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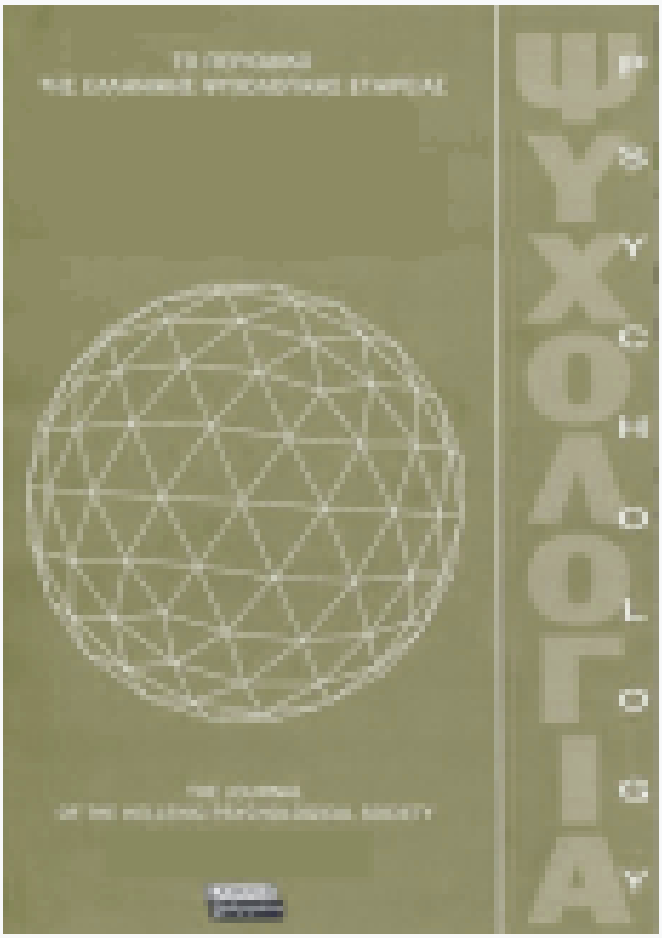

How Many Children? A Comparison of the Influence of Individual and Country-Level Predictors on Female Childbearing Behavior in 25 OECD Countries

MANDY BOEHNKE, MICHAEL FELDHAUS

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How Many Children? A Comparison of the Influence of Individual and Country-Level Predictors on Female Childbearing Behavior in 25 OECD Countries

MANDY BOEHNKE[1]

MICHAEL FELDHAUS[2]

ABSTRACT

Utilizing a multi-level analytic approach (HLM), the present study analyzes reasons for variations in the number of children among 4069 25- to 34-year old women in 25 OECD countries, surveyed in the World Value Survey (WVS). Educational attainment, household income, age, and pro-child attitudes were included as individual-level predictors, whereas on the country-level, individualism and masculinity (as conceptualized by Hofstede), the Human Development Index (HDI), marriages rates, female employment rates, and early childcare enrolment rates were used as predictors. On the individual level, pro-child attitudes and age covaried positively with number of children, educational attainment did so negatively, whereas household income was unrelated. Beyond the overall finding that more highly educated women have fewer children, analyses revealed that the impact of education on fertility varies significantly between countries. Of the macro-level indicators, HDI had the strongest impact in that women in countries higher on HDI have fewer children. Country-specific individualism predicted individual number of children *positively* after partialing for HDI. This result was, however, not sustained, once female employment rates were included in the prediction model: Against age-old folklore convictions, 25- to 34-year-old woman in countries with a high female employment rate have *more* not fewer children.

Key words: Hierarchical Linear Modeling, Fertility, Attitudes.

1. Address: Mandy Boehnke, Institute for Empirical and Applied Sociology, University of Bremen, Celsiusstrasse, D-28359 Bremen, Germany. Phone: +49-421-21867346. E-mail: boehnke@empas.uni-bremen.de URL: www.tess.uni-bremen.de

2. Address: Michael Feldhaus. E-mail: feldhaus@empas.uni-bremen.de

1. Introduction

In the OECD, fertility rates have declined considerably over the last three decades, to levels well below those needed to secure generation replacement. Overall decline in fertility rates occurs with sizable differences between countries. In some the decline started earlier but then stabilized. Elsewhere the decline commenced later but progressed faster (Bagavos & Martin, 2001). Additionally, one finds an increase in mean ages of women at first childbirth, and postponement of childbearing comes along with cross-nationally different trends of fertility-recuperation at higher ages. Furthermore, one finds systematic differences in the level of fertility rates among women by employment status and a few other characteristics, indicating a differential impact of institutional effects brought about by measures taken in the educational and the occupational system (Blossfeld & Huinink, 1991). All in all, changes in fertility rates over the last three decades in the OECD show high variability (Sleebos, 2003).

The goal of the present paper is threefold. First, we present descriptive evidence showing the observable changes in fertility rates since 1970 in some 25 member countries of the Organization for Economic Cooperation and Development (OECD). Secondly, we draw on existing theories for explaining decreasing rates of childbearing from a cross-cultural perspective to outline a conceptual framework for empirical investigation and generate hypotheses. In the third part we use the World Value Survey (WVS) data to test our hypotheses in multi-level analyses. In order to analyze cross-cultural variability in fertility behavior and its predictability, we include not only individual-level WVS data but also country-level context variables. Concludingly, we outline possibilities for future research.

Having Children: Trends across Time and Cross-cultural Differences. Trends in total fertility rates (TFR[3]) have undergone profound changes over the last 30 years. They declined from an average value of 2.4 children per woman in 1970 to 1.6 in 2002. Only Mexico and Turkey show values above the replacement level of 2.1. *Figure 1* gives an overview of TFR in the OECD.

A look at absolute TFR differences between 1970 and today (details omitted here) shows that the average reduction of total fertility rates was at slightly above 1 in the entire OECD. Between-country variability in TFR-decrease was, however, immense, with Finland remaining almost stable since 1970 and Mexico reporting a decrease by more than 4.5 children.

Conceptual Considerations. In cross-cultural analyses of the variability and predictability of fertility behavior three major problems arise: First, the theoretical framework and the hypotheses derived from it must accommodate the specific situation in each cultural context, the cultural unit of analysis typically being the country. In principle, conceptual considerations must allow for a differential per-country relationship between variables. Of course, instruments and operationalizations must furthermore allow valid measurement of equivalent constructs across countries. Finally, one has to be able to obtain data from a sufficient number of units on the aggregate level: Studies with only few countries will not allow for a test of hypotheses that assume both country-level and individual-level factors influencing fertility behavior. Only a multi-level approach accommodates a culture-specific prediction of fertility behavior while at the same time allowing for an overarching cross-

3. The Total Fertility Rate gives the average number of children that a woman gives birth to in her lifetime, assuming that the prevailing rates at a given time remain unchanged. The TFR does not give information about the final birth rates since they estimate the reproductive behavior of women who have not ended childbearing. If the age of first births is increasing, trends based on total fertility rates exaggerate the decline in childbearing. Thus, a better – but not as common – indicator of long term trends is provided by data on completed fertility rates.

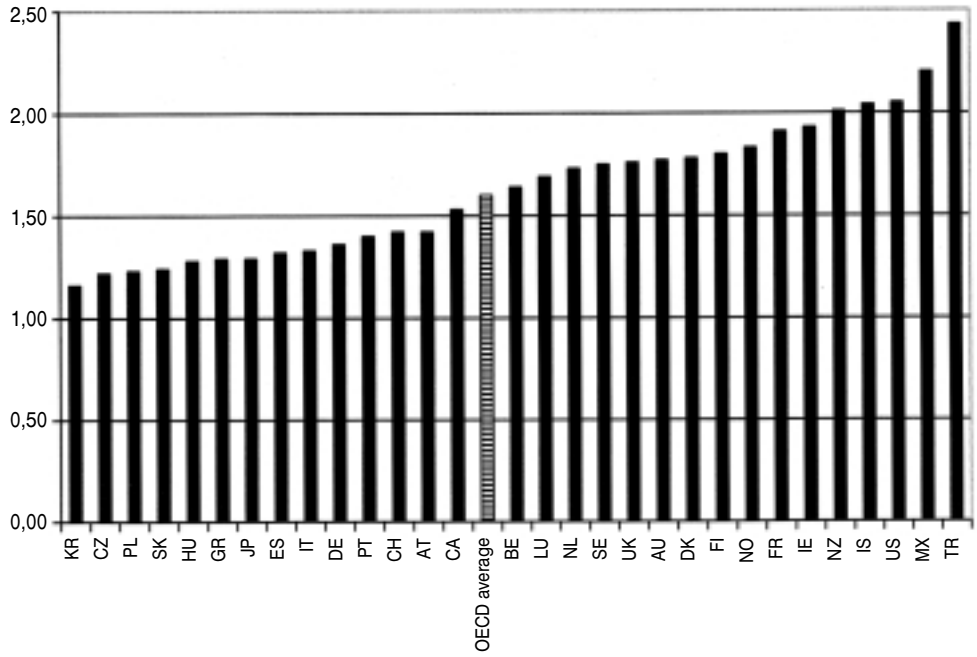

Figure 1
Total Fertility Rates in the OECD, 2004[4]

cultural prediction (Nauck & Schönpflug, 1997). It emphasizes that for explaining phenomena like the fertility rates of different countries, effects on different levels need to be recognized: structural properties of the cultural context as well as, among others, individual attitudes (Mayer, 2004).

On the *macro level* the cultural and institutional structure, as well as the culture-specific political and economic conditions determine the opportunities and constraints of individual behavior. Cultural norms affect the probability for having a child, as does the political and economic context (Lesthaeghe & Moors, 2002). Differing welfare systems have an impact on fertility: Faced with a decline in fertility rates, European welfare states have been undergoing major demographic change. The Nordic countries and France have, however, quite successfully embarked upon this trend by supporting families with a moderate so-called defamilialization strategy, while Germany and Southern Europe have, in principle, continued to depend on welfare production by families (Esping-Andersen, 1999), and only recently modified their policy.

Defamilialization means providing families with services like daycare facilities, advisory services, or support in caring for the elderly. Families are disburdened, which allows (both) parents to remain in the workforce and engage in other non-family activities. Whereas the Nordic and French models foster lower rates of childlessness and larger families because they offer a chance for reconciling work and family, families in other countries are smaller and childlessness figures are higher.

4. Country abbreviations are internet country codes.

On the *micro-level,* one looks at the individual and its *resources* (acquired, for example, through education) and *psychosocial dispositions* (often assessed in the form of attitudes). The value-of-children approach (Hoffman & Hoffman, 1973; Nauck, 2001) assumes that children provide a certain utility for their parents or family, which can be differentiated into three basic types, namely economic, psychological, and socio-normative benefits. Numerous theories discuss the importance of attitudes for the prediction of behavior, the most influential one probably being the so-called theory of planned behavior (Ajzen, 1991). That approach distinguishes between attitudes, subjective norms, and the perceived behavioral control as determinants of a behavior intention and the subsequent behavior.

A multi-level approach simultaneously includes the structural and cultural context as well as personal resources as determinants of an individual behavioral decision. It is particularly useful for cross-cultural comparisons, but it also bears pragmatic disadvantages insofar as multi-level modeling is often confronted with strong limitations of data availability: Macro-level indicators are frequently lacking, and equivalent micro-level measures across numerous countries are also infrequent. This means that in a multi-level analysis of the prediction and variability in fertility behavior across countries, one has to make substantial compromises with regard to measures included in one's analyses.

In addition, the very design of studies meant to predict fertility behavior is a point of compromise. A fully valid prediction of childbearing calls for panel data, in which data on structural properties of a social entity and data, for example, on fertility attitudes are obtained at one point in time, and the behavior itself, namely the bearing or not-bearing of a child, is corroborated at a later time. Moreover, data from the (potential) mother *and* father would ideally have to be obtained (Lesthaeghe, 2002). Such dyadic, multi-country panel data are currently not available. Only one-shot studies, i.e., studies in which data on predictors of the behavior under scrutiny and the behavior itself (here childbearing) are available from a multitude of countries and will have to be utilized here.

In the present study, we focus more on macro-level indicators, and less so on the actual individual-level decision-making process of having or not having children. We additionally confine our analyses to a segment of the population for whom the decision-making process and the behavior itself (having or not having one or more children) are not separated by a long time-stretch: We focus on mid-adulthood and include only the 25- to 34-year-old women of all studied countries in our analyses. For this population segment the generation of attitudes toward childbearing and the childbearing itself occur fairly close together time-wise and contextual indicators also stem from the same historic era. Would one include older segments of the population, child birth would often have occurred many years or even decades before, but childbearing attitudes would be current attitudes.

In light of the above-described decline of fertility rates across all OECD countries, the most interesting dependent variable seems to be the number of children an individual has.

Hypotheses. On the individual level we include proximal information on individual resources and on psychosocial dispositions in our prediction model. As resource variables in a very wide sense we include education, the self-assessed income level of the household to which an individual belongs, and age[5]. As a proxy for an individual's psychosocial dispositions for childbearing we include childbearing attitudes.

5. Age could, of course, also be seen as a more technical control variable, but seeing it as a resource variable is also plausible, because experience and knowledge and as result also economic resources of an individual do increase with age in the childbearing cohorts of a society.

The influence of *education* on fertility rates has often been investigated. A strong argument why educational level of individuals should be related to fertility comes from the so-called New Home Economics approach, which argues that with increasing education opportunity costs of children increase, in turn negatively impacting the decision for having children (Becker, 1991), an assumption corroborated for many different countries (Billari & Philipov, 2004). It is, however, an open question whether education has a differential impact across countries and, in case variation in educational effects exists, which context variables are responsible for such variability. Our first hypothesis, thus, reads: *The number of children a woman has is negatively related to individual educational attainment* (H1).

With regard to economic status the literature is more equivocal. Ewer and Crimmins-Gardner (1978) e.g., have shown that increasing individual economic resources of women tend to covary negatively with the number of children. This can be explained in the way that the higher your economic resources are, the greater a potential loss of resources a child may cause. However, other studies have not found a clear relationship between individual economic resources and fertility; for the US, DiPrete and McManus (2000) report no relationship between private household income and number of children, while for Germany they do find such a relationship. We *assume* that *a negative relationship between household income and fertility* continues to exist (H2).

For age our somewhat trivial assumption is that *number of children born to a woman increases with it* (H3).

Lastly, on the individual level, we include attitudes towards children and the question if a woman needs children for self-fulfillment. In accordance with the theory of planned behavior (Ajzen, 1991), which defines the influence of attitudes on behavioral intentions and subsequently on behavior, *we assume that there is a positive correlation between positive attitudes toward having children and actually having a child* (H4). But here we have to point out a restriction pertaining to the question of modeling predictors of behavior. We use the World Value Survey for our analyses that does not contain panel data, which means that we cannot measure the attitudes *before* the intention or behavior of the respondent. But we assume that this attitude is stable enough and measures more a general outlook on life, internalized in the relevant phases of socialization. Rijken & Liefbroer (2009), for example, argue that the internalized experience in one's own family and witnessed parental behavior influence future decisions for childbearing. Facing the lack of suitable data, we have to take into account this restriction.

Macro-sociological and demographic research has insisted that beyond individual resources structural and mentality differences between countries have an influence on individual childbearing behavior: The cultural climate vis-à-vis children is assumed to impact fertility (Boehnke, 2007). In addition to attitudes on the individual level we, therefore, add a number of macro-level variables to our predictive model that characterize the present normative situation in the country.

We, first, refer to the well-known measurement of Individualism and Collectivism (Hofstede, 2001) and *assume that degree of societal individualism influences female fertility rates negatively (H5),* because in individualized societies self-actualization is more rewarding, than fulfillment through having children (Gouveia & Ros, 2000).

Another indicator discussed in the literature is also taken from Hofstede's work, namely Masculinity/Femininity. We *assume that in societies high in masculinity, women will have more children* (H6). In formulating this assumption, we follow Hofstede as well as a study by Berry (1989). These studies let it seem plausible that in societies in which masculinity is high, women's destiny is seen as lying first and foremost in having children and that consequentially women in such societies, as norms there are highly dominated by men, will fulfill these expectations

to a higher degree than women in societies high in femininity.

Beyond these indicators of a specific cultural climate, we include a number of structural variables as predictors for variations in fertility behavior.

For once, we include the Human Development Index (HDI), an index encompassing a country's gross domestic product, its life expectancy at birth, its literacy rate, and its overall enrolment figures in the educational system, weighted in a complex way. The variable assesses the overall societal prosperity. Here our hypothesis is that *the higher HDI, the lower a fertility rate of a country will be* (H7). In line with the value-of-children research (Kagitcibasi & Esmer, 1980), the argument here is that in high HDI societies children are not needed for a family's socioeconomic well-being, e.g., in old age, as the society is sufficiently affluent to provide support for individuals with few or no children, so that rational reasons to have children are less pronounced.

Further macro-level variables are assumed to add to the prediction of fertility rates. First, it is often assumed that fertility rates are higher in countries with a high rate of legal marriages (as opposed to common-law marriages and other family arrangements). As Sobotka (2003) reported, this indeed is the case particularly in Central and Eastern European OECD countries, while comprehensive data and analyses do not seem to exist. Other authors (Kohler, Billari, & Ortega, 2002) claim that the traditional relationship between marriage rates and fertility rate has dwindled or even been reversed. We follow the original general assumption in hypothesizing that *fertility rates are higher in countries with a high proportion of legal marriages* (H8), because there, the norm of having children – and consequentially more frequently of indeed having children – is higher.

Two more macro-level indicators are more closely related to the structural context of childbearing and rearing. We include the average female participation in the job market as one further macro-level predictor of fertility. Here, once again, available research is not consentaneous, several studies reporting lower childbearing rates in countries with a high female employment rate, while there also are studies that do not see a connection. For heuristic purposes we side with the traditional view discussed by Weller (1977), and *assume that the higher the female employment rate in a country, the lower the individual propensity to bear children* (H9).

A final macro-level indicator in our model is a country's average enrolment in childcare institutions. As discussed most extensively in the work of Esping-Andersen (1999), *high levels of availability of non-family childcare,* or as he terms it, defamilialization of childcare, *offer a chance for women to combine work and family and thereby allow them to more easily come to positive fertility decisions* (H10).

Generally speaking, the goal of the present paper is to combine structural macro-level and resource and attitude-related individual-level measures in explaining low but differing birth rates in OECD countries.

2. Method

Sample

The present study includes women between the ages of 25 and 34. We use data from the World Value Survey (WVS) collected in the years 1999 and 2000 (Inglehart et al., 2004). The mean age of the entire sample (N=4069) is 29.56. Out of the countries available only the 27 participating OECD countries were selected. Two OECD countries (Korea and Iceland) could not be included as there were missing data for two of the macro-indicators to be included in our analyses. The remaining 25 countries are Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Great Britain, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, Poland, Portugal, Slovakia, Spain, Sweden, Turkey, United States, East, and West Germany, which we keep separate, because earlier studies (Boehnke, 2007) have shown that fertility behavior in the two formerly

separate German states continues to be distinctly different, particularly among academically trained women.

Instruments

Our dependent variable is the number of children a woman has at the time of surveying.

As predictors on the individual level, we include age, level of educational attainment (8 categories from "no formal education" to "university-level education with degree"), the self-rated household income of the surveyed woman standardized within country (10 categories from low to high), and attitudes toward having children ("Do you think that a woman has to have children in order to be fulfilled or is this not necessary?"). Answering options for this attitudinal question were "no", and "yes", coded "0", and "1".

Our macro-level predictors were Hofstede's individualism/collectivism and masculinity/femininity indices (Hofstede, 2001), the country's Human Development Index (UNDP, 2000), the crude marriage rate (number of marriages per 1000 inhabitants) (UN, 2005), the female employment rate (percentage of employed females in working-age cohorts), and the enrolment in childcare institutions (percent of children under 3 enrolled in formal childcare), the latter two taken from OECD files (OECD, 2006; 2007). Table 1 documents the included scores for all countries, and also documents the average number of children reported by the surveyed women.

Analytic Procedures

We used Hierarchical Linear Modeling (HLM) for our analyses. HLM is in essence a two-level linear regression approach, where individual-level regression analyses are performed and the obtained coefficients are then inserted into country-level regression analyses (Raudenbush & Bryk, 2002; Hox, 2002). Details on equations are omitted here[6]; all variables were centered at their grand means.

3. Results

Table 2 documents a series of HLMs, starting with a so-called empty model (Model 1) that gives information on the overall individual and country-level variance. The average number of children across the included countries was 1.25. Variance components show that of the between-country variance 8% are explainable. Model 2 introduces the individual resource variables education, income, and age as well as the attitude variable. As assumed we find that a positive, a pro-child attitude goes together with a higher number of children (0.204[7], $p<0.001$). Consistent with our hypothesis, education has a negative coefficient (–0.205, $p<0.001$), meaning that women with higher education have fewer children. Age has a positive coefficient (0.125, $p<0.001$) as expected, with increasing age the number of children increases. No influence of income was found.

The next model (Model 3) includes again all individual-level variables; this time the coefficients are allowed to vary across countries. Including the four individual variables and allowing them to vary across the 25 countries reduces the unexplained between-county variance by about 35% and the individual-level variance by about 20%. Variance components for the education slope are significant ($p<0.01$), meaning that the relationship between education and fertility varies between countries. While we find for example no relation between the two in the Czech Republic, in Canada or Spain there is a rather strong link

6. They can be obtained from the first author.

7. As is typical for HLM, we use unstandardized coefficients, which mean that if the predictor variable is increased by 1 unit, the dependent variable changes by the documented amount.

Table 1
Country-level Descriptive Statistics

Country	N	Individualism	Masculinity	Human Development Index	Crude Marriage Rate	Female Employment Rate	Enrolment in Childcare	Average Number of Children
Austria	149	55.00	79.00	0.908	4.90	58.50	4.10	1.53
Belgium	193	75.00	54.00	0.925	4.30	47.50	38.50	1.10
Canada	214	80.00	52.00	0.935	5.10	63.60	19.00	1.39
Czech Republic	164	58.00	57.00	0.843	5.20	58.70	3.00	1.33
Denmark	118	74.00	16.00	0.911	6.70	70.30	61.70	0.99
Finland	108	63.00	26.00	0.917	4.70	61.20	35.00	1.17
France	173	71.00	43.00	0.917	4.90	52.40	26.00	1.45
Germany-West	110	67.00	66.00	0.911	5.30	59.00	9.50	1.07
Germany-East	70	67.00	66.00	0.911	5.30	57.90	40.50	1.26
Greece	163	35.00	57.00	0.875	5.60	40.30	7.00	0.55
Hungary	93	80.00	88.00	0.817	4.40	47.30	6.90	1.66
Ireland	96	70.00	68.00	0.907	4.90	48.20	15.00	1.26
Italy	217	76.00	70.00	0.903	4.90	37.30	6.30	0.60
Japan	132	46.00	95.00	0.924	6.10	57.20	15.20	0.98
Luxembourg	127	60.00	50.00	0.908	4.90	45.60	14.00	1.15
Mexico	212	30.00	69.00	0.784	7.60	40.10	3.00	1.91
Netherlands	126	80.00	14.00	0.925	5.70	59.40	29.50	1.02
Poland	81	60.00	64.00	0.814	5.70	52.20	2.00	1.52
Portugal	106	27.00	31.00	0.864	6.80	58.30	23.50	0.94
Slovakia	139	52.00	110.00	0.825	5.10	53.50	17.70	1.33
Spain	247	51.00	42.00	0.899	5.20	36.50	20.70	0.81
Sweden	92	71.00	5.00	0.926	4.00	69.80	39.50	0.90
Turkey	671	37.00	45.00	0.732	7.20	28.50	1.00	2.00
Great Britain	138	89.00	66.00	0.918	5.10	64.20	25.80	1.74
United States	130	91.00	62.00	0.929	8.60	67.40	29.50	1.42

Table 2
HLMs for Individual and County-level Variables

Country	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept[a]	1.246***	1.318***	1.298***	1.283***	1.296***
Individualism				0.010*	0.005
Masculinity				0.003	0.004
HDI				–3.354**	–3.880**
Marriage Rate					0.027
Female Employment Rate					0.017**
Enrolment in Childcare					–0.002
Pro-Child Attitude		0.204***	0.182**	0.166**	0.169**
Education Level		–0.205***	–0.176***	–0.177***	–0.175***
Household Income		–0.011	–0.003	–0.002	–0.002
Age		0.125***	0.127***	0.127***	0.127***
Intercept[b]	0.1266***	0.0779***	0.0816***	0.0467***	0.0368***
Attitude slope[c]			0.0134	0.0130	0.0131
Education slope			0.0029**	0.0032**	0.0037**
Income slope			0.0009	0.0010	0.0010
Age slope			0.0002	0.0002	0.0002
Level 1 Variance[d]	1.4464	1.1941	1.1640	1.1472	1.1624
Deviance Coefficient	12772.09	9236.18	9185.72	9175.74	9165.40
	(3)	(7)	(21)	(24)	(27)

**p<0.05 **p<0.01 ***p<0.001*

a. The technical term "intercept" can here be understood as the mean of the dependent variable if all predictors are 0.
b. In this context, the technical term "intercept" refers to the variance still to be explained after the inclusion of the model variables; for Model 1, the so-called "empty model", this, thus, is the overall variation of the number of children between countries.
c. The technical term "slope" indicates the variability of country-specific micro-level variable effects.
d. Coefficients documented in this line report the estimated variance on the micro-level, meaning the variance between the women included here.

between fertility and education.

In the next step (Model 4) the first three higher order variables in the order of our hypotheses are introduced. The coefficient for individualism is 0.010 ($p<0.05$), meaning that in more individualist countries the number of children is *higher*. This appears surprising in light of our hypothesis that assumed the opposite relationship. It must be pointed out that this coefficient is adjusted for the degree of prosperity of a country (HDI). This suggests that when looking at the "pure" ideational component of individualism (partialed for the human development component), individualism *fosters* female fertility. For HDI per se (the

comprehensive prosperity of a country) we found the negative relationship we assumed (–3.354, $p<0.01$), the higher education, life expectancy, and the standard of living of a country the lower the number of children. For masculinity no significant effect was found.

Model 5 indicates that the effect of the prosperity of a country remains significant, but not that of individualism if women's employment rate, the country-specific marriage rate, and the childcare enrolment rate are included in the model. The coefficient for women's employment rate is 0.017 ($p<0.01$): In countries where it is more common that women work, the number of children is not lower but *higher*. For enrolment rates in formal childcare as well as marriage rates no significant results were found. Including all of these variables reduces unexplained country-level variance by 71% and individual-level variance by 20%.

As mentioned earlier, the model shows a significant slope for education, i.e., a differential influence of individual education on fertility between countries.[8]

4. Discussion

The study examined the influence of individual-level as well as macro-level predictors of childbearing among 25-34-year-old women in 25 OECD countries. It was assumed that – on the micro-level – age, education, economic status, and the attitude towards children, and – on the macro-level – country-specific individualism, masculinity, economic development, marriage rate, female employment, and enrolment in childcare would influence the number of children a woman has. For the individual-level predictors our hypotheses were confirmed for all variables but household income. There seemingly is no linear relationship between the income of the household of a woman and the number of children she has. Growing older, having less of an education, and endorsing the position that children give one's life a sense, do, however, positively predict a woman's number of children. In addition to being an overall negative predictor of fertility, the impact of education of the number of children a woman bears in the OECD varies significantly between countries. Further research is, however, needed as to why this is the case: None of the macro-level variables included here offers a suggestion; neither of them significantly predicts the between-country differences in the import of education for childbearing.

For the aggregate-level variables results were quite diverse. While we found clear evidence for an influence of societal economic development on childbearing – the greater a country's prosperity, the lower the number of children women have – the influence of individualism and masculinity are indistinct. While no influence of masculinity could be corroborated, country-specific individualism seems to – in principle – covary *positively* with the number of children a woman has, a finding contrary to our predictions. This effect loses significance, however, once the country-specific female employment rate is introduced into our model (which correlates both with individualism and economic development[9]). Female employment is *positively* related to fertility, also contrary to the – classical – assumption. Greece, Italy, and Spain where we find a comparably low female

8. HLM allows for an exploratory analysis of macro-level indicators that could have an influence on the variability of the slopes. Substantively this means that one can analyze whether any of the available macro-level variables predict the degree of variability in the predictive capacity of education on fertility. Unfortunately none of the included predictors turned out to be a promising higher-level variable impacting these slopes. HLM also offers the possibility to compare the model fit using a so-called deviance statistic based on χ^2. Comparative analyses secure that each of the Model 2 to 5 has a better fit to the data than the previous one, meaning the contribution of the added variables and slopes for explaining the variation of the outcome is non-negligible.

9. See appendix for correlation matrix.

employment rate and at the same time a low fertility rate might be examples that the traditional male breadwinner model might indeed have changed while the frequency of possibilities offered for combining work and family haven't (yet). A closer inspection of the data does, however, reveal that there are outliers: For Mexico and Turkey the generally found relationship does not hold true, here we find a comparatively high mean number of children, combined with a comparatively low female employment rate.

It should be noted that enrolment in institutional childcare, as a proxy for the availability of early-age childcare in a society, does not impact women's childbearing behavior.

What are the essential findings of the present study? First and foremost: That classical "folklore" or common-sense knowledge is wrong. Countries with a high female employment rate are not the ones that have low fertility rates: The contrary is true. Adherence to individualist values in an OECD country does *not* impact fertility negatively if a country's prosperity is taken into account. Sustainable wealth, i.e., high scores of a country on the Human Development Index, does, at the same time, have a strong impact on fertility. In our opinion this finding supports the main assumption of the value-of-children approach: In countries where children have a low economic utility, because the general prosperity is high enough to allow the average citizen to facilitate his or her survival regardless of the number of children, fewer children are indeed born. Furthermore, there is no evidence that it is the underclass that has more children: No relationship between household income and number of children born was found.

Having reviewed the non-findings, the question, of course, remains what *was* found beyond the huge effect of a country's prosperity that was already discussed? The central finding here is the very strong effect of individual education on female fertility, which at the same time varies between countries. Future research should address the reasons for both the strong impact of education as well as for its cross-national variability. While the latter question is more a question for sociologists, the question of why higher education prevents women from having children may not only interest sociologists but also psychologists: Is education more a variable that just changes the odds in expectancy-value equations, or does education also change the ideational context of the decision for or against a child? Another big question for psychologist, of course, also remains unanswered after the present study, namely how positive attitudes towards having children develop during childhood and adolescents. Hardly any research is available in this field.

Finally arguments against the validity of our findings need to be discussed. One could, argue that including 25-34-old women in a study on predictors of the number of children is not the wisest decision since in view of rising mean age of first births the dependent variable might measure the degree of early childbearing rather than the number of children per se. Arguments against this assumption are that there is only a minor increase of mean age at higher birth orders (Sobotka, 2003) and recuperation at higher ages is only partial (D'Addio & d'Ercole, 2005). Nevertheless, further research as to this question seems advisable. One could repeat the calculation of the models advocated in the present study for 35-44-year-old women, using then, of course, macro-level indicators from earlier times, when on average 40-year-olds made decisions for or against having children. This task must, however, remain for future research.

Another criticism against the study can obviously be voiced against the relative arbitrariness of the selection of predictors both on the individual and on the aggregate level. Here readers have to be reminded that availability of data for some 25 countries is the major argument for the given choice of variables, but, of course, the inclusion of further conceptually grounded variables addressing the individual decision process for having or not having children would

be highly desirable. May such variables be included in future waves of the World Value Survey.

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Appendix
Table: Correlation Matrix of Variables Included in Multi-Level Analyses

Individual-Level Variables				
	Age	**Household Income**	**Education Level**	**Pro-child Attitude**
Household Income	0.075***			
Education Level	–0.032*	0.357***		
Pro-child Attitude	0.005	–0.171***	–0.169***	
Number of children	0.277***	–0.179***	–0.404***	0.146***

Country-Level Variables						
	Individualism	**Masculinity**	**HDI**	**Marriage Rate**	**Female Employment Rate**	**Enrolment in Childcare**
Masculinity	–0.099					
HDI	0.568**	–0.272				
Marriage Rate	–0.290	–0.013	–0.328			
Female Employment Rate	0.483*	–0.267	0.568**	–0.021		
Enrolment in Childcare	0.436*	–0.587**	0.594**	–0.037	0.617**	
Number of Children	0.016	0.284	–0.553**	0.272	–0.072	–0.329

**p<0.05 **p<0.01 ***p<0.001*

Παράμετροι πρόβλεψης ως προς την απόκτηση παιδιών από γυναίκες σε 25 χώρες του ΟΟΣΑ: σύγκριση μεταξύ ατομικού επιπέδου και επιπέδου χώρας

MANDY BOEHNKE[1]

MICHAEL FELDHAUS[2]

ΠΕΡΙΛΗΨΗ

Η παρούσα έρευνα, σε 4069 γυναίκες, ηλικίας 25-34 ετών, σε 25 χώρες του ΟΟΣΑ που συμμετείχαν στην Παγκόσμια Έρευνα για τις Αξίες (WVS), μελετά με τη βοήθεια της Πολυεπίπεδης Ιεραρχικής Ανάλυσης Γραμμικών Υποδειγμάτων (HLM), τις παραμέτρους που σχετίζονται με τον αριθμό των αποκτώμενων παιδιών στην οικογένεια. Ως ατομικές παράμετροι πρόβλεψης του αριθμού των παιδιών χρησιμοποιήθηκαν το επίπεδο εκπαίδευσης, το εισόδημα στο νοικοκυριό, η ηλικία και οι θετικές στάσεις προς την απόκτηση παιδιών, ενώ ως παράγοντες πρόβλεψης στο επίπεδο της χώρας χρησιμοποιήθηκαν ο ατομικισμός και η συλλογικότητα κατά Hofstede, ο Αναπτυξιακός Οικονομικός Δείκτης (HDI), ο ρυθμός γαμηλιότητας, ο ρυθμός της γυναικείας απασχόλησης, καθώς και ο ρυθμός της απόκτησης παιδιών σε νεαρή ηλικία. Τα ευρήματα δείχνουν ότι, σε ατομικό επίπεδο, οι στάσεις υπέρ της απόκτησης παιδιών και η ηλικία συμμεταβάλλονται θετικά με τον αριθμό των παιδιών, ενώ αντίθετα, το υψηλό εκπαιδευτικό επίπεδο σχετίζεται αρνητικά με την απόκτηση παιδιών. Το εισόδημα του νοικοκυριού δεν σχετίζεται καθόλου με το ρυθμό απόκτησης παιδιών. Πέρα από το γενικό εύρημα ότι οι γυναίκες με υψηλότερο επίπεδο εκπαίδευσης αποκτούν λιγότερα παιδιά, τα αποτελέσματα της έρευνας δείχνουν ότι η επίδραση της εκπαίδευσης στη γονιμότητα ποικίλλει σε σημαντικό επίπεδο μεταξύ χωρών. Ανάμεσα στις παραμέτρους του μακρο-επιπέδου, ο Αναπτυξιακός Οικονομικός Δείκτης φαίνεται να ασκεί την ισχυρότερη επίδραση για την απόκτηση λιγότερων παιδιών σε χώρες με υψηλότερο αναπτυξιακό δείκτη. Επιπλέον, αφαιρώντας στατιστικά την επίδραση του Αναπτυξιακού Οικονομικού Δείκτη, ο ατομικισμός σε μια χώρα φαίνεται να προβλέπει θετικά την απόκτηση παιδιών. Το εύρημα αυτό, αν και δεν υποστηρίζεται, συμπεριλαμβάνεται στη συνάρτηση πρόβλεψης και διαπιστώνεται ότι, παρά τις παραδοσιακές πεποιθήσεις, στις γυναίκες ηλικίας 25-34 ετών με υψηλό βαθμό επαγγελματικής απασχόλησης, ο ρυθμός απόκτησης παιδιών δεν είναι τόσο μικρός όσο θα αναμενόταν.

Λέξεις-κλειδιά: Ιεραρχική ανάλυση γραμμικών υποδειγμάτων, Γονιμότητα, Στάσεις.

1. Διεύθυνση: Mandy Boehnke, Institute for Empirical and Applied Sociology, University of Bremen, Celsiusstrasse, D-28359 Bremen, Germany. Phone: +49-421-21867346. E-mail: boehnke@empas.uni-bremen.de URL: www.tess.uni-bremen.de

2. Διεύθυνση: Michael Feldhaus. E-mail: feldhaus@empas.uni-bremen.de