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Descriptive Finding

Attitudinal and behavioural indices of the second demographic transition: Evidence from the last three decades in Europe

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Attitudinal and behavioural indices of the second demographic transition: Evidence from the last three decades in Europe

Zuzanna Brzozowska¹

Abstract

BACKGROUND

The second demographic transition (SDT), which links ideational changes with demographic developments, is one of the most prominent and debated theoretical frameworks in family demography. Yet, its operationalisations as composite sets of measures remain unevaluated.

OBJECTIVE

We evaluate two most frequently used SDT indices: attitudinal and behavioural. We assess how strongly they have been linked to each other in the last three decades in Europe and test their consistency over time.

METHODS

Using four waves of the European Values Study and publicly available demographic indicators for 23 European countries, we reconstruct, update, and evaluate the SDT indices. The attitudinal index measures postmaterialism, gender-egalitarianism, and religiosity. The behavioural index includes indicators of postponement, nonmarital childbearing, marriage, and divorce.

RESULTS

The correlation between the attitudinal and behavioural indices is positive, but its strength varies substantially over time. The indices' strongest correlates are indicators of postponement (demographic index) along with gender-egalitarian views and the importance of leisure (attitudinal index). Marriage and divorce rates together with attitudes towards the institution of marriage are least consistent with the indices.

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CONCLUSIONS

Both indices are inconsistent internally and temporally. Some of the included indicators do not fit the SDT assumptions of stage-like one-directional development. Consequently, conclusions about the SDT based on cross-national data for a single year may be misleading.

CONTRIBUTION

We show that the ideational and demographic changes posited by the SDT should not be treated as a package. Their operationalisation should take into account their multidimensionality. To facilitate future research, we provide the ready-to-use indicator and index values used in the analysis.

1. Introduction

The second demographic transition (SDT) is “population researchers’ to-go concept and theoretical framework for studying family and fertility changes” (Zaidi and Morgan 2017: 474). It posits that the shift from materialist to postmaterialist values, as identified by Inglehart (1971, 1977), triggers changes in family and fertility behaviour. Ideational and demographic developments are considered as packages. Postmaterialist values are associated with secularism, gender-egalitarianism, and acceptance of non-traditional family forms, and their diffusion gives rise to the demographic ‘package’: rising nonmarital cohabitation and childbearing, declining fertility and marriage rates, and increasing divorce rates (van de Kaa 2001). They may not occur all at once but they all take place eventually (Lesthaeghe 2010).

Importantly, it is assumed that both ideational and behavioural developments are irreversible and represent successive stages of unidirectional change. They began in Northern European countries (the ‘leaders’), which were followed soon after by western parts of the continent and English-speaking non-European countries, and then by the ‘laggards’: first Southern Europe, then postsocialist Central-Eastern Europe, and finally also some high- and middle-income countries outside Europe (Lesthaeghe 2010, 2020).

Since its formulation in 1986 (Lesthaeghe and van de Kaa 1986), the framework has been fiercely debated and its empirical underpinning has often proved to be weak (see Zaidi and Morgan 2017 for a comprehensive overview). Surprisingly, however, its operationalisation has attracted very little scholarly attention and the concept is typically reduced to single ideational and demographic variables (Bystrov 2014; Coleman 2004; Lesthaeghe 2010; Liefbroer, Merz, and Testa 2015; Treas, Lui, and Gubernskaya 2014). Out of the few attempts to operationalise the SDT as composite indices (Lesthaeghe and Neidert 2006; Sobotka 2008a, 2008b; Surkyn and Lesthaeghe 2004) only the one by

Sobotka is frequently used and referred to (Lesthaeghe 2010, 2020; Liefbroer, Merz, and Testa 2015; Merz and Liefbroer 2012; Miranda-Ribeiro and Garcia 2013; Zagaglia and Moretti 2014). Sobotka constructed two SDT indices, attitudinal and behavioural. They are based on country-level cross-sectional data for a single point in time and have so far been never evaluated for their internal or temporal consistency. Consequently, we do not know whether they indeed represent the SDT concept.

This paper uses repeated cross-sectional data for 23 countries to validate the SDT attitudinal and behavioural indices constructed by Sobotka. First, we examine how well the ideational changes captured by the attitudinal index correlate with demographic developments over the last three decades in Europe. Second, we evaluate each of the two indices: we test whether they are coherent and whether they equally represent each of the included demographic and ideational aspects of the SDT. Third, we provide ready-to-use index values as well as the values of each indicator included in the indices, along with the R code for generating them, for every analysed country and year, with the aim of facilitating future research.

2. Data and methods

We use the same ideational (attitudinal) and demographic (behavioural) indicators as Sobotka (2008a, 2008b). The ideational variables come from four waves of the European Values Study (EVS) conducted in years 1989–1993 (wave 1990), 1999–2001 (wave 1999), 2008–2010 (wave 2008), and 2017–2019 (wave 2017) (EVS 2015, 2020), and are measured as country-level aggregates representative of country adult populations. They intend to capture non-conformist and gender-egalitarian attitudes towards family, postmaterialist values, and secularisation (see Table 1, Panel A). The original SDT attitudinal index, constructed for countries participating in the 1999 EVS wave, was based on respondents' answers to and opinions about eight questions and statements, of which only five (V1–5) were available in all four EVS waves. Therefore, after conducting consistency checks, we use a truncated version of the ideational index comprising five items (V1–5). Fig. SG1.1 and SG2.1–2.4 in Supplementary Graphs compare the results yielded by the eight- and five-variable indices and find no substantive differences.

The period demographic indicators included in the SDT behavioural index (Panel B of Table 1) are retrieved from the Council of Europe, Eurostat, the Human Fertility Database, and national statistical agencies (see Table ST1 in Supplementary Tables for detailed information). In order to mitigate the problem of their year-on-year variations, they are computed as three-year averages, so that, for example, an indicator for year 2008 is in fact an average of the indicator values in years 2007, 2008, and 2009. If values for

one or two years are missing, we use the average of values for the remaining year(s). For details on how the missing values were treated see Table ST1 in Supplementary Tables.

The SDT theory assumes that changes in behaviour follow ideational changes with some delay. Accordingly, the original SDT behavioural index was shifted in time with respect to the attitudinal index, i.e., it used demographic indicators measured approximately five years after the attitudinal data was collected. We were able to apply this strategy to the 1990–2008 EVS waves but not to that of 2017. Thus, after confirming that the correlation between the shifted and non-shifted indices was very strong (87%–90% of common variance; see Figure SG1.2), we used the non-shifted ones. The Supplementary Graphs include all analyses shown in the paper repeated for the 1990–2008 EVS waves with the use of behavioural indices shifted by five years (Fig. SG3.1–3.4). Beyond that, Figures SG1.3a–c in Supplementary Graphs show trends in all six demographic indicators measured in the EVS wave years and five years later.

Both the ideational and demographic variables are normalised, as shown in Equation 1, and vary between 0 and 1:

$$x_{iyc}^N = \frac{x_{iyc} - \min(x_i)}{\max(x_i) - \min(x_i)}, \quad (1)$$

where x_{iyc} is the value of indicator i in year y in country c , whereas $\min(x_i)$ and $\max(x_i)$ denote the minimum and the maximum value, respectively, of indicator i across all countries and analysed years. The normalised demographic indicators of teenage fertility (TEENFERT) and total first marriage rate (MARRRATE) were reversed before inclusion in the index, so that their high values appear as low in the index and are thus positively related to the index. Following Sobotka (2008a, 2008b), we computed the SDT indices as arithmetic means of the normalised indicators and multiplied them by 10, so that the indices range between 0 and 10 (Equation STE1 in Supplementary Tables).

We include 23 countries that participated in at least three of the EVS waves and whose demographic indicators were available for the years of interest. The countries represent five geographic-cultural regions of Europe: North (Denmark, Finland, Iceland, Norway, and Sweden), West (Austria, Belgium, France, Germany, Great Britain, and the Netherlands), South (Italy, Portugal, and Spain), Central-Eastern Europe or CEE (Czechia, Estonia, Hungary, Lithuania, Poland, Slovakia, and Slovenia), and East (Bulgaria and Romania). We refer to the two latter regions (CEE and East) as post-socialist or post-state-socialist countries. Table ST2 in Supplementary Tables lists the exact years in which the EVS surveys were conducted in each country.

Table 1: Indicators included in the SDT attitudinal index (Panel A) and behavioural index (Panel B)

Panel A: Attitudinal variables ¹							
Item	EVS question (variable name)	Indicator included in the index	Number of countries with item included, by wave				
			1990	1999	2008	2017	
V1	LEISURE	<i>How important in your life is leisure?</i> (a003)	Share of respondents answering <i>very important</i>	23	22	23	22
V2	LIFECONTROL	<i>How much freedom of choice and control do you feel you have over the way your life turns out?</i> (a173)	Mean value on the scale from 1 (<i>none at all</i>) to 10 (<i>a great deal</i>)	23	22	23	22
V3	MARR OUTDATED	<i>Marriage is an outdated institution</i> (d022)	Share of respondents answering <i>agree</i>	23	22	23	22
V4	NO HOME&KIDS	<i>A job is alright but what most women really want is a home and children</i> (d062)	Share of respondents not answering <i>strongly agree</i>	22	21	23	22
V5	NO CHURCH	<i>How often do you attend religious services?</i> (f028)	Share of respondents not answering <i>more than once a week or once a week</i> (equivalent to <i>less than once a week</i>)	21	22	23	22
*V6	NEED KIDS	<i>Do you think that a woman has to have children in order to be fulfilled or is this not necessary?</i> (d019)	Share of respondents answering <i>not necessary</i>	23	21	23	0
*V7	RESPECT	<i>One does not have the duty to respect and love parents who have not earned it by their behaviour and attitudes</i> (a025)	Share of respondents answering <i>tend to agree</i>	23	22	23	0
*V8	ABORTION	<i>Do you approve or disapprove of abortion where a married couple does not want to have any more children?</i> (a049)	Share of respondents answering <i>approve</i>	23	22	23	0

Panel B: Behavioural indicators (period indicators measured yearly at country-level) ²		
Item	Indicator included in the index	
I1	AGE1BIRTH	Women's mean age at first birth
I2	AGE1MARR	Women's mean age at first marriage
I3	NONMARBIRTH	Percentage of nonmarital births
I4	TEENFERT	Sum of age-specific fertility rates below age 20, per 1,000 women
I5	MARRRATE	Total first marriage rate for women (sum of age-specific first marriage rates)
I6	DIVRATE	Total divorce rate (number of divorces per 100 marriages)

Notes:

¹ An asterisk * denotes items available in EVS waves 1990–2008 but not in 2017. For the EVS, the country means were computed using the post-stratification (calibration) weights (gweights). The variable names given in brackets are taken from the Longitudinal Data File 1981–2008 (the variable names in the Integrated Dataset 2017 were renamed correspondingly).

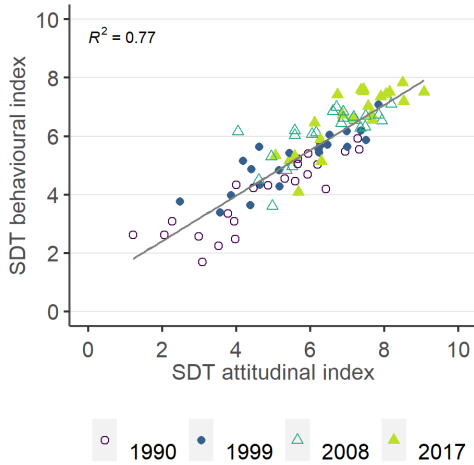
² In addition to the six demographic indicators included in this study, Sobotka adjusted the behavioural index upwards by 0.5 "if more than 10% of co-residential unions were made up by cohabiting couples (data for 2001 based on Philipov 2005 and national data sources)" (Sobotka 2008b: 223). Due to the lack of reliable and comparable data for the analysed countries and years, we were not able to implement this adjustment. However, the spread of cohabitation in Europe is largely reflected by the share of nonmarital births, of which the overwhelming majority are to women in co-residential unions (Brzozowska 2014; Perelli-Harris et al. 2012; Stípková 2013).

3. Results

3.1 How well do the SDT attitudes correlate with the SDT behaviour?

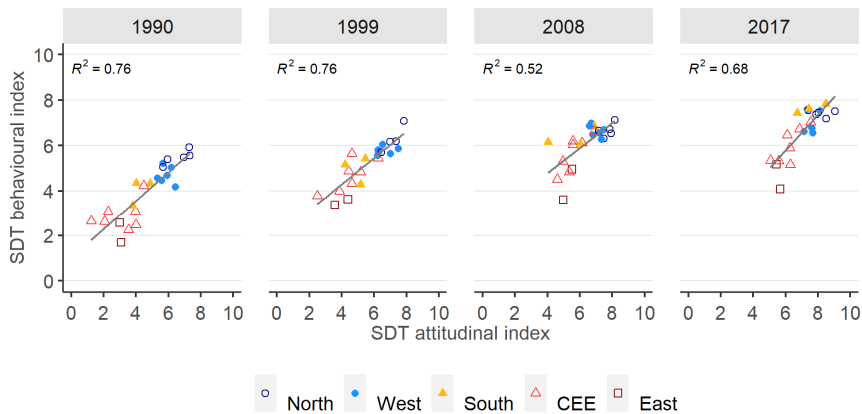
The SDT attitudinal and behavioural indices are very closely interrelated (Pearson's r close to 0.9 or r^2 equal 0.77; Figure 1) and show the developmental pattern predicted by the SDT: the values of both indices tend to rise with time. The relationship is also consistent with the theoretical assumptions about the geographical divide, with Northern European countries at the ideational and demographic forefront, closely followed by Western European countries and then Southern Europe, and with post-socialist countries closing the ranking (Figure 2). It is worth noticing, however, that the geographic pattern is less clear in 2017 than in previous years, as the North, West, and South, along with part of the CEE, have similar scores on both scales. Both indices have converged over time, with the 'laggards' moving upwards faster than the 'leaders'. The catch-up process has been particularly fast for attitudes. However, whereas variation between the five European regions has declined substantially, the reverse is often the case within these regions. After two decades of convergence, the ideational differences between Northern countries increased in 2017. The post-socialist countries have been steadily diverging in terms of their demographic behaviour: nowadays, Slovenia and Estonia score between Finland and Germany, whereas Bulgaria, Lithuania, Poland, Romania, and Slovakia consistently occupy the lowest positions (with Romania being a demographic outlier in 2008 and 2017).

Figure 1: SDT attitudinal (x-axis) and behavioural (y-axis) indices, by country and EVS wave



Note: Each point signifies a country's score on the attitudinal and behavioural scales. The demographic data is given for the actual year of the EVS data collection. R^2 is the square of Pearson's correlation coefficient (or the share of common variance) and the straight line represents the linear correlation of the two indices.

Figure 2: SDT attitudinal and behavioural indices, by country, region, and EVS wave



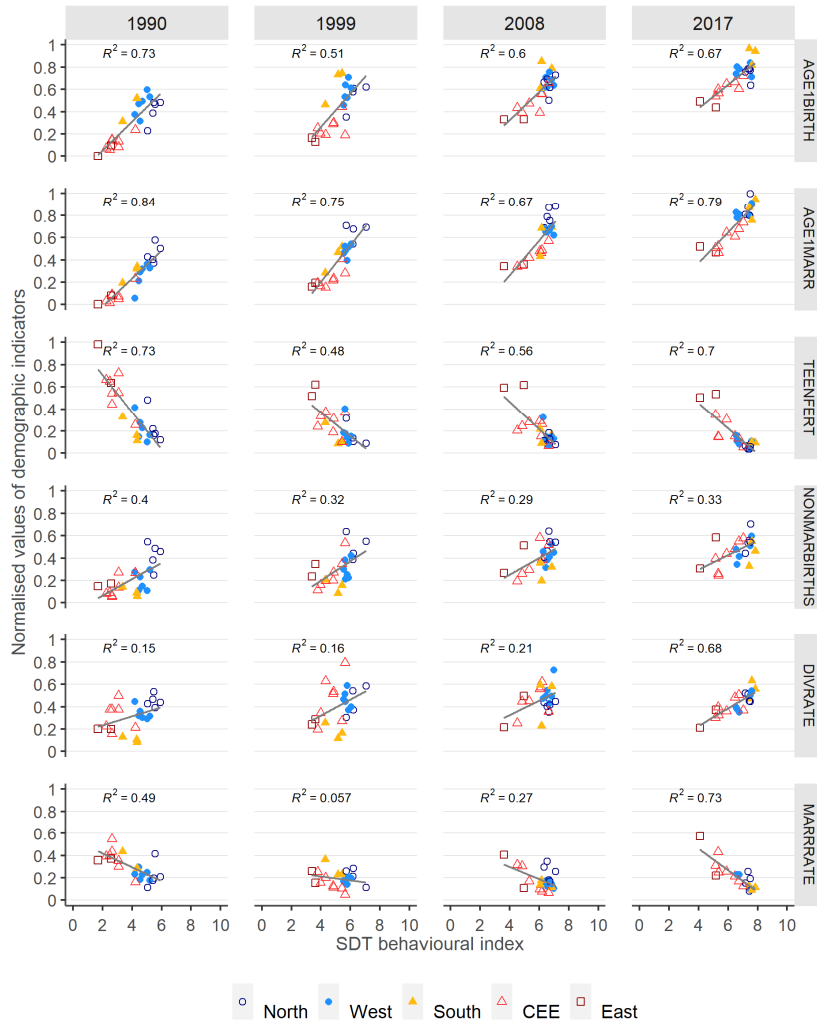
Note: The demographic data is given for the actual year of the EVS data collection. R^2 is the square of Pearson's correlation coefficient (or the share of common variance) and the straight line represents the linear correlation of the two indices.

3.2 How good are the SDT behavioural and attitudinal indices?

Figure 3 shows the components of the SDT behavioural index in each analysed year and answers the question of whether all six demographic indicators are equal drivers of the observed changes. Clearly, the answer is no. The SDT behavioural index is largely driven by the ‘age’ variables – the rising mean age at first marriage (AGE1MARR) and first birth (AGE1BIRTH) – and, to a lesser extent, by declining teenage fertility (TEENFERT; trends in the various indicators are depicted in Figure SG1.3ab). The country values of these three variables and their evolution largely reflect the spatial and temporal pattern assumed by the SDT, i.e., advancing in stages, consistently in one direction. In all analysed points of time, the correlation between each of these three ‘timing’ indicators and the behavioural index is strong, with the share of common variance ranging between 48% (TEENFERT) and 84% (AGE1MARR). The corresponding figures for the share of nonmarital births (NONMARBIRTHS) are much lower but stable. The values of NONMARBIRTHS tend to increase with time, as expected under the SDT framework. However, they do not entirely match the theoretical spatial pattern, as some of the post-socialist countries have a persistently higher share of nonmarital births than would be expected, judging from the values of other demographic variables.

The trends in the last two indicators – total divorce rate (DIVRATE) and total first marriage rate (MARRRATE) – do not at all resemble those anticipated by the theory (see Fig. SG1.3c): their levels vary greatly across countries, but not necessarily in line with the predicted spatial pattern, and they tend to fluctuate rather than following a consistent upward (DIVRATE) or downward (MARRRATE) trajectory. Consequently, the relationship between each of them and the behavioural index is very unstable. In fact, excluding DIVRATE and MARRRATE from the behavioural index would not change it much, whereas leaving out just the two ‘age’ indicators (AGE1MARR and AGE1BIRTH) would produce an index only loosely related (if at all) to the SDT behavioural index (see Fig. SG1.5a) and the SDT attitudinal index (Figure SG1.5b).

Figure 3: The SDT behavioural index (x-axis) and its components (y-axis), by country, region, and EVS wave

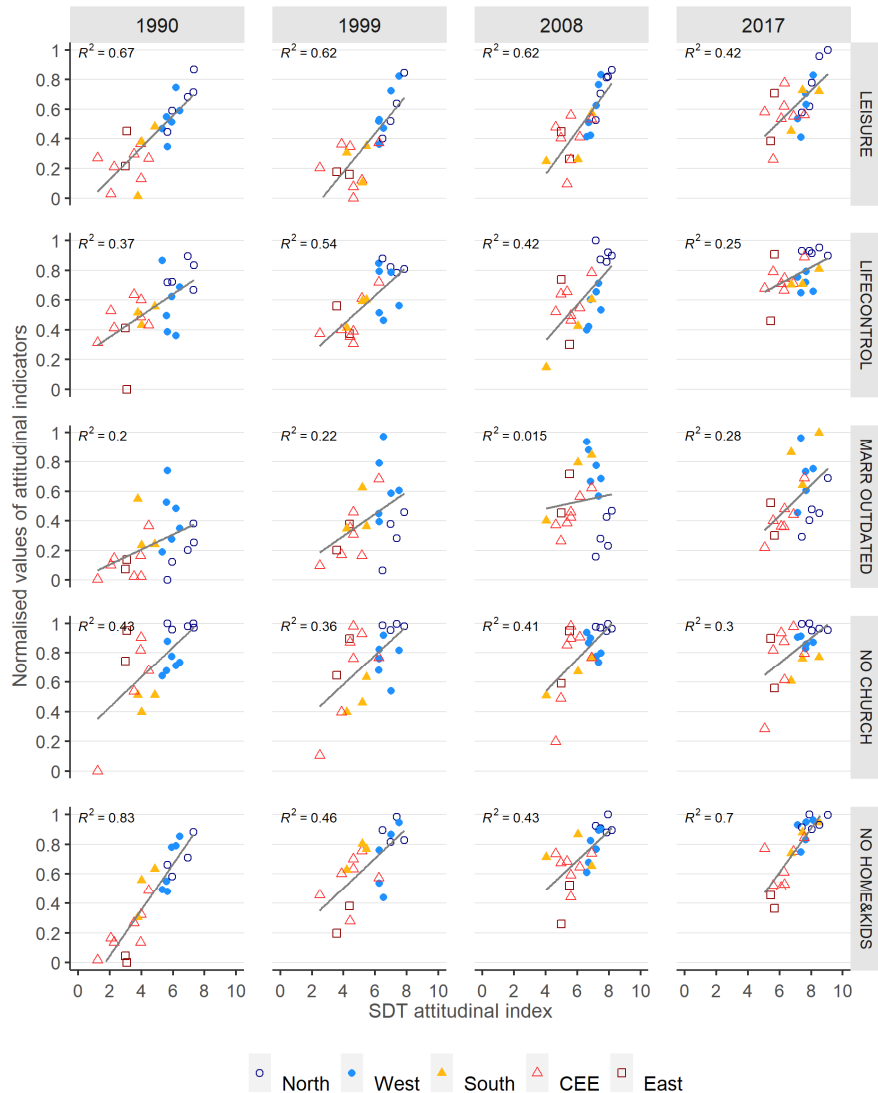


Note: The indicators teenage fertility (TEENFERT) and total first marriage rate (MARRRATE) entered the index as 1-TEEN and 1-MARRRATE, respectively, so their increasing values correspond to increasing values of the SDT index. The demographic data is given for the actual year of the EVS data collection. R^2 is the square of Pearson's correlation coefficient (or the share of common variance) and the straight line represents the linear correlation of the index and each of its components. R^2 s below 0.2 are statistically non-significant at the 0.05 level.

The indicators of the SDT attitudinal index appear to be less-determining factors than those of the behavioural index (Figure 4). Overall, SDT-related attitudes vary much more than SDT-related behaviour across time and, in particular, across countries. The two indicators most strongly correlated with the attitudinal index and which seem to best match the framework's spatial and temporal assumptions are gender attitudes (NO HOME&KIDS) and the importance of leisure (LEISURE). The feeling of control over one's life (LIFECONTROL) declined in many Western- and Southern-European countries in 2008, possibly in response to the economic crisis, and was the weakest correlate of the index in 2017. In line with the SDT theory, most societies have become more secular with time (NO CHURCH). There are two exceptions to this trend: since 1990, church attendance has been increasing continuously in Romania and has remained constant in countries where it was already very low, e.g., Northern countries, Estonia, and Czechia (see also Fig. SG1.4ab for trends in the indicators). More generally, post-socialist countries are the most heterogeneous group, with Poland being a religious outlier and Bulgaria, Czechia, and Estonia being among the most secular countries in Europe. This weakens the correlation of church non-attendance with the attitudinal index.

The variable least consistent with the framework (and with the SDT attitudinal index) is the opinion that marriage is an outdated institution (MARR OUTDATED). At odds with other attitudinal indicators and the SDT theory, Northern societies value marriage as much as post-socialist countries. The perception of marriage as obsolete has been most widespread in the West (France, Belgium, the Netherlands and, since 2008, Austria) and, especially more recently, in the South of Europe, where it has increased spectacularly, almost doubling from one wave to the next in Spain (in 2008) and Italy (in 2017). The timing of both surges closely follows legal changes, introduced in 2005 in Spain and in 2015 in Italy, to simplify and speed up divorce procedures.

Figure 4: The SDT attitudinal index (x-axis) and its components (y-axis), by EVS wave, country, and region



Note: R^2 is the square of Pearson's correlation coefficient (or the share of common variance) and the straight line represents the linear correlation of the index and each of its components. R^2 s below 0.2 are statistically non-significant at the 0.05 level.

4. Conclusions

We demonstrate that over the last three decades the link between the ideational and behavioural SDT indices, as proposed by Sobotka (2008a, 2008b), has been positive and rather strong in Europe. However, the strength of the association varies substantially with time, so that care is needed when drawing conclusions based on cross-national data for a single year. Furthermore, both indices are imbalanced and internally inconsistent, which corroborates previous micro-level findings on family-related values (Lakomý 2019; Liefbroer, Merz, and Testa 2015) and behaviour (Kalmijn 2007). The indices' strongest correlates are indicators that tend to continuously develop in one (upward) direction and thus fit best the stage-like pattern assumed by the SDT: mean age at first marriage and first birth (demographic index) along with gender-egalitarian views and the importance of leisure (attitudinal index). By contrast, trends in marriage and divorce rates as well as the opinion that marriage is an outdated institution clearly do not match the SDT developmental narrative, and are thus least consistent with the SDT indices.

The weaknesses of the two indices evaluated in this paper illustrate the problem already admitted by van de Kaa (1994: 104; cited after Zaidi and Morgan 2017): it is problematic to force “a multi-dimensional reality into a linear, sequential narrative.” Some of the dimensions may develop in a non-linear way, as suggested by, e.g., Esping-Andersen and Billari (2015) and Goldscheider, Bernhardt, and Lappegård (2015). The two frameworks they propose posit that gender equality, which advances continuously, triggers U-shape developments in family behaviour: it brings first ‘less family’ – e.g., lower marriage and higher divorce rates – and then ‘more family’. Our results closely match these assumptions and are in line with the existing empirical support of the two concepts (Kolpashnikova, Zhou, and Kan 2020; Pessin 2018).

The fact that the importance of leisure tends to rise particularly fast in post-socialist countries, whose GDP per capita grew spectacularly between the beginning and the end of the analysed period (World Bank 2021), exemplifies the key assumption of the SDT: the cultural shift from materialist to postmaterialist values occurs only after reaching a sufficiently high level of economic development. Recently, following fundamental changes in the labour market, economic recession(s), and spreading economic uncertainty, the way economic factors affect family behaviour is increasingly being studied by family researchers, both theoretically (e.g., Mills and Blossfeld 2013) and empirically (e.g., Bastianelli and Vignoli 2021; Guetto, Vignoli, and Bazzani 2021; Kreyenfeld, Andersson, and Pailhé 2012; Matysiak, Sobotka, and Vignoli 2020). Our analysis focuses on validating the temporal and internal consistency of the existing SDT indices and does not examine their connection with any economic factors. However, along with this paper, we provide ready-to-use demographic and ideational indicators (both their raw and normalised values) which can be used in future research exploring,

for instance, the links between macro-level economic indicators, demographic behaviour, family-related attitudes and/or, more generally, post-materialist values. In micro-level analyses, the provided data may be used as contextual variables, comparable across countries and time.

5. Acknowledgments

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