Eur J Population (2018) 34:745–767
https://doi.org/10.1007/s10680-017-9459-8

Societal Agreement on Gender Role Attitudes and Childlessness in 38 Countries

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Received: 4 April 2017 / Accepted: 2 December 2017 / Published online: 3 January 2018

Abstract Many authors argue that levels of childlessness and fertility are a function of changing gender relations, but the mechanisms behind this association remain unclear and mainly untested. This study argues that the societal variation in gender role attitudes explains the link: a great variation in attitudes among potential partners leads to uncertainty and conflicts, which depresses people's propensity for parenthood. This idea is tested with multilevel logistic regression models for 6305 individuals in 38 countries on all continents, using ISSP 2012 data. Measures for the average gender role attitude in the society as well as the dispersion in attitudes are regressed on whether individuals have at least one child or are childless. Attitudes are captured using factor analysis and are opinions towards the gendered division of given tasks and privileges, such as childrearing or the uptake of parental leave. The dispersion in attitudes is the standard deviation of the factor variable in the given country. The analysis gives support to the hypothesis: the greater the variation in gender role attitudes, the higher the chance for individuals to remain childless. The association is significant and holds against various robustness checks.

Keywords Transition to parenthood · Childlessness · Fertility · Gender role attitudes · Gender revolution

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s10680-017-9459-8) contains supplementary material, which is available to authorized users.

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1 Introduction

The idea that patterns of fertility and parenthood over time are a U-shaped function of societal gender relations has gained growing interest in recent years: the argument is that once gender relations moved away from the male breadwinner model, childlessness increased and overall fertility decreased. That is to say, more gender equality meant less fertility. After a certain threshold is surpassed, the gender equity–fertility nexus changes its direction: more gender equality or gender equity means less childlessness and more fertility (e.g. McDonald 2000a, b; Esping-Andersen 2009; Esping-Andersen and Billari 2015; Goldscheider et al. 2015). For a recent discussion of these arguments from an American perspective, see Cherlin (2016).

While these authors provide important contributions to the formulation of broad theoretical frameworks that link changing gender roles to changes in demographic behaviour, there is a lack of knowledge about the underlying mechanisms and little empirical evidence. The existing studies, e.g. Arpino et al. (2015) or Myrskylä et al. (2011) show that higher gender equality or more gender-equitable attitudes are associated with higher fertility on the macro-level, but these analyses do not trace the underlying mechanisms.

Taking the framework by Esping-Andersen and Billari (2015) as point of departure, this study develops and tests such a mechanism: the lack of macro-level, societal agreement on a specific gender role model decreases people's chance to become parents. Empirically, the degree of societal agreement on gender role attitudes is measured as the variation in gender role attitudes in a given society. Low variation, meaning that most members of society share similar attitudes, represents great societal agreement, high variation the opposite.

Multilevel models are run using the Family and Changing Gender Roles IV-module from the International Social Survey Programme 2012 (ISSP) for 38 countries. The independent variable of interest is variation in gender role attitudes. This is measured as the standard deviation of a factor variable that measures gender role attitudes in a given country. The measure for gender role attitudes describes the opinion how given tasks or privileges, such as childcare or uptake of parental leave, should be distributed between males and females. Results show that large variation in gender role attitudes on the macro-level is significantly associated with higher final childlessness on the individual level. This holds against a number of robustness checks. Three-level models—which measure gender role attitudes and their variation at the sub-national, regional level, and apply country-level fixed effects—show that the observed association goes beyond unobserved country-level characteristics such as general culture, family friendliness or social policy.

This article offers four main contributions to the literature on gender relations and childlessness. First, it specifies and tests a mechanism that links societal gender roles to fertility. Second, the multilevel analysis combines societal gender roles with individual fertility, ruling out that any macro-level association is driven by the composition of the populations regarding factors that influence the transition to parenthood. Third, by measuring final childlessness, the measure does not suffer

from tempo distortions caused by cross-country differences in the timing of fertility. Fourth, using ISSP data from 2012 I am able to apply a measure for gender role attitudes that is more integral and unambiguous than in previous cross-country analyses.

2 Theoretical Background

Esping-Andersen and Billari (2015) present a theory which interprets a U-shaped evolution of fertility levels depending on the spreading of gender-symmetric norms and attitudes.[1] They argue that societies move from a situation with a societal agreement on gender relations, a situation with strong gender role norms (male breadwinner and female homemaker), 'through a prolonged period of uncertainty and normative confusion' towards a situation with new strong gender role norms centred around more gender-symmetric norms and the dual-career family model (Esping-Andersen and Billari 2015, p. 6). When there are strong gender-related norms, most members of the society share the same ideals about gender roles. The here-established mechanism that links the societal variation in gender role attitudes to the transition to parenthood builds upon this theoretical work.

Normative change concerning gender roles can take two ideal-typical paths: either the society as a whole shifts slowly, uniformly and step-by-step in a certain direction or the transition from one model to another causes ruptures as some members of the society adopt a new model, while others continue sticking to the old one.

To give an example, the uniform scenario might look like this: in the, say, 1960s, most members of the society believed that the male breadwinner and female homemaker model is the right way to go. Gradual change begins, and people tend to favour more and more female employment and male involvement in the home. Twenty years later, the clear societal norm is that mothers work part-time while still doing most of the work in the home. Another 20 years later, all members of the society favour a model in which both partners share work for pay and unpaid work in the home equally. All these changes could potentially happen in a uniform way. The implication would be that the *variation* in realized gender roles and gender role attitudes is low and constant over time.

While this scenario is possible, the version in which the transition causes ruptures might seem more likely and is the one that Esping-Andersen and Billari (2015) describe in their framework. Some members of the society adhere to new gender roles while others adhere to traditional ones. Esping-Andersen and Billari (2015) state that it is an implication of this scenario that there is more *variation* in gender roles halfway, when there is no model of gender relations that is the clear societal norm. This plurality of gender roles is said to produce normative confusion: there

[1] To describe different forms of gender relations, mainly the contrast between the male breadwinner and the dual earner gender roles, various terms are used: gender-asymmetric, traditional, old or unequal versus gender-symmetric, new, modern, gender-equal or gender-equitable. Particularly, the term 'gender-equitable' could be misleading though as different societies and societies at different times might regard different gender roles as equitable (cf. McDonald 2013).

are no clear gender roles which have a strong normative pull and give members of the society (or a societal group) a guideline on what constitutes 'good', socially desired and simply *normal* gender roles.

Esping-Andersen and Billari (2015) do, however, not give further attention to this idea of normative confusion and the lack of clear societal ideas in gender relations. They neither conceptualize it further nor do they provide a thorough attempt to capture and measure this idea empirically.[2]

The aim of this article is to do exactly that: give further attention to the idea of normative confusion and the lack of clear societal ideas in gender relations, describe a theoretical approach in which the variation is the causal driver behind demographic behaviour, provide an operationalization of variation in attitudes and test how it is associated with people's propensity to remain childless.

3 Empirical Evidence on Gender Relations and Fertility

A number of empirical studies deal with different aspects of the interplay between gender relations and fertility in advanced societies (Kreyenfeld and Konietzka 2017; Balbo et al. 2013; Tanturri et al. 2015). Myrskylä et al. (2011) argue that gender equity is a necessary condition for rising fertility in highly developed societies. Evidence concerning the effect of male involvement in childcare and housework on fertility is mixed (see for example Cooke 2004; Mills et al. 2008; Miettinen et al. 2015; Kan and Hertog 2017).

[2] In an endnote next to a graph on the 'Relationship between gender egalitarianism and partnership stability, late 1980s' Esping-Andersen and Billari (2015, p. 22) discuss the comparison of two measures for 'the hegemony of gender norms: either a simple headcount (share of egalitarians in the population) or the coefficient of variation (to capture the degree of value uniformity in the population). Our estimations produce essentially the same result' (Esping-Andersen and Billari 2015, p. 26). For binary variables, coefficient of variation is no suitable indicator for the degree of uniformity or variation (Vogt and Johnson 2011, p. 59). Standard deviation and variance are measures for the degree of variation in a dummy variable, but a distinct interpretation of variation and mean value provides little insight: variation and mean value determine each other mathematically. For each mean value, there is only one mathematically possible value for variance of standard deviation. For each value of standard deviation, there are two possible corresponding mean values, one being $.5 + x$, the other $.5 - x$. An example: if the mean value of a binary variable is .75, the standard deviation is forced to be .44. A population with a standard deviation of .44 could have one of the two mean values $.5 + .25 = .75$ or $.5 - .25 = .25$. In the case of Esping-Andersen and Billari (2015), all mean values are greater than .5. Thus, within their range of data, mean values perfectly predict levels of variation and vice versa. Using the coefficient of variation, the standard deviation divided by the mean value, is not a suitable measure for the degree of variation of a dummy variable. To give an example, let us compare two populations of each 100 individuals. Population A is egalitarian: 90 individuals hold egalitarian views, 10 non-egalitarian ones. Population B is the opposite case: 10 individuals hold egalitarian views, 90 non-egalitarian ones. Intuition and standard deviation (or variance) would suggest that both populations have the same degree of variation or hegemony in attitudes (standard deviation = .30, variance = .09). The coefficient of variation would show a very different picture: it is 3.02 for population A and .36 for population B (consider also that on binary outcomes the assignment of ones and zeros is arbitrary: there is no compelling reason why egalitarians should be coded one and non-egalitarians zero, rather than the other way around). In fact by using the coefficient of variation Esping-Andersen and Billari (2015) measure practically nothing else than the mean value: in the range of their mean values, going from around .5 to close to 1, the correlation between mean value and coefficient of variation is − .99 (tested on a dummy dataset).

Studies on the effect of social policies that promote gender equality, such as the provision of childcare, are often interpreted to have a positive effect even though many of these studies face difficulties, for example concerning endogeneity, reversed causality, the isolation of different policy measures or the distinction between timing and quantum changes in fertility (see for example Neyer 2003; McDonald 2006; Gauthier 2007; Rindfuss et al. 2010; Luci-Greulich and Thévenon 2013; Bauernschuster et al. 2016; Hudde and Engelhardt 2017). Even though there is a lack of studies on the effect of family-friendly policies on childlessness, as opposed to overall fertility, some studies suggest that social policy might be more important for the transition to having a second or third birth than for the transition to parenthood (Hank and Kreyenfeld 2003; Rindfuss et al. 2010; Laroque and Salanié 2014; Bauernschuster et al. 2016).

Arpino et al. (2015) analyse changes in fertility as societies move from traditional towards new gender roles. They show that at first total fertility rate (TFR) decreases as societies become more gender equitable, but once a certain threshold is reached, the relationship turns positive. This relationship seems to be moderated by the differences in attitudes between men and women: the change happens faster and more pronounced when the agreement between men and women is greater.

I argue, it is not (only) the gap between men and women that matters, but the level of agreement within the group of peers and especially within the group of *potential partners*. My analysis further adds to this as it studies final childlessness, a measure that does not suffer from tempo distortions, unlike total fertility rate (see for example Bongaarts and Sobotka 2012). Arpino et al. (2015) measure gender role attitudes as 'views regarding the proper role of women in the labour market' (p. 373) alone. My analysis uses a measure that is more integral and captures attitudes towards the gendered division of different tasks and privileges, such as childcare, uptake of parental leave and working for pay.

4 Linking Variation in Gender Role Attitudes to Fertility

Esping-Andersen and Billari (2015) take a longitudinal perspective and describe the transition from traditional to egalitarian gender arrangements. The mechanism that I specify becomes independent of the notion of this transition. If the degree of variation in attitudes within a society is a driver for cross-country differences in childlessness, countries with higher variation should have systematically higher levels of childlessness.

High variation in a society might be a consequence of the transition from male breadwinner to dual earner model (as Esping-Andersen and Billari 2015, describe it), any other transition (see below), or any other reason, such as incoherent social policy that hinders the societal gathering behind a specific role model. The question, where the variation 'comes from', is of secondary interest for this study (but might be of interest for future research).

Beforehand, it should be stressed that there is no need or reason to think of gender relations in a binary way in which people either support the male breadwinner, 'traditional' model or the 'egalitarian', 'modern' model. While there is

evidence suggesting that many societies are moving towards a more gender-symmetric society, it might as well happen that some societies find stable arrangements at alternative shapings of gender relations, e.g. centred around the one-and-a-half earner model or a model with gender-symmetric roles in the labour market but gender-asymmetric roles in the home, also societies might move 'backwards', towards more traditional gender regimes.

4.1 Variation in Gender Role Attitudes and Partnership Dynamics

Most women and men are assumed to have a preference for living in a harmonious, relatively conflict-free, stable relationship and for having children (Testa 2012). Conflicts might emerge if both partners have different views on gender roles, opposing opinions on the proper behaviour of a male and a female partner, of a mother and a father. Consider two hypothetical cases of couples with different gender ideologies: (1) the woman has a more symmetric gender ideology than the male partner. The man expects her to do most of the housework and childcare while the woman wants her partner to contribute (close to) equally. (2) The man has a more symmetric gender ideology than the woman and expects her to contribute much to the family income, while the woman expects him to earn the lion's share of the money. The man wants to involve equally in parenting while the woman wants to be the main decision-maker in childrearing.

In both cases, the attitudinal differences are a burden to the couple. The gap between different gender role models is expected to be especially salient when a couple has young children or is planning life with children and discussing how to organize it: Who will—if at all—stop working for pay and for how long? How should the housework be divided? Who will be the main decision-maker in parenting?

It could be assumed that someone's gender ideology is—just like any other character trait—something that is partly known a priori, will partly be known once certain situations are addressed explicitly (e.g. a couple discusses who would take how much parental leave if they were to have a child), and will partly only show once a certain situation arises (e.g. a woman does not have certainty on whether her partner will regularly engage in household maintenance or childcare until the couple cohabits and has a child).

This implies that any planned and discussed or actual succession to a new stage of the partnership (partnership formation as such, cohabitation, marriage, transition to parenthood, having additional children) brings along the risk of a 'bad surprise': one learns more about the partner's gender ideology and it shows that the partner has ideas on gender roles that are different and potentially conflicting and incompatible to one's own ideas. Whenever such a 'bad surprise' is experienced, be it in the stage of dating, cohabiting or after a first child, the chance of taking the next step is diminished. The risk of such a disappointment is argued to be higher, the greater the variation of gender role attitudes is within the group of *potential partners*.

In a scenario in which all potential partners have the same gender ideology, the risk of a bad surprise is zero. In a scenario with a plethora of different and

conflicting views, the risk becomes great. As people may have experienced role conflicts in earlier steps of the relationships, in previous relationships, or seen them among peer couples, they will anticipate that conflicts might emerge after cohabitation and especially after the birth of a child. The greater the fear of important conflicts, the lower the propensity to take the risk.

This argument builds on the stated assumption that people have, at least in the early stage of partnership formation, imperfect knowledge about the gender ideology of their potential partners and partners. Let us for a moment assume the opposite: individuals on the dating market have prefect information on the gender ideology of themselves and of all potential partners. In this case, couple formation could happen based on attitudinal similarity. No matter how big the variation in attitudes, most people could find a partner with compatible attitudes (assuming low or moderate differences in the attitudinal distribution between females and males) and there would be no 'bad surprises'. Empirical results seem to reject this idea. Hohmann-Marriott (2006) shows that in the late 1980s a considerable share of American couples have divergent views towards the gendered division of paid and unpaid work and couples with great dissimilarity are more likely to split up. Hudde and Engelhardt (2017a) compare attitudinal similarity in 'actual' German couples to two types of 'synthetic' couples: (1) randomly matched and (2) matched based on maximum similarity in attitudes. The actual matching of partners is much closer to being random than to being maximum in similarity. Hudde and Engelhardt (2017a) conclude that either couples are, due to a lack of information, unable to find partners with suiting attitudes or do not consider gender ideology as a central dimension in choosing a partner. Either of these interpretations could be read as support for the idea that high attitudinal variation on the macro-level translates into higher dissimilarity on the couple-level.

If the elaborated mechanism is in fact at work, individuals living in societies, in which people have a high agreement on gender roles, should be systematically more likely to progress to a first or additional child than individuals living in societies where people show very different attitudes towards gender roles. This should persist independently of the average attitude. This leads to the hypothesis: *The greater the societal variation in gender role attitudes, the higher the chance that individuals remain childless*.

As argued, this association should show in a longitudinal as well as in a cross-sectional perspective. If a high variation in attitudes *causes* high childlessness through the elaborated mechanism, then, at one point in time, individuals in a high-variance society should be less likely to achieve parenthood than those in a low-variance society, independently of how gender relations were in these societies 20 years ago or how they will be 20 years in the future.

4.2 Variation in Gender Ideology, Peer-Group Effects and Coherence of Public Policy

At least two additional mechanisms might link variation in gender role attitudes to fertility:

(1) A peer-group mechanism: If a peer group of friends, colleagues or family members consists of people preferring different gender role arrangements, they might meet each other with criticism and reproaches. A person that sees mothers mainly as homemakers and fathers as providers might brand a working mom as a bad mother and an active father as unmanly; someone who considers a working mom and an active father desirable might brand the female homemaker as unambitious and lazy, the father that focusses on his role as provider as old fashioned. Schneider and Bujard (2013) argue that this is happening in the German case. Given the general lack of survey data that covers attitudinal information of more or less entire social networks of family, friends and colleagues, testing this mechanism empirically seems difficult.

(2) A mediation through public policy: through the democratic process societal disagreement on gender roles translates into incoherent public policies. In a country in which everyone has more or less the same attitudes on gender roles, governments have an incentive to tailor their family policies, such as tax system or the organization of caring for children and elderly, to this specific role model.[3]

A country with great differences in attitudes between or within different parties, coalitions and governments, might produce a policy mix with measures that promote and incentivize different gender role models. In consequence neither the male breadwinner nor the double-career family nor a family organized in any other way finds policies that match their needs.

Note that this notion of incoherence in family policies differs from the argument of McDonald (2000a, b), Esping-Andersen (2009) and others: while McDonald (2000a, b), Esping-Andersen (2009) and others focus on discrepancies between societal gender norms and the entity of policies, this argument is on coherence *within* public policy, the question to which degree different measures in the policy mix 'counteract each other by having different aims or requirements, or […] reinforce each other by being on the same underlying logic' (Neyer and Andersson 2008, p. 702).

As examples, France (Hantrais 1994; Thévenon 2009) or Sweden (Hoem et al. 2001) have been described as more, Germany (Hantrais 1994; Fleckenstein 2011), Austria (Hoem et al. 2001) or Great Britain Hantrais (1994) as less coherent in their policies. Societal attitudes can be source and consequence of public policy (Svallfors 2010). Gangl and Ziefle (2015) provide an example of such policy feedback as they identify a causal effect of a change in parental leave reform on subjective work commitment of women.

Based on these ideas, policies could also influence the degree of variation in societal attitudes: coherent policies that are tailored around one specific model of gender relations might encourage one specific gender ideology and align societal attitudes around it, while an incoherent set of policies in which different measures support different gender ideologies might cement or even foster societal

[3] Research shows that societal attitudes/public opinion (among numerous other factors) influence policy in democratic systems; how big this influence is, and how much it relies on salience of a specific policy/a policy field, is largely contested though (Burstein 2003). Most, but not all, countries in the sample are democratic. Research on public opinion and policy in non-democratic settings is very limited, but also suggests potential influences (Horne 2010).

disagreement. The following sections feature a test on whether the variation in attitudes—parenthood hypothesis, holds net of effects of public policy.

5 Data and Methods

To identify and measure gender role attitudes, factor analysis is run on a battery of items from the Family and Changing Gender Roles IV-module from the International Social Survey Programme (ISSP) 2012. All countries that participate in the survey are studied, except for Spain and Turkey, as key variables are not available for these two countries. This leaves 38 countries on all continents. For a list of all sample countries, see the online appendix. Average response rate for the sample countries is 51%. However, in a number of countries, response rates were low. In Belgium, India, Ireland, Latvia and The Netherlands, response rates were between 25 and 30%, in Canada as low as 18%. As further robustness checks, I ran models excluding these countries; results were robust.

Even though the ISSP is on Family and Changing Gender Roles, it does not feature a question on how many children a respondent has ever had. Parents and childless women and men are identified indirectly. The questionnaire asked respondents to only answer four questions if they 'have ever had any children' Respondents who answered any of the four questions are coded as parents. Less than 2% of female and male respondents did not answer these questions but indicated to live in a household with children. They are coded as missing as it is unclear whether they live in a household with children of whom they are not the parent or whether they did not answer the questions for any other reason. For a limited number of countries, questions on number of children are available.[4] Contrasting the indirect measure against the direct measure suggests a high degree of consistency.

To detect final or very-close-to-final childlessness while keeping the sample reasonably large, main regression models are run for females aged 45 + and males 50 +. Upper age limits are 55 for females and 60 for males. This leaves 6305 individuals for regression analyses, observations per country range from 56 (India) to 720 (China). 89.9% of males are fathers, and 92.3% of females are mothers.[5]

To produce reliable estimates, a broader age range, 20–55 for females and 25–60 for males, is chosen to compute the country- and region-level variables: average and variation in attitudes. This leaves 23,017 observations in total, ranging from 227 (Canada) to 2638 (China) per country.

The choice of sample creates two challenges: (1) The younger people in the age range are not the same individuals and do not belong to the same cohort as those, for who I measure childlessness. (2) The older people in the sample, those for who I capture childlessness, might have changed their attitudes and views since their period of family formation. Previous research suggests that gender role attitudes do

[4] For some countries, ISSP 2012 was part of a larger national survey, e.g. in the USA, ISSP 2012 was part of the General Social Survey 2012, and in Germany, it was part of the German General Social Survey (ALLBUS) 2012.

[5] Country-level shares of parenthood in the ISSP sample are largely consistent with other sources (see online appendix for details).

change over the life course. For example, Perales et al. (2017) show how attitudes towards gender divisions of labour change over time and how they respond to the transition to parenthood. Baxter et al. (2015) find opposing effects of ageing and the transition to parenthood: people become less 'gender-traditional' as they grow older, but more traditional after they become parents. The magnitude of these changes within an individual seem rather small in comparison with the between-individuals variation in attitudes (Baxter et al. 2015). Baxter et al. (2015) also suggest that younger cohorts are less traditional than older ones.

There seems to be no single ideal way to account for the above described challenges, but two robustness checks are proposed:

(1) Using attitudinal info of young people only, females aged 20–30 and males 25–35. The advantage of this selection is that these are the people that are currently in their main phase of partnership formation and transition to parenthood. On the downside, attitudes and fertility outcomes are not measured for the same cohort.

Using this sample rules out potential ageing effects but ignores potential cohort effects.

(2) Using attitudinal info from the same people that are included in the multilevel regressions. These are females aged 45–55 and males 50–60. Complementary to (1), this selection rules out potential changes over cohorts but ignores potential ageing effects. Both age restrictions bring along a decrease in number of observations to compute the macro-level variables (6345 observations for the young sample and 7271 for elder sample) which might make the estimates to be less robust. If all three measures, variation in the whole population, among young people and among those with finished birth careers, yield similar results, it could be read as strong support for the argument, that results are robust to potential distortions by cohort or ageing effects of gender role attitudes.

Finding a measure for gender role attitudes that allows cross-country comparison is difficult (cf. Braun 2008; Scott and Braun 2009; Constantin and Voicu 2015. A challenge is for example that a certain behaviour (or attitude towards such behaviour) might have different meanings in different cultural settings. For example Walby (1994) argues that the emancipatory power of female employment differs depending on the societal context. In some societies, working might enable women to achieve a similar status as men, in others it might not be enough, and again in others women might have an equal status even if they do not work. Constantin and Voicu (2015) argue that an older wave of ISSP from 2002 is generally suitable for comparative analyses of gender role attitudes but criticize the lack of questions on the believe how men and women should share tasks like childcare, elderly care or family care. The ISSP 2012 contains two new questions which might fill this gap—see below.

To identify latent factors that capture distinguishable aspects of gender role attitudes, iterated principal factor analyses are run. The factors are rotated using promax rotation.[6] Table 1 lists all items that are used for factor analysis.

[6] The goal is to find a convincing variable that captures gender role attitudes—and it is no problem if that variable is correlated with other measures and attitudes—so promax, which does not force the different factors to be uncorrelated, is chosen here.

Table 1 List of items for factor analysis

Item	Label of item
Warm relation	A working mother can establish just as warm and secure a relationship with her children as a mother who does not work
Child suffers	A pre-school child is likely to suffer if his or her mother works
Family suffers	All in all, family life suffers when the woman has a full-time job
Want home	A job is all right, but what most women really want is a home and children
Housewife	Being a housewife is just as fulfilling as working for pay
Both contribute	Both the man and woman should contribute to the household income
Men money	A man's job is to earn money; a woman's job is to look after the home and family
Work school	Do you think that women should work outside the home full-time, part-time or not at all under the following circumstances? After the youngest child starts school
Work U6	Do you think that women should work outside the home full-time, part-time or not at all under the following circumstances? When there is a child under school age
Leave divide[a]	Consider a couple who both work full-time and now have a new born child. […] if both are in a similar work situation and are eligible for paid leave, how should this paid leave period be divided between the mother and the father?
Care best	Consider a family with a child under School age. What, in your opinion, is the best way for them to organize their family and work life?

The first seven questions allow the following answers: strongly agree/agree/neither agree nor disagree/disagree/strongly disagree

Answer categories for 'leave divide' are: mother: entire leave/mother: most of the leave; father: some/both half/father: most of the leave; mother: some/father: entire leave

Answer categories for 'care best' are: mother home; father works full-time/mother works part-time; father works full-time/both work full-time *or* both work part-time/father works part-time; mother works full-time/father home; mother works full-time

[a]This item was only presented to respondents who previously stated that there should be paid parental leave, which around 90% of all respondents did (many, but not all countries in the sample have paid parental leave; for an overview see www.leavenetwork.org). In some countries, respondents who said that there should be paid leave differed significantly in their answers to the other gender role items. I performed multiple imputation for missings on this items. There were some changes in average attitudes in some countries that were minor in size (e.g. USA, Australia and China now had slightly more symmetric average attitudes; Belgium and Slovenia slightly more asymmetric attitudes). Regression analyses including imputed data were consistent

The variation in gender role attitudes in a country or region is defined as the standard deviation of the factor variable in the given country or region.

Multilevel logistic regression models are run to test the hypothesis that a higher variation in gender role attitudes on the macro-level is associated with lower parenthood on the micro-level. In all models, the dependent variable is coded zero if the respondent is childless and one if the respondent is a parent.

All models control for micro-level variables sex, age, age-squared and years of education and its square. On the macro-level, all models control for the GDP of country (see for example Becker 1981; Furuoka 2009; Myrskylä et al. 2009; Myrskylä et al. 2011; Harttgen and Vollmer 2014; Luci-Greulich and Thévenon 2014). This variable is introduced as a control because it is correlated with gender

role attitudes ($r = .78$; $p < .001$) and with parenthood ($r = -.36$ $p < .001$). All control variables are interacted with sex of the respondent.

If the association between variation in gender role attitudes and fertility is explained by differences in public policy (or any other country-level characteristic), the association should disappear once country-level fixed effects (dummy variables for all countries) are introduced. Three-level models with individuals nested in regions which are nested in countries test this. Region-level variables, average and variation in attitudes are computed for all regions with at least 100 attitudinal observations. Countries for which only one region fulfils this requirement are dropped from this analysis.[7] Seventy-three regions in 22 countries remain.

If the (dis)agreement between two partners and their chance of conflicts is the key, then what should matter is not the variation in the society as a whole, but in attitudes among potential partners. In an example: for a female college graduate aged 35, gender role attitudes of male graduates aged 30–45 might be more relevant that those of males aged 25 and without formal education.

I try to isolate the attitudinal variation among *potential partners* from the variation in the whole society following the rationale: variation among potential partners is variation that can *not* be explained by character traits that typically shape dating behaviour. Among these variables are sex, age, education, religiosity, ethnicity or place of residence (e.g. Schwartz 2013; Blossfeld 2009).

One could think of variation among likely potential partners as the variation in attitudes *within* groups of people that share the same sex, age, education, etc. In the above example of the 35 years of college graduate, her individual group of likely potential partners might be men aged 35–45 who have a college degree. In that case, for her, variation in attitudes among her potential partners would be variation in attitudes in the group of men that are aged 35–45 and hold a college degree.

In other, more technical, words: the variation among potential partners is the variation that cannot be explained by micro-level regressions that regress sex, age, etc., on gender role attitudes (run separately for each country).

For more information on the calculation of this measure, see the online appendix.

Two different measures are proposed here: *unexplained variation I*, which applies micro-level regressions, run separately for each country, with the variables sex, age, education (with interactions for age and education with sex), region of residence and urban versus rural location. *Unexplained variation II* adds a measure for religiosity. Other relevant variables, such as the ethnicity of the respondent, are not available in a manner that is comparable between countries.

6 Results

Table 2 shows the results from factor analysis. Generating three factors offers a result that allows a clear interpretation. In each case, a higher value on the factor represents a more 'modern' or 'gender-symmetric' attitude (women are *not* mainly

[7] These countries are: Argentina, Canada, Finland, Germany, Great Britain, Hungary, Ireland, India, Japan, Lithuania, Mexico, Poland, Sweden, Slovenia and USA

Table 2 Result from factor analysis

	Female homemaker	Gender division	Mother as earner
Warm relation	.36		
Child suffers	.68		
Family suffers	.77		
Want home		.58	
Housewife		.38	
Both contribute			.32
Men money		.61	
Work school			.58
Work U6			.71
Leave divide		.46	
Care best		.50	

Displayed numbers are factor loadings. Blanks represent loadings < .3 in absolute values

regarded as homemakers, an equal gendered division of tasks and privileges is desired and mothers labour force participation is approved). All bivariate correlations between the three generated factors are positive and range between .60 and .71 on the micro-level and .74 and .88 on the macro-level.

6.1 Three Different Aspects of Gender Role Attitudes

The first factor, *female homemaker*, loads strongest on the three items on negative consequences that maternal employment might have on relationships within the family. This factor is almost unrelated to items regarding the question whether mothers should work or which parent should involve more in childcare (*work U6*, *work school* and *leave divide, care best*). People with a low value on this factor tend to believe that a mother who stays at home is better for the family and the kids.

The third factor, called *mother as earner*, measures whether people think that women and mothers of young children in particular should work for pay. People with a high value in this factor believe that women in general and mothers of small children specifically should work and earn money.

The first and third factor, *female homemaker* and *mother as earner*, mainly load on questions that deal with the role of women alone—and not in contrast to the role of men. Both factors might mix up gender role attitudes with general, 'ungendered' opinions on the interplay and potential conflicts between family and labour market. Probably some of those who believe that young children suffer if the mother works full-time also believe that young children suffer if the father works long hours. What might hint towards that idea that *female homemaker* captures family rather than gender ideology or at least mix the two is that many of those who think a woman's employment is bad for the family actually disagree with gender-separate spheres.[8]

[8] This seems to be especially valid for some European countries: in Switzerland, France or Germany more than one in four agrees to the statement that 'All in all, family life suffers when the woman has a full-time job'. Among those who agree with this statement, the majority rejects traditional gender-

Some of those who think that mothers of young children should work, as measured by *mother as earner* might be more concerned about securing household income rather than ideals family and gender ideology.[9]

The second factor, labelled *gender division*, loads strongly on items that specifically ask whether a given task or privilege should be allocated to the male partner, the female partner or to both equally. These tasks and privileges include earning money, taking parental leave and caring for young children (*men-money*, *leave divide* and *care best*). This factor also loads on the questions whether women prefer homemaking and whether being a housewife is as fulfilling as working for pay (*want home* and *housewife*). This factor is unrelated to all questions regarding maternal employment and its consequences (*warm relation, child suffers, family suffers, work U6, work school*) and thus clearly distinguishes attitudes towards the *gendered* division of tasks from questions concerning the conflict between family and labour market. As the second factor, *gender division*, captures gendered views and gender ideology most unambiguously, it is most promising to measure gender role attitudes for the here-presented work. All further analyses apply this factor.

People in the Nordic countries and in the Netherlands show highest mean scores on the factor *gender division* and more right-leaning distributions in Fig. 1 (Finland being somewhat of an outlier among the Nordic countries with a mean value most similar to Germany). Most gender-asymmetric views are found in countries in Central and Eastern Europe and outside of Europe, such as Philippines, Russia and Latvia. The 'cluster' of countries in Central and Eastern Europe is extremely heterogeneous though. The country with the flattest curve and consequently the highest variation in attitudes is Austria, followed by Germany. The country with the lowest variation is Chile. Interestingly, the two extreme cases of low and high variation, Chile and Austria, are almost identical in their mean and median value for gender role attitudes. Through floor and ceiling effects, countries that have a medium average value could either have great or low variation, while countries with either very high or very low average value are bound to have little variation. Over the whole sample, females have slightly more gender-symmetric views and variation is slightly bigger among females than among males. In general, between-country differences (over male and female respondents) seem to be much more salient than within-country differences between female and male respondents.

Footnote 8 continued
separated spheres ('A man's job is to earn money; a woman's job is to look after the home and family') and a third or more expresses gender-egalitarian childrearing ideals (stated view that parental leave should be equally distributed between the mother and the father).

[9] This seems to be especially valid for some countries in Eastern Europe and outside of Europe. In Russia, China or Mexico, the majority believes that mothers of young children should work at least part-time. ('Do you think that women should work outside the home full-time, part-time or not at all under the following circumstances? When there is a child under school age'.) Nevertheless, the majority of this group believe that this will actually have negative consequences for the child (agreement to: 'A pre-school child is likely to suffer if his or her mother works'.) Also, more than a third of those who favour maternal employment actually support gender-separate spheres (agreement to: 'A man's job is to earn money; a woman's job is to look after the home and family').

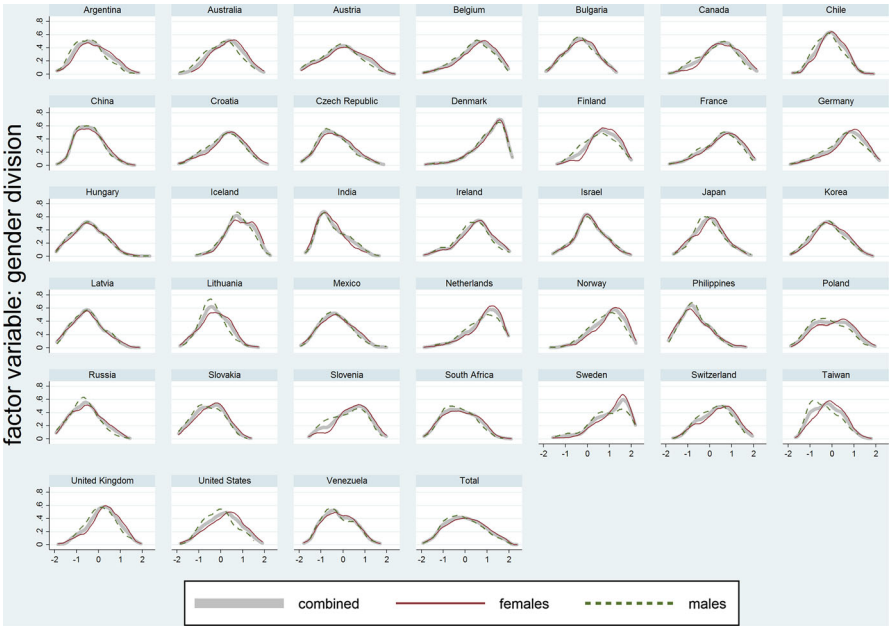

Fig. 1 Distribution of gender role attitudes in all sample countries for males and females separately. Kernel density plots are shown

6.2 Variation in Gender Role Attitudes and Individual Parenthood

Table 3 shows the regression models to test the hypothesis that parenthood is less common, the higher the variation in gender role attitudes is in a society. This association should persist independently of the content or mean value of gender role attitudes in the society. In all models, the odds ratio for variation in gender role attitudes is significant and smaller than one, which represents a negative association, as predicted. The higher the variation in attitudes, the lower the chance that respondents have at least one child. The size of its odds ratio is almost constant in all presented models.

Model 1 is the base model that includes relative individual gender role attitudes, measured as the deviation from the country-level mean value, the variation in gender role attitudes, measured as the standard deviation of attitudes on the macro-level, and the macro-level mean value of attitudes. For males and females combined, more gender-symmetric attitudes on the macro-level are associated with higher chance of parenthood on the micro-level. Individual-level attitudes that are more gender-asymmetric than the country-average are associated with higher transitions to parenthood.

Model 2 tests whether the associations between parenthood and the gender-attitudes-related variables differs between male and female respondents. It shows that none of the interaction effects is significant. Model 3 adds the square term for the average attitudes in a country to the base model. As discussed in Sect. 2, the

Table 3 Logistic multilevel regressions predicting parenthood (= 1) versus childlessness (= 0)

	Base models				Region-level	Variation among potential partners	
		+ Interactions	+ Square term	+ Sex gap			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Individual attitudes (measured as difference from macro-level mean)							
Country-level	.91* (.042)	.89 (.058)	.91* (.042)	.91* (.042)		.91* (.042)	.91* (.045)
Region-level					.96 (.0646)		
Macro-level mean value of attitudes							
Country-level	1.31** (.129)	1.20 (.144)	1.17 (.150)	1.33** (.130)		1.27* (.129)	1.26* (.127)
Region-level					.91 (.275)		
Macro-level variation in attitudes							
Country-level: standard deviation	.79*** (.055)	.83* (.070)	.81** (.057)	.80** (.058)			
Region-level: standard deviation					.73* (.096)		
Country-level: unexplained variation I						.82** (.059)	
Country-level: unexplained variation II							.81** (.057)
Interaction with sex of respondent (reference: female)							
Individual attitudes (as different from country-mean)		1.04 (.097)					
Country-level mean attitudes		1.20 (.175)					
Country-level standard deviation		.91 (.091)					
Country-level mean value: square term			1.11 (.090)				
Different in attitudes between females and males				.94 (.065)			
Controls individual level	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls country level	Yes	Yes	Yes	Yes		Yes	Yes
Country-level RE	Yes	Yes	Yes	Yes		Yes	Yes
Region-level RE					Yes		
Country-level FE					Yes		
Observations: micro-level	6305	6305	6305	6305	2986	6305	6305

Table 3 continued

	Base models				Region-level	Variation among potential partners	
		+ Interactions	+ Square term	+ Sex gap			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Observations: countries	38	38	38	38	22	38	38
Observations: regions					73		

Odds ratios are displayed

Odds ratios displayed. Standard errors are displayed in parentheses

All independent variables are standardized

*$p < .05$; **$p < .01$; ***$p < .001$

literature suggests an U-shape association between individual parenthood and gender relations. This pattern cannot be found in the set of these countries with mainly medium or high values of gender-symmetric attitudes. Model 4 adds the gap in attitudes between men and women in the respective country (country-mean value of female respondents minus country-mean value of male respondents). The odds ratio is insignificant: the association between variation in gender role attitudes and individual fertility is not a function of differences in average attitudes between females and males.

Models 10 and 11 in the online appendix measure macro-level variables, average gender role attitudes and variation in gender role attitudes, for two age-restricted subsample (compare Sect. 4). In order to rule out potential ageing-effects of change in attitudes, model 10 measures macro-level variables based on younger respondents who are currently in their main phase of partnership formation and transition to parenthood. In order to rule out potential cohort effects of change in attitudes, model 11 measures macro-level variables based on the restricted subsample of those, that are aged 45+ (females) and 50+ (males). In models 10 and 11, compared to model 1, all odds ratios are consistent in size while standard errors for all variables are greater. Given that mean attitudes and variation in attitudes are calculated based on a much lower number of observations, increased standard errors should not be a surprise. Nevertheless, the negative association between variation in attitudes and individual parenthood remains statistically significant in all models.

Figure 2 shows the predicted probabilities of individuals to have at least one child at different levels of macro-level variation in gender role attitudes and at global mean values on all other variables. Predicted probabilities for parenthood versus childlessness range from 85% for the highest value of variation in attitudes in the dataset, as observed in Austria, to 94% for the opposite value, as observed in Chile. The following examples should give a—admittedly rough—intuition for the size of association, based on predicted margins of model 1: if the variation in gender role attitudes was as low in Germany as it is in the United Kingdom (the country with the second highest variation versus the country with the eighth lowest

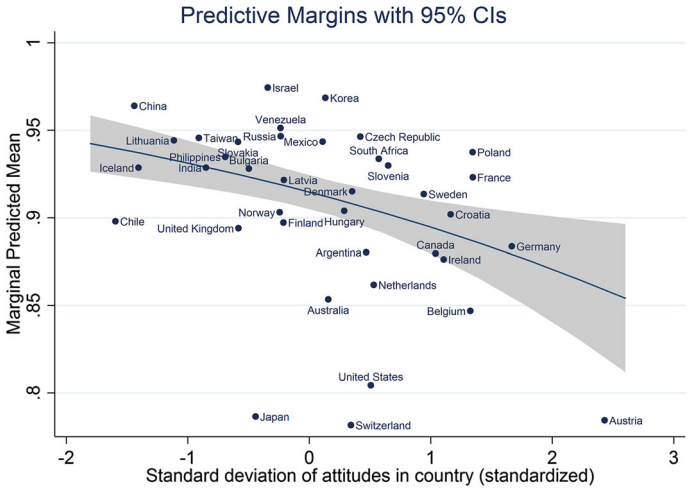

Fig. 2 Predicted probability of having at least one child in dependence of variation in gender role attitudes at mean values of all other covariates (calculation based on model 1); combined with a bivariate country-level scatterplot of share of parents versus variation in gender role attitudes

variation), progression to parity one would be predicted to be 5% higher. Complementary, childlessness would be predicted to be 38% lower.[10]

6.3 Variation in Gender Role Attitudes and Individual Parenthood: Variation on the Country Level, Regional Level and Among Potential Partners

As discussed in Sect. 3, there are at least two alternative mechanisms that might link societal disagreement on gender roles to fertility: first, a translation of unclear gender norms into incoherent family policy with the consequence that no family, whatever gender role model it follows, finds policies tailored to their needs, and second negative sanctioning among peers who pursue different gender role models. This section is an attempt to disentangle these mechanisms.

In most countries, the majority of public policies that might influence fertility behaviour are country-level policies. All individuals in a given country are affected by it, independently of their region of residence within the country.

While it is hard to empirically capture all aspects of public policy, one can apply country-level fixed effects which capture all unobserved country characteristics, including—among many others—historical experience, culture, economic development, and public policy. If the association between variation in gender role attitudes and fertility is explained by differences in public policy (or any other country-level characteristic), the association should disappear once country-level fixed effects (dummy variables for all countries) are introduced. Model 5 is a three-

[10] Predicted value for parenthood and childlessness Germany: 87.9 and 12.1%, for United Kingdom: 92.5 and 7.5%. This equals a difference of 4.6% points and a difference of 5.2% in parenthood or 38.0% in childlessness.

level model with individuals nested in regions which are nested in countries. Average gender role attitudes and variation in attitudes are measured on the level of these regions (and not on the level of countries, as in models 1–4).[11] In the model with country fixed effects (5) the odds ratio for variation in gender role attitudes on the regional level is similar to the odds ratio for variation on the country-level in all other models. The hypothesis—more variation means higher chance of parenthood—holds even against controlling for public policy and other country-specific factors. The association between more gender-symmetric average attitudes on the macro-level and individual parenthood disappears.

Models 6 and 7 include two measures for variation among potential partners, as opposed to variation in the whole society in the base model. As *standard deviation of attitudes in country*, *unexplained variation I* and *unexplained variation II* are standardized, their odds ratios are comparable. If the variation in attitudes among potential partners—as opposed to variation in the whole society—matters, the odds ratio for *unexplained variation II* should be smallest and the odds ratio for *standard deviation of attitudes in country* closest to zero. This pattern does not show that all odds ratios are similar in size and significance. This result does not allow any clear conclusion on whether or not it is the variation among potential partners that matters, rather than variation in the whole society.

Further robustness checks are shown in the online supplementary material. I run models excluding potentially influential cases on the macro-level and control for two macro-level indices that should capture aspects of gender equity/gender equality/female empowerment. The proposed pattern that individual fertility is a function of the variation in gender role attitudes holds in all models.

7 Discussion

While there are several studies that deal with the interplay between gender relations and fertility in some way, there is still insufficient knowledge of and empirical evidence about the mechanisms behind the observed patterns. This study contributes to filling this gap by specifying and testing a model that explains how the variation in gender role attitudes links gender roles to fertility.

Esping-Andersen and Billari (2015) stand in line with a number of other prominent theoretical works that link gender relations to fertility and family formation, such as McDonald (2000a, b) and Goldscheider et al. (2015). All claim that (Western) post World War II societies are inevitably moving from a stable societal arrangement around the male breadwinner model towards the gender equity model. This will eventually bring a re-increase in fertility levels. According to Esping-Andersen and Billari (2015), fertility will recover once, and because, new norms on gender and family roles will become the societal consensus.

My analysis shows that parenthood rates are systematically higher, the greater the degree of societal agreement on gender roles is, a prediction that is derived

[11] Running the base model with the restricted sample of model 5 brings coherent results which suggests that the sample-restriction does not confound the picture.

from Esping-Andersen and Billari (2015). Results hold against a number of robustness checks. The analysis also supports the previous finding that more macro-level gender equality is associated with higher fertility (Myrskylä et al. 2011; Arpino et al. 2015).

This study is innovative as it gives further insight into the mechanisms that link gender relations and fertility, as it applies a much clearer and more unambiguous measure for gender role attitudes, and as it shows how—in general—the variation in variable matters for a social outcome, independently of its content or mean value. Will this cross-sectional finding hold in the longitudinal perspective? Will the move towards new gender and family roles bring along a decrease in societal variation in attitudes, and will this translate into higher parenthood and lower childlessness? The analysis suffers from a number of shortcomings. The first, and main issue is, as discussed in Sect. 3, the data structure. Gender role attitudes are measured in the same year as fertility outcomes. If ideal data were available, I would measure attitudes when people are in their typical years of partnership and family formation (probably somewhere between age 20 and age 30), and measure fertility outcomes around 20 years later, once we know whether or not people remain permanently childless (e.g. age 45 for females and age 50 for males). In an ideal setting, I would predict parenthood versus childlessness of those that are in late forties or fifties today with attitudinal data from the same cohorts, measured some 20 years earlier. Given that my data are cross-sectional, I predict childlessness of those in their late forties or fifties with attitudes of people that mainly are (1) from later cohorts and (2) younger. Two alternative approaches are presented as robustness checks: one rules out potential ageing but not cohort effects, the other rules out potential cohort but not ageing effects. These approaches yield almost identical results which suggests a robust association.

ISSP 2012 data also has a number of other challenges. Response rates and numbers of observations were low in a number of countries, and the identification of parents and the childless was indirect. In general terms, cross-country comparison of gender role attitudes remains a challenge, for example because such attitudes relate to institutional settings like the labour market, formal childcare or parental leave, and these institutional settings differ widely between countries (cf. Braun 2008; Scott and Braun 2009; Constantin and Voicu 2015).

Like most research on fertility, our theoretical reasoning is about fertility decisions, while I actually measure fertility outcome (Schneider 2016). Some of the childlessness might be involuntary (e.g. due to infertility), also some of the childbirths might be unplanned or unintended. Shares of these two groups are likely to differ between the countries under investigation.

Future analyses should try to disentangle different mechanisms that link the association between the variation in gender role attitudes and individual parenthood more precisely. What share of the association can be attributed to processes of partnership formation or to peer-group mechanisms?

While the aim of this article was to develop the theoretical framework and show that macro-level associations are robustly in line with theoretical predictions, future research could go into the ‘second stage’ and test the partnership-hypothesis using micro-level panel data (cf. Billari 2015). When two partners in a couple have very

different and possibly incompatible (parental) gender role attitudes at one point in time, they should be less likely to become parents later on. Such micro-level analysis might also be able to consider not only the transition to parenthood but further parity progressions. Future research could also gain greater insight into the question why societal agreement in gender role attitudes is high in some, and low in other countries.

All in all, this study provides a substantive contribution to understanding by which mechanisms gender relations and fertility are related. While in general a pluralistic society—with a variety of different gender role models and no strong normative pressure to follow a certain 'lead model'—would be desirable, this could come at the cost of high childlessness and lower fertility. If higher levels of fertility are desired, it is upon the society and policy makers to agree on a specific gender role model and tailor institutions around it—or to find a creative way of escaping this trade-off and reconciling a variety in gender role models with moderate or even high fertility.

Acknowledgements I thank Henriette Engelhardt-Wölfler, Gøsta Esping-Andersen, and Francesco Billari for their advice and support. The work has also benefited from very helpful comments from Léa Pessin and Michael Gebel. Further thanks go to the participants of the EDUREP conference in Vienna 2015, the Internal BAGSS Conference 2016 in Bamberg, the Annual Meeting of the German Demographic Association 2016 in Leipzig and the 2nd Human Fertility Database Symposium in Berlin 2016.

Funding This work was supported by the Bamberg Graduate School of Social Sciences which is funded by the German Research Foundation (DFG) under the German Excellence Initiative (GSC1024).

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