# Repositório ISCTE-IUL

**Normative value change across the human life cycle: Similarities and differences across Europe**

**Abstract**

Normative change in people's value priorities (Schwartz, 1992) was examined by analyzing repeated cross-sections of the 26 countries that participated in at least four of the first seven waves of the European Social Survey (2002-2015). For this purpose, we compared data from different samples taken from five historical cohorts over time in order to identify generalizable patterns in value development that could apply to most people. Results suggest that most cohorts increasingly valued Self-Transcendence over Self-Enhancement in the transition from late adolescence to young adulthood. During and after middle adulthood, age effects were virtually non-existent in Eastern Europe, relatively weak in Southern Europe, and limited to midlife in North-Western Europe. The results also suggest that all cohorts, except most Northern and Western European cohorts in midlife, became relatively more conservative and less open with age. We present evidence that differences between historical cohorts produced some of the age-values associations that have been found in previous studies. Latent Growth Curve Modeling was used to further summarize the observed intra-cohort aging trajectories and to identify potential country-level moderators. This analysis showed that the positive association between normative aging and Self-Transcendence endorsement was stronger in countries that are more affluent.

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# 1. Introduction

Research on value change across the life cycle is an ongoing pursuit in the social sciences. While research generally points to the relative stability of values, this does not preclude the existence of value change, especially mean-level change over time (cf. Roberts, Walton, & Viechtbauer, 2006). It might well be that values do change over the life cycle, but in similar ways across most people. The aim of the current paper was to investigate mean-level (i.e., normative) changes in people's values on Schwartz's (1992) Self-Enhancement vs. Self-Transcendence and Openness to Change vs. Conservation value dimensions across different ages. This is done by comparing data from different samples taken from historical cohorts over time. Normative change is commonly defined as "generalizable patterns of personality development that apply to most people" (Roberts, Walton, & Viechtbauer, 2006, p. 1). There is only a handful of studies that have looked at the change in the mean importance of Schwartz's values in groups with periods between measurements of more than a few months. A recent study from Italy that followed the same group of people from age 20 to age 28 found that Conservation values increased strongly while Openness to Change values remained stable (Vecchione et al., 2016). The authors also reported that Self-Transcendence and Power values increased, and Achievement values decreased, over time. Even though the observed mean-level change in the importance of Schwartz's values was not large, these findings are somewhat at odds with an earlier study of Australian adults, which found that only Hedonism values increased in the same participants over a two-year period (Bardi, Lee, Hofmann-Towfigh, & Soutar, 2009). Researchers had mostly relied on cross-sectional data from a specific time period when they examined age-values associations across the life cycle. In these studies, an increase in age has been found to be associated with higher Self-Transcendence and Conservation values and lower Self-Enhancement and Openness to Change values (e.g., Robinson, 2013; Schwartz, 2005b). Additionally, few studies have investigated cultural differences. Two studies found no remarkable differences either between individualistic and collectivistic societies (Fung et. al., 2016) or across 12 industrialized

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European countries (Robinson, 2013) regarding age-values associations. van Herk and Poortinga (2012), nevertheless, found some minor differences in the cross-sectional association between age and personal values across European districts and also that these differences were somewhat explained by Gross Domestic Product (GDP) and Soviet past.

We argue that, when exploring how values priorities can change across the human life cycle, it is important to take into account differences in cohort socialization, as well as the potential influence of the context in which people live. We, therefore, aim to disentangle the effects of age, which may be due to physical and psychological changes that result from the aging process as well as role changes associated with new life-stages, from those of cohort. Cohort effects are those resulting from the replacement of cohorts with formative experiences at the early/middle 20th century with cohorts born and socialized later in the same century. A third change factor, period, which should simultaneously influence all cohorts, is not a focus of the current paper. Because these three components of change are confounded (period – age = cohort) and due to the multicollinearity among them, it is difficult to disentangle age from cohort effects, especially in a setting with limited data (with only 4 to 7 repeated cross-sections), where recent methodological innovations cannot be applied yet (Yang & Land, 2013). One way of examining age and cohort effects across different countries and their relationship to normative value change is through an explorative analysis of datasets that span several cross-sectional waves. Drawing on sequential, comparative data, such as the European Social Survey (ESS), makes it possible to understand country differences in how people age (see, e.g., Realo & Dobewall, 2011; Robinson, 2013). In the current study, we describe the intra-cohort aging approach to change (Glenn, 1977, 2005), which operationalizes normative aging at the group level. In a cross-sectional, sequential design, no individual is studied at more than one time-point; instead, different samples of individuals from each group are studied at different times (Glenn, 2005). As these individuals have at least one characteristic in common, such as belonging to the one cohort with the same unique socio-historical experiences, comparing data from different historical cohorts across cross-sectional ESS waves makes it possible to assess, across Europe, the

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consequences of growing older. This is an important contribution as it is possible that intra-cohort-aging trends (i.e., normative value changes) deviate from previously reported age-values associations. When cohort effects exist, they might artificially produce some of the associations between age and values, possibly even when there are no age effects at all. At the same time, cohort effects can exaggerate or suppress age effects, depending on whether they go in the same or the opposite direction.

The use of cohorts as a unit of analysis has become increasingly popular in the social sciences as a way of gauging the consequences of aging (Glenn, 1977, 2005). Moreover, taking the cohort as a valid unit of analysis that is sampled over time, analytical strategies can be applied that are commonly used for longitudinal data analyses using the same respondents. Hence, we make a novel attempt to summarize the cultural similarities and differences in how European cohorts age by analyzing their growth curves (Byrne, Lam, & Fielding, 2008). Latent Growth Curve Modeling (LGCM) is utilized to analyze the initial levels (i.e., intercepts) of the Schwartz value dimensions and their rate of change over time (i.e., slopes). As cohorts are the unit of analysis, and cohort means at different ages the time points, the intercept reflects the value priority of the average European, and the slope the magnitude of value change due to normative aging. LGCMs based on sequential, comparative data require that Schwartz's values are equivalent in their measurement and psychological meaning across countries and within participating countries over time (Byrne et al., 2008). Using ESS data, Davidov (2010) has found some evidence for the measurement invariance of Schwartz' values across Europe and within these countries over time. Moreover, LGCM allows for a high number of missing values in the data (i.e., those ages of cohorts that were not surveyed) by conducting all analyses with full information maximum likelihood (FIML) estimation (Allison, 2012). LGCM analyses further enable us to identify potential country-level moderators.

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## 1.1. What are values?

Values are beliefs that guide and justify people's actions while also reflecting cultural ideals and a shared understanding of what is right or wrong and good or bad in a given society. When speaking about values, this paper complies with the theory of human values proposed by Schwartz (1992). According to Schwartz, values are (a) broad concepts or beliefs (b) about desirable end states or behaviors that (c) guide evaluation and selection of behavior and events, and are (d) ordered hierarchically by their relative importance. Due to their general and abstract nature, values are (e) assumed to be trans-situational. Schwartz proposed a circumplex structure of values consisting of ten value types, which, due to their underlying motivational compatibilities and conflicts, can be collapsed into two basic dimensions (Schwartz, 2005a):

- The Self-Enhancement (Achievement and Power value types) vs. Self-Transcendence (Universalism and Benevolence value types) dimension reflects whether people strive for sharing and fairness or whether they value competition and personal gain, even at the expense of others.

- The Openness to Change (Hedonism, Stimulation, and Self-Direction value types) vs. Conservation (Security, Conformity, and Tradition value types) dimension contrasts novelty and expression of intellectual, behavioral, and emotional autonomy with communally-tied preferences for self-restriction and order.

## 2. Factors that potentially contribute to value change

## 2.1. Cohort socialization

The proposition that belonging to a specific cohort may have an effect on developing certain value priorities is known as the *formative-* (Inglehart & Welzel, 2005) or *impressionable-years* (Alwin & Krosnick, 1992) hypothesis. It is based on the basic claim that members of a cohort share special

characteristics due to the common sociohistorical phenomena they experienced during early socialization. More precisely, a cohort can be understood as "those people within a geographically or otherwise delineated population who experienced the same significant event within a given period of time" (Glenn, 1977, p.8). Values are usually conceptualized as formed almost entirely during youth. This perspective assumes age-stability in adulthood and limited changes in value priorities due to change in context. However, Schwartz (2005b) also acknowledged the role of cohort socialization on value emphasis. He argues that, in prosperous and secure societies, later-born cohorts will give greater priority to Openness to Change and, perhaps, Self-Transcendence (e.g., Universalism values), but less preference to Conservation. If there are indeed differences between cohorts' values endorsement, they stimulate long-term changes in societies by means of what is called generational replacement or a *silent revolution* (cf. Inglehart & Welzel, 2005).

Thus, the *formative-* or *impressionable-years* hypothesis suggests that differences in the socialization of earlier- and later-born cohorts are the main source of value change (also called generational differences; Twenge & Foster, 2010). If this is true for the current data, then a later year of birth should be associated with higher Openness to Change and Self-Transcendence values and lower Conservation and Self-Enhancement values, given that countries in the European region have generally become more prosperous and secure in recent decades (Inglehart & Welzel, 2005).

## 2.2. Age and stages of life

A second perspective argues for the capacity of people for *life-long learning* (Konty & Dunham, 1997). It assumes that values can still be subject to long-lasting change during adulthood. This perspective is in line with personality theories (McCrae & Costa, 1999) in which values are seen as *characteristic adaptations* that are prone to change due to interactions with the environment. Therefore, it is conceivable that values change as people age and take on new social roles. Indeed, there is empirical evidence that psychological constructs that are related to values can change after

being formed during adolescence. For instance, Danigelis and colleagues (2007) decomposed changes in socio-political attitudes into those due to generational differences and aging within each cohort in their study. They found evidence for learning, adaptation, and reassessment, not only in respondents aged 18 to 39 but also, and most frequently, in those aged 60 and older. At the same time, there is evidence that attitudes and values may not equate with one another since they change differently during the life course (Konty & Dunham, 1997). Hence, the evidence on value change across different ages and cohorts is still inconclusive (Bardi et al., 2009; Vecchione et al., 2016).

There is a considerable agreement in the literature that values remain relatively stable during the life cycle, once value priorities are formed in adolescence (Inglehart & Welzel, 2005; Schwartz, 2005b). Still, there is a multitude of theories that might explain the development of personal values across the life course (for a recent review, see Jaspers & Pieters, 2016). Schwartz (2005b) argued that role changes associated with aging alter peoples' values in a directionally predictable and coherent way. In early *adulthood*, endorsing a combination of Self-Enhancement and Openness to Change values might help meet the challenges associated with getting a job or becoming parents. In middle adulthood and the pre-retirement age, the need for preservation of what has been achieved in life goes together with an increased endorsement of Conservation values. Physical aging may also affect personal values because mobility and cognitive abilities usually decline progressively with age, even though elderly people are very successful at applying a variety of coping strategies (George, 2012). Schwartz (2005) further argued that a wish for safe and predictable environments and less novelty and risk drives older people from the Openness to Change to the Conservation pole. Self-Enhancement "may also be less important for older people who are less able to perform demanding tasks successfully and to obtain social approval" (Schwartz, 2005b, p. 74). In terms of role changes, opportunities to express the values of youth (i.e., Self-Enhancement and Openness to Change) become less central with retirement, while the values located on the opposite side of the circle (e.g., Security) better meet the challenges linked to this life stage (e.g., the loss of a partner). For values at the Self-Transcendence pole, there are no conceptual links to old age, even though there seems to be

an empirical association: The older the individual, the more self-transcendent values are emphasized over self-enhancing values (Schwartz, 2005b). This fits the commonly held stereotype of older people becoming wiser and being good-natured (Cuddy, Norton, & Fiske, 2005). Note that *wisdom*, for example, is a defining value of Self-Transcendence (Schwartz, 1992). Hence, with every stage of life, there seems to be a hierarchy of values that helps people handle typically occurring life circumstances.

Taking a *life-long learning* perspective, we might expect that, at different ages and stages of life, different values become more important. That is, individuals' values shift towards emphasizing Conservation over Openness to Change, and maybe value Self-Transcendence over Self-Enhancement, as they grow older.

## 2.3. Potential differences across Europe

Country differences are another factor that can contribute to how people age in terms of their value priorities. It is noteworthy that there is almost no mention in the literature of differences between countries in how cohorts age and change in their value priorities. It is conceivable that some countries provide a context in which the values of the young have become considerably different to the values of older people, or that cohorts that were socialized differently across Europe might also react distinctly to contextual factors. For instance, Mishler and Rose (2007) argued that the capacity of people for life-long-learning is especially important in countries with a Soviet past because they had to adapt to dramatic socioeconomic and political change. Countries belonging to geographical regions with similar socioeconomic and political histories should, therefore, show similar intra-cohort aging trajectories. None of the three studies (Fung et al., 2016; Robinson, 2013; van Herk & Poortinga, 2012) that have investigated cultural differences in the associations between age and Schwartz's values, however, reported strong differences, probably because their data did not allow for the testing of the presence of cohort effects.

In summary, the intra-cohort approach to change takes data from multiple cross-sectional studies that have gathered data over a sequence of occasions using the same measurements of Schwartz's values. It then defines particular generations in each cross-sectional study by grouping people who were born between particular years into historical cohorts (for example, Generation X born between 1965 and 1976). It then compares data across the studies and countries to look for changes within a generation over time. It assumes that the samples from the historical cohort in the different studies have representative means. Hence change can be taken to reflect the age-related mean-level change for that cohort in general. In this way, the intra-cohort approach studies change within a cohort over time, that is, normative aging, without requiring longitudinal data. We reviewed two competing hypotheses explaining why, in single cross-sections, older age is associated with higher Self-Transcendence (vs. Self-Enhancement) and Conservation (vs. Openness to Change) values. While the *formative-* or *impressionable-years* hypothesis leads us to attribute these age-value associations to generational differences, the *life-long learning* perspective sees the value change as a consequence of aging (i.e., normative mean-level changes). In this exploratory work, we do not formulate any hypotheses about whether the pace of change differs between Schwartz's two value dimensions or whether we expect to find strong or weak country differences regarding normative value change and cohort effects. To identify a pattern behind these potential differences, we need to look at specific countries within Europe. The main aim of this study is to shed light on the underlying reasons for value change by determining whether it can be attributed to age differences (life-long learning hypothesis) or differences between cohorts (formative-years hypothesis).

## 3. Methods

### 3.1. Research material

Representative data from the European Social Survey (www.europeansocialsurvey.org) were used. To date, the ESS has been fielded 2002/2003, 2004/2005, 2006/2007, 2008/2009, 2010/2011, 2012/2013, and 2014/2015. Since the release of the seventh ESS wave (edition 1.0, published 28 October 2015), a comparison of the 26 countries that have participated in at least four waves became possible. More than 275,000 respondents provided complete answers on value priorities. We excluded respondents with more than three missing value items and those who did not report their year of birth. The smallest *N* was for Cyprus (4,262) and the largest for Germany (19,980). A total of 12 countries (Belgium, Denmark, Finland, France, Germany, Ireland, the Netherlands, Norway, Poland, Slovenia, Sweden, and Switzerland) released data for all seven waves, six countries for six waves (the Czech Republic, Estonia, Hungary, Portugal, Spain, and the United Kingdom), three countries for five waves (Austria, Slovakia, and the Ukraine), and six countries (Bulgaria, Cyprus, Greece, Israel, and Russia) for four waves.

### 3.2. Measures

#### 3.2.1 Dependent variables

*Schwartz's value dimensions.* The Portrait Values Questionnaire (PVQ; e.g., Schwartz, 2005a), with 21 items, is routinely included in the core section of the questionnaire of the ESS. As we are interested in *value priorities* (i.e., the hierarchy of values within the Schwartz structure), and to simplify the data, higher-order values that are conceptually conflicting were combined to form a dimension score. The score for the Openness to Change vs. Conservation dimension was obtained by subtracting the Conservation score from the Openness to Change score. In the same way, the Self-Transcendence score was subtracted from the Self-Enhancement score to get a score for the Self-Enhancement vs. Self-Transcendence dimension. These two basic value dimensions run from -

5 (maximal Openness to Change or maximal Self-Enhancement) to +5 (maximal Conservation or maximal Self-Transcendence) (see Schwartz, 2005a, for computational details).

The use of dimensions can be justified because it is known that, if people's values change, they do so in a systematic fashion, i.e., conflicting values change in opposite directions, and compatible values change in the same direction (Bardi et al., 2009). Also, Davidov (2010) has shown that Schwartz's higher-order values are more comparable across countries than his ten value types.

### 3.2.2. Independent variables age and cohort

*Age groups.* The cumulative ESS dataset covers the full adult age range with a mean of 47.9 years ($SD$ = 18.6). We decided to group individuals into 14 age groups. These categories separate respondents in 5-year intervals, except the oldest (81 to about 100 years) and youngest (15 to 20 years) ages.

*Historical cohorts.* A cohort variable was created that distinguishes five different cohorts (each contributes approximately 13-24% to the total sample) since these might have experienced historical changes in their formative years (see van Herk & Poortinga, 2012 and Grasso, 2014)[1]: The oldest cohort (1926-1945) was born and/or raised during World War II (WWII). Baby-boomers share the characteristic feature of being born during the period of high birth rates following WWII, ending with the introduction of the birth control pill. We split this cohort into two groups (1946-1953; 1954-1964) to reflect the different periods of the Cold War (the death of Soviet leader Stalin in 1953 was set as the cut-off). The cohort that followed, labeled Generation X (1965-1976), is the cohort for which shared characteristics are least clearly defined. The youngest cohort, often called Millennials (born 1977 and later), came of age after the collapse of the Soviet Union. After excluding age-cohort pairs with less than 50 cases (within country), the analyses presented are based on 611 samples of cohorts at different ages.

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[1] We excluded ESS respondents born and raised before WWII (1900-1925).

### 3.2.3. Country-level moderators

We obtained (per capita) GDP from EuroStat (http://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_per_capita,_consumption_per_capita_and_price_level_indices). A country's legacy of communism was coded 1= Communist legacy, 0.5=Germany, and 0=others. Due to the high correlation between GDP and Communist legacy, the former variable was standardized.

## 4. Results and discussion

A main objective of this paper was to graphically separate generational differences from intra-cohort aging across the 26 European countries. The following figures show repeated ESS cross-sections for the five historical cohorts at different ages, organized by geographic region. The 26 countries are presented separately for Northern (Figure 1), Eastern (Figure 2), Southern (Figure 3), and Western Europe (Figure 4).

### 4.1. Normative aging

First, we used a graphical cross-sectional sequential design, which assesses normative value change/intra-cohort aging by inspecting an age-by-cohort table. More precisely, we compared data from different samples taken from the same cohorts over time to obtain a broad estimate of value change as a consequence of aging. The stability of the results was assessed by comparing the similarity of the intra-cohort aging trajectories and generational differences of countries from the same European geographic region.

*Insert Figure 1 about here*

### 4.1.1. Self-Enhancement vs. Self-Transcendence values

There were near-universal increases in Self-Transcendence from late adolescence to young

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adulthood. Subsequently, age effects were virtually non-existent in most Eastern European countries (Bulgaria, Czech Republic, Hungary, Slovakia, Russia, and the Ukraine; Figure 2), as well as Ireland and Switzerland. It should be noted that age trajectories, in some of these countries, were even slightly negative for the so-called Generation X and the Cold War generation, as well as the Baby boomer generation. Also, in the Southern European countries of Greece, Israel, Portugal, and Slovenia (Figure 3), age effects were only weakly present, if at all, yet there was a general tendency for Self-Transcendence values to increase with age. In old age, looking at the WWII generation in these countries, self-transcending value orientations leveled off. Across most Northern and Western European cohorts (in Belgium, Denmark, Finland, France, the Netherlands, Norway, and Sweden, and also, but less clearly so, in Austria), Self-Transcendence values further increased with age until middle adulthood (Figures 1 and 4). Overall, there was no remarkable increase in Self-Transcendence endorsement for the WWII generation in old age. The presented overall weak intra-cohort aging trends are in line with the study of Bardi and colleagues (2009) but are at odds with studies that found that an increase in age is strongly associated with higher Self-Transcendence and lower Self-Enhancement values (Robinson, 2013; Schwartz, 2005b; Vecchione et al., 2016)

Most importantly, we found that there was variation within Europe's geographic regions concerning their intra-cohort aging trajectories. For instance, Ireland went against the overall trend for its region because it showed a relative decrease in self-transcending values for people born before 1954, instead of being stable. Period effects may serve as an explanation for some of these deviations, as the economic crisis struck Ireland comparatively early and hard (2008-2010). Also, Cyprus, Estonia, Germany, the United Kingdom, Poland, and Spain deviated from the overall trends in their regions, but share the tendency for value change on the Self-Enhancement vs. Self-Transcendence dimension to be attributable to age. In this last group of countries, the evidence from previous single cross-sectional studies (e.g., Robinson, 2013; Schwartz, 2005b) is in line with the observed normative aging trajectories (see also, Vecchione et al., 2016).

### 4.1.2. Openness to Change vs. Conservation values

On the Openness to Change vs. Conservation dimension, the vast majority of historical cohorts (including Cyprus, Germany, the United Kingdom, Spain, and all East European countries except Poland and Russia) became more conservative with age. The remaining Northern and Western European cohorts, as well as those of Greece, Poland, and Russia, were an exception to this general trend once they were in middle age. Here, intra-cohort aging was not associated with conservative values for the average cohort member. In particular, the different samples that were taken from Cold War and Baby boomer generations did not change over time in their mean levels in any noteworthy way. The trajectories of Southern European countries also revealed a general slow-down in the age-related increase on the Openness to Change vs. Conservation dimension after midlife (except Cyprus, Greece, and Spain).

It appears that, on the second Schwartz dimension, fewer countries deviated from the main trend of their geographic region. Unsurprisingly, however, within-country trends were not identical across such a diverse array of countries. For instance, looking at the different samples of individuals from each historical cohort at the different times revealed that normative aging was far less related to changes in Conservation (vs. Openness to Change) value endorsement in Israel and Portugal than in the other Southern-European countries.

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## 4.2. Generational differences in value priorities

In the second step, our graphical approach allowed us to look at mean-level differences in value priorities between cohorts when reaching the same age. The comparison of these group means reveals what is commonly called generational differences (i.e., cohort effects). Further, Figures 1-4 reveal whether similar cohort effects affected neighboring countries or whether generational differences are country-specific.

There were remarkable similarities between samples drawn from the same European regions in terms of identifiable cohort effects. It appears that generational differences are responsible for the prioritization of Self-Transcendence over Self-Enhancement values in older age, which was especially evident in many parts of Eastern Europe (Figure 2). In the other regions of Europe, generational differences were much weaker, but still present. Interestingly, Irish, Israeli, Portuguese, and Swiss later-born cohorts were also generally lower in self-transcending values than earlier-born cohorts (exaggerating age effects, as in most Eastern European countries), while later-born cohorts in some other countries were higher on this value dimension than those born earlier in the same century (e.g., in Germany, Finland, Cyprus, and Sweden; suppressing age effects). In the case of Spain, it is remarkable that there were strong differences between the overlapping data points of cohorts, while, within all cohorts, Self-Transcendence values increased with age. Spain's political history as a relatively young democracy, together with a steady increase in GDP (before the Crisis), may explain these trends.

On the Openness to Change vs. Conservation dimension, there were also generational differences. These cohort effects, with few exceptions (e.g., the Danish intra-cohort aging trends in Figure 1), worked in the same direction as the effects of age (i.e., the more conservative, the older and/or the earlier born).

*Insert Figure 4 about here*

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## 4.3. Latent growth curves and country-level moderators

Next, we estimated a series of LGCMs. With cohorts as a unit of analysis, assessed at different ages (i.e., ESS waves), the initial mean level of the two basic values dimensions reflects the European average, and the slope reflects the average values development of different samples taken from historical cohorts over time. FIML estimation does not impute missing values, but it uses all information available in the age-by-cohort table. Thus, our estimates include intra-cohort aging trends from all historical cohorts and across all ages.

For both Openness to Change vs. Conservation (Model 1) and Self-Enhancement vs. Self-Transcendence (Model 2), the global fit indices indicated that a linear trajectory describes the data well (Table 1). For the developmental (a) as well as the model (b) that includes country-level moderators, there was a rather good fit for the Self-Enhancement vs. Self-Transcendence dimension (RMSEAs < .07; CFIs >.94), and a still acceptable fit for the Openness to Change vs. Conservation dimension (RMSEAs <.10; CFIs >.90).

The latent slopes were significantly different from zero, meaning that there is development over time on both value dimensions. The point estimates further indicate that across the adult life cycle, Conservation increased twice as fast as Self-Transcendence (.12 versus .06). As the variances for both intercept and slope were significant across models (not presented in Table 1), the analyses further indicated that there are mean differences between the cohorts and that not all cohorts increase at the same rate. By regressing the growth curves on the country characteristics GDP and Communist legacy, we explained some, although relatively little, of the variation in cohorts' mean levels at different ages. Increased affluence increased the initial level of the Conservation (latent intercept close to 0.30) and the Self-Transcendence (close to 0.90) dimensions. Not having a legacy of Communism seems to have a weak effect on the latent intercept of Conservation, failing to reach statistical significance ($p$=.14). As before, the effect of societal context on intra-cohort/normative aging –as accessed by the latent slope– was minimal. After excluding the effect of formerly

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belonging to Eastern Block, the rate of change in Schwartz's Self-Transcendence dimension was significantly moderated by GDP ($p<.01$). This means that the more affluent cohort members were, the more self-transcendent they became over time.

LGCM can also include a latent variable for a quadratic slope to account for the non-linear changes suggested by Figures 1-4. A model with a quadratic slope, however, did not converge. It is possible that the country differences or cohort effects that we have shown to be present, especially for the prioritization of self-transcending over self-enhancing values, artificially distorted age estimates (see Galbraith, Bowden, & Mander, 2014). Therefore, we looked at the latent growth of the World War II generation separately and split-half by GDP (RMSEA = .38; CFI = .76, results of this multi-group analysis are not shown). Results indicated that, in the group of high GDP countries, intra-cohort aging was weak but significant, and that, in the group of low GDP countries, the slope estimate (.09 versus .01) was non-significant. We interpret these findings to mean that differences between countries, rather than differences between cohorts, produced the linear normative aging trend on this Schwartz dimension in the LGCM.

Insert Table 1 about here

## 4.4. Similarities and differences across European regions

Overall, these findings provide mixed evidence for the two hypotheses that have been put forward in the literature. Most support can be found for the *life-long learning* hypothesis on the Openness to Change vs. Conservation dimension. The results of both analyses indicate that Conservation values become more important with age, relative to Openness to Change values. While, in descriptive analyses, this trend seems to slow down during midlife, it was dependent on the region in which a respondent was surveyed. While GDP and Communist legacy moderated a cohort's initial level (i.e., the latent intercept) of Conservation endorsement in the LGCM, neither of these two country-level characteristics explained differences in the magnitude of value change as a consequence of aging.

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Also, the *formative-/impressionable-years* hypothesis is corroborated in relation to the Self-Enhancement vs. Self-Transcendence dimension. While previous studies (Schwartz, 2005b; van Herk and Poortinga, 2012), likely due to differences between cohorts, have suggested that adults become more self-transcendent and less self-enhancing with age, in the current data, age effects were found mostly for Millennials (see also Robinson, 2013). During midlife, evidence was mixed, with no value change due to age in Eastern Europe, relatively weak age trends in Southern Europe, and stronger intra-cohort aging in Northern and Western Europe. The cohort that was born and/or raised during World War II, again, showed rather stable age trajectories across European regions (LGCM estimates deviated, in this respect, from the graphs in Figures 1-4). LGCM cannot tell us about the strength and/or direction of cohort differences, however, and this analysis confirmed that the rate of change was twice as slow on the Self-Enhancement vs. Self-Transcendence dimension as on the Openness to Change vs. Conservation dimension. Moreover, that the association between Self-Transcendence endorsement and intra-cohort aging (i.e., the latent slope) was moderated by GDP matched the differences between Northern, Eastern, Southern, and Western European cohorts that we found with the descriptive approach.

## 5. Conclusions

### 5.1. Age and cohort effects

Before this study, there was almost no research published on whether patterns in the development of Schwartz's (1992) values that could apply to most people exist, or whether there are cultural differences in the interplay of age and cohort effects. We examined cross-sectional data on cohorts at different ages and found near-universal normative aging trends on the Self-Enhancement vs. Self-Transcendence dimension in the young, and on the Openness to Change vs. Conservation dimension across the life cycle. Age effects were non-existent or weak on the Self-Enhancement vs. Self-Transcendence dimension in middle (except for Western Europe) and later adulthood. Thus, value

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change due to age appears to be coherent across European countries and directionally predictable. Moreover, consistency across countries belonging to regions with similar socioeconomic and political experiences confirmed the robustness of intra-cohort aging trajectories, yet we found important exceptions from the general trend, which painted a more precise picture. The variability in results can be accounted for by the fact that societal change is a composite of age, cohort, and period effects, which, in conjunction, may constitute cultural differences between countries (cf. Mishler & Rose, 2007; Realo & Dobewall, 2011). Moreover, LGCM results largely confirmed the normative aging trends reported in the descriptive analyses, with the minor exception that we were unable to model the potentially non-linear slope of the Self-Enhancement vs. Self-Transcendence dimension.

The literature suggests that age and cohort might jointly contribute to people's value endorsement and that the effects often go in the same direction. This matches the interplay we found between intra-cohort aging trajectories and generational differences on the Conservation vs. Openness to Change dimension. When generational differences were present, these made age differences more pronounced (see also Robinson, 2013). The stability of people's Self-Transcendence values, however, was obscured by the (sometimes strong) generational differences. Taken together, our results seem to indicate that egoistic values (i.e., Self-Enhancement) are on the rise across wide parts of Europe, and it is not the first time that researchers attribute more egocentric personality profiles to younger generations (Twenge & Foster, 2010). At the same time, we have positive news to report, because the more affluent a country, the more cohorts emphasized Self-Transcendence over Self-Enhancement values with increasing age. Future work should clarify the nature of age effects by looking at associated role changes and co-occurring life events.

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## 5.2. Strength and Limitations

The most obvious limitation is that we compared data from different samples taken from historical cohorts over time and did not follow the same group of people as they grow older. At the same time, the richness of the comparative dataset, which included repeated observations in many European countries, is the biggest strength of the current study. Its biggest limitation is the relatively short time-span covered by the first seven waves of the ESS. The data needed to perform a robust age and cohort analysis that also takes into account period effects (ignored in the present study) are gathered across long time series so that multiple cohorts going through different life stages and experiencing diverse contextual conditions can be observed. The longer the time span covered by the data, the lower the correlation, and subsequent confusion, between the effects of age and cohort. In this respect, the (maximally) thirteen-year period of observations included in the current data may be at the lower limit of what it is desirable, and this, therefore, restricted our capacity to safely separate age from cohort effects and make subsequent inferences. To partially overcome this limitation, we estimated the latent growth curves of the cohorts using FIML estimation. This novel approach was chosen because it has the advantage of dealing with a high number of missing values in the data in the analysis, providing a fuller picture of the average cohort member's value priorities across adulthood.

Each statistical approach to measuring change at the group level has its advantages and disadvantages. The graphical cross-sectional sequential design we used looks descriptively at interactions between two of the three change components–age, cohort, and period–at a time. Similar to related approaches (e.g., Danigelis et al., 2007; Twenge & Foster, 2010), each combination, here an age-by-cohort table, neglects the third component (period), which may also be relevant for understanding value priorities. The question arises whether the observed value preferences reflect the effects of aging or the period in which the respondents were surveyed. If period effects confound value change, then it becomes increasingly difficult to disentangle age from cohort

effects. Therefore, we cannot rule out the possibility that period effects produced some of the observed age trajectories.

Schwartz's (1992) theory describes universal aspects of the content and structure of human values (cf. Davidov, 2010). It should be noted that, to the best of our knowledge, only one study has assessed the comparability of the entire circle at once across different countries (Lilleoja et al., 2016), while the cross-country cross-time equivalence of values has been assessed for the Universalism value type only (Zercher et al., 2015). Measurement invariance is an assumption that underlies LGCM that was not directly tested in the current study.

## 5.3. Summary

Unlike the *formative-* or *impressionable-years* hypothesis would suggest, *life-long learning*–which can lead to changes in personal value priorities–seems to be the norm rather than the exception. The normative change in Schwartz's values due to age was equally important as the change due to differences in cohort formative experiences (i.e., socialization). The relative contribution of age and cohort to personal values, however, depends on the value dimension studied (age effects were much stronger for Openness to Change vs. Conservation values). Country differences played a relatively weak role in explaining normative value change; yet, a country's affluence seems to be an important moderator of the relationship between age and Self-Enhancement vs. Self-Transcendence endorsement.

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**Table 1.** Developmental Models of Value Change: Initial Mean Levels and Rate of Change

| Model | Intercept | (std. err) | p | Slope | (std. err) | p | $X^2$ | (df) | RMSEA | CFI |
|---|---|---|---|---|---|---|---|---|---|---|
| *1a) Openness to Change vs. Conservation* | | | | | | | 221.480 | (100) | .097 | .912 |
| *Growth curves* | -0.290 | (.040) | .000 | 0.118 | (.005) | .000 | | | | |
| *2a) Country-level moderation* | | | | | | | 264.412 | (124) | .093 | .905 |
| *Growth curves* | -0.346 | (.050) | .000 | 0.117 | (.008) | .000 | | | | |
| GDP (standardized) | -0.173 | (.047) | .000 | -0.006 | (.007) | .417 | | | | |
| Communist legacy | 0.147 | (.100) | .141 | 0.003 | (.016) | .858 | | | | |
| *1a) Self-Enhancement vs. Self-Transcendence* | | | | | | | 151.614 | (101) | .062 | .959 |
| *Growth curves* | 0.879 | (.033) | .000 | 0.063 | (.005) | .000 | | | | |
| *2b) Country-level moderation* | | | | | | | 202.717 | (126) | .068 | .941 |
| *Growth curves* | 0.896 | (.042) | .000 | 0.064 | (.005) | .000 | | | | |
| GDP (standardized) | 0.116 | (.040) | .003 | 0.016 | (.005) | .001 | | | | |
| Communist legacy | -0.071 | (.084) | .394 | - | - | - | | | | |

*Note*. Model 1(a,b): All items—historical cohort means in five-year steps—were fixed on the intercept at 1 and the slope at 0+n. Model 2 (a,b): Covariates were regressed on the latent intercept and slope. The Communist legacy variable was excluded in Model 2b.

*Figure 1.* Intra-cohort aging on the Openness to Change vs. Conservation (dark blue) and Self-Enhancement vs. Self-Transcendence (light blue) value dimensions in Northern Europe

*Figure 2.* Intra-cohort aging on the Openness to Change vs. Conservation (dark blue) and Self-Enhancement vs. Self-Transcendence (light blue) value dimensions in Eastern Europe

*Figure 3.* Intra-cohort aging on the Openness to Change vs. Conservation (dark blue) and Self-Enhancement vs. Self-Transcendence (light blue) value dimensions in Southern Europe

*Figure 4.* Intra-cohort aging on the Openness to Change vs. Conservation (dark blue) and Self-Enhancement vs. Self-Transcendence (light blue) value dimensions in Western Europe

**Figure Notes**

*Figures 1-4.* Lines show an average cohort member's value priorities at different ages (ESS waves 1-6 pooled).