be technically feasible. In the example of German voters above, survey respondents cannot easily be questioned with qualitative techniques after the survey because of technical time limitations regarding e.g. their concentration.

It seems that basic attitudes and behaviours of individuals in political contexts may be most inert: attitudes towards the state and society, certain core areas of policy, socially constructed groups, core behaviours in politics like political participation, deliberation and others. In contrast, least inert may be attitudes and behaviours towards or in context of single events, actions or situations, such as attitudes towards 9/11 terrorists or the public opinion towards a specific policy proposal (see for example Pappi and Shikano 2005).

3.1.2 The research project and the questions

A research project tends to be motivated by one or two 'grand' underlying research questions; its constitutive analytical steps may, however, be guided by simpler research questions. These simpler research questions determine the choice of methods and, vice versa, the methods determine the type of research question that can be answered. As a consequence, the research project must be of a nature that allows a meaningful combination of quantitative and qualitative research. Therefore, we could also argue that if we only have one limited research question, such as "what explains the impact of President Bush's declaration of the end of the Iraq War on US mass public opinion in 2003?", a mixed-method approach may not be necessary. Some people may actually prefer to size down their research question and to answer that with one method alone instead of embarking on a more complex research project that requires several questions to be answered.[6]

Of course, it is always possible to use several research methods in order to investigate the same question. However, it is not clear a priori whether this combination of methods will yield a higher level of understanding. Instead, a combination of very specific research questions in one research project could more clearly guide researchers about how to aggregate the results from different methods within their project.

[6] We would like to thank Bernhard Kittel for pointing this thought out to us.

3.2 Second-level sufficient conditions[7]

Once these two necessary conditions are met, researchers must identify at least one out of the six following conditions to improve their level of understanding by a multi- over a mono-method approach.

3.2.1 Varying possibilities of data collection

The study scope covers two areas. In one of them, reliable data cannot be easily collected (Kelle 2007). A study about individual political behaviour may cover two regions, one where, for example, random sampling is cheap and reliable and one where it is impossible. Thus, some of the classics of political participation studies (Almond and Verba 1989 [1963]; Verba et al. 1978) included countries, such as Mexico and India in the 1970s, which made the reliability of some sampling procedures questionable. In such a context, qualitative research, such as qualitative interviews in India and Mexico would have helped to understand the diversity of attitudes rather than trying to achieve a representative data set of standardised items from a questionable sampling process.

3.2.2 Cases fit the quantitative model to varying degrees

A very popular proposal in the current discussion in comparative political science is to use quantitative techniques (such as regression analysis) for preliminary analysis in order to identify cases that lie close or far from the regression lines, i.e. identify the goodness-of-fit of the model for a particular case (Lieberman 2005; see for a critique Rohlfing 2008). This can also be done in individual-level analysis. Analogously, we can imagine the identification of certain individuals in a quantitative model. Here, the objectives of a qualitative method would be to identify and describe the causal chains underlying, for example, correlations identified in a quantitative part of the study (Sieber 1973) or to contextualize the quantitative findings with qualitative data (Ong et al. 2006).

This condition is likely to be met in most individual-level studies in the social sciences given the poor fit of our empirical models. Thus, it may almost seem like a universal piece of advice to accompany quantitative research of individuals with qualitative methods. Of course, the question of inertia that we discussed above applies here, too. If the phenomenon under study is likely to be of short existence or be characterised by fast-changing dynamics, embarking on the mixed-method study in a sequential manner leads to confusing results. Also, it is impossible in most research contexts to contact individuals who have, for example, been part of a survey sample to analyse their behaviours or thoughts with other methods. However, findings from the quantitative research suggest individuals with certain relationships or characteristics to be well or badly explained by quantitative models, which could then guide the selection process of additional cases. Apart from that, this combination of quantitative and qualitative methods is also suited if a researcher is interested simultaneously in the effects of variables and in the underlying mechanisms.

[7] There are some further conditions that are either trivial or are requirements of one of the methods rather than of the combination of two types of methods. So, for a quantitative method, the concepts (and thus the theory) must have a certain degree of refinement in order for the concepts to be captured by numbers.

3.2.3 Generating or testing a quantitative instrument

This condition assumes the quantitative method being the main method of the analysis; and the qualitative method only serves to generate and/or pre-test a quantitative instrument, such as items for a questionnaire, or to cover suspected weaknesses of the quantitative method (see Groves et al. 2004, Chap. 8).

Existing instruments used in surveys can be difficult in terms of their validity. This may more often be the case in international surveys where an international consortium of researchers funded by various sources must agree on the lowest common denominator, the results of which may then represent a difficult instrument in terms of measurement. So, the illustrative example that we are going to show questions the validity of items in the International Social Survey Programme as to people's attitudes towards the welfare state. In these surveys, respondents are typically asked which functions of the welfare state they support and whether they want to give less, the same amount or more money into a certain policy area. In such an instance, the government qualitative methods help to improve the measurement of the quantitative method (see Adcock and Collier 2001). These improvements can then be used in another round of quantitative research.

3.2.4 Generating hypotheses or concepts and testing for scope

In comparison to the instance above, where a mixed-methods approach is employed for methodological advancement, methods can also complement each other in order to develop or enhance theories (Coppedge 1999; Lieberman 2005; Rohlfing 2008). In this case, qualitative methods come first in order to develop or to generate concrete hypotheses to guide the quantitative part of the research project. In such a context, the sophistication of the literature is relatively low either in terms of the causal dynamics to be expected or in terms of the main concepts that need to be measured (Lin and Loftis 2005).

Similarly, qualitative results can also be tested in order to get a sense about the scope of dynamics in focus and thus facilitate the assessment of the degree of generalisation (Sieber 1973). The researcher might want to know if the qualitative finding only applies to certain social groups or to the whole society. In this case, the idea for the application of a multi-method approach might appear in the course of research, for example when a qualitative finding is unexpected and the researcher wants to find out the scope of the dynamics found.

3.2.5 Unexpected research results in a quantitative study

Another strategy for using qualitative after quantitative methods is to unravel unexpected research results (Kelle 2007), such as a significant regression coefficient in the wrong direction or the identification of a new variable. For example, Campbell (2003) noticed that some American retirees showed an extraordinarily high level of political participation that did not correspond to their relatively low level of socio-economic resources (Verba et al. 1995). Thus, this group of citizens presented unusual cases in the Socio-economic Status model of political participation. This observation made her employ qualitative interviewing (and again quantitative survey analysis) to find the mobilising trigger of the policy threat to Social Security that mobilised pensioners the more, the bigger the proportion of their income depended on Social Security. Methodologically speaking, she identified a new set of causal paths and variables by using additional research techniques.

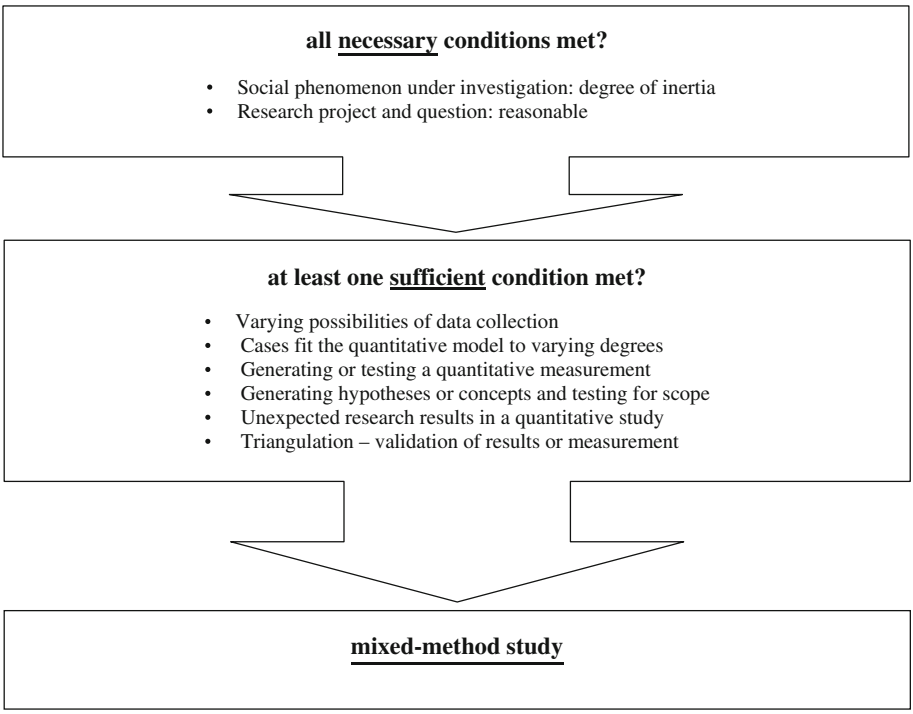

Fig. 1 Summary of conditions for a mixed-method study

3.2.6 Triangulation: validation of results or measurement

A quantitative and a qualitative investigation can be conducted in parallel and their findings melted in the phase of interpretation (Lin and Loftis 2005).[8] This mixed-method approach is called triangulation. Lin and Loftis denote the core of triangulation as "joint reinforcement; each component can stand alone, although they make a stronger argument in combination" (Lin and Loftis 2005, p. 13).[9]

Triangulation can be conducted in order to study one and the same social phenomenon from different perspectives in order to get a more exhaustive and complete view of the phenomenon under investigation (Kelle and Erzberger 1999). Another application of triangulation is to test the same hypothesis with different methods to correct for the bias implicit in each method's findings, which can be defined as cumulative validation (Campbell and Fiske 1959; Kelle and Erzberger 1999). (See Fig. 1)

Figure 1 summarises the two necessary and six sufficient conditions. If all necessary conditions of the first selection procedure and at least one sufficient condition from the second step are met, a multi-method approach to the study of individuals is superior to a mono-method study.

[8] Also, triangulation allows for increasing internal validity for qualitative methods only (Meijer et al. 2002) which, according to our definition is not a mixed-methods study.

[9] For a critical discussion of triangulation see Kelle and Erzberger (1999, pp. 514–516).

4 Illustrative application: attitudes towards the welfare state in ageing societies

4.1 Research questions and overview of theoretical knowledge

Now we apply our suggestions to a concrete research problem (see also Goerres and Tepe 2010; Vanhuysse and Goerres forthcoming, 2011). We are interested in what citizens expect from the welfare state in advanced industrial democracies that are characterised by extensive welfare states and a large and growing proportion of older people in the population. The research questions of interest are: does intergenerational solidarity matter for people's attitudes towards the welfare state, its functions and scope? And if so, how does it matter? As a central concept in this piece of research, solidarity towards another generation is defined as someone's willingness to incur costs in favour of the member of another generation, which may be defined as a generation in the family in terms of lineage or as a generation in the sense of a birth cohort.

Sociological research suggests that there are a lot of intergenerational in vivo transfers (time and money) in the family, revealing a complex array of motivational sources (Künemund and Rein 1999) and that there may be a balance between the intergenerational contract in the family and the intergenerational contract managed by the state (Kohli 1999). Some studies on welfare state attitudes in general do exist. These can be summarised into two strands: (a) one highlights the socio-economic situation of an individual and the ensuing need for transfers and for insurance (see for example Iversen and Soskice 2001; (b) the other suggests that institutional and historical welfare state regimes socialise an individual into certain beliefs about the scope and the qualities of the welfare state (see for example Andreß and Heien 2001; Esping-Andersen 1990). In addition, there is a distinct body of knowledge in family sociology, developing models of intergenerational solidarity in the family (see for example Bengtson and Roberts 1991). No empirical research exists combining these strands of the literature; only a few general propositions about the nexus between family and state exist (Daatland and Lowenstein 2005).

4.2 The mixed-method approach

We combine one quantitative method, secondary survey analysis, with one qualitative method, focus group analysis. The survey used is the German General Social Survey from 2006 (West German sample) that also includes items from the International Social Survey Programme Module "Role of Government". This survey is a standard population survey with a sample representative of the German 16+ resident population. First, we present the results from regression analysis of the survey data. Second, we discuss the evidence from twelve focus groups that we conducted in (Cologne, Germany) between January and June 2009 with each consisting of four to eight people aged 17–89.[10] Participants were paid 25 Euro for 2 h of their time including a discussion and filling out a standardised questionnaire in which we replicated some of the items about the welfare state from the Germany Social Survey, such as items on governmental spending analysed in the quantitative study of this article. Thus, we have pieces of information from the participants alike the ones from the standardised survey as well as a flurry of information (statement, non-verbal signals) from their participation in the group discussions.

[10] This approach is different from a very common one in conducting a survey where researchers conduct a few focus groups to understand relevant themes and questions around a certain topic and to try out some of their instruments (Groves et al. 2004, pp. 243–245).

The volunteer-to-group allocation followed a theoretical line of reasoning. We tried to maximise the heterogeneity of dynamics between the groups. All groups were stratified by education, i.e. group members had similar levels of formal education. This eases the group members' ability to draw on similar terminology, language and in general social codes. Ten of the groups were age-homogenous (of similar age) and two were age-heterogeneous (of various ages). This strategy was based on the knowledge that education and age are important predictors of welfare attitudes (Busemeyer et al. 2009). We cannot say how representative certain dynamics that we found in the focus groups are of the population, but we can be sure to measure a high level of heterogeneity of the dynamics with a variety of different, but within-homogenous groups.

How are the conditions favouring a mixed-method approach met? Let us first discuss two necessary conditions and then two sufficient ones: (1) the phenomenon of interest shows a reasonable level of inertia of its dynamics. Research studying welfare attitudes from a longitudinal perspective suggests that the dynamics of attitudes are relatively stable (Andreß et al. 2001; Roller 1992). This means that we can be reasonably sure that the internal dynamics that were measured in the surveys in 2006 are comparable to the dynamics of the focus groups (early 2009); (2) the research questions make a mixed-method approach appropriate because they entail aspects that are neither analysable with surveys or focus groups alone. They ask for causal impact ("does intergenerational solidarity matter?") as well for the nature of the underlying causal chain ("how does it matter?").

These two necessary conditions are met before the data analysis. The next two conditions arise in the course of the analysis: (3) as we will demonstrate, the quantitative analysis yields that intergenerational solidarity and the theoretical concept of policy attitudes may not be measured well; (4) the correlations in the quantitative analysis suggest that there may be unmeasured dynamics in the survey analysis that call for an identification strategy to be pursued in the focus group analysis.

4.3 Empirical results from survey analysis

We conduct Generalised Ordered Logit Regressions (Williams 2006) on a three-step ordinal variable that captures the attitudes towards spending ([much] less, the same, [much] more) in the areas of education and pensions.[11] These policy areas have age-dependent salience with education being of primary interest to younger people and pensions to older people The distribution is skewed with only 3 (6) percent favouring less, 18 (42) percent being in favour of the same amount and 80 (51) percent favouring more education (pension) spending. The regression technique allows a flexible way of modelling of the dynamics that differentiate individuals on the lowest step from those on the second and third steps as well as between those on the first and second steps from those on the third step. Earlier studies of the same variable have demonstrated that the dynamics differ, meaning that becoming in favour of less spending is somewhat different than becoming in favour of more spending (Busemeyer et al. 2009). Bivariate analysis yields no relationships between age and spending preferences

[11] The question wording reads: "Please show whether you would like to see more or less government spending in each area. Remember that if you say 'much more', it might require a tax increase to pay for it." Answering options: Spend much more, spend more, spend the same as now, spend less, spend much less. The two items were spending on education and old age pensions.

for education or pensions and a small positive (negative) association between education and education (pensions) spending preferences.[12]

For each series of regression, we use four blocs of variables. Bloc 1 contains control variables that we are not particularly interested in (gender, level of school education, employment in the public sector, income, whether the person thinks that she has received "her fair share in life", political interest, an assessment of the economy and an evaluation of the personal economic situation; see the Appendix Table 2 for details). Bloc 2 includes variables about the family composition, mostly of the household (people from the same family generation [siblings, partner] live in household, parents (in law) live in the household, child (in law) lives in the household, respondent has children living outside of the household). Here, the expectation is the more complex family structures are, the more spending preferences are skewed towards the interests of other family generations. For instance, older people who share the same household with their adult children, who could be or once become parents, are expected to be more in favour of education spending than other older people. Bloc 3 consists of variables about the age of other household members, namely whether other household members who are likely to be affected live in the household (for education: whether there are children between 0 and 6, 7 and 16 or young adults 17–25 years of age living in the household beside the respondent; for pensions: whether there are adults between 60 and 74 or 75+ living in the household). Again, we expect more support for a government policy area if individuals belonging to the primary target group of the policy live in the household. For example, if older people live in the household all people in that household should be more pro-spending in pensions than elsewhere. Also, we include either the age of the respondent or the minimum age (for education) or the maximum age (retirement) of all household members as part of bloc 3.

For each dependent variable, there is a series of nine regressions: four for each bloc separately, one for blocs 1 and 2, two for blocs 1 and 3 (both variants) and two for blocs 1, 2 and 3 (again two variants, see Appendix Tables 3 and 4 for the detailed results). In a second series, we are particularly interested to see whether individuals who themselves have a lesser interest in the policy area are affected by the "generational variables", so older people (50+) for education preferences and younger people (18–49) for retirement preferences. In order to save space, we summarise the main results (see Table 1) here whereas a detailed description can be found in the Appendix (Table 5).

The models across all ages yield that the independent variables of theoretical interest have small effects compared to many control variables. For education spending, the models show that, even though we do not find any effects of the presence of younger people in the household on what people expect from the state, knowing the minimum age of a household is a better piece of information than knowing the age of the respondent herself (although the coefficients are not statistically different). For pension spending, there are also significant positive effects associated with the age of the respondent and maximum household age in the most complex models. Individuals who are older or individuals who live in households with higher maximum age are more likely to be in favour of the same amount or more pension spending than being in favour of less spending. This time, the effects are comparable in magnitude to those of formal education. Thus, the evidence is ambiguous as to the importance of other generation's members in the household for policies that affect that generation.

[12] χ^2-tests between education and education preferences and between education and pension preferences have p-values <0.001; bivariate correlation coefficients between age and education preferences and between age and pension preferences are smaller than 0.10.

Table 1 Predicted probabilities from generalised ordered logit regression, West Germany, 2006, preferences for spending in education spending (older people) and pension spending (younger people)

		Being in favour of … spending		
		Less	Same amount	More
Education spending	Child generation in household	0	48	52
Older persons (50+)	Child generation not in household	1	13	86
	Minimum age in household (one standard deviation below mean)	0	4	95
	Minimum age in household (one standard deviation above mean)	0	22	78
	Personal age =50	0	13	87
	Personal age =75	0	24	76
Pension spending	Parent generation in household	5	31	64
Younger persons (18–49)	Parent generation not in household	5	45	49
	Maximum age in household (one standard deviation above mean)	3	61	36
	Maximum age in household (one standard deviation below mean)	6	41	54
	Personal age= 18	8	31	62
	Personal age = 40	5	47	48

Predicted probabilities from generalised ordered logit regressions, all other variables held at their means. See Appendix Table 5 for full regression results and description

The split-sample models brought to light some interesting dynamics suggesting that the involvement with other generations works differently for young and for older people's attitudes (see predictions in Table 1). First of all, only one piece of evidence could be a reflection of immediate self-interest. Among those who are 50 and older, increasing age is associated with being more in favour of the same amount rather than more spending in the area of education. Second, there is evidence that the wider composition of the household matters. Older people who live in a "younger household", i.e. where the youngest member is about 18, are almost universally supportive of more educational spending than older people in "older household". Similarly, younger people who share the house with their parents are more supportive of more pension spending than younger people who do not share. Third, we find evidence seemingly at odds with the previous pieces. Among younger people, the very young around 18 have a 62 % chance of being supportive of more pension spending whereas those around the age of 40 only have a 48 % probability. This seems to reflect the insecurity about pension expectations by the very young, a feeling that makes them rather supportive of high spending. Among those in working life, the support is lower as they may be more knowledgeable about the levels of public pension that they can expect and the insecurity of their own pay-offs due to political decisions. Moreover, older people who share a household with their own children are less supportive of high levels of education spending than older people who do not share. Along similar lines, younger people who live in very "old households", i.e. where the oldest member is about 75, are less supportive of more pension spending than younger people in "young households". These results could be a sign of "experience" with those who are benefiting a policy. Those who do not share everyday life with them are more willing to support more spending than those with more intimate knowledge.

In all, these models revealed some more complex dynamics supporting the notion that the living situation with regard to other generations does alter an individual's attitudes, that

self-interest is also at work when people express their preference for age-related policy areas, but that overall the fit of the quantitative models is not very high and the suggested variables seem not to add much to explaining the variance of the dependent variable.

Returning to our first- and second-level conditions for using mixed-methods, there are two conditions that warrant the usage of another technique. The dependent variables could be weak indicators of attitudes. Also, the measure for the concept of solidarity between generations could lack strength. We only have information about whether there are any other generations in terms of cohorts of family generation in the household or in existence elsewhere. We do not know anything about the nature of the relationship of the individual with members of other generations. Furthermore, there are some unexpected research results. It seems strange that neither the presence of younger people in the household for education spending, nor of older people for pension spending creates any systematic patterns. In analogy to economic studies of household behaviour, we would have expected individuals to be interested in maximising the potential utility from government action for their households as a whole. Also, the existence of other family generations in the household or of children outside does not matter. Being involved with a multi-generational family setting does not create any visible effects for these dependent variables.

4.4 Empirical results from focus-group analysis

4.4.1 Weak measurement of the dependent variables and incomplete measurement of the concept of intergenerational solidarity

The weak findings about the correlations between the independent variables and the dependent variable as well as the discovery of varying dynamics within the three-step ordinal variable hint at the possibility of weak measurement of the dependent variable, which is underpinned by findings from the focus group analysis.

Before the discussion, focus group participants had to fill out a questionnaire in which we replicated the exact questions from the survey that we used for the quantitative analysis. One question measured whether a person is in favour of more, the same or less governmental spending for a certain policy, reminding the respondent that higher levels of spending could mean tax increases. We can thus compare what people have said in the discussions with what information they have given in the standardised questionnaire.

There was for example a 42-years old woman who indicated in the questionnaire that she was in favour of the same level of spending for pensions. According to the arguments she gave in the discussion, her attitude should be regarded as much more complex than her answer to the standardised item:

IV-1, 42 years, female, high education[13]	It's tough at old age if you do not get a certain minimum of pension. So if pensioners who get extremely little pension get a pension cut, that is going to be tough for them.

[13] Our definition of education is: lower formal education (German school leaving certificates: none, Hauptschule, Realschule) and higher formal education (German school leaving certificate: Fachhochschulreife, Hochschulreife).

Moderator	Could you expand on that?
IV-1	I know many people who get a very good pension. And those are probably very happy to give. … On the other hand, I don't like it when pensioners do not get a minimum income to keep existing. …I think this has to be paid attention to. So that's why I don't like the state cutting pensions. Because that is like an indiscriminate, sweeping cut.

Her attitude is too nuanced to be measured by the given survey question. She argued pro public minimum pension and at the same time she was in favour of pension cuts for high pensions. This suggests that the clean answers of the standardised question undervalue the complexity of attitudes that people can have towards policy areas such as pensions. The item suggests one dimension of the support of pension (less spending–more spending). This participant thought more in terms of qualitative categories, differentiating between basic pension schemes and high-level pensions.

Another problem of these general spending items is their high level of generalisation that stems from them having been developed in a comparative framework. So, the questions on spending in the area of pensions may be difficult to interpret for Germany that has a public, contribution-based scheme. Different from other countries, Germany's public pension system does not administer a basic pension scheme that guarantees the same level of pensions for everyone like, for example, one pillar in the Dutch system. One woman indicated in the questionnaire that she wanted to see more spending on pensions. At the same time, she said the following:

VIII-2, 76 years, female, low education	I worked for 43 years. My pension does not come from the welfare state, but I paid it in myself. I do NOT consider [the pension] to be any sort of gift or support. I think it is my right.

So, it seems difficult to judge what she actually meant by supporting more pension spending in the questionnaire. She might have interpreted state spending in the area of pension as the state's contribution to cover the deficit in the pension system or the level of indexing that is decided upon politically from year to year. This remark should lead us to question what the item actually measures.

Another question of measurement seems to be the conditionality of more spending. One focus group participant discussed state spending for education and pension around the criterion of efficiency:

I-05, 27 years, female, high education	I think that at the end of the day there is enough money if we spend it a bit more economically. … And you can certainly invest in BOTH sides. … on the one hand, the elderly want to have a good health care system. So that they can maybe also count on getting money privately at home if they need it. At the same time, one ought also to spend as much as possible in the education and future of children. … And if we did invest in education and stimulated [that area] more, then we would not have as many unemployed and would have more money at our disposal.

This points to an important additional factor influencing spending preferences. The participant incorporated the criterion of efficiency in her evaluation. She formulated her expectations from the state in times of financial shortage emphasising a worthwhile investment of scarce financial goods. In other words, her willingness to support more spending is contingent on governmental behaviour, a kind of conditionality that is not captured in the quantitative items.

So, we see that the additional qualitative analysis of focus group data confirms the suspicion that we had about the measurement of the dependent variables in the quantitative analysis. The focus group participants gave seemingly clear answers when filling out the questionnaire, but apparently had different things in mind when answering it. Indicating a certain level of spending for a policy in a questionnaire might miss some aspects of the dimension of intensity of welfare state attitudes. Given these weaknesses of the quantitative measures, much variance could not be captured well in the regressions. This is an important finding for these items alone as they are so widely used (see for example Iversen and Soskice 2001).

The other measurement issue, the nature of the household composition with regard to family generations and age, brought to light a few interesting correlations in the quantitative analysis, some of them in surprising directions. A close look at our focus group discussions hints at the inadequate operationalisation of the involvement with other family generations. A 24-year old woman explained her view towards pension spending. She put forward the opinion that the elderly had paid into the system their whole lives and did not have any chance of responding to sudden pension cuts. Plus, she wanted pensioners to spend their remaining lifetime with a high quality of life and thus supported their higher pension levels. For herself, interestingly, she did not expect any sort of pension from the state upon retirement and made plans accordingly by providing for her own pension privately. So, corresponding to our definition of intergenerational solidarity, she clearly expressed the willingness to incur costs in favour of another cohort:

X-6, 24 years, female, high education	I think it's important to pay into the system now. I think that we have obligations toward older people who are there today, I also think it is depressing that I know that my situation will be different [when I am old]. On the other hand, this makes me provide for my old age pension myself now rather than waking up at the age of 40 when it could be too late. So at the end of the day, we are given the opportunity of doing something proactively.
Moderator	You said that there is an obligation toward older people. Could you expand on that?
X-6	It's not the fault of older people that the state is currently not doing as well. They have been paying into the system for years. And I think that they have a right to get their money … to spend their remaining years nicely. And if we don't pay, they don't get them.
X-1, 24 years, female, high education	But we should also … get enough.
X-6	Yes, but we have a different kind of knowledge on this matter. You know 60, 70 years ago, people did not think that others would fare differently.

In contrast to the measurement of the survey, we had more information about her involvement with other generations in the family. This woman did not live with other generations in the same household, but met her parents twice a week and her grandparents once a month, which hints at regular interchanges with other family generations that could generate this willingness to incur costs in favour of older generations.

Solidarity towards another cohort was also expressed by a pensioner: a 64-year old participant of migrant background with 6 years of school education and without any vocational training stated that he considered education more important than his pension:

VI-4, 64 years, male, low education	Education is essential. The kids' future is more important than my pension or my healthcare.

Looking at his involvement in family, we see that he had a close relationship to other family generations as he, for instance, met his adult son once a week. Also, he and his wife cared for his old mother. This suggests, again, that other kinds of involvement with other generations beside co-residence matter.

Furthermore, there was one young man who said that he would take out a private pension policy as he did not expect any public pension upon retirement. Nevertheless, according to his answer in the questionnaire, he was in favour of raising public pension levels. He was living with his grandmother and felt responsible for her, which reveals a strong emotional relationship to this person from an older family generation. Through the contact with her, he noticed many of her everyday problems and complained about her low pension income:

X-3, 20 years, male, high education	In my view, it is unjust. My granny worked in a factory for 43 years. Yes, and now she only gets this tiny pension for what she did and paid in. She just about manages. For 43 years of work.

So, in a nutshell, the quantitative operationalisation of intergenerational family involvement may be inadequate. A close contact with members of other generations in the family could lead to an attitude of favouring high levels of spending in favour of that generation. So it seems that our quantitative measurement of intergenerational solidarity as living together with different generations is only an incomplete picture of exchange with other generations. Additionally, there is no reason why a close relationship to other family generations outside someone's own household should not create concern for the interests of members of other generations. As an alternative, measuring the *emotional* relationship to other family generations may also be a way of approximating the involvement with other generations.

4.4.2 Accounting for unexpected research result: causal relationship in the "wrong" direction

Among the quantitative results, we discovered some surprising dynamics: older people who share a household with their own children are less supportive of high levels of education spending than other older people. Along similar lines, younger people who live in very "old households", i.e. where the oldest member is about 75, are less supportive of more pension spending than younger people in "young households". These results could be a sign of "experience" with those who are benefiting from a policy. Those who do not share everyday life with them are more willing to support more spending than those with more intimate knowledge.

The qualitative results suggest that older people without children support education policy as a value as such. All of our older focus group participants regarded education as important, no matter whether there were (grand-)children in their household or not. There was, for example, a group aged 61–72, and none of them had small children living in their household. They appreciated education overall from a normative point of view as well as a good educational system or a healthy society. They led the following discussion:

VI-6, 72 years, female, low education	And the state should finance free education and training for all adolescents.

Moderator	And why do you think that is…
VI-6	Because that is ABSOLUTELY the most important thing. Because the whole society benefits from what people can contribute. What they can contribute according to their opportunities/abilities. And the state has to support this. And it must not select at a time when [abilities] are not yet identifiable.
Moderator	Yes. Does anyone else want to add to this matter? ...
VI-4, 64 years, male, low education	I would like to come back to the question of education/training. Where I come from [Greece], we have a saying…: an uneducated man is like an untrimmed piece of wood….
VI-2, 61 years, female, low education	I am of the same opinion. This is very important. For the future of children.

So, older people who share the same household with small children could be more aware of the actual situation of children compared with those who do not share the everyday life with small children. From our focus group analysis, we gathered that grandparents tended to compare their grandchildren's situation in society with their own situations when they had had children. And what they saw is that today's situation was much better—nearly too good as participant VI-6 put it—because there was more societal wealth that children benefit from, such as more playgrounds or public swimming pools that had not existed when the older people themselves had been young. They had grown up in times of war and hunger and even when they had grown older, being parents, they had experienced societal wealth well below today's level. So, older people living without small children in the household could be overshooting in their support for education spending compared with those who have a more realistic impression of what children's experience is like. The discussion was led as follows:

VI-6, 72 years, female, low education	And I still have in mind what my grandmother used to say about the measures that were taken at the times of [chancellor] Brüning in the years 1929 and '30. People suffered from hunger. … And I don't want to go through anything like that. Just recently, I thought: we are doing well. And my grandchildren get this and that, always. And then I thought: how should we get things back to normal? If there were bad times to come, they [my grand children] would need to cut back. …
[…]	
VII-3, 71 years, female, high education	… I have a grandchild. And he is very much looked after. Now my grandson is 12 years old. Now the situation is always like that [that I look after him] because my daughter and son-in-law work. …. my worries about my grandchild ... on the one hand, I really think that expenses are cut back for schools … and playing grounds. On the other hand, I also think that many of the things that are taken for granted for kids today did not exist when my daughter was a child. Back then, we did not have God-knows-how-many leisure swimming pools, but just one normal swimming pool. Thus, sometimes when my grandson wants to go somewhere, I tell him: sorry, but now we go into the garden to clean off the leaves.

So, for the unexpected research results, the qualitative findings suggest that there may indeed be a kind of experience factor that makes older people with very intense contact with

younger people less supportive of spending in a policy area for children than older people with non-first-hand contacts. By analysing our focus group discussions, we found that causal chains were more complex than expected in our theoretical assumptions.

All in all, our three instances of combining a quantitative and qualitative method show that both methods complement each other and that through a multi-method project a broader understanding of causal chains and methodological advancement with regard to quantitative measurement could be reached. The survey provided a reliable measurement of welfare state attitudes in our study and could test our theoretical assumptions for scope. But according to our quantitative results, we questioned the measurement of our dependent variable and the measurement of the concept of intergenerational solidarity. Furthermore, there was an unexpected research result. As focus groups can be a more valid measurement, we were able to understand and explain our quantitative results.

5 Conclusions

This article puts forward general guidelines collected from across the literature for a fruitful combination of at least one qualitative and one quantitative technique in the social science analysis of individuals: more concretely, a two-step decision procedure is put forward consisting of necessary conditions, all of which have to be met, and of sufficient conditions, one of which is already sufficient for a mixed-method approach to be be superior to a mono-method approach. Compared to an analysis of nations or other higher-level aggregates, applying a mixed-method approach to the study of individuals is, on the one hand, easier because the assumption of unit homogeneity can in tendency be met more easily. It can, on the other hand, be more difficult because in tendency the expectation of congruence between the dynamics measured by different techniques at different points in time is not as easily justified as in research of higher-level aggregates.

The article illustrates the application of the first- and second-level conditions with a study on the relationship between intergenerational solidarity and welfare state attitudes. By combining a qualitative study of focus groups with a quantitative study of survey data, the mixed-method approach highlights problems in measurement with the dependent variable and some dimensions of solidarity measured in the survey. Also, some unexpected correlations of the quantitative study could be meaningfully explained with evidence from the discussions.

Future research should continue testing the boundaries of mixed-method designs in individual-level analyses. Especially, further work can point towards the differences between the sequential usage of several methods versus the simultaneous one. Overall, we find that some conditions for fruitful mixed-method approach are almost universally met in the social science studies of individuals and warrant a closer inspection of the combination of quantitative and qualitative methods in many research endeavours.

Appendix

Detailed description of regression results

Let us first look at the goodness of fit of the four blocs as they are entered individually into the analysis (see Tables 3 and 4). For both dependent variables, the regressions with only control variables fare best (according to the AIC). Of the blocs that are of theoretical interest to us,

Table 2 Descriptives of generalised ordered logit regression, West Germany 2006

Variable	Observations	Mean	Std. Dev.	Min	Max
Preferences for education spending	1079	2.77	0.48	1	3
Preferences for retirement spending	1074	2.45	0.61	1	3
Female	1112	0.51	0.50	0	1
Formal education (Real)	1112	0.26	0.44	0	1
Formal education (FH)	1112	0.09	0.29	0	1
Formal education (Abitur)	1112	0.21	0.41	0	1
Public employment	1112	0.10	0.31	0	1
Income, mean-imputed	1112	0.00	1.00	−1.24	7.99
Income, imputed	1112	0.27	0.44	0	1
Had NOT my fair share in life	1112	0.32	0.47	0	1
Political interest	1112	0.00	1.00	−1.94	1.87
Evaluation economic situation	1112	0.00	1.00	−2.08	2.84
Evaluation personal econ. situation	1112	0.00	1.00	−2.65	2.03
Member of same generation in HH	1112	0.71	0.45	0	1
Member of parent generation in HH	1112	0.08	0.27	0	1
Child generation present in HH	1112	0.35	0.48	0	1
Children living outside of HH	1112	0.40	0.49	0	1
Maximum age in HH	1109	0.00	1.00	−2.14	2.60
Minimum age in HH	1109	0.00	1.00	−1.51	2.29
Age	1107	0.00	1.00	−1.81	2.64
Child 0–6 years in HH	1112	0.11	0.32	0	1
Child 7–16 years in HH	1112	0.20	0.40	0	1
Adult 17–25 years in HH	1112	0.16	0.36	0	1
Adult 60–74 years in HH	1112	0.19	0.39	0	1
Adult 75+ years in HH	1112	0.06	0.24	0	1

Real = Realschulabschluss, FH = Fachhochschulreife, HH = household

bloc 3 in the variant with the respondent age explains the data best. This is mainly due to the significant effect of the respondent's age that comes up in one panel of the regression in each instance. In the simple model, the bloc with the family generation variables still captures some systematic variance, but this changes in later composite models. Theoretically, these results hint at little help from our theoretical models at understanding the attitudes in these areas compared to the more powerful control variables.

When now concentrating on the models of attitudes towards education spending, we see that most variables of blocs 2 and 3 do not yield any significant coefficients. In the most complex model (model 9, table 3), there are two significant coefficients of variables of theoretical interest: the older the youngest member in the household, the less likely an individual is to support more spending rather than the same or less spending. Also, if the child of a respondent lives in the household, she is less likely to be in favour of more spending than the same amount or less spending. This seems counterintuitive at first, but recall that we separately capture whether there are individuals younger than 25 in the household. Thus, this effect here is likely to represent the presence of adult children in the household. It is surprising to find that the presence of children or young adults does not add any systematic variance in this model. In addition, the variables about family generations and generations

Table 3 Generalised ordered logit regressions, preferences for education, whole adult population, West Germany 2006

	Education								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Much) less									
Female	−0.13				−0.06	−0.13	−0.16	−0.20	−0.18
	[0.45]				[0.47]	[0.49]	[0.49]	[0.50]	[0.49]
Formal education (Realschulabschluss), BL: no degree or Hauptschule	−0.80*				−1.11**	−1.09**	−0.99*	−1.16**	−1.09**
	[0.43]				[0.47]	[0.53]	[0.51]	[0.53]	[0.52]
Formal education (Fachhochschulreife)	1.47				1.68	1.52	1.59	1.63	1.61
	[1.12]				[1.14]	[1.14]	[1.13]	[1.15]	[1.14]
Formal education (Abitur)	0.78				0.79	0.69	0.80	0.77	0.83
	[0.79]				[0.78]	[0.82]	[0.80]	[0.81]	[0.79]
Public employment	1.70*				1.53	1.09	1.10	1.15	1.15
	[1.01]				[1.03]	[1.03]	[1.03]	[1.03]	[1.03]
Income, mean-imputed	−0.89***				−0.91***	−0.94***	−0.94***	−0.98***	−0.95***
	[0.32]				[0.35]	[0.34]	[0.34]	[0.36]	[0.35]
Income imputed	−0.02				0.02	0.23	0.20	0.09	0.09
	[0.49]				[0.50]	[0.54]	[0.54]	[0.55]	[0.54]
Had not my fair share in life	0.05				0.14	0.12	0.12	0.10	0.10
	[0.39]				[0.40]	[0.42]	[0.42]	[0.41]	[0.41]
Political interest	0.52**				0.54**	0.61**	0.58**	0.54**	0.54**
	[0.23]				[0.26]	[0.26]	[0.26]	[0.27]	[0.27]
Evaluation economy	0.58***				0.59***	0.56***	0.54***	0.58***	0.56***
	[0.20]				[0.21]	[0.21]	[0.21]	[0.22]	[0.21]
Evaluation personal financial situation	0.03				0.09	0.16	0.16	0.16	0.17
	[0.23]				[0.23]	[0.24]	[0.24]	[0.25]	[0.25]

Table 3 continued

	Education								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Member of same generation in household		0.48			0.32			0.27	0.27
		[0.41]			[0.44]			[0.46]	[0.46]
Member of higher generation in household		13.79			13.51			12.96	14.40
		[592.47]			[456.63]			[443.28]	[887.27]
Member of lower generation in household		0.16			0.46			0.00	0.03
		[0.46]			[0.50]			[0.77]	[0.84]
Children outside of household		0.08			−0.12			−0.18	−0.32
		[0.41]			[0.45]			[0.58]	[0.56]
Age			0.03			−0.18		−0.08	
			[0.20]			[0.24]		[0.29]	
Child 0–6 years in household			−0.19	−0.12		−0.26	−0.28	−0.22	−0.20
			[0.58]	[0.66]		[0.62]	[0.69]	[0.71]	[0.72]
Child 7–16 years in household			−0.08	0.00		0.37	0.31	0.32	0.29
			[0.49]	[0.57]		[0.54]	[0.61]	[0.75]	[0.75]
Adult 17–25 years in household			1.71*	1.73*		1.69	1.66	1.53	1.52
			[1.03]	[1.04]		[1.05]	[1.07]	[1.11]	[1.11]
Minimum age in household				0.07			−0.11		0.06
				[0.27]			[0.32]		[0.42]
Constant	4.00***	3.06***	3.48***	3.46***	3.66***	3.99***	3.96***	3.91***	3.90***
	[0.48]	[0.34]	[0.22]	[0.25]	[0.59]	[0.54]	[0.57]	[0.65]	[0.66]
The same									
Female	−0.31*				−0.25	−0.24	−0.26	−0.20	−0.17
	[0.17]				[0.18]	[0.18]	[0.18]	[0.18]	[0.18]
Formal education (Realschulabschluss), BL: no degree or Hauptschule	0.28				0.23	0.15	0.19	0.15	0.14

Table 3 continued

	Education								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	[0.19]				[0.19]	[0.20]	[0.20]	[0.20]	[0.20]
Formal education (Fachhochschulreife)	0.77**				0.73**	0.62*	0.67**	0.63*	0.60*
	[0.33]				[0.34]	[0.34]	[0.34]	[0.34]	[0.34]
Formal education (Abitur)	1.11***				1.05***	1.00***	1.05***	0.99***	0.96***
	[0.27]				[0.28]	[0.29]	[0.28]	[0.29]	[0.29]
Public employment	0.48				0.44	0.38	0.39	0.39	0.37
	[0.32]				[0.32]	[0.32]	[0.32]	[0.32]	[0.32]
Income, mean-imputed	−0.06				−0.03	−0.04	−0.05	−0.02	−0.02
	[0.09]				[0.10]	[0.10]	[0.10]	[0.10]	[0.10]
Income imputed	0.04				0.07	0.14	0.13	0.14	0.15
	[0.18]				[0.18]	[0.19]	[0.19]	[0.19]	[0.19]
Had not my fair share in life	−0.24				−0.23	−0.22	−0.22	−0.22	−0.23
	[0.18]				[0.18]	[0.18]	[0.18]	[0.18]	[0.18]
Political interest	0.22***				0.23***	0.24***	0.23***	0.25***	0.24***
	[0.09]				[0.09]	[0.09]	[0.09]	[0.09]	[0.09]
Evaluation economy	0.03				0.03	0.05	0.05	0.06	0.07
	[0.09]				[0.09]	[0.09]	[0.09]	[0.09]	[0.09]
Evaluation personal financial situation	−0.02				−0.05	0.00	−0.00	−0.03	−0.03
	[0.10]				[0.10]	[0.10]	[0.10]	[0.10]	[0.10]
Member of same generation in household		0.30*			0.23			0.15	0.14
		[0.18]			[0.19]			[0.19]	[0.19]
Member of higher generation in household		0.36			0.28			−0.02	−0.06
		[0.33]			[0.35]			[0.37]	[0.37]

Table 3 continued

	Education								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Member of lower generation in household		−0.13			−0.06			−0.39	−0.71**
		[0.18]			[0.19]			[0.27]	[0.32]
Children outside of household		−0.35**			−0.17			0.00	0.03
		[0.17]			[0.18]			[0.21]	[0.21]
Age			−0.24***			−0.16		−0.16	
			[0.09]			[0.10]		[0.12]	
Child 0–6 years in household			−0.15	−0.33		−0.09	−0.15	0.10	0.01
			[0.27]	[0.30]		[0.27]	[0.31]	[0.32]	[0.33]
Child 7–16 years in household			0.15	−0.06		0.16	0.07	0.36	0.29
			[0.21]	[0.25]		[0.22]	[0.26]	[0.28]	[0.28]
Adult 17–25 years in household			0.07	−0.06		0.14	0.09	0.29	0.23
			[0.23]	[0.25]		[0.24]	[0.26]	[0.28]	[0.28]
Minimum age in household				−0.29**			−0.15		−0.32*
				[0.12]			[0.13]		[0.17]
Constant	1.27***	1.33***	1.37***	1.45***	1.17***	1.27***	1.29***	1.19***	1.34***
	[0.17]	[0.16]	[0.10]	[0.11]	[0.24]	[0.18]	[0.19]	[0.24]	[0.25]
N	1079	1079	1074	1076	1079	1074	1076	1074	1076
Pseudo R^2	0.066	0.012	0.014	0.012	0.074	0.075	0.074	0.081	0.083
AIC	1228.16	1269.04	1250.64	1254.03	1233.93	1218.38	1220.67	1227.26	1225.90

Standard errors in brackets
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4 Generalised ordered logit regression, preferences for pension spending, whole adult population, West Germany, 2006

	Retirement								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Much) less									
Female	0.26				0.20	0.19	0.18	0.17	0.14
	[0.28]				[0.28]	[0.29]	[0.29]	[0.29]	[0.29]
Formal education (Realschulabschluss), BL: no degree or Hauptschule	−0.69**				−0.57*	−0.41	−0.44	−0.39	−0.40
	[0.33]				[0.34]	[0.35]	[0.34]	[0.35]	[0.35]
Formal education (Fachhochschulreife)	−0.31				−0.23	−0.11	−0.14	−0.09	−0.12
	[0.50]				[0.51]	[0.51]	[0.51]	[0.51]	[0.51]
Formal education (Abitur)	−0.73**				−0.58	−0.28	−0.36	−0.28	−0.33
	[0.35]				[0.36]	[0.38]	[0.37]	[0.38]	[0.38]
Public employment	0.67				0.75	0.74	0.81	0.81	0.83*
	[0.49]				[0.49]	[0.49]	[0.49]	[0.50]	[0.50]
Income, mean-imputed	−0.17				−0.18	−0.23**	−0.19*	−0.22*	−0.20*
	[0.11]				[0.12]	[0.11]	[0.11]	[0.12]	[0.12]
Income imputed	−0.08				−0.10	−0.13	−0.13	−0.13	−0.13
	[0.30]				[0.30]	[0.33]	[0.31]	[0.33]	[0.32]
Had not my fair share in life	0.14				0.18	0.19	0.25	0.23	0.24
	[0.32]				[0.33]	[0.33]	[0.33]	[0.33]	[0.33]
Political interest	−0.30**				−0.32**	−0.34**	−0.38**	−0.35**	−0.37**
	[0.14]				[0.14]	[0.15]	[0.15]	[0.15]	[0.15]
Evaluation economy	−0.25				−0.26*	−0.23	−0.26	−0.25	−0.27*
	[0.16]				[0.15]	[0.16]	[0.16]	[0.16]	[0.16]
Evaluation personal financial situation	0.12				0.12	0.07	0.09	0.09	0.11
	[0.16]				[0.16]	[0.17]	[0.17]	[0.17]	[0.17]

Table 4 continued

	Retirement								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Member of same generation in household		−0.21			−0.15			−0.32	−0.35
		[0.30]			[0.31]			[0.33]	[0.34]
Member of higher generation in household		0.64			0.53			0.83	0.12
		[0.54]			[0.57]			[0.63]	[0.59]
Member of lower generation in household		0.39			0.34			0.41	0.40
		[0.31]			[0.31]			[0.32]	[0.32]
Children outside of household		0.85***			0.78**			0.25	0.30
		[0.31]			[0.32]			[0.38]	[0.37]
Age			0.27*			0.38**		0.46**	
			[0.15]			[0.18]		[0.23]	
Adult 60–74 years in household			0.46	0.19		0.41	0.14	0.33	0.27
			[0.43]	[0.48]		[0.45]	[0.50]	[0.50]	[0.51]
Adult 75 or older in household			0.53	0.08		0.17	−0.33	−0.04	−0.20
			[0.76]	[0.82]		[0.78]	[0.85]	[0.82]	[0.85]
Maximum age in household				0.40**			0.49**		0.43**
				[0.18]			[0.20]		[0.22]
Constant	3.04***	2.38***	2.68***	2.76***	2.66***	2.88***	2.99***	2.84***	2.95***
	[0.31]	[0.25]	[0.15]	[0.17]	[0.39]	[0.33]	[0.34]	[0.41]	[0.43]
The same									
Female	−0.03				−0.02	−0.01	−0.01	−0.02	−0.00
	[0.14]				[0.14]	[0.14]	[0.14]	[0.15]	[0.15]
Formal education (Realschulabschluss), BL: no degree or Hauptschule	−0.43***				−0.45***	−0.45***	−0.44***	−0.45***	−0.45***
	[0.16]				[0.16]	[0.17]	[0.17]	[0.17]	[0.17]

Table 4 continued

	Retirement								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Formal education (Fachhochschulreife)	−0.46*				−0.48**	−0.48**	−0.48**	−0.50**	−0.50**
	[0.24]				[0.24]	[0.25]	[0.24]	[0.25]	[0.25]
Formal education (Abitur)	−0.54***				−0.58***	−0.55***	−0.55***	−0.57***	−0.58***
	[0.18]				[0.19]	[0.19]	[0.19]	[0.20]	[0.19]
Public employment	−0.00				−0.00	−0.01	−0.01	−0.00	−0.00
	[0.22]				[0.22]	[0.22]	[0.22]	[0.22]	[0.22]
Income, mean-imputed	−0.16**				−0.15*	−0.15*	−0.15**	−0.14*	−0.14*
	[0.07]				[0.08]	[0.08]	[0.08]	[0.08]	[0.08]
Income imputed	0.02				0.02	0.04	0.03	0.03	0.04
	[0.15]				[0.15]	[0.15]	[0.15]	[0.15]	[0.15]
Had not my fair share in life	0.30**				0.30*	0.30**	0.30*	0.29*	0.29*
	[0.15]				[0.15]	[0.15]	[0.15]	[0.15]	[0.15]
Political interest	−0.21***				−0.20***	−0.20***	−0.21***	−0.19***	−0.20***
	[0.07]				[0.07]	[0.07]	[0.07]	[0.07]	[0.07]
Evaluation economy	−0.17**				−0.18**	−0.17**	−0.17**	−0.18**	−0.18**
	[0.07]				[0.07]	[0.07]	[0.07]	[0.07]	[0.07]
Evaluation pers. Financial situation	−0.15*				−0.14*	−0.15*	−0.15*	−0.14*	−0.14*
	[0.08]				[0.08]	[0.08]	[0.08]	[0.08]	[0.08]
Member of same generation in household		−0.27*			−0.13			−0.18	−0.18
		[0.14]			[0.16]			[0.17]	[0.17]
Member of higher generation in household		0.20			0.14			0.11	0.15
		[0.24]			[0.25]			[0.29]	[0.26]
Member of lower generation in household		0.08			−0.00			0.03	0.02
		[0.15]			[0.16]			[0.16]	[0.16]

Table 4 continued

	Retirement								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Children outside of household		0.13			−0.01			−0.02	0.01
		[0.14]			[0.15]			[0.18]	[0.17]
Age			−0.00			−0.03		−0.02	
			[0.07]			[0.08]		[0.10]	
Adult 60–74 years in household			0.09	0.11		0.14	0.16	0.19	0.22
			[0.17]	[0.19]		[0.18]	[0.20]	[0.21]	[0.21]
Adult 75 or older in household			0.01	0.04		−0.11	−0.08	−0.08	−0.02
			[0.26]	[0.29]		[0.28]	[0.31]	[0.30]	[0.32]
Maximum age in household				−0.01			−0.04		−0.06
				[0.08]			[0.09]		[0.10]
Constant	0.25*	0.15	0.04	0.04	0.34*	0.23	0.22	0.34*	0.32
	[0.14]	[0.13]	[0.07]	[0.08]	[0.20]	[0.15]	[0.15]	[0.20]	[0.20]
N	1074	1074	1069	1071	1074	1069	1071	1069	1071
Pseudo R^2	0.058	0.007	0.005	0.006	0.063	0.062	0.064	0.064	0.066
AIC	1829.80	1899.57	1880.03	1884.09	1837.37	1817.04	1819.24	1828.46	1831.68

Standard errors in brackets
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5 Generalised Ordered logit regressions, preferences for spending in education and pensions, West Germany, younger people (18–49) versus older people (50+), 2006

	Education				Retirement			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Older	Older	Younger	Younger	Younger	Younger	Older	Older
(Much) less								
Female	1.91	1.90	−1.31	−2.14**	0.40	0.41	−0.33	−0.32
	[1.18]	[1.19]	[0.98]	[0.96]	[0.38]	[0.38]	[0.52]	[0.52]
Formal education (Realschulabschluss), BL: no degree or Hauptschule	−2.65**	−2.51**	−1.24	−0.98	−0.31	−0.32	−0.66	−0.69
	[1.24]	[1.25]	[0.82]	[0.75]	[0.48]	[0.48]	[0.54]	[0.55]
Formal education (Fachhochschulreife)	2.62	2.80	0.20	2.20	−0.32	−0.28	0.29	0.22
	[1658.56]	[1704.90]	[1.40]	[1.49]	[0.62]	[0.62]	[1.12]	[1.13]
Formal education (Abitur)	−3.85**	−3.67**	15.41	15.88	−0.69	−0.69	0.24	0.53
	[1.62]	[1.63]	[1482.27]	[1233.63]	[0.49]	[0.49]	[0.74]	[0.84]
Public employment	0.05	0.42	16.34	15.59	0.56	0.54	12.65	12.64
	[2.08]	[2.12]	[2122.61]	[1658.70]	[0.52]	[0.52]	[371.08]	[383.05]
Income, mean-imputed	−0.00	−0.08	−2.34***	−2.25***	−0.24	−0.26*	−0.11	−0.12
	[0.78]	[0.80]	[0.67]	[0.61]	[0.15]	[0.15]	[0.24]	[0.24]
Income imputed	1.69	1.62	−0.32	−0.05	−0.12	−0.16	−0.21	−0.14
	[1.14]	[1.16]	[1.16]	[1.10]	[0.43]	[0.44]	[0.53]	[0.55]
Had not my fair share in life	−0.87	−0.84	−0.02	−0.00	−0.06	−0.06	0.60	0.58
	[0.97]	[0.97]	[0.74]	[0.64]	[0.40]	[0.40]	[0.64]	[0.65]
Political interest	1.20**	1.19**	−0.11	−0.19	−0.46**	−0.45**	−0.10	−0.05
	[0.49]	[0.49]	[0.51]	[0.48]	[0.19]	[0.19]	[0.26]	[0.26]
Evaluation economy	0.92**	0.95**	1.16***	0.99***	−0.16	−0.17	−0.51*	−0.45
	[0.42]	[0.42]	[0.42]	[0.35]	[0.20]	[0.20]	[0.29]	[0.30]

Table 5 continued

	Education				Retirement			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Older	Older	Younger	Younger	Younger	Younger	Older	Older
Evaluation personal financial situation	−1.41**	−1.46***	1.18**	1.07**	0.13	0.14	0.25	0.17
	[0.55]	[0.56]	[0.47]	[0.43]	[0.21]	[0.21]	[0.33]	[0.34]
Member of same generation in household	2.39**	2.36**	0.30	0.86	−0.41	−0.42	−0.96	−0.89
	[1.02]	[1.02]	[0.92]	[0.81]	[0.43]	[0.42]	[0.70]	[0.71]
Member of higher generation in household	13.02	13.28	16.53	15.96	0.12	0.71	11.38	11.78
	[1749.10]	[1743.33]	[1904.38]	[1227.94]	[0.77]	[0.75]	[842.96]	[855.96]
Member of lower generation in household	12.37	11.72	2.08	0.01	0.40	0.45	0.04	−0.07
	[714.75]	[738.53]	[1.67]	[1.34]	[0.43]	[0.43]	[0.61]	[0.63]
Children outside of household	0.27	0.23	−0.60	−0.10	−0.03	−0.04	0.53	0.42
	[0.92]	[0.93]	[1.08]	[1.35]	[0.54]	[0.55]	[0.52]	[0.53]
Minimum age in household	0.38		2.85*					
	[1.21]		[1.53]					
Child 0–6 years in household	−13.80	−13.96	1.03	−0.03				
	[3366.00]	[3370.17]	[1.08]	[0.98]				
Child 7–16 years in household	14.77	14.88	0.59	0.29				
	[1683.26]	[1668.97]	[1.18]	[1.13]				
Adult 17–25 years in household	−11.38	−10.99	14.68	14.50				
	[714.75]	[738.53]	[1318.59]	[1058.28]				
Age		0.51		−0.67		0.40		0.23
		[0.84]		[1.09]		[0.43]		[0.57]
Maximum Age in household					0.41		0.25	
					[0.37]		[0.56]	

Table 5 continued

	Education				Retirement			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Older	Older	Younger	Younger	Younger	Younger	Older	Older
Adult 60–74 years in household					−0.22	0.11	0.48	0.51
					[1.27]	[1.22]	[0.67]	[0.63]
Adult 75 or older in household					11.84	11.96	0.03	0.16
					[772.19]	[770.53]	[1.07]	[0.94]
Constant	1.95	1.86	5.97***	4.29***	3.16***	3.07***	3.43***	3.39***
	[1.96]	[1.53]	[1.35]	[1.42]	[0.70]	[0.69]	[0.91]	[1.02]
The same								
Female	−0.14	−0.19	−0.19	−0.19	0.07	0.06	−0.06	−0.04
	[0.28]	[0.28]	[0.27]	[0.26]	[0.21]	[0.21]	[0.23]	[0.23]
Formal education (Realschulabschluss), BL: no degree or Hauptschule	0.29	0.30	−0.05	−0.02	−0.46*	−0.47**	−0.32	−0.31
	[0.32]	[0.32]	[0.28]	[0.28]	[0.24]	[0.24]	[0.25]	[0.26]
Formal education (Fachhochschulreife)	1.62**	1.64**	0.31	0.38	−0.28	−0.33	−1.16***	−1.15***
	[0.78]	[0.79]	[0.42]	[0.42]	[0.33]	[0.33]	[0.44]	[0.45]
Formal education (Abitur)	0.61	0.62	1.21***	1.24***	−0.86***	−0.88***	−0.02	0.05
	[0.46]	[0.46]	[0.40]	[0.39]	[0.27]	[0.27]	[0.31]	[0.31]
Public employment	0.46	0.46	0.36	0.36	−0.14	−0.14	0.17	0.26
	[0.60]	[0.60]	[0.40]	[0.40]	[0.28]	[0.28]	[0.39]	[0.39]
Income, mean-imputed	0.28	0.29	−0.11	−0.11	−0.07	−0.04	−0.18	−0.19
	[0.18]	[0.18]	[0.13]	[0.14]	[0.11]	[0.11]	[0.12]	[0.12]
Income imputed	0.03	0.04	0.20	0.18	0.18	0.21	−0.02	−0.05
	[0.27]	[0.27]	[0.29]	[0.29]	[0.22]	[0.22]	[0.23]	[0.23]
Had not my fair share in life	−0.26	−0.24	−0.18	−0.15	−0.18	−0.16	0.89***	0.91***
	[0.27]	[0.27]	[0.26]	[0.26]	[0.22]	[0.22]	[0.23]	[0.24]

Table 5 continued

	Education				Retirement			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Older	Older	Younger	Younger	Younger	Younger	Older	Older
Political interest	0.18	0.18	0.29**	0.27**	−0.19*	−0.19*	−0.20*	−0.18*
	[0.12]	[0.12]	[0.13]	[0.13]	[0.10]	[0.10]	[0.10]	[0.11]
Evaluation economy	0.13	0.11	−0.05	−0.03	−0.15	−0.15	−0.22*	−0.21*
	[0.14]	[0.14]	[0.12]	[0.12]	[0.10]	[0.10]	[0.12]	[0.12]
Evaluation personal financial situation	0.10	0.10	−0.12	−0.11	−0.16	−0.17	−0.13	−0.15
	[0.15]	[0.15]	[0.14]	[0.14]	[0.11]	[0.11]	[0.13]	[0.13]
Member of same generation in household	−0.13	−0.06	0.24	0.29	−0.25	−0.27	−0.20	−0.13
	[0.29]	[0.29]	[0.30]	[0.30]	[0.23]	[0.23]	[0.30]	[0.30]
Member of higher generation in household	−0.84	−0.81	0.05	0.10	0.62	0.11	−2.12*	−1.52
	[0.96]	[0.96]	[0.43]	[0.43]	[0.38]	[0.36]	[1.20]	[1.24]
Member of lower generation in household	−1.72***	−0.70	−0.62	0.01	0.11	0.15	0.09	0.15
	[0.60]	[0.43]	[0.47]	[0.42]	[0.23]	[0.24]	[0.29]	[0.29]
Children outside of household	−0.10	−0.10	−0.04	−0.05	−0.08	−0.04	0.07	0.07
	[0.28]	[0.28]	[0.36]	[0.37]	[0.30]	[0.31]	[0.23]	[0.23]
Minimum age in household	−0.88***		−0.83*					
	[0.33]		[0.44]					
Child 0–6 years in household	−3.14**	−2.68*	−0.33	−0.06				
	[1.48]	[1.46]	[0.42]	[0.38]				
Child 7–16 years in household	0.46	0.88	−0.01	0.20				
	[0.78]	[0.76]	[0.36]	[0.34]				
Adult 17–25 years in household	0.10	0.31	0.00	0.08				
	[0.58]	[0.56]	[0.34]	[0.34]				

Table 5 continued

	Education				Retirement			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Older	Older	Younger	Younger	Younger	Younger	Older	Older
Age		−0.50**		−0.39		−0.42*		0.43*
		[0.24]		[0.30]		[0.24]		[0.24]
Maximum Age in household					−0.35*		0.22	
					[0.20]		[0.23]	
Adult 60–74 years in household					−0.10	−0.34	0.34	0.30
					[0.56]	[0.53]	[0.29]	[0.28]
Adult 75 or older in household					1.43	1.13	−0.18	−0.25
					[0.94]	[0.90]	[0.45]	[0.40]
Constant	2.45***	1.92***	1.05***	0.79*	0.19	0.19	−0.15	−0.44
	[0.61]	[0.51]	[0.33]	[0.44]	[0.36]	[0.36]	[0.39]	[0.44]
N	504	502	572	572	562	562	509	507
Pseudo R^2	0.136	0.131	0.141	0.130	0.070	0.069	0.108	0.109
AIC	609.80	611.60	622.47	629.30	1025.20	1025.61	837.50	829.49

Standard errors in brackets
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

in the household do not explain any differences between those individuals who think that the state should spend less and those who think that the state should spend the same amount or more in the area of education. The effect that is associated with the age of the youngest member of the household is also relatively small with the logit of one standard deviation of age being three times smaller than having A levels (Abitur) compared with the lowest level of school education. It is interesting, however, that the model 9 in Table 3 with the minimum age of household members yields better results than that of the respondent's age itself (model 8). This means that even though we do not find any effects of the presence of younger people in the household on what people expect from the state, knowing the minimum age is a better piece of information than knowing the age of the respondent herself.

Turning towards the results for pension spending (table 4), we see again that adding blocs 2 and 3 hardly improves our understanding of the variance of the dependent variable. We see a few significant coefficients in blocs 2 and 3 of the intermediary models that are associated with whether someone has children living elsewhere, the age of the respondent or the maximum age in the household. In the most complex models 8 and 9, there remain significant positive effects associated with the age of the respondent and maximum household age. Individuals who are older or individuals who live in households with higher maximum age are more likely to be in favour of the same amount or more pension spending than being in favour of less spending. This time, the effects are comparable in magnitude to those of formal education. However, in order to differentiate between those who want more pension spending and all others, none if the variables of interest have a significant effect.

We have also run additional models for 18–49 year olds and 50+ year olds to check whether the dynamics of young people are different from those of old people (table 5). We are particularly interested to see whether individuals who themselves have a lesser interest in the policy area are affected by the "generational variables" in blocs 2 and 3, so older people for education preferences and younger people for retirement preferences. See main text for the main findings from these regressions.

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