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ORIGINAL INVESTIGATION

Values and adult age: findings from two cohorts of the European Social Survey

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Abstract Human values are assessed biannually in a multinational sample as part of the European Social Survey (ESS). Based on theories of adaptive ageing, it was predicted that ten lower order values and four higher order values would show age differences that would be invariant across (a) two sample cohorts (2002 and 2008), (b) gender and (c) 12 industrialised nations. The value categories measured by the ESS are the following: conservative values (tradition, conformity and security), openness to change values (self-direction, hedonism and stimulation), self-transcendent values (universalism, benevolence) and self-enhancement values (power, achievement). Of the ten lower order values, *tradition* shows the strongest positive relation with adult age, while the value of *stimulation* shows the strongest negative relation with age. With regards to the four higher order value categories, conservative values increased across age groups, while openness to change values decreased. Neither of these value types showed cohort or gender differences. Self-transcendence values were greater in midlife and older adults compared with young adults, were higher in women than in men, and higher in the 2008 compared with the 2002 cohort. Self-enhancement values showed a negative relation with age, with men of all age groups scoring higher in this value type than women. Age effects on the four higher order value types were replicated across all 12 countries in the sample, with the single exception of self-enhancement values in Spain, which show no relation with age.

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Introduction

Values are learnt beliefs about what is, and what is not, important and meaningful in life, which serve as guiding principles for behaviour (Hill 1960; Olver and Mooradian 2003; Schwartz 2006). While values can be conceived as stable motivational traits that vary between people (Burr et al. 2011), they are also considered to evolve normatively across the human lifespan (Erikson 1980; Maslow 1987).

Research suggests that certain fundamental value domains can be commonly distinguished in over a 100 different national cultures (Schwartz and Bilsky 1987). Several major initiatives have been undertaken that have assessed personal values in multinational populations, including the *World Values Survey* (WVS), the *European Values Survey* (EVS) and the *European Social Survey* (ESS). The WVS has been conducted since 1981 in 100 countries, and has used a series of standardised questionnaires to assess values, including most recently a ten-item version of the Schwartz Portrait Values Questionnaire (PVQ) (Held et al. 2009). Details on the various questionnaires and findings from the WVS can be obtained at http://www.worldvaluessurvey.org.

The EVS is another large-scale international survey of human values, run from the Netherlands. It has so far included four waves of data collection in 1981, 1990, 1999 and 2008/2009. Values assessed in the EVS include religious/spiritual values, values relating to marriage and political values. Details on the EVS are available at http://www.europeanvaluesstudy.eu.

The ESS commenced in 2002 and has been conducted biannually since then in over 30 countries. It has gained data on attitudes, values, social conditions, health and well-being from nationally representative samples. Like the WVS, it employs a version of the Schwartz PVQ. The current article is based on data from the 2002 and 2008 cross-sectional waves of the ESS. Details of the questionnaires and data from the ESS are available at http://www.europeansocialsurvey.org.

The taxonomic model of values that underpins the PVQ measure, used in both the ESS and the WVS, was developed by Schwartz and colleagues (Schwartz and Bilsky 1987, 1990; Schwartz 1992, 2006). In the model, ten fundamental value domains are categorised into four 'higher order values':

1. Conservative values: *tradition* (valuing observance of historical traditions and customs), *conformity* (valuing restraint, politeness and impulse control) and *security* (valuing safety and order in society and relationships).
2. Openness to change values: *stimulation* (valuing novelty and new challenges) and *self-direction* (valuing independent activity and creativity). The value of *hedonism* (valuing self-gratification and enjoyment) is classified in both self-enhancement and openness to change value types.
3. Self-transcendent values: *universalism* (valuing equality and principled justice) and *benevolence* (valuing welfare of significant others).
4. Self-enhancement values: *power* (valuing social status, control, dominance) and *achievement* (valuing success and competence).

This set of ten values and four higher order values is factorially invariant across at least 20 cultures (Schwartz 1992, 2006; Schwartz et al. 2001). The value taxonomy is predictive of positive well-being (Burr et al. 2011; Sagiv and Schwartz 2000) and negative emotional states (Schwartz et al. 2000). Values also predict behaviour, for example alcohol consumption correlates with endorsing values of stimulation and hedonism (Schwartz et al. 2001). There are differences between men and women in some of the ten value domains, but the differences are small and account for considerably less variance than culture and age (Schwartz and Rubel 2005).

Values, when conceptualised at the individual level, are cognitive-motivational evaluations about which domains of activity are important and valuable (Schwartz and Bilsky 1990). From whence do such cognitive evaluations arise? What shapes human values? The consensus is that, as with other social-cognitive constructs, values are influenced by a complex set of intra- and inter-personal factors (Jost et al. 2003). Research has established that an individual's values are related to the social norms and values of the surrounding cultural and national milieu (Schwartz and Rubel 2005). Although the mechanisms by which cultural values come to be internalised at the individual level is widely debated, processes such as social learning through imitation have been emphasised as the basis for acquiring values (Hill 1960; Weiss 1978). Other forms of social influence can shape individual values, including verbal persuasion (Wood 2000). Age is also implicated by some as a causal factor in values acquisition, and we now turn to theories that propose mechanisms for this relation.

Adaptive ageing theories and values

Theories of lifespan development argue that personal values change normatively with age, and that such age-graded change is an adaptive process (Heckhausen et al. 2010). As a person grows older, they encounter a changing balance of age-related gains and losses, each of which brings new transitions to navigate, new tasks to fulfil, new roles to inhabit and new challenges to overcome (Baltes 1987). Adaptive ageing involves changing in ways that maximise opportunities, competence and well-being, given these inevitable age-related biological and social shifts (Vaillant 2002).

Erik Erikson's stage theory of human development models key phases of adaptive ageing. It postulates three sequential stages that adults move through: intimacy/isolation, generativity/stagnation and integrity/despair. Each of these stages refers to an adaptive solution to meet the challenges of the three main segments of adult life: young adulthood, midlife and old age (Erikson 1980). Neo-Eriksonian theories have built on this foundation and developed it, including those of Levinson (1978, 1996) and Vaillant (2002). According to this body of Eriksonian theory and research, in young adulthood, a person's focus is typically on establishing successful intimate relationships, on starting and maintaining a family of their own, and on 'making it' in the world of work (Levinson 1978). Corresponding to these challenges, young adults typically value and prioritise self-direction, achievement and being stimulated by new experiences (Arnett 2000). Then in midlife, a person focuses to a greater degree on providing for family and children, and on developing a lasting legacy. Generativity, and corresponding values that focus on others, typically becomes a stronger concern around the age of 40, and continues to dominate through midlife, if a person is developing healthily (Erikson 1980).

Vaillant's longitudinal research led him to conclude that in late midlife, around the age of 50, people typically come to value the maintenance and preservation of existing cultural institutions more than earlier in life, and may often take a role that involves conservative concerns. He refers to this late midlife period as the 'keeper of meaning' stage,

and contrasts it with the pursuit of new and progressive ideas typically observed in those in their twenties and thirties (Vaillant 2002).

In later life, adults enter a stage that involves greater *retrospection* and *reflection* on life more than in earlier years, and a search for a narrative that makes sense of the past and the present (Vaillant 2002). If this is achieved successfully, a person finds *integrity* in their twilight years (Erikson 1980). Values in older age correspondingly are said to become increasingly focused on the importance of the past, and on those institutions and traditions that bind the present to the past.

In sum, the Eriksonian theoretical perspective thus conceives of continual increase in conservative values with age, and a corresponding decrease in progressive values. This view is supported by political research; studies have found that when age cohorts are compared, older adults emerge as more culturally and politically conservative than younger adults (Cornelis et al. 2009; Maltby 1997).

Another theory that postulates a shift in personal values in the final decades of life is the *Theory of Socio-Emotional Selectivity* (Carstensen et al. 1999). This theory is based on evidence that older adults are less focused on acquisition and achievement goals and more on the promotion of emotional well-being than younger adults (Charles and Carstensen 2009). The mechanism that drives this change is a person's cognitively appraised *time horizon*—i.e. how much longer they think they have left to live. Those persons who have a long time horizon, and thus perceive that they have much time left to achieve and accumulate things, typically value achievement and the accumulation of influence and possessions. In contrast, those who perceive a short time horizon (e.g. older adults or the terminally ill) focus on immediate emotional concerns and the promotion of a state of positive well-being in the present moment, while de-emphasising achievement. Predictions from SES theory have been supported in experimental, longitudinal and cross-sectional research (Ersner-Hershfield et al. 2008; Charles and Carstensen 2009).

Baltes (1987) theorised that adults adapt to the changing balance of losses and gains associated with ageing, in order to optimise their performance in tasks despite this decline. The relative proportion of losses to gains increases as an adult ages, and Baltes (1987) suggests that older adults spend an increasing amount of time on conserving the competences that they have, rather than developing new ones. Research has correspondingly found that there is a normative motivation shift from acquisition to maintenance with age across adulthood (Heckhausen et al. 2010). From this, a corresponding change in values with age towards more conservative values can be predicted, as in this way a person's value system remains consistent with their own behaviour.

This study: aims and predictions

The multinational studies of human values, the WVS, EVS and ESS, have focused little attention on the relation of values to age. Furthermore, there is a paucity of papers examining the relation of personal values and age in the wider literature. In order to help fill this gap, the current article investigated age differences in values across adulthood, by way of a time-sequential analysis (Schaie 1965) of two waves of ESS data—the 2002 and 2008 waves. At the time of analysis, these two ESS cohorts were the furthest apart in time that had published data.

The aim of this study was to search for age, gender and cohort effects on values, and to establish the consistency of age effects across countries. These aims were pursued in light of a set of predictions based on adaptive ageing theories, and the findings are also interpreted and discussed in light of these theories. The predictions for the study are outlined below.

Self-transcendence values

A prediction was made that self-transcendence values (universalism, benevolence) would be lowest in young adults, highest in midlife adults and then marginally lower in older adults than midlife adults. This prediction was based on the findings of Erikson (1980), McAdams et al. (1998) and Vaillant (2002) that generativity—the concern for others and for later generations—tends to peak in-between the ages 40 and 60. In later years, self-transcendent values are predicted to decrease slightly, as Socio-Emotional Selectivity (SES) theory predicts that older adults should come to focus more on their own well-being and on managing their own age-related losses, thus less on social causes (Charles and Carstensen 2009). However, contrary to the predictions of SES theory, research on *gero-transcendence* has found that decreased self-centredness and transcendence of self-focus can be expected in many healthy individuals well into old age (Tornstam 1989, 1997). Thus, the predicted relation between self-transcendence and age after midlife is uncertain.

Self-enhancement values

These values (hedonism, achievement and power) prioritise the importance of directing energy, resources and attention towards the betterment of the self for instrumental ends. Adaptive ageing theory suggests that such values should be strongest in the years during which a person is most focused on the future, on themselves and on their own future goals. From this, we predicted that such values would be most strongly prioritised in young adults compared with midlife and older adult age groups.

Conservative values

Adaptive ageing theories emphasise that advancing age brings a gradual decrease in the motivation for making transformative changes to self and society, and conversely an increased value placed on maintaining valued elements of the past and of the status quo, by way of rituals and institutions that provide a link to social and personal history. Research on political attitudes has found a robust positive correlation between age and political conservatism. Given this, a prediction was made that conservative values (conformity, tradition and security) would increase across adult age groups and show the most pronounced age-related increase in late midlife.

Openness to change values

Openness to change values prioritise the importance of being independent, original, adventurous, and of seeking surprises and new experiences. Based on adaptive ageing theory, this value type should be expected to be most strongly emphasised in young adults, who have the greatest proportion of gains to losses across all adult age groups, and who have the longest typical time horizon of all adult age groups (Baltes 1987). Compared with young adults, openness to changes values are expected to be generally lower in older age groups. However, given that around the age of 60 adults may experience an increase of independence and self-direction due to retirement from work and children leaving home (Laslett 1989), we may expect a slight average increase between the ages of 55 and 65.

Gender, cohort and nationality: predicted relations with age

Given prior research on sex differences and age in relation to the Schwartz model, it was predicted that age will account for more variance in values than gender (Schwartz and Rubel 2005). We predicted that men would show higher mean scores on self-enhancement and openness to change values, while women would show higher mean levels of self-transcendence values. Conservative values were not predicted to show a difference across genders.

Given the cross-cultural invariance that the Schwartz taxonomy of values has demonstrated in previous research (Schwartz and Rubel 2005), it was predicted that the various nationalities that constitute the sample used in this study would show the same age–value relationships. It was also predicted that the same age effects would manifest across two cross-sectional cohorts of ESS data. If any clear cohort effects emerged, our aim was to explore and interpret these in an exploratory manner.

Method

Design of the ESS

The ESS is a cross-disciplinary, multinational research initiative that surveys the attitudes, beliefs and behaviours of over 30 countries in and around Europe. The survey has thus far comprised five waves of data collection, conducted in 2002, 2004, 2006, 2008 and 2010. Each wave of the ESS employs a different representative cross-sectional sample from participating nations. Data from the 2002 and 2008 data waves provide the basis for this study (ESS Round 1: European Social Survey Round 1 Data 2002; ESS Round 4: European Social Survey Round 4 Data 2008). These two waves were selected because, at the time of analysis in 2011, they were the first and last ESS waves for which data was available. It takes 2 years after ESS data collection for the data to be published, thus 2010 data were not yet accessible.

Sample and participants

Countries selected for inclusion in the analysis were those that featured in both 2002 and 2008 waves. A second criterion was that countries were required to have a GDP-per-capita of $30,000 or more. The decision to analyse only those countries with a GDP-per-capita above this cut-off was taken in order to limit the sample to industrialised, economically developed countries with comparable levels of affluence relative to the size of the population, as the predicted values–age relations are based on theories developed based on research in industrialised cultures. Countries that met both inclusion criteria included Belgium, Denmark, Finland, France, Germany, Greece, Ireland, the Netherlands, Norway, Spain, Sweden, Switzerland and the UK.

Sampling in all countries in the ESS used geographical- and age-clustering combined with random sampling to ensure a representative national sample. The majority of the sample did not have higher education qualifications; in the 2002 cohort, 26 % of the sample had further or higher education, while in the 2008 cohort, 31 % had further or higher education. In the two samples, approximately two-thirds of participants were married or cohabiting with their partner (2002—66 %, 2008—64 %).

Participants in the sample under the age of 20 and over the age of 90 were excluded due to the small sample numbers in these age ranges compared with adults between the ages of 20 and 89. Participants with missing data from the values questionnaire or any of the key demographic variables were also excluded from the analysis. After exclusions, the resulting sample across both cohorts was $N = 44{,}955$. A detailed breakdown of this sample number by cohort, gender and age group is shown in Table 1, along

Table 1 Sample numbers for 10-year adult age group, cohort, country and gender

	Cohort	Resp rate (%)	20–29	30–39	40–49	50–59	60–69	70–79	80–89
Belgium	2002	59.2	296	325	358	286	200	142	59
	2008	58.9	243	279	317	311	225	159	70
Denmark	2002	67.6	206	283	252	295	200	105	46
	2008	53.9	154	245	298	295	299	143	61
Finland	2002	73.2	309	289	360	379	239	183	53
	2008	68.4	314	306	375	387	350	206	98
France	2002	43.1	239	284	245	247	200	156	58
	2008	49.4	251	376	354	358	288	212	114
Germany	2002	55.7	334	516	579	457	470	256	86
	2008	48.0	330	357	594	524	416	282	90
Ireland	2002	64.5	340	366	363	391	246	171	49
	2008	51.6	227	386	284	286	251	179	60
The Netherlands	2002	67.9	226	502	471	426	330	218	80
	2008	49.8	203	301	337	328	267	184	76
Norway	2002	65.0	299	438	405	370	212	159	64
	2008	60.4	187	301	295	273	202	112	45
Spain	2002	53.2	222	339	256	230	246	226	95
	2008	66.8	416	488	458	337	318	275	118
Sweden	2002	69.5	287	395	316	367	239	164	81
	2008	62.2	255	306	294	274	285	191	86
Switzerland	2002	33.5	188	455	409	337	281	177	75
	2008	49.9	249	324	351	281	250	192	92
UK	2002	55.5	241	405	334	339	280	244	89
	2008	55.8	303	398	452	356	340	243	123
Male total	2002		1534	2208	2105	2006	1593	1015	329
	2008		1549	1970	2096	1997	1747	1089	413
Female total	2002		1649	2388	2242	2117	1549	1184	504
	2008		1583	2097	2313	2013	1744	1289	620
Total sample	2002		3187	4597	4348	4124	3143	2201	835
	2008		3132	4067	4409	4010	3491	2378	1033

Resp rate response rate

with response rates for the different countries in the two data collection waves. The 10-year age groups shown in Table 1 are the same age intervals as used in the ensuing ANOVA analysis of the values–age relation.

Measure and procedure

Schwartz PVQ-21 and scoring procedure

The PVQ-21 (PVQ-21-item version) assesses the ten basic human values of Schwartz's taxonomy (*power*, *achievement*, *stimulation*, *self-direction*, *hedonism*, *universalism*, *benevolence*, *tradition, conformity* and *security*). All values are measured using two items, except universalism, which is measured using three items. Each item contains a short portrait that describes a hypothetical person (gender is matched to participant) who expresses particular value priorities (Schwartz 2006). An example item for the value of *self-direction* is: "Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way", and an example *Power* item is "It is important to him/her to be rich. He/she wants to have a lot of money and expensive things". For each portrait, responses are given on a six-point Likert scale anchored to: *very much like me, like me, somewhat like me, a little like me, not like me* and *not like me at all*. Internal reliability coefficients for the ten values assessed in the PVQ have been reported elsewhere and have shown to be adequate across multiple samples ($\alpha = .61–.78$) (Schwartz et al. 2000). The current analysis of the values–age relation also focuses on the four higher order value types of the Schwartz model. The internal reliabilities of these four

higher order subscales have been less widely reported. In the current sample, they show satisfactory internal consistency. Cronbach alpha coefficients across both sample cohorts are as follows: self-transcendent values ($\alpha = .72$), conservative values ($\alpha = .74$), change-focused values ($\alpha = .68$) and self-enhancing values ($\alpha = .75$).

In the Schwartz model, the hedonism subscale fits into both self-enhancement and openness to change higher order factors. For the purpose of this analysis, it was included in the self-enhancement category, as it loaded onto this higher order value more strongly in the current dataset.

Scoring procedure The ten values and four higher orders values of the Schwartz model can be calculated from PVQ item scores in two ways: (1) the raw-score approach or (2) the mean-corrected approach. For the raw-score approach, the mean of contributing item scores is calculated. The alternative approach—the mean-corrected scoring method—is specifically instructed for use with ESS data and other cross-cultural data.[1] This is because individuals from different cultures may interpret the label anchors of the six-point scale (e.g. 'somewhat like me'/'very much like me') differently, and thus differences between individuals in raw score may reflect differences in response scale interpretation (Saris 1988; Schwartz 1992).

In order to control for this, the mean-corrected or 'centred' value scores corrects for an individual's overall tendency to score high or low on the scale. To conduct the mean correction, an individual's mean score across all 21 items is computed and then subtracted from each item score. The raw score minus the mean is the mean-corrected score—it represents how high or low an item is *relative to the individuals' overall mean*. Mean-corrected scores thus can be negative (e.g. −2) if they are below the mean or positive (e.g. +2) if they are above the mean. By centring scores around the mean in this way, particular cultural or individual tendencies to variably interpret the six-point scoring scale are corrected. Limitations of this calculation approach are outlined in the discussion.

Statistical analysis

For the purposes of this study, age was analysed both as a continuous variable and as a categorical variable. Zero-order correlations with age as a continuous variable were employed as the basis of inference for the linear relationship between ten lower order values and age. Age was also grouped into 10-year categories in order to conduct a multivariate analysis with age and three other categorical variables—cohort, country and gender—as independent variables. A multifactor ANOVA was employed to test for the effects of gender, age and cohort on the four higher order values. Visual analysis of confidence intervals, using the approach described by Cumming and Finch (2005), was used to infer the significance of differences between paired means. This employs a standard 'rule of eye', whereby non-overlapping 95 % confidence intervals are attributable to a difference between the means that is significant at $p < 0.01$ (Cumming and Finch 2005).

Table 2 Zero-order correlations between age and ten Schwartz model values in the 2002 and 2008 cohorts, ordered by higher order value type (all correlations significant at $p < 0.001$, medium effect sizes shown in bold)

Higher order value	Value	2002	2008
Conservative values	Tradition	**.30**	**.30**
	Conformity	.29	.28
	Security	.25	.22
Openness to change values	Stimulation	**−.32**	**−.30**
	Self-direction	−.05	−.05
Self-transcendent values	Universalism	.11	.15
	Benevolence	.08	.06
Self-enhancement values	Power	−.10	−.11
	Achievement	−.27	−.26
	Hedonism	−.29	−.25

Results

Zero-order correlations between age and the ten values are presented in Table 2 for the 2002 and 2008 ESS cohorts. All correlations in the table emerged as significant, even those with small effect sizes. Correlations that show medium effect size are shown in bold in Table 2, based on Cohen's (1992) rule of thumb for medium effect correlations as $r > 0.3$. In support of the hypothesised relations between higher order values and age, all self-enhancement values showed a negative relation with age, as did the openness to change values, while self-transcendence values and conservative values show positive associations with age. Direction of association and effect size category (small/medium) were the same across both cohorts for each value. In both the 2002 and 2008 cohorts, the two values that loaded most strongly onto age were stimulation (negatively) and tradition (positively)—these both show a medium effect size in the two cohorts.

To test the effects of age, gender and cohort on higher order values, a multifactor ANOVA for each of the four higher order values was conducted with age, gender and cohort as fixed factors. For the purposes of this analysis,

[1] http://ess.nsd.uib.no/ess/doc/ess1_human_values_scale.pdf.

age was grouped into seven decade-long intervals (20–29, 30–39, 40–49, 50–59, 60–69, 70–79 and 80–89).

The effect size for each IV is reported using partial eta squared (η_p^2), which is analogous to R^2 values for individual predictors, although large/medium/small distinctions differ—anything over .06 is a medium effect size and over .14 is a large effect size (Cohen 1988). Variance accounted for the ANOVA model is reported using adjusted R^2.

The conservative higher order value type showed a significant effect of age (F (6.42892) = 1242.9, $p < 0.001$, $\eta_p^2 = .16$), gender (F (1.42892) = 281.3, $p < 0.001$, $\eta_p^2 = .01$) and cohort (F (1.42892) = 6.4, $p < 0.001$, $\eta_p^2 = .01$); however, as these figures show, only age showed an effect size of any note. Adjusted R^2 for the ANOVA model was 0.17.

The openness to change value type showed a significant effect of age (F (6.42891) = 475.9, $p < 0.001$, $\eta_p^2 = .09$), gender (F (1.42891) = 180.6, $p < 0.004$, $\eta_p^2 = .01$) and cohort (F (1.42891) = 13.65, $p < 0.001$, $\eta_p^2 = .007$), with an adjusted R^2 for the ANOVA model of 0.09.

The self-transcendent value type showed a significant effect of age (F (6.42892) = 147.0, $p < 0.001$, $\eta_p^2 = .03$), gender (F (1.428922) = 1013.2, $p < 0.001$, $\eta_p^2 = .02$) and cohort (F (1.42892) = 150.7, $p < 0.001$, $\eta_p^2 = .008$), but sizes of all three effects were small. Adjusted R^2 for the ANOVA model was 0.06.

The self-enhancement value type showed a significant effect of age (F (6.42880) = 405.7, $p < 0.001$, $\eta_p^2 = .06$), gender (F (1.42880) = 1029.3, $p < 0.001$, $\eta_p^2 = .02$) and cohort (F (1.42880) = 7.9, $p < 0.001$, $\eta_p^2 = .01$), but again only age registered an effect size above small. Adjusted R^2 for the ANOVA model was 0.08.

In summary, of the four higher order values, age accounted for more variance in values than cohort or gender. For the conservative value type, the effect size of age was large; for the openness to change and self-enhancing value type, the effect size of age was medium and for the self-transcendent type, the effect size of age was small.

Post-hoc significance tests of means lacked the capacity to highlight the source or shape of the effects found by the ANOVA, as due to the large sample size all differences emerged as significant at the $p < 0.001$ level. Therefore instead, a visual inspection of confidence intervals on the graphs was used to test the hypotheses relating age to values (Hunter 1997), using the standard 'rule of eye' for confidence interval analysis (non-overlapping 95 % CIs are attributable to $p < 0.01$). Figure 1 provided the basis for this analysis.

It was found that the mean for conservative values increased across all age groups with non-overlapping CIs, except for middle-aged women between 30–39 and 40–49 and between male age groups 70–79 and 80–89 in the 2002 cohort. This provided consistent support for the hypothesis that this value type would increase across adult age groups.

The two cohorts showed no clear and consistent differences. In terms of gender, women were consistently higher in conservative values than men in age groups below 40 and over 60, but not in middle age. This partially contradicts our hypothesis that conservative values would not show a gender difference—it seems there may be a gender difference, but only in specific age groups.

In the openness to change value type, means declined across all age groups, supporting the predicted relation. The negative effect of age is more pronounced in young adults and in old adults than in middle-aged adults. It was predicted that openness to change values would increase after retirement age, but this was not found.

It was predicted that men would show higher mean scores on openness to change values, based on a prior gender analysis of the Schwartz model (Schwartz and Rubel 2005). In support of this, men were consistently higher than women in the age groups below 40 and above 60; however, when compared within cohort, gender differences in the 40–49 and 50–59 categories were non-significant.

Self-transcendent values were predicted to be lowest in young adults, highest in midlife adults and then marginally lower in older adults than midlife adults, thus showing a curvilinear pattern. In partial support of this prediction, means were higher in middle-aged adults than in young adults. However, there was no significant decline in older adults. The 2002 cohort showed mean-level stability after the age of 49 (2002), and the 2008 cohort showed mean-level stability after 59 (2008).

It was also predicted that women would show higher mean levels of self-transcendent values than men. In support of this, women were higher than men in all age groups and in both cohorts, except for the 2002 cohort in the 80–89 age group. This value type is the only one that shows a clear and consistent cohort effect—except for the 40–49 age group for both genders and women over the age of 70; all 2008 cohort age groups are significantly higher than their 2002 counterpart.

Self-enhancement values showed a negative relation with age, supporting our hypothesis. The negative relation with age was most pronounced between the age groups under the age of 60. There was also a consistent gender difference in line with predictions—men showed a higher mean level of this value type in all age groups and in both cohorts relative to women.

Effect of nationality on the values–age relationship

It was hypothesised that the relationship between age and values would be replicated across the 12 different nationalities that comprise the international sample used in this study. For this reason, further ANOVAs were conducted with the higher order value types as DVs, and age group and country as IVs.

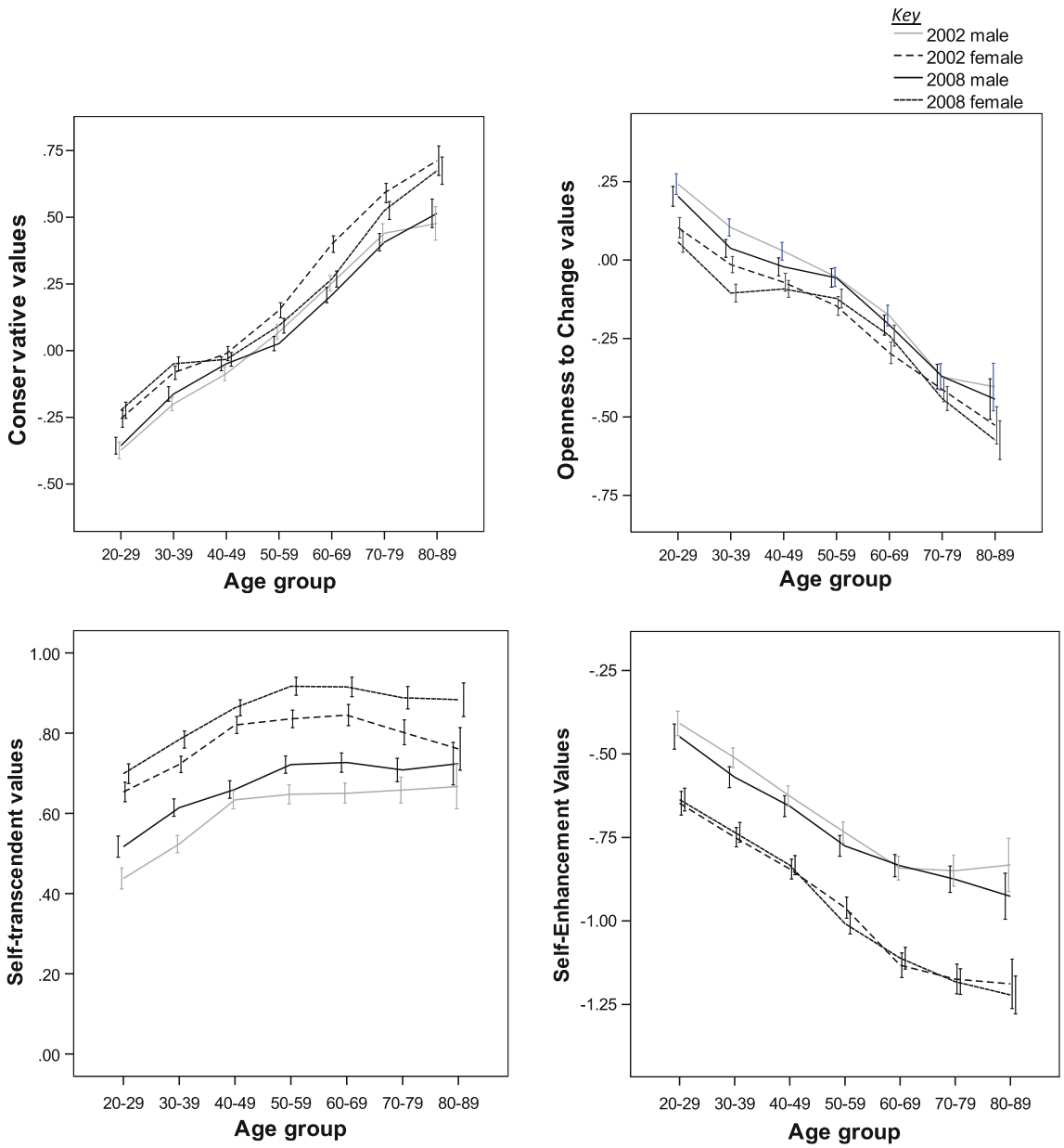

Fig. 1 Age–values relationship for males and females in 2002 and 2008 ESS cohorts for four higher order value types: self-enhancing, self-transcending, openness to change and conservative values, with 95 % CI error bars

In all ANOVA models, age accounted for more variance than national differences, which in turn accounted for more variance than the interaction term. F values and effect sizes for age and nationality are shown in Table 3. All effects were significant at $p < 0.001$.

In order to explicitly test the hypothesis that age and values would show the same relationship in the countries sampled, a visual analysis of CIs was undertaken using Fig. 2, in which lines are defined by country. Confidence intervals were compared using the aforementioned technique described by Cumming and Finch (2005). For conservative values, there was a consistent positive relation of age to value mean in *all* countries, while for openness to change values there was a consistent negative relation, with the *only* positive change being in Ireland between the ages of 40–49 and 50–59 (non-significant) and in Norway and Denmark between 70–79 and 80–89 (non-significant). The curvilinear relationship between age and self-transcendent values was replicated across *all* countries, and in the self-enhancement value type, the negative relationship with age was replicated across countries except Spain. France and Finland showed significantly lower levels of self-

Table 3 *F* values and partial eta squared values for the effects of age, country and their interaction on the four higher order value types

Higher order value	Effect	df	*F*	η_p^2
Conservative values	Age	6.42846	1292.4**	.15
	Country	11.42846	186.2**	.05
	Interaction	66.42846	281.3**	.004
Openness to change values	Age	6.42845	462.1**	.08
	Country	11.42845	81.1**	.02
	Interaction	66.42845	6.5**	.01
Self-transcendent values	Age	6.42847	139.3**	.02
	Country	11.42847	35.5**	.009
	Interaction	66.42847	1.9**	.003
Self-enhancement values	Age	6.42835	411.6**	.06
	Country	11.42835	281.3**	.01
	Interaction	66.42835	5.1**	.008

** Significant at $p < .001$

enhancement overall, and the age effect was slightly different—there was no negative relation between age and self-enhancement values over 59.

Discussion

Age differences in values and higher order values were examined in the two cross-sectional cohorts of the ESS. In both cohorts, openness to change values and self-enhancement values were negatively associated with age, and conservative values were positively related to age. Self-transcendent values were positively associated with age between young adulthood and midlife but not with age between midlife and old age. The nature of the age-values association held across cohorts and across countries included in the sample, with some minor caveats. In Spain, there was no relation between self-enhancement values and age, and in the openness to change values category, the relation with age was stronger in some countries than others. This cross-national consistency suggests that for industrialised European countries, the source of the age–values relation, whatever it may be, is a constant presence.

The developmental interpretation

There are different ways of interpreting cross-sectional findings such as those presented here, and this study has chosen to interpret them through an adaptive ageing framework. Taken as a totality, the findings support the adaptive ageing perspective and the predictions borne from it. This theoretical perspective states that personal values change with age in ways that adaptively suit the opportunities and constraints open to adults of different ages and life stages. Adaptive ageing theories predict a rise in conservatism with age, as a person increasingly focuses on conserving their abilities and achievements rather than new acquisitions. In line with this prediction, conservative values showed a positive relation with age. *Tradition* was the value most strongly positively associated with age of all the ten values assessed, which supports Vaillant's longitudinal study that found individuals to increasingly value tradition as they age, prompting Vaillant to suggest that this change is central to normative successful ageing (Vaillant 2002). Adaptive ageing theory also predicts a gradual decline in the value attached to self-enhancing activities such as the search for new stimulation, which aligns with ageing theories that predict a greater concern with self-transcendence. Erikson suggested that midlife is a time of generativity, and the cross-sectional data support this, while showing that the levels achieved at midlife are maintained in later life.

Limitations to the developmental framework: the alternative cohort interpretation

The values–age relation has thus been interpreted here through a developmental lens. An alternative interpretation of such age differences is by way of historical cohort effects (Schaie 1965), for age groups in the study differ not only by age but also by the historical environment they have developed in, thus the differences between them may reflect the normative value shifts that have occurred over the past 70 years, since the Second World War. There has for example, been a general societal shift in values towards acceptance of pluralism and the acceptance of alternatives to traditional norms pertaining to marriage, gender roles, sexuality and cohabitation (Haskey 2001; Widimer et al. 1998); therefore, younger adults may show lower levels of conservatism than older adults due to them growing up in a more pluralist social milieu.

One way of exploring the possibility of cohort effects is comparing cross-sectional datasets collected at different times, as has been done here. The two groups compared in the current dataset are only 6 years apart, but if a cohort effect underpins the age differences observed, we can reasonably expect a shift of the age–values pattern to the right, as a proportion of individuals within each age group move up to the next age group. Interestingly, exactly that cross-cohort pattern is observed in self-transcendent values. In 2002, there is a positive relation with age up to the age group of 40–49, while in the 2008 cohort, there is a positive relation up to the age group of 50–59. There is also a more general cohort effect—an age-consistent increase in self-transcendent value endorsement in both genders. A post-hoc inspection of the two contributing values to this higher order value (benevolence and universalism) showed that it was benevolence that was the principal contributor to

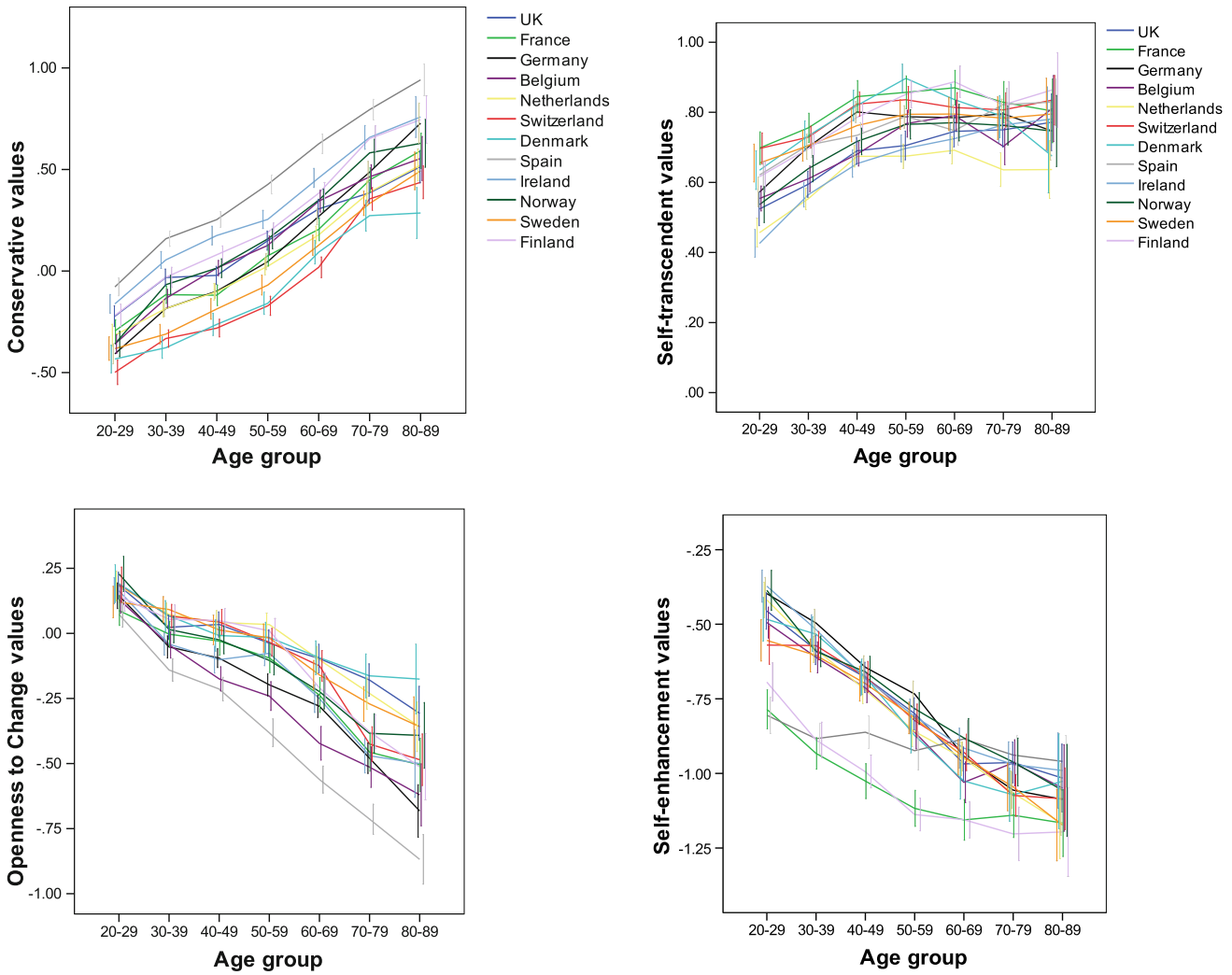

Fig. 2 Age–values relationship across 12 European countries for four higher order value types: self-enhancing, self-transcending, openness to change and conservative values, with 95 % CI error bars

the 2002–2008 increase. Does this mean that European adults are shifting generally in the direction of becoming more benevolent to others? Or are they just more inclined to think they are, or more likely to report that they are? Further research is necessary to establish whether self-report data does in fact reflect behaviour. Twenge has found in her research that American college students have become more self-focused and narcissistic over the past decade (Twenge and Campbell 2009), so if, as these data imply, European adults of all ages are becoming more self-transcendent and more benevolent, the data presents a discrepancy worthy of further investigation.

Gender differences

Gender differences in self-enhancement values and self-transcendent values were consistent across age groups; men have a consistently higher mean in the former, while women had a consistently higher mean in the latter across age groups. Gender differences in conservative values and openness to change values were most pronounced in young adults. For openness to change, there was a significant gender difference in the 2002 cohort, with male means being higher than female, but in the 2008 cohort that difference disappears, as the male mean decreased and the female mean increased. Given that this value type is based on desire for stimulation and self-direction, this cohort shift may allude to lessening gender role differences in young adults, as women continue to occupy more positions in the workplace and more men take a domestic role (Hochschild and Machung 2012).

Methodological limitations and further research

The time-sequential cross-sectional design used in this study presents both advantages and disadvantages. It provides a simultaneous analysis of age and time effects, but

does not provide a clear interpretation that the age effects are a result of maturation or historical differences between the age cohorts. As previously mentioned, longitudinal designs provide more robust inferences of ageing effects, but are also burdened with their own limitations, such as self-selection effects, attrition effects and time-of-measurement effects (Schaie 1996). Further research on values and age should pursue the creative combination of both cross-sectional and longitudinal research in order to gain the most robust conclusions (Schaie 1965).

The data for all four higher order values illustrated in Fig. 1 show mean-level differences across age groups that together present a smooth age gradient—there is a marked lack of sharp discontinuities in the aggregated age profile, which contrasts with theories that specify stages of change in adulthood (e.g. Erikson 1980; Kohlberg 1973; Levinson 1996). Is this continuity of change a representation of the genuine incremental nature of values development across adulthood, or is it an artefact of the averaging across thousands of different individuals? This is a question for which further research is required. The only way to establish if values development at the individual level is continuous or punctuated with discontinuities would be to conduct longitudinal research on the topic and then present the data at the individual level as well as the averaged level. An example of this kind of data presentation in relation to personality traits is provided by Costa and McCrae (2003), who present individual level change profiles as well as aggregated age profiles for traits across longitudinal time durations through adulthood.

This study measured values by way of a psychometric measure, the PVQ-21, which is based on Schwartz's (2006) taxonomic model of values. The taxonomy comprises ten values, categorised into four higher order value types. Such a taxonomy is, by definition and by requirement, limited. While it provides for reliable measurement, it makes no claims on being exhaustive. For example, it does not discuss values that pertain to cultural institutions such as marriage or religious values. Correspondingly, there are a variety of alternative empirical avenues for exploring the relation of values and age that are not available to research based on the ten values of the PVQ, and the current analysis should be interpreted as a partial picture that requires expansion with additional value measures and more holistic forms of data collection such as interviews.

Values were scored using the mean-corrected method, as described in "Method" section. With this method, each participant scores high on a particular value *only* if it is high *relative* to his/her other value scores, and vice versa for low scores. This 'intra-individual' approach to scoring prevents an examination of how individuals, and thus countries, differ in their raw-score differences on particular values. Schwartz (1996) considers that this limitation is an acceptable price to pay for an analysis of how values are scored relative to each other as an interlinked system. Certainly, future research could compare raw scores and mean-centred scores in terms of their relationship with age and their relative prediction of well-being.

A further limitation is in the analysis' principal focus on the four higher order value types. This was done to enhance parsimony and make the presentation of the findings manageable within the auspices of a journal article, and was justified given that the correlative relations of the values that comprise each higher order value with age were in the same direction, showing a common age gradient within each value type. Using the higher order value types meant that cohort, gender and country effects were not presented at the level of the ten individual values. It would be a productive route for further research to search for further relations between age and values at the level of the ten values, particularly given that the most recent wave of the ESS data, from 2010, has been published since the analysis of the 2002 and 2008 cohorts that underpins this article was conducted.

This research employed ANOVAs to examine the effects of age, gender, cohort and country on values. An alternative analytical approach for future research is multilevel modelling. The benefits of multilevel modelling are that it allows for a more straightforward estimation and testing of the overall fixed age effects on the DVs, as well as the cross-country variation in these effects. The downside is that the statistical output of multilevel modelling is less accessible to the non-specialist, which lessens the potential readership and reach of the article in applied or real-world contexts.

A final limitation stems from the variability of ESS response rates in the countries contributing to the analysis. Response rates vary considerably—from 33.5 % (Switzerland 2002) to 73.2 % (Finland 2002). It has been shown that non-responders in surveys such as the ESS may be systematically different from responders, meaning that non-response rates may reflect non-response bias (Groves 2006). Given that this is the case, the possibility that the cross-country differences in values shown in Fig. 2 are partially influenced by variable response rates, and not solely by cultural difference, should be considered.

Conclusion

The ten individual values of the Schwartz typology have varying positive, negative and neutral linear relationships with age. Of the four higher order values, conservative values show a positive relation with age, while self-enhancing and openness to change-focused values have a negative relation with age. Self-transcendent values show a

positive relation with age between young adulthood and midlife, but not beyond. Cross-sectional studies such as the current one cannot conclusively attribute age-difference data to ontogenetic developmental or ageing processes, as they may be partially the product of historical cohort effects. However, the study provides a strong rationale for a systematic longitudinal investigation of values and age. The robust empirical study of the relationship between human values and adult age, using a reliable and validated measure such as the PVQ, has been overlooked in the past and should be the target of further research in the future, both in terms of cross-sectional studies to highlight time-sequential cohort effects, and international prospective studies to help validate the ontogenetic nature of the age effects found in this study.

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