How Can the Global Ageing Affect the Global Value System? An Evolutionary Perspective*

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ABSTRACT

All demographic forecasts imply that global ageing will continue and even intensify in the coming decades. As some values may change with age, global ageing is likely to cause shifts in global values. Our analysis suggests that a shift towards cooperation is to be expected alongside a shift to conservative values, as these are two main evolutionary adaptations for group stability and increasing chances of offspring survival. These are observed for both males and females. Using the World Values Survey data across various regions and country groups we find that both conservation and cooperation values indeed increase with age even with control for cohort effect. Older respondents tend to be more

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religious and support Conservation values as opposed to Openness values. They also tend to support values of Self-Transcendence/care for the others rather than Self-Enhancement/self-empowerment, and support pro-social values more, condemning free-riders and various ways of cheating on the social system. Thus, global ageing might not only contribute to growth of conservation values, but also might have beneficial effects by increasing support of pro-social values promoting concern and care for the welfare of others.

Keywords: *ageing; global ageing; human evolution; evolution of human values; pro-social values; World Values Survey.*

All demographic projections unanimously forecast dramatic aging of the world population in the forthcoming decades (Alkema *et al.* 2011; Grinin *et al.* 2017; Kaneda *et al.* 2016; Lutz *et al.* 2018; Raftery *et al.* 2012; UN Population Division 2022; Vollset *et al.* 2020; Wittgenstein Center 2020); see Figures 1 and 2.

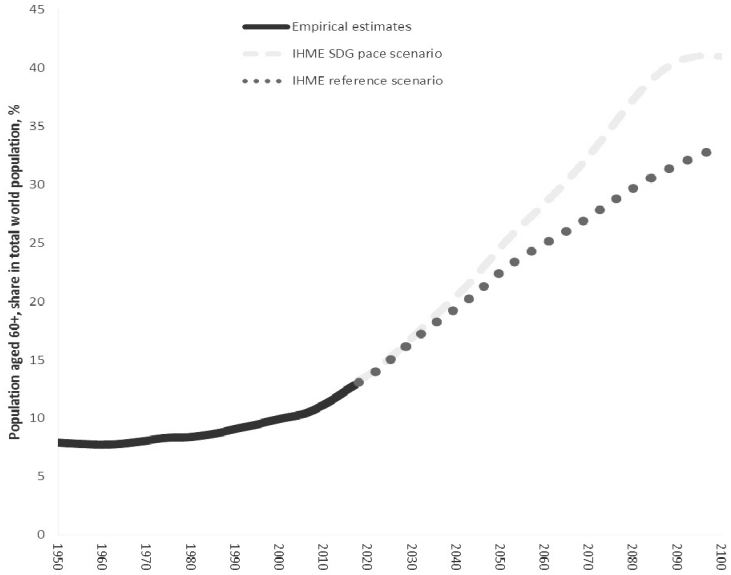

Fig. 1. Population aged 60+, share in total population (%)

Note: Institute for Health Metrics and Evaluation at the University of Washington (IHME) empirical estimates for 1950–2020; IHME reference scenario for 2021–2100; IHME Sustainable Development Goals (SDG) pace scenario for 2021–2100. The IHME SDG pace scenario 'shows what we can expect population trends to look like if every country and territory meets the SDGs for education and contraceptive met need by 2030' (Vollset *et al.* 2020: 1295).

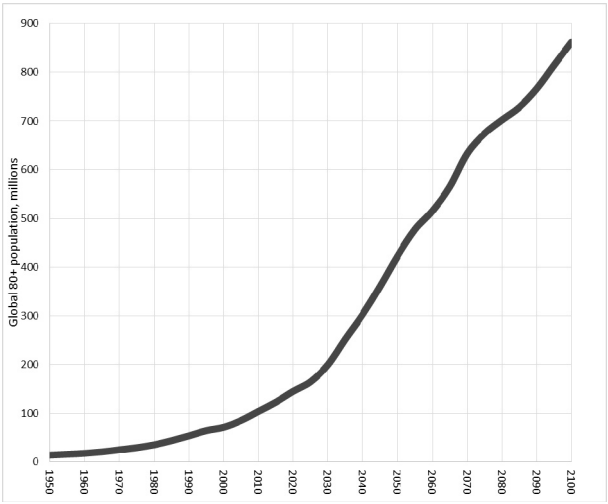

Fig. 2. Global population aged 80+, millions

Note: UN Population Division empirical estimates for 1950–2021 and the UN Population Division medium forecast scenario for 2022–2100. *Data source*: UN Population Division 2022.

So, in the view of ongoing global aging, it is important to understand what implications it bears for possible forthcoming changes in the global values system. Of course, human values tend to demonstrate considerable cross-country variation, but we aspire to reveal not the cross-country differences between these values, but rather the overarching similarities in their dynamics that are observed despite these differences. Indeed, some important values are known to be associated with age. Literature review reveals that the values of the elderly are different from the values of the young in a number of significant ways: for example, older people tend to be more religious, more conservative, and more right-wing oriented (Moberg 1953; Riley and Foner 1968; Wilson 1973; Levin and Taylor 1997; Argue, Johnson, and White 1999; Deaton 2009; Cornelis *et al*. 2009; Van Hiel and Brebels 2011; Tilley and Evans 2014). However, the nature of these differences can be ambivalent – they stem from either the effect of age per se, or the effect of the cohort (belonging to a particular generation that socialized in particular historical situation which formed a distinction in values), or the combination of both. For example, older people are known to be more religious than younger people. However, it is still disputable whether this fact should be attributed to people generally becoming more religious with age per se (age effect), or to the process of secularization, wherein earlier co-

horts (to which the now older people belong) used to be more religious than those that appeared later, younger cohorts (cohort effect). We try to investigate the role of the age effect by differentiating it from the cohort effect in order to understand what implications the continuing process of global ageing may have for the global values system.

PRO-SOCIAL VALUES: EVOLUTIONARY PERSPECTIVE

We believe that some general information on the basic issues of human evolution is necessary for understanding of our reasoning concerning the evolutionary perspectives on the effect of aging on global value systems. As a species, *Homo sapiens,* bears a number of unique derived features, which distance us from other great apes, and likely from the last common ancestor. Most of those features are the results of at least 6 million years of hominin evolution. These refer both to morphological (anatomic) and non-morphological traits (Lovejoy 1981). Bipedalism is a basic adaptation in the line of derived morphological human features and a cause of numerous skeletal changes shared by all bipedal hominines, including vertebral column, legs, pelvis, feet, ankles, and skull (Aiello and Dean 1990). The visible brain enlargement (encephalization) is another notable process that started with the origin of genus *Homo* (Püschel *et al.* 2021). Humans are substantially different from other apes in their neurochemical profile and brain structures, particularly those, associated with greater sensitivity to social cues that promote social conformity, empathy, altruism and cooperation (Raghanti *et al.* 2018).

The shortening of the pelvis and smaller birth canal evolved as a by-product of bipedalism and had caused significant limitations to brain size increase in early humans. The trade-off has been obtained in a form of combination of a shorter gestation period, associated with the relative immaturity of human neonates, combined with the increased duration of helping behavior by mothers and other helpers as a necessity for the increased duration of children dependency.

Hence, humans are unique by a set of distinctive characteristics of their life histories, including generally slower development compared to the great apes, an extended period of juvenile dependence, a later age of sexual maturity and exceptionally long lifespan. At the same time, women have higher birth rates, produce relatively larger neonates, which are at the same time weaned much earlier (Richerson and Boyd 2005; Robson *et al.* 2006). Some authors also point to the male provisioning of females and their offspring as an early originated human trait (Lovejoy 1981), and intensive help in child-breeding on the

part of older post-reproductive individuals (Kaplan *et al.* 2000; Hrdy 2005, 2009; van Schaik and Bukhart 2010).

Since the time of 'Man the hunter' (DeVore and Lee 1968) and 'Woman the gatherer' (Dahlberg 1981) debates, and with accumulation of findings in the field of anthropology and archaeology, there is a growing consensus as to the important roles of both sexes in economic subsistence and activities in food provisioning, as well as in social sphere (Khorasani and Lee 2020). According to evolutionary anthropologists, the needs for investments of both parents in offspring survival (Lovejoy 1981, 2009), as well as cooperative breeding caused changes in human psychology in direction of unique prosociality, including intensive and nearly indiscriminate within-group cooperation and morality, as well as extended cognitive abilities finally resulted in development of theory of mind (Raghanti et al. 2018). The needs for family provisioning on the part of males, and cooperative breeding in humans have been positively selected with increase of the duration of juvenile dependency in human evolution. In line with this trend, the grandparents' role has been gradually increasing in human societies (Hrdy 2009; Coall and Hertwig 2010; Raghanti *et al.* 2018). Some scholars even suggest that, from evolutionary perspective, helping behavior within and beyond the family ultimately developed from ancestral parenting and grandparenting (Chisholm 2017; Chisholm, Coall and Atkinson 2016; Hrdy 2009). A feedback loop between grandparental helping and extension of the human lifespan in the course of evolution may have existed (Kim *et al.* 2014). Certain confirmation for this hypothesis may be seen at the proximately level in contemporary human populations (Coall *et al.* 2018). For instance, it was demonstrated that among elderly people, helpful grandparents experience increased survivorship compared to individuals who do not help (Hilbrand, Coall, Gerstorf *et al.* 2017). In addition, grandparental investments into grandchildren may be viewed as an extension of their attachment to children (Euler and Weitzel 1996).

According to evolutionary theory, humans were gradually evolving towards longevity, certain specialization of younger and older adults to different social and reproductive tasks, effective cooperation between different age groups for optimal functioning of social groups as well as optimum survival of progeny. The difference between the older and the younger age groups, that we described earlier, result from the human nature, and have been rooted in developmental principles of body morphology, and selection for optimal relationships between morphology and psychological attitudes, adjusted for aging.

The evolutionary psychological life history theory (EP-LHT) appears highly promising as a framework for understanding the reasons of general lifespan changes and individual differences in wide spectrum of behavioral, social, and psychological traits in humans, which should affect transformations in people's value system and moral principles with aging (Chang 2018; Del Giudice and Belsky 2011). Previous studies, discussing the fundamental causes for lifespan value differences resorted to the EP-LHT in search of generalized explanation. Particularly, Zhu and Chang (2020) found that age was positively associated with sexist attitudes (conservative attitudes related to traditional gender roles). And recent paper by Zhu *et al.* (2021) revealed that age was positively associated with ingroup and outgroup trust. The human morality and value system should be adapted to the physical and social environments of our ancestors. In Darwin's words, human morality is built upon an innate 'social instinct' resulting from group living and modified by 'praises and criticisms' of peers (Darwin 1872). Both nature and nurture contribute to the evolution of human morality and value system. Given the general evolutionary perspective, individual variability and developmental plasticity in relation to situational flexibility, it may be expected that natural selection should favor diversity of human morality and value system (Zhu *et al.* 2020). In this sense, one's value system and prosocial attitudes can change over the course of their life in ways that are consistent with their interests in terms of inclusive fitness.

Both males and females gain experience with age, as well as adjust their life values according to novel everyday reality. They generally accumulate higher social status and prestige (respect from other group members, both kin and non-kin). On the other hand, they also become less competitive and more cooperative. Given some traditional differences in distribution of sexual division of labor in social space outside households and inside home space, older males are more experienced in translation and control over valuable intragroup cooperation and intergroup behavioral norms, such as basic principles of social interactions with group members, and optimum balancing between conflicts and conflict resolution in direction of other groups (Handley and Mathew 2020; Doğan *et al.* 2018; Wiessner 2019; Hagmann 2007; Agwanda and Harris 2009; Olowolafe *et al.* 2020; Travis and Saa 2021; Barnes and Magdalena 2020). Particularly, there is a tendency for people to cooperate and help other group members (parochial cooperation), as well as to invest resources to punish uncooperative partners (parochial punishment) (Bernhard *et al.* 2006). Accord-

ing to many theoretical studies, restricting cooperation to in-groups can provide a relative advantage during conflict, and parochial cooperation coevolve with between-group aggression (Bowles 2008, 2009; Choi and Bowles 2007; García and van den Bergh 2011; De Dreu *et al.* 2014). At the same time, females of older age may benefit from concentrating on caring for grandchildren, regulation of social tension on family and neighborhood level (Akhter-Khan 2020; Burkart *et al.* 2017; Konner 2018; Chapman *et al.* 2021).

When discussing the role of the older age cohort in maintaining group stability[1] and cooperation, a number of authors suggest taking into account demographic characteristics (Rodrigues 2018). Based on the mathematical models proposed by Rodrigues, in modern society, two significant factors are identified that determine the increase of intragroup cooperation (and, thus, improve group stability). The first factor is associated with a general increase in life expectancy and the accumulation of the share of older people, whereas the second is related to an increase in the share of people who do not participate in reproduction. For example, Rodrigues emphasizes the role of later-life breeding inefficiencies[2] that push elderly people to share breeding resources. Both for women and men, later-life breeding inefficiencies provide not benefits, but rather disadvantages, as they drop out of reproduction and lose an opportunity to increase their direct reproductive success. However, caring for grandchildren helps to amend these disadvantages, by increasing the probability of their (grandchildren) survival, consequently increasing the inclusive fitness of helpers. This is the way how later-life breeding inefficiencies are connected with the growth of care for others, first of all, grandchildren, though this care tends to expand to a wider range of persons (Mattison *et al.* 2018; Sear 2018).

Indeed, the age structure of the group in modern societies reveals the increase of the proportion of people beyond the reproductive ages. They share their breeding resources with their adult children who are in reproductive ages. Thus, elderly people increase their own inclusive fitness by increasing the reproductive success of their children. This indeed implies a significant demographic transformation of the group structure as compared to other mammals in general and primates in particular. As a result, the level of cooperation increases while the overall competition for reproductive resources decreases, as elderly people do not compete with their children for reproductive resources, but rather co-operate with them, thus increasing their own reproductive success as well (Rodrigues 2018; Abraham and Feldman 2018; Willführ *et al.* 2018). Thus, elderly people contribute to group stabil-

ity through the increase in intra-group cooperation due to the mechanisms specified above.

On the basis of this literature, we hypothesize that a shift towards pro-social values should be attributed to the age effect rather than cohort effect and thus should be expected to accompany global ageing in the forthcoming decades. Following Carlo and Sandman, we define pro-social values as 'beliefs esteemed by an individual or group that promote concern and care for the welfare of others' (Carlo and Sandman 2012: 2709). Values of care and cooperation are frequently subsumed under pro-social values – thus, co-operators and altruists are classified as pro-social persons (Van Lange and Liebrand 1989: 209); Chatterjee *et al.* state that pro-social values can be expressed 'by a high importance to care for the welfare of close others' (Chatterjee, Baumann and Koole 2017: 842), features of highly pro-social societies include 'empathic tendencies and care-giving values' (Hilser 2021: 2), people with pro-social motives are rendered to be more cooperative (Giacomantonio *et al.* 2010: 824) *etc*.

METHODS

We use the data of the long-term global sociological project 'World Values Survey' (WVS) from the 1st to the 7th wave of the WVS. We are using a longitudinal data file (World Values Survey 2021).

We consider multivariate models in which the variables describing values are dependent on age and cohort and are controlled by gender, education level (numerical value from 1 to 8), marital status (categorical variable), labor market position / employment (categorical variable), income level (numerical variable). We also control for fixed effects in all country-waves using the corresponding dummy variables. To address cross-country differences, we use groups of regions (Latin America, Eastern Europe, MENA and others) where we expect on individual level a similar relationship between independent variable of interest (age and cohort) and our dependent variables that represent different individual values.

As a basic one, we use the logistic model (1) to explain the relationship when the dependent variable is binomial (*i.e*., when the answers are of two types, typically, 'Yes' (1) / 'No' (0). The results of estimating the coefficient for the variable 'age' in the logistic model are shown in Column 1 (see Tables A1–A6 in the Supporting online materials).

The ODDS ratio column (see Column 3 in Tables A1–A6 in the Supporting online materials) shows the odds ratio, which reveals how much the chances of choosing the answer (1) in comparison with the answer (0) increase with age.

We use ordinal logistic model (2) to explain relationships when the dependent variable has three or more ordered levels (*e.g.*, 'Very happy' (1), 'Rather happy' (2), 'Rather unhappy' (3), 'Not happy at all' (4)). The results of estimating the coefficient for the variable age in the ordinal logistic model are shown in Column 2 (see Tables A1–A6 in the Supporting online materials).

For all analyzed variables, we also present OLS estimates of model (3) for the influence of age using the multiple linear regression model (see Column 4 in Tables A1–A6 in the Supporting online materials).

For the OLS model, the specification of the equation is given below.

$$Value = \beta_0 + \beta_1 age + \beta_2 cohort + \beta_3 education + \beta_4 sex + \beta_5 income + \sum_{m=2}^{8} \gamma_m D_m + \sum_{l=2}^{8} \delta_l D_l + \sum_{cw=2}^{45} \mu_{cw} D_{cw} + e \quad (1)$$

where *Value* in OLS is the answer of respondent regarding his idea of values. In the logistic and ordinal logistic model, P(*Value)* is the probability of the respondent choosing the corresponding answer;

age, *cohort*, *education*, *sex*, *income* are variables describing the age, cohort, education, sex, and income level of the respondent;

D_m, D_l, D_{cw} are dummy variables for the corresponding levels of marital status, labor market position and membership in one of 45 country-waves;

β, γ, δ, μ are coefficients of the regression equation, the estimated values of which are obtained as a result of evaluating this model on the data.

We estimate models (1), (2) and (3) for six regional sub-samples of respondents of both sexes from high-income OECD countries (a subgroup of economically developed countries); Eastern Europe; Latin America; the Middle East and North Africa; Sub-Saharan Africa; and East and South-East Asia. Lists of countries belonging to each of the regions and the years of WVS surveys conducted therein are presented in Table 1.

Table 1

Countries and country-waves of six regional sub-samples

Region	Countries and country-waves
OECD 16 countries 56 country-waves 78,102 respondents	Australia (1981, 1995, 2005, 2012, 2018), Canada (1990, 2000, 2006), Finland (1981, 1996, 2005), France (2006), Germany (1997, 2006, 2013, 2018), Israel (2001), Italy (2005), Japan (1981, 1990, 1995, 2000, 2005, 2010, 2019), Netherlands (2006, 2012), New Zealand (1998, 2004, 2011, 2020), Norway (1996, 2007), Spain (1990, 1995, 2000, 2007, 2011), Sweden (1982, 1996, 1999, 2006, 2011), Switzerland (1989, 1996, 2007), UK (1998, 2005), United States (1982, 1990, 1995, 1999, 2006, 2011, 2017)

Table 1 (continued)

Region	Countries and country-waves
Eastern Europe 22 countries 52 country-waves 64,760 respondents	Albania (1998, 2002), Belarus (1990, 1996, 2011), Bosnia and Herzegovina (1998, 2001), Bulgaria (1997, 2005), Croatia (1996), Czech Republic (1991, 1998), Estonia (1996, 2011), Greece (2017), Hungary (1982, 1998, 2009), Latvia (1996), Lithuania (1997), Macedonia (1998, 2001), Moldova (1996, 2002, 2006), Montenegro (1996, 2001), Poland (1989, 1997, 2005, 2012), Romania (1998, 2005, 2012, 2018), Russia (1990, 1995, 2006, 2011, 2017), Serbia (1996, 2001, 2017), Slovakia (1990, 1998), Slovenia (1995, 2005, 2011), Ukraine (1996, 2006, 2011), Yugoslavia (Serbia and Montenegro) (2005)
Latin America 17 countries 53 country-waves 74,341 respondents	Argentina (1984, 1991, 1995, 1999, 2006, 2013, 2017), Bolivia (2017), Brazil (1991, 1997, 2006, 2014, 2018), Chile (1990, 1996, 2000, 2006, 2012, 2018), Colombia (1997, 2005, 2012, 2018), Dominican Republic (1996), Ecuador (2013, 2018), El Salvador (1999), Guatemala (2004, 2020), Haiti (2016) Mexico (1981, 1990, 1996, 2000, 2005, 2012, 2018), Nicaragua (2020), Peru (1996, 2001, 2006, 2012, 2018), Puerto Rico (1995, 2001, 2018), Trinidad and Tobago (2006, 2010), Uruguay (1996, 2006, 2011), Venezuela (1996, 2000)
Middle East and North Africa 16 countries 40 country-waves 64,298 respondents	Algeria (2002, 2014), Egypt (2001, 2008, 2013, 2018), Iran (2000, 2007, 2020), Iraq (2004, 2006, 2013, 2018), Jordan (2001, 2007, 2014, 2018), Kuwait (2014), Lebanon (2013, 2018), Libya (2014), Morocco (2001, 2007, 2011), Pakistan (1997, 2001, 2012, 2018), Palestine (2013), Qatar (2010), Saudi Arabia (2003), Tunisia (2013, 2019), Turkey (1990, 1996, 2001, 2007, 2011, 2018), Yemen (2014)
Sub-Saharan Africa 11 countries 25 country-waves 44,109 respondents	Burkina Faso (2007), Ethiopia (2007, 2020), Ghana (2007, 2012), Mali (2007), Nigeria (1990, 1995, 2000, 2011, 2018), Rwanda (2007, 2012), South Africa (1982, 1990, 1996, 2001, 2006, 2013), Tanzania (2001), Uganda (2001), Zambia (2007), Zimbabwe (2001, 2012, 2020)
East and South-East Asia 18 countries 55 country-waves 82,467 respondents	Bangladesh (1996, 2002, 2018), China (1990, 1995, 2001, 2007, 2018), Hong Kong (2005, 2013, 2018), India (1990, 1995, 2001, 2006, 2014), Indonesia (2001, 2006, 2018), Kazakhstan (2011, 2018), Kyrgyzstan (2003, 2011, 2020), Macao SAR (2020), Malaysia (2006, 2012, 2018), Myanmar (2020), Philippines (1996, 2001, 2012, 2019), Singapore (2002, 2012), South Korea (1982, 1990, 1996, 2001, 2005, 2010, 2018), Taiwan (1994, 2006, 2012, 2019), Tajikistan (2020), Thailand (2007, 2018), Uzbekistan (2011), Vietnam (2020)

We study changes in values with age for high-income OECD countries, Eastern Europe, Latin America, the Middle East and North

Africa, Sub-Saharan Africa, and East and Southeast Asia with the World Values Survey data (World Values Survey 2021).

Let us note that we include into our study the Schwartz model, the data for which were collected in the 5th and 6th waves of the World Values Survey. According to this model, values are subsumed under four composite variables, namely Conservation ('values that emphasize order, self-restriction, preservation of the past, and resistance to change'), Openness ('values that emphasize independence of thought, action, and feelings and readiness for change'), Self-Transcendence/care for the others ('values that emphasize concern for the welfare and interests of others'), and Self-Enhancement/self-empowerment ('values that emphasize pursuit of one's own interests and relative success and dominance over others') (Schwartz 2012: 8).

- Conservation comprises Security, Tradition, and Conformity (Security = 'safety, harmony, and stability of society, of relationships, and of self'; Tradition = 'respect, commitment, and acceptance of the customs and ideas that one's culture or religion provides'; Conformity = 'restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms');
- Openness comprises Self-Direction, Stimulation, and Hedonism (Self-Direction = 'independent thought and action-choosing, creating, exploring'; Stimulation = 'excitement, novelty, and challenge in life'; Hedonism = 'pleasure or sensuous gratification for oneself');
- Self-Enhancement/self-empowerment comprises Hedonism, Power, and Achievement (Hedonism = 'pleasure or sensuous gratification for oneself'; Power = 'social status and prestige, control or dominance over people and resources'; Achievement = 'personal success through demonstrating competence according to social standards');
- and Self-Transcendence/care for the others comprises Benevolence and Universalism (Benevolence = 'preserving and enhancing the welfare of those with whom one is in frequent personal contact (the "in-group")'; Universalism = 'understanding, appreciation, tolerance, and protection for the welfare of all people and for nature') (Schwartz 2012: 8).

In our analysis we regard these four composite variables as the ends of two independent axes (dimensions). So, one dimension is Conservation ('values that emphasize order, self-restriction, preservation of the past, and resistance to change') *vs* Openness ('values that emphasize independence of thought, action, and feelings and readiness for change'), and the second dimension is Self-Transcendence/care for the others ('values that emphasize concern for the welfare and interests of others') *vs* Self-Enhancement/self-empowerment ('values that

emphasize pursuit of one's own interests and relative success and dominance over others') (definitions of composite variables quoted from Schwartz 2012: 8).

RESULTS

We differentiate between age and cohort effects. It has long been noticed that some values tend to shift with age; for example, older people tend to be more religious than younger people (Moberg 1953; Riley and Foner 1968; Wuthhow 1976; Argue, Johnson, and White 1999; Levin and Taylor 1997; Deaton 2009). However, it is still disputable whether this fact should be attributed to age effect per se, or to the cohort effect. We try to distinguish between these two effects using a multifactor model applied to World Values Survey data (1981–2020) and find values for which the age effect strongly prevails over the cohort effect (see Methods section for details). We find the following groups of values to change most with an increase in the respondents' age (for full details see supporting online materials).

Religiosity. In all the six sub-samples older respondents are significantly more likely to report frequently attending religious services (F028). Besides, older respondents are significantly more likely to assert that God is very important in their life (F063) in OECD, Eastern Europe, and East and Southeast Asia. Older respondents are also more likely to state that religion is very important in their life (A006) in OECD, Latin America, and Eastern Europe. They are also more likely to report being active members in a church / religious organization (A098) in OECD and Sub-Saharan Africa.

Pro-social values. In all of the sub-samples, older respondents are significantly more likely to assert that:

- avoiding a fare on public transport (F115) is never justifiable (significant in OECD, Eastern Europe, Latin America, Middle East and North Africa, Sub-Saharan Africa; statistically insignificant but in the predicted direction in East and Southeast Asia);
- cheating on taxes (F116) is never justifiable (significant in OECD, Eastern Europe, Latin America, Middle East and North Africa, East and Southeast Asia; marginally significant with one-tailed significance test in Sub-Saharan Africa); and
- accepting a bribe (F117) is never justifiable (significant in OECD, Eastern Europe, Latin America, Middle East and North Africa; marginally significant with one-tailed significance test in East and Southeast Asia; statistically insignificant but in the predicted direction in Sub-Saharan Africa).

Conservation as opposed to Openness. In all the six sub-samples of countries older respondents tend to incline more to values of Conservation (Security, Tradition, and Conformity) as opposed to Openness (significant in OECD, Eastern Europe, and East and Southeast Asia; significant with one-tailed significance test in Latin America; marginally significant with one-tailed significance test in Sub-Saharan Africa; statistically insignificant but in the predicted direction in the MENA region).

Self-Transcendence/care for the others as opposed to Self-Enhancement/self-empowerment. Our analysis of these composite variables reveals that in all sub-samples older respondents tend to support values of Care for the Others (Benevolence, Universalism) as opposed to Self-Empowerment. In the OECD countries this coefficient changes with age by 0.0943, that is for each increase of age-group, everything else being equal (controlling for sex, income, education *etc*.) person shifts toward Self-Transcendence from Self-Enhancement by 0.0943; in Eastern Europe by 0.0609; in Latin America by 0.0493; in East and South-East Asia by 0.0533 (see Tables A1–A5). It is significant in OECD, Eastern Europe, East and Southeast Asia, Middle East and North Africa; significant with one-tailed significance test in Latin America; marginally significant with one-tailed significance test in Sub-Saharan Africa.

DISCUSSION

Thus, older respondents tend to support pro-social values and values of care for the others more than younger respondents, and, as our analysis demonstrates, this finding should be directly attributed to the age factor rather than the cohort factor. In other words, support of pro-social values and values of care for the others is not related to the particular values of the cohorts of the currently elderly people and can be expected to grow with age as the currently younger cohorts enter their senior ages, as well. Thus, our results are in accordance with the evidence presented recently by other authors showing that the general increase in prosocial motivations with age (including charitable donations or volunteering to the common good) has been purely altruistic in nature[3] (Zhu and Chang, 2020; Zhu *et al.* 2020, 2021; Mayr and Freund 2020). Prosocial behavior has been shifting fundamentally with aging, and older adults have a reduced self-favoring bias in their decision-making (Lockwood *et al.* 2020). Besides, along with the general increase in prosocial behavior with aging, the antisocial behavior and violence significantly decrease across the lifespan worldwide (Hiraiwa-Hasegawa 2005; Liberman 2008). Values related to conserva-

tism and cooperation appear to underly some important strategies of the older generation. Hence, formerly evolved as basic evolutionary adaptation aimed at maintaining the stability of society and favorable conditions for the survival of offspring in small-scale societies in the Paleolithic, this adaptation continues to provide obvious benefits, despite the intensive processes of technological (information) development and the transformations in the field of employment and organization of social life. The stability of such an adaptation testifies to its exceptional importance for the survival of humankind in the past and present. Our results may provide additional support for the hypothesis of dual evolutionary foundations of political ideology (Claessens *et al.* 2020; Duckett and Sibley 2009; Feldman and Johnston 2014).

CONCLUSION

Given our findings, with the general tendency of world population aging, the increase in the accent on the social conservatism dimension may be expected, along with an increase in sticking to pro-social values even when no immediate reward for that is obvious. This can be viewed as an increase in strong reciprocity which Bowles and Gintis define as follows: 'Where genetically unrelated members of a group benefit from mutual adherence to a social norm, agents may obey the norm and punish its violators, even when this behavior cannot be justified in terms of self-regarding, outcome-oriented preferences' (Bowles and Gintis 1998: 1). 'Global ageing' seems to invoke mostly negative connotations. However, our analysis suggests that in the field of value orientations global ageing might produce some positive effects through the increase in support of pro-social values at the global level.

NOTES

[*] The article was prepared as part of the research work under the state assignment to RANEPA on the part of Korotayev, Shulgin, and Zinkina and in line with state assignment of the Institute of Ethnology and Anthropology 'Cross-cultural and interdisciplinary studies of historical and modern societies' on the part of Marina Butovskaya.

[1] When we discuss group stability, we mean all aspects of this notion, such as the stability of the group compared to other groups, the adherence to rules within the group, the stability of the demographics in the group *etc*.

[2] After a certain age people lose their capacity to directly participate in reproduction, as women lose their ability to bear children, and men lose their ability to impregnate. However, they can still well contribute to their reproductive success indirectly by caring for their grandchildren and thus sharing their breeding resources with their adult children.

[3] The current research has investigated the association between age and prosocial values, which is independent from the cohort effects. However, expressed prosocial values are not necessarily equivalent to prosocial motivations. It is important to distinguish between people's moral motivations (leading to their own moral behaviors) and their moral values (leading to their judgments of others' moral behaviors). They can be contradictory to each other, leading to the phenomena of moral hypocrisy (Batson *et al.* 1999). This is an important thing to take into account, but in the context of the current research focusing on global value shift both moral motivations and moral values are important, because both one's own moral behavior (guided by moral motivations) and condemnation of others' immoral behaviors are important in defining the increase in pro-sociality and, eventually, in assessing the potential macro-social implications of the value shifts viewed in this paper.

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