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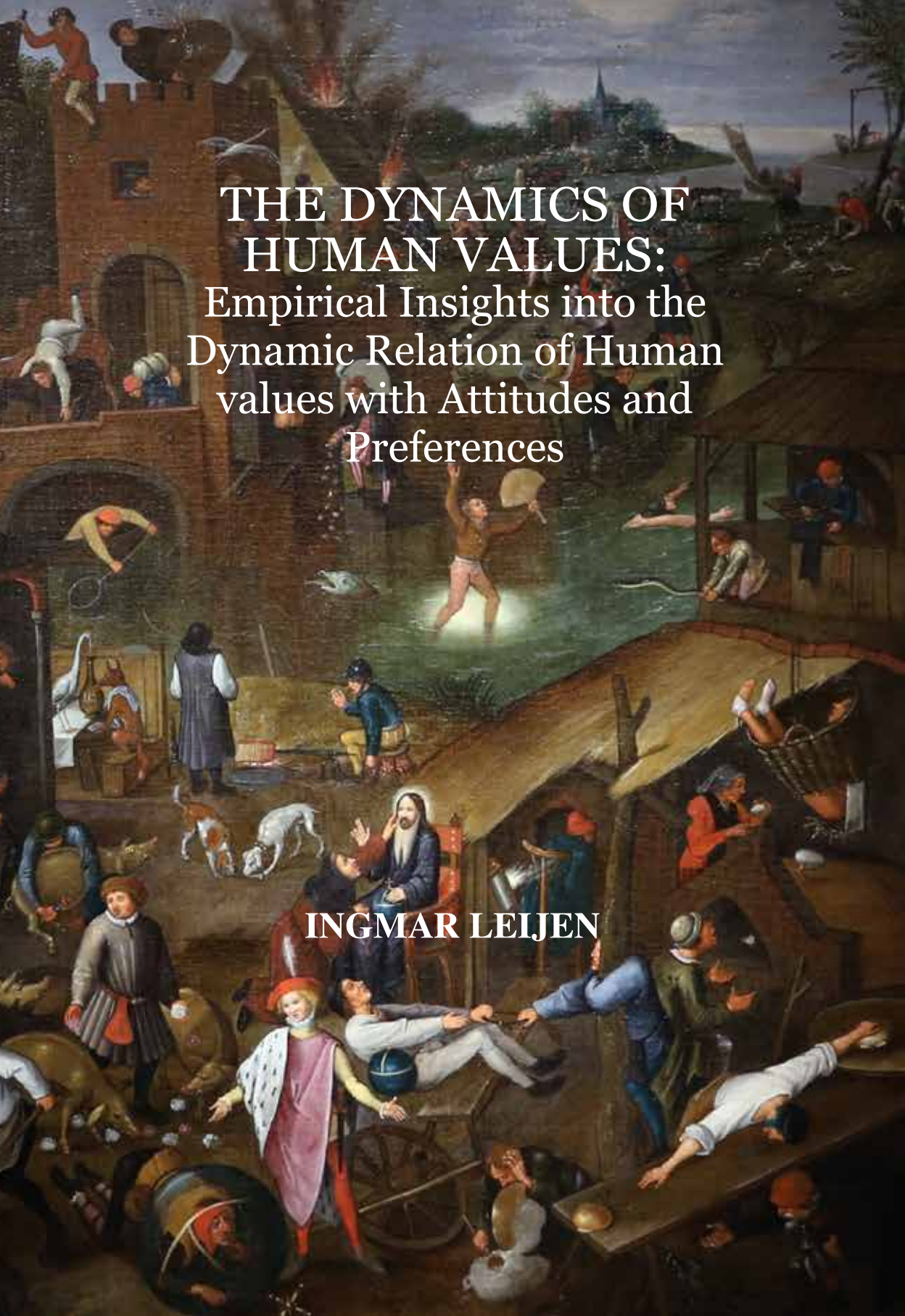
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THE DYNAMICS OF
HUMAN VALUES:
Empirical Insights into the
Dynamic Relation of Human
values with Attitudes and
Preferences

INGMAR LEIJEN

THE DYNAMICS OF HUMAN VALUES:
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into the Dynamic Relation of Human Values
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Ingmar Leijen

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VRIJE UNIVERSITEIT

THE DYNAMICS OF HUMAN VALUES:
EMPIRICAL INSIGHTS INTO THE DYNAMIC RELATION OF HUMAN VALUES WITH
ATTITUDES AND PREFERENCES

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Contents

Chapter I. Introduction.....	11
1.1. Overview of essays.....	16
1.2. Contributions.....	20
Chapter II. Individual and generational value change in an adult population, a 12- year Longitudinal Panel Study.....	21
2.1. Introduction.....	23
2.1.1. Background.....	23
2.1.2. Schwartz Human Values.....	25
2.1.3. Value Change and Stability.....	25
2.2. Method.....	28
2.2.1. Description of data set.....	28
2.2.2. Generations and Schwartz values.....	29
2.2.3. Data analysis.....	30
2.2.4. Descriptives.....	31
2.3. Results.....	34
2.3.1. Value Profile Stability.....	34
2.3.2. Mean value change over time.....	38
2.4. Discussion.....	46
Appendix 2.A.1: Fit statistics Latent Curve Growth Models (LCGM).....	52
Appendix 2.A.2: Table 2.A.2 to 2.A.4, LCGM models.....	53
Appendix 2.A.3: Figure 2.A.1: Value Profile Stability Plot.....	56
Appendix 2.A.4: Construction of the human values measurement.....	57
Appendix 2.A.5: List of items and translation to Schwartz human values.....	61
Appendix 2.A.6: Invariance of the value configuration across generations.....	62
Appendix 2.A.7: Comparison sample and longitudinal sample.....	63
Appendix 2.A.8: Value differences between cohorts (similar age) and within cohort (same people in T0, 2008 and T6, 2020).....	64

Chapter III. Cultural Variation in Healthcare Consumption: National and Individual Drivers of Preference for Medical Help..... 65

3.1. Introduction 67

3.2. Materials and Methods 73

 3.2.1. Method..... 73

 3.2.2. Measures 73

 3.2.3. Participants 75

3.3. Results 77

 3.3.1. Study Design..... 77

 3.3.2. Multi-Level Analyses 77

3.4. Discussion 84

3.5. Conclusions 86

 Appendix 3.A: Correlation Matrices..... 88

Chapter IV. Longitudinal Analysis of the Relation between Changes in Human Values and Social Attitudes 89

4.1. Introduction 91

4.2. Theory 93

 4.2.1. Human values 93

4.3. Method 99

 4.3.1. Data..... 99

 4.3.2. Measures 100

 4.3.3. Analysis plan 101

4.4. Results: 103

 4.4.1. Univariate analysis of the relations between values and attitudes... 105

 4.4.2. Random Intercept Cross Lagged Panel Models 105

4.5. Discussion 108

4.6. Limitations: 112

4.7. Conclusion:..... 112

 Appendix 4.A: Fit and Reliability Statistics 113

Appendix 4.B: Measurement Items:	115
Chapter V. Discussion	117
5.1. Summary of findings	117
5.2. Theoretical implications	120
5.3. Limitations and further research directions.....	122
5.4. Concluding remarks	126
Summary	127
Dankwoord/Acknowledgements.....	131
List of publications	133
References.....	135

LIST OF FIGURES

Figure 2.1. Mean value change for different generations over a period of 12 years

Figure 2.2. Latent Growth Model value change over 12 years with latent intercept and slopes

Figure 3.1. Human Values Framework

Figure 3.2. Preference for professional medical help in non-acute medical situations

Figure 3.3. Relation between Tightness-Looseness and Preference for professional medical help in non-acute medical situations.

Figure 4.1 The Human Values Circumplex

Figure 4.2: Effect of attitudes and values over time, the random intercept cross-lagged panel model.

Figure 4.3: mean attitude toward foreigners

Figure 4.4: mean attitude toward marriage (liberal)

Figure 4.5: mean attitude toward income equality

Figure 4.6: mean attitude toward euthanasia

Figure 4.7: mean universalism

Figure 4.8: mean conformity

Figure 4.9: mean benevolence

Figure 4.10: mean security

Chapter I. Introduction

Values are an elusive concept that many people talk about, in politics, companies, policy-making, strategy, marketing: in any strand of life that is connected to social issues, people talk about values. However, these discussions are most often speaking of values without much deeper thought, people sort of grasp the concept of 'values', but if you probe deeper, it is often not so clear what is exactly meant with these 'values'. A former prime minister of the Netherlands was notorious for his focus on the promotion of 'norms and values' in society, however his focus was more focused on promoting a conservative political agenda than quantifying and measuring an aspired change in values and norms. Needless to say his call was more directed at gaining popular support than actual results.

The first scientist to recognize the need for a more quantitative and uniform measure of human values was Allport, who almost 100 years ago worked on a scale (the Allport Vernon test) that could measure human values (Vernon & Allport, 1931). Although this scale was quite influential in personality psychology, it was more a measurement of attitudes than that it measured the "guiding principle" of human values. In 1973, Rokeach developed a new measurement scale for human values, which contained 36 values, 18 terminal values (i.e. values people find should be achieved) and 18 instrumental values (i.e. values that are supportive of these terminal values) (Rokeach, 1973).

An important and influential addition to the research on values is by Hofstede (1980). Investigating and comparing the cross-cultural differences in values of workers of a very large international computer company, he developed a set of national cultural values, which have been, and still are highly influential in cross cultural research and in management and marketing research (Kirkman et al., 2017).

A source of confusion sprouted from Hofstede's goal with these cultural values: Hofstede never meant these values to be used to measure human values in individuals, they

were only meant to measure cultural differences between groups or countries. (Hofstede, 1980; Hofstede et al., 2010; Spector et al., 2001). According to Hofstede though, within his data he did not find the same values on the individual level as he did on the aggregated country level, and he warned for the danger of stereotyping when using his values as personality aspects. Current research is still continuing on the country level cultural differences, combining the different cultural frameworks like Hofstede, Schwartz and Inglehart that measure country level culture (Kaasa, 2021).

Attention towards individual level values in academic research has been increasing (Schwartz et al., 2012), as well as the broadening of the scientific fields where human values are included as explanatory factors, for instance in Politics (e.g. Schwartz et al. (2010), Public Policy (e.g. Smillie (2024), Sociology (e.g. Carneiro et al. (2021)), Clinical Psychology (e.g. (Tarsitani et al., 2022)), Management (e.g. (Zhang et al., 2023)), Human Resource Management (e.g. (Arieli et al., 2020)), Marketing (e.g. (Sharma, 2021)), Consumer Behavior (e.g. (Tanrikulu, 2021)). More theoretical research on the nature, measurement, and causes and effects of values is also receiving timely attention: How do values develop, in children (Knafo-Noam et al., 2024; Oeschger et al., 2024), adolescents (Benish-Weisman, 2024) and in adults (Milfont et al., 2016), how do values react to adverse circumstances (Daniel et al., 2022)? But also, how are values used in political communication, can they be recognized in written texts (Scharfbillig, Reitis-Münstermann, et al., 2024)? Are there other innovative ways in which people's values can be recognized and used (Nurwidiantoro et al., 2023)? How are values related to economic preferences (Scharfbillig, Ciecuch, et al., 2024)?

The currently dominant framework that has been developed to specifically measure human values (i.e. in individuals) is the Schwartz Values Framework. Originating from the work of Rokeach (1973), Schwartz and Bilsky developed a strong, theoretically

underpinned, circular value structure (Bilsky et al., 2011; Schwartz & Bilsky, 1987; Schwartz & Bilsky, 1990; Schwartz et al., 1990). Their first measurement instrument to measure human values was based on the 36 item Rokeach questionnaire, but the framework and the measurement thereof has since then seen considerable development (Sagiv & Schwartz, 2022). An important improvement over the Rokeach Values Survey was that they added a more theoretical foundation that led to a more clearly structured and complete measurement of values. Also, the distinction between terminal and instrumental values was left out, as they found no evidence in the data to support this distinction.

According to the theory of Schwartz and Bilsky, people's values originate from several basic human needs, the need to survive (be safe), to have social relations (be part of a group) and to prosper and develop (be an individual). These 3 basic human needs lead to a set of 10 basic human values, together forming a quasi-circumplex, with values that oppose each other (e.g. universalism versus power, self-direction versus conformity), or are in line with each other (e.g. universalism and benevolence, tradition and conformity). In the original Schwartz values framework, there are 10 basic human values: Universalism, Benevolence, Tradition, Conformity, Security, Power, Achievement, Hedonism, Stimulation, and Self-Direction. When these values are adjacent on the circle, they have conceptual, as well as measurement overlap: in case someone scores high on for instance security, this person will also have elevated scores on conformity, tradition and power. On the other side (literally), people will score lower on the value that is opposing: meaning that these people will also score lower on universalism and benevolence, as these values are located on the other side of the circle. Later work by Schwartz added 4 higher order human values: Conservation, Openness to Change, Self-enhancement and Self-Transcendence, which are aggregated from 2 or 3 adjacent values (Schwartz, 1994). Aggregating the values in other ways, Schwartz et al. (2012) also grouped the values

differently, in a growth versus protection value dimension, and a Social versus Self value dimension. Besides adding aggregated measures, also more fine-grained value instantiations were added that made the value circle more precise and specific. In total 19 value instantiations were developed, whereby for instance the value of universalism was split in universalism nature, concern, and security into societal and personal. Also two new values were added: humility and face (Schwartz et al., 2012).

The Schwartz values theory has thus seen considerable development, and has also been measured in many different ways. The first measurement was fully based on the items that of the original RVS measurement. In his 1992 paper Schwartz developed a 56-item scale (SVS) that was validated in 20 countries. Later additions were revised scales like the shorter PVQ-40 and the PVQ-RR (which measures the more refined 19 values framework). Within the European Social Survey a 21-item scale, the portrait values questionnaire (PVQ 21 is used). Also a picture-based questionnaire for children has been developed (Döring et al., 2010). Other examples of measures that capture the Schwartz values are for instance the SSVS (Lindeman & Verkasalo, 2005), which contains 10 items and the HOVS (Lechner et al., 2024) which measures the 4 higher order values with 17 items, the Best-Worst Refined Values scale (BWVr) by Lee et al. (2008) which is based on the method of paired comparisons. Within all these scales that measure the Schwartz values the circular structure of the values has been established, showing the robustness of the underlying value structure, irrespectively of the measurement method.

Thus the Schwartz values framework is a well-established framework that has been validated in many countries, is predictive of many attitudes and behaviors and has a solid theoretical underpinning. Adding to this body of knowledge this dissertation is focusing on the dynamic aspect of values: how do values develop over time, how do values relate

dynamically to attitudes, and how are the effects of values on behavior different across different countries.

The definition of values in the Schwartz framework is that values are concepts or beliefs, about desirable end states or behaviors, that transcend specific situations, guide selection or evaluation of behavior and events, and are ordered in relative importance (Schwartz, 1992; Schwartz, 2012). The main theme of current dissertation is revolving around the trans-situational aspect of values: in 3 essays I show the effect of values across time and situations (how values change over time, how changing attitudes and values influence each other and how values differ in their effect across different countries).

Taken together, the aim of the current dissertation is thus:

- To show that, although human values are very stable once people are mature, also after childhood they still can change in their value priorities.
- To show that human values affect behavior but that this relation can differ depending on the context.
- To show that human values and attitudes are strongly related, but that this relation might change over time.

To shed light on these research questions, this dissertation consists of 3 essays: The first essay (chapter 2) discusses the value development of adult individuals (aged 16-84 at the start) over the course of their life, showing how people from 4 different generations change in their values over 12 years' time using latent growth curve modeling. The second essay (chapter 3) investigates the way human values and cultural factors (i.e. tightness-looseness) affect healthcare preferences in different countries, using a random intercept multilevel regression model. The last essay (chapter 4) describes how attitudes and values mutually influence each other over time. We model the way 4 social values and 4

associated attitudes change over time and how they cause changes in each other over time, using random intercept cross-lagged panel modeling.

1.1. Overview of essays

Chapter 2: Individual and generational value change in an adult population

Lay people's believe is that peoples' values change over time: young people are more open to change, and more focused on self-enhancing values like hedonism, stimulation, achievement, and with age they will become more conservative and less interested in hedonic activities. This is however in contrast with the more scientific approach of values as a learned construct that is stable once people are adults. In this view, values will be learned during childhood, and once people are adults, they will be stable. By far the most research has been done on change in children, young adolescents and students, and limited research on value change and stability in adults. One of the reasons for this limited amount of research is the problem of data collection. To be able to investigate value change within individuals, there is need of longitudinal data from the same people, over a sizable time span.

Tackling this challenge, we use data from the LISS panel, which is a Dutch representative panel, that followed people already from 2008 till now. For our research we selected all individuals that have been in the panel from 2008 to 2020, resulting in a sample of 1599 people for which we had 7 time points where their values have been measured. We analyzed individual value change (i.e. not changes between people, but changes within people). To make the development more insightful, we grouped the people in different generations, and thus show the differences between generations in values, as well as the change within generations over time. With this analysis we showed that value change was still happening in the millennial generation, while Generation X and the Baby

boom generation were stable in their value profile. For the Silent generation their value profile seemed to become less stable again, however this change was insignificant, possibly due to the smaller sample size in this cohort. Investigating 9 individual values, we found there were differences in stability in the different values: some were stable over time (like hedonism, conformity) in all generations, while other values were changing even in the older generations. Specifically we noticed an increase in security values between 2008 and 2020 for all generations. Some values changed between generations, but were stable within people. An intriguing finding was that hedonism, which was one of the least important values in the oldest generation, but within each generation it became more important, and in the millennial generation even as important as benevolence, which is commonly found as the most important value across cultures. Combining this high score with the stability of the value of hedonism, this seems to indicate a remarkable feature of the millennial generation.

Chapter 3: Cultural Variation in Healthcare Consumption: National and Individual Drivers of Preference for Medical Help

This chapter investigates how values and culture interact in shaping consumer preferences for medical help. Specifically we looked at preference for professional medical help in the case of non-urgent medical conditions (backache, headache, sore throat and sleeplessness). We use a combination of data from the European Social Survey and country level scores of Tightness-Looseness (TL) (Gelfand et al., 2006) to investigate the effect of human values on this preference, in 16 countries in the EU. Next to that we analyze the effect of country level variables (i.e. tightness-looseness) on this preference, and finally we look at how the country level variable of tightness-looseness interacts with human values in influencing preference. The results of the analysis showed that human

values (conceptualized to the four higher order values conservation, openness to change, self-enhancement and self-transcendence) had a significant impact on this preference. We found that conservation, and to a lesser extent self-enhancement values had a positive effect on preference while self-transcendence had a negative effect. We found that tightness-looseness, which describes the importance of normative behavior (i.e. behaving as other people feel you should behave) in a society, also increased preferences for professional medical help. Interestingly we also found interactions between TL and human values: in countries where TL is higher we found that conservation had a stronger positive effect, and self-transcendence a stronger diminishing effect. Although Self-enhancement did not show a significant direct effect, we did find a significant diminishing effect of self-enhancement in the case of strong TL. These results show that human values influence preferences, but that these influences can differ across different cultures. The cultural surrounding can either increase or diminish the effect of human values.

Chapter 4: Longitudinal Analysis of the Relation between Changes in Human Values and Social Attitudes

The next chapter also investigates differences in how human values influence human behavior. Using the LISS panel (as we did in essay 1), we investigate the dynamic relation of values and attitudes over time: adding to the insights we found in essay 1: *values are stable but can change* and essay 2: *the effect of values can change depending on the context*, we now look at the interplay between values and attitudes: *if values change, what happens to attitudes, and vice versa: what if attitudes change, do they influence human values?* To investigate this intricate relation, we looked at the relation of a selection of 4 socially related values (universalism, benevolence, conformity and security) and 4 related attitudes: attitude toward marriage, toward foreigners, toward income equality and

toward euthanasia. With 7 measurements points over 12 years' time we can longitudinally investigate changes, and the mutual effects of these changes. We modelled the reciprocal effects using Random Intercept Cross Lagged Panel modeling for each combination of the values and attitudes. Using this model we looked at the effect of within person value change on within person attitude change, and vice versa, controlling for the state like nature of both values and attitudes. Several results came out of these analyses. First of all we found that values and attitudes are rather stable over time, with values being the most stable and attitudes showing more changes over time. Also we found that values and attitudes are in general changing gradually over time: if change happens, this is not so much a change in one moment leading to a rebound effect, but it will be rather a continuous change. Looking at the relation between attitudes and values we find that this relation can change over time, for some values we found the correlation with attitudes increasing (e.g. benevolence and attitude towards foreigners), while for others decreasing (e.g. security and marriage). As for the effect of attitudes on values and the effect of values on attitudes: for each attitude we found at least one instance where either value change caused attitude change, or the other way around, an attitude change that causes a value change. We found that for one attitude-value combination (i.e. security and attitude towards income equality) there was a reciprocal relation between value and attitude: an increase in the importance of security was positively related to a more positive attitude towards income equality, as well as a more positive attitude towards income equality that was related to an increase in the importance of security.

1.2. Contributions

Table: 1.1: overview of the 3 essays

	Title	Topic	Research Question	Methodology
1	Individual and generational value change in an adult population, a 12-year Longitudinal Panel Study	Value change	How stable are individuals from different generations in their value profile? How stable are the different values? And, how do values change over time within and between generations?	Latent Growth Curve Modeling (LGCM)
2	Cultural Variation in Healthcare Consumption: National and Individual Drivers of Preference for Medical Help	Interaction of human values and cultural environment	How do tightness-looseness and human values influence preference for professional medical help in non-acute situations.	Multilevel random intercept Modeling
3	Longitudinal Analysis of the Relation between Changes in Human Values and Social Attitudes	Value change and Attitude change	How do values and attitudes change over time, and how does this change lead to reciprocal changes in values and attitudes?	Random Intercept Cross Lagged Panel Modeling

Chapter II. Individual and generational value change in an adult population, a 12-year Longitudinal Panel Study

This chapter is based on the original paper published in Scientific Reports:

Leijen, I., van Herk, H., & Bardi, A. (2022). Individual and generational value change in an adult population, a 12-year longitudinal panel study. *Scientific Reports*, 12(1), 17844. <https://doi-org.vu-nl.idm.oclc.org/10.1038/s41598-022-22862-1>

Abstract

A long-standing conundrum is whether age differences in personality are due to generation, or internal change with age. Using a representative sample from The Netherlands (N = 1,599; aged 16-84 at the start), the current research focuses on human values (an important aspect of personality), following the same individuals for 12 years. We distinguish four generations, Silent-generation, Baby-boomers, Generation-X and Millennials. We found clear differences across generations in human values, with Millennials, e.g., valuing hedonism more than all other generations. Furthermore, value change over time was mainly evident in Millennials. Some values (achievement and conformity) were stable within individuals and between generations. Change over time across most values occurred mainly in Millennials, but not for all values. Some values were stable in adults (e.g., hedonism, conformity) while other values still increased (e.g., security, self-direction) or decreased (e.g., power, stimulation) in importance. In adults older than Millennials change decreased and change was absent in the oldest generation. Hence, age differences in values seem both due to generation, as well as internal change, although the latter mainly in young adults. These value changes over time may have implications for developments in societal values in the long run.

Keywords: Human Values, value change, longitudinal, growth modeling, generations, cohorts

2.1. Introduction

A general opinion on values and aging is that young people want to have fun and old people are conservative, implying that people's values change with age. In this view, age differences are due to internal changes with age rather than generation differences. However, theory predicts that individuals' values are rather stable over time, which contradicts this possible change in values (Sagiv et al., 2017), raising the question if individuals' values change as they age, or remain stable after a certain age, and it is birth cohort that is behind age differences in values? We examine this question using representative data from the Netherlands, and spanning four generations (Millennials, Generation-X, Baby-boomers, and the Silent-generation) (Lyons et al., 2007) over a 12-year period (2008-2020).

2.1.1. Background

Values are abstract ideals that function as guiding principles in life (1992) and are considered a stable part of someone's psychological profile, influencing attitudes, needs, and behaviors (Sagiv et al., 2017). Values are considered relatively stable over time (Rokeach, 1973). Unlike attitudes or needs, they do not easily change with circumstances. Examples of values that are important to most people are, for instance, caring for other people and having freedom (Schwartz & Bardi, 2001). Cross-sectional studies on human values show that value priorities of younger and older individuals differ (Borg, 2019; Dobewall et al., 2017; Schwartz & Rubel, 2009). These studies involved distinct samples such as students and teachers (Vauclair et al., 2011), representative samples (Fetvadjiev & He, 2019), and large cross-national studies (Robinson, 2013; van Herk & Poortinga, 2012). Value differences between generations (e.g., Baby-boomers, Generation-X, Millennials) have also been shown in several studies (Lyons et al., 2007; Marcus et al., 2017). These

studies consistently showed that values differ between age groups, with younger age groups considering openness values more important and older age groups conservation values. Recent work shows value differences across the life span reflect a universal pattern across different countries (Vilar et al., 2020). However, it is possible that the results that were found were due to generational differences. To obtain insight into changes over time in specific age groups, differences between individuals at different points in time may be approximated using a meta-analysis (Curran & Hill, 2019). However, to confidently determine whether age or generation (i.e., birth cohort) drives value differences across ages, a longitudinal study is required including individuals at different points in time, over a long period.

Recent work recognizes this, resulting in intra-individual value change being an emerging topic in psychological research (Schuster et al., 2019). These studies can be categorized to three types: First, experiments changing values in the short-term in the laboratory (Arieli et al., 2014; Maio et al., 2009). Second, studies including two points in time and including significant life events. In these studies, the focus is on intra-individual value change due to events like an earthquake (Oishi et al., 2017), a terrorist incident (Verkasalo et al., 2006), immigration (Lönnqvist et al., 2011, 2013) as well as life stage specific events such as attending university (Bardi et al., 2009), or becoming a parent (Lönnqvist et al., 2018). Third, longitudinal studies at more than two time points. E.g., Vecchione, Schwartz, et al. (2016) who studied 107 young adults (21-22 years old at start) over a period of 8 years, and Milfont et al. (2016) who used a large representative sample of 3,434 adults (aged 25-71 at start) over a period of 3 years. However, as values are considered rather stable aspects of people's personality, even 3 years is still a relatively short period for measuring intra-individual value change. Moreover, according to theory,

most value change happens during the younger life stages (Bardi & Schwartz, 1996), thus limiting the insights of this study.

2.1.2. Schwartz Human Values

Currently the most widely used framework of human values is by Schwartz (1992). He conceptualizes values into 10 different value-types that together form a *value-circumplex*, with two main dimensions underlying the differences between values. The first dimension opposes the value domain Openness-to-change (self-direction, stimulation) with the value domain Conservation (conformity, tradition, security). The other value dimension is the opposition between Self-enhancement value-types (power, achievement) versus Self-transcendence value-types (universalism, benevolence). The value-type hedonism is situated in between the Self-enhancement and Openness-to-change poles. Value-types can either be more in accordance with each other (the closer they are on the circumplex, the stronger they correlate) or more in conflict with each other (being on opposing sides of the value-circumplex). This means that a higher priority of a certain value-type is expected to be associated with a lower priority of a value-type on the opposing side of the circumplex.

2.1.3. Value Change and Stability

After value priorities have developed during childhood, they are considered relatively stable over the life span (Schwartz, 1992). However, “relative” leaves room for change: research into value change suggests that value change after childhood is possible, and that these changes could be attributed to a host of factors. Schwartz (2005) mentions 3 potential sources of value change in adults: 1; societal events like war, famine, economic crisis, pandemics, 2; aging-related physical decline, and 3; life events like leaving school, marrying, becoming a parent, retirement.

There are large cross-sectional studies using representative samples that include the relation between age and value priorities. Schwartz (2005) concluded from his review that

age is positively correlated with conservation and self-transcendence, and negatively with openness-to-change and self-enhancement. The capability of recognizing, and distinguishing between values, was already found in children as young as 5 (Collins et al., 2017). Research using European Social Survey data found older cohorts leaning more to conservation values and lower self-enhancement values, and younger cohorts showing the opposite (Robinson, 2013; Tormos et al., 2017; van Herk & Poortinga, 2012). However, if measured cross-sectionally, differences between generations cannot be attributed to either age or cohort: an older generation would have experienced other societal events than a younger generation, but an older generation would have also experienced many more individual events and increased physical decline. Thus, it is impossible to attribute changes to just one of these sources using cross sectional data or specific age groups.

Longitudinal studies showed that the stability of children's values increases during childhood: the older the child, the higher the value stability (Lee et al., 2017; Vecchione et al., 2019). For children in middle childhood self-transcendence and openness-to-change values became more important, while conservation and self-enhancement decreased in importance over time (Daniel et al., 2020; Vecchione et al., 2020). Other longitudinal studies showed that in early adolescence values were moving towards more importance for the value-domains self-enhancement and openness-to-change (Vecchione et al., 2019), and for young adults the value-types self-transcendence, conservation, and power increased in importance, and achievement values decreased (Vecchione, Schwartz, et al., 2016). Graduating students increased in conformity and security and decreased in hedonism and self-direction values (Daniel et al., 2020). Finally, adults (aged 25-71), followed over a 3-year period, were found to increase in self-transcendence and conservation and decrease in openness-to-change (Milfont et al., 2016).

To summarize, these findings suggest that ageing in adults positively relates to conservation and self-transcendence values and negatively to openness-to-change and self-enhancement values. However, with existing research the question whether this is a change over time within individuals, or whether value change is a generational shift, cannot be answered. Researchers either investigated individual value change over brief time periods or only within limited age groups (e.g., children, adolescents, young adults), or used cross-sectional designs. Hence, the question of whether individual value change is also possible over the entire lifespan has been theoretically addressed but lacks empirical evidence with a representative sample including the same people over a longer period of time.

Our longitudinal approach, in a large Dutch sample, provides insight into values people have at the start of the study as well as in the consecutive development of their values over a 12-year period, investigating change in people from late adolescence to the elderly. We distinguish 4 generations, the first born before WW2, the second growing up in the post-war reconstruction years, the third in an era of increasing economic growth, and the last experiencing a period of high prosperity (Beugelsdijk et al., 2022; Inglehart & Norris, 2016).

Corroborating existing cross-sectional research, we show the differences between younger and older people in value importance. For this we classify them into known generations (i.e., Silent-generation, Baby-boomers, Generation-X, Millennials) and show that there are meaningful differences. We address several aspects of value stability and change. First, we investigate value-profile stability: the stability (within individuals) of the relative order of importance of values. We compare the average value-profile stability between four different generations. Next, we analyze the stability of each value-type: we compare the rank-order stability of each value-type over a 12-year period, again for each

generation. And finally, we analyze the development of the relative (i.e., mean-level) importance of each value-type over time, for each generation.

2.2. Method

Our analyses are based on publicly available data collected within the LISS panel (Longitudinal Internet Studies for the Social sciences; www.lissdata.nl), administered by CentERdata (Tilburg University, The Netherlands). The LISS panel is a representative sample of Dutch individuals who participate in monthly Internet surveys. The panel is based on a true probability sample of households drawn from the Dutch population register. Households that could not otherwise participate are provided with a computer and Internet connection. Within this household the same person has filled out the questionnaires. Next to the monthly surveys, a longitudinal survey is fielded in the panel every year, covering a large variety of domains including work, education, income, housing, time use, political views, personality, and values (CentERdata, 2024).

2.2.1. Description of data set

We combined data from the LISS panel from the years 2008 till 2020 (2008, 2009, 2011, 2013, 2014, 2017, 2020). As we intended to analyze intra-individual longitudinal value change over the longest time-period possible within the current panel data, we excluded participants who did not participate in all 7 waves and/or did not fill out the values survey at all these time points. The main reason for including only full responses is comparability across all our analyses and tables. Our final dataset thus includes 7 waves and 1,599 respondents. The respondents included in our study were aged between 16-84 in 2008, and 50.8% were female. The subsample we used from the complete LISS panel was 24% of the original representative dataset. In comparison to the complete LISS panel for which there were human values in 2008 (6,700 respondents) the sample of people who were in the panel for 12 years differed to some extent (see Table 2.1 and a more elaborate

comparison in Appendix table 2.A.5). The age difference between people in the panel in 2008 and those who were in our final sample is 46.3 years versus 50.0 years ($t = -13.59$, $p = .000$), and average level of education was slightly higher in our sample (higher educated 28.5% in the original sample, versus 31.7% in the final sample X_2 ($1, N=6,700$) = 5.9, $p = .016$. Furthermore, the number of women was slightly lower in our final sample (50.8%), X_2 ($1, N = 6,700$) = 10.2, $p = .002$.

Table 2.1. Description of the dataset and comparison with initial sample (e.g., all respondents who answered the values questions regarding values) in T0

Dataset	2008	2008-2020
N	6,700	1,599
Gender	54.3%; women, 45.7% men	50.7%; women, 49.3% men
Age	46.3 years (range 16 – 95)	50.0 years (range 16 – 83)
Education	High: College/University 28.5%	High: College/University 31.4%

2.2.2. Generations and Schwartz values

For our analyses, we calculated a new variable indicating the generation an individual belongs to: (1) Silent-generation born during 1925-1945, (2) Baby-boomers born during 1946-1964, (3) Generation-X born during 1965-1979, and (4) Millennials born during 1980-1992.

The LISS data includes 36 items that measure values (Rokeach, 1973) at each wave. Rokeach and Schwartz values share many commonalities (Schwartz & Bilsky, 1987), corroborated by a meta-analysis showing that the circular value structure found with the Schwartz Value Survey (SVS) questionnaire, was also found using the Rokeach Values Survey (RVS) (Vauclair et al., 2011). Previous research has established configural invariance of a similar circular structure in the RVS as in the SVS over 7 countries. The RVS items in the LISS panel have been used before to create values related to the Schwartz framework (Bleidorn et al., 2020; Fetvadjev & He, 2019). Using these value items, we created human values that map as closely as possible onto the Schwartz value

framework. We first computed the value scores using the Rokeach items, after which we ipsatized the nine values as advised and commonly done when using Schwartz values (Borg et al., 2015; Schwartz, 2007). See Table 2.2 for an overview of the used items and the corresponding Cronbach Alphas for each value. In the appendix we included analyses showing invariance of the value structure across generations (Appendix 2.A.6).

Table 2.2. Values, scale reliability and scale items

Value	Cronbach Alpha	# Items	Rokeach Items
Benevolence	.781	5	forgiving, helpful, true friendship, mature love, sincere and truthful
Universalism	.766	6	open-minded, a world at peace, equality, wisdom, inner harmony, a world of beauty
Self-direction	.685	4	independent, freedom, self-respect, creative
Stimulation	-	1	an exciting life
Hedonism	.621	2	a comfortable life, pleasure
Achievement	.698	3	capable, intellectual, a sense of accomplishment
Power	-	1	social recognition
Security	.653	3	clean, family security, national security
Conformity	.649	2	polite, obedient

All supplemental materials as well as the data and code and for the main analyses can be found at the open science framework (<https://osf.io/gp6ef/>). In the Appendix, a detailed description of the procedure and items used to construct the Schwartz values is included (Appendix 2.A.4, 2.A.5).

2.2.3. Data analysis

2.2.3.1. Value Change: Mean Level Change and Rank-order Stability

To assess change, we focused on long-term individual change, and report change in 3 ways: **value-profile stability** within individuals, followed by **rank-order stability** and **mean level** change of each value in the population. We order our results as follows. First, we describe our data, and then assess within-person **value-profile stability over time**, and whether this is different or similar for different generations using Spearman rank-order correlations.

Second, we focus on between person **rank-order stability** of the respective values to assess the degree to which human values keep the same relative position in the sample across the 7 time-points. We assess the rank-order-stability across the whole sample, as well as within the 4 distinguished generations, again using Spearman rank-order correlations. The higher the rank-order correlation, the more stable human values are over time. Third, we model **value change over time per value** using latent growth curve modeling (LGCM)(Curran et al., 2010; Preacher et al., 2008). We employed LGCM, an often-used method in developmental research, to provide insight into within individual change over time as well as in the direction of this change. In the analysis our main interest is in differences between generations. For each value, we estimate the following nested models in addition to a base model: (1) a model with random intercept, (2) a model with both random intercept and random slope, (3) random intercept and invariant slope including time- invariant covariates (generation, gender, and education) (4) a model with both random slope and random intercept including time-invariant covariates (generation, gender, and education). To corroborate our analyses, in the online supplemental materials we provide the confidence intervals for these models, plus additional analyses with quadratic and cubic effects for age, and an analysis assessing the effects employing the same LISS sample (N=2,033) containing missing values at some waves (see suppl. materials: Table 6.1 - 9.3 on <https://osf.io/gp6ef/>).

2.2.3.2. Statistical software

We use R (R_Core_Team, 2021) for our analyses. To calculate descriptive statistics, we use the package psych (Revelle, 2021) and to estimate the latent growth curve models, we employ the R-package lavaan (Rosseel, 2012).

2.2.4. Descriptives

Demographic characteristics and observed scores of value importance at time point 0 (T0; 2008) are reported in Table 2.3. The sample consists of 1599 individuals with a mean age of 50.0 and 812 (50.7%) females. The scores across the sample are shown in the last row and the other rows show the scores for each of the 4 distinguished generations. At T0 (2008), within the full sample of 1599 individuals, the values benevolence ($M = 0.683$) and self-direction ($M = .417$) were considered relatively the most important and both stimulation ($M = -.952$) and power ($M = -.717$) the least important. There were some notable differences between the 4 generations in value importance (see F-test in Table 2.3). Overall, the youngest generation (Millennials) seems most different from the other generations with lower importance attached universalism (.007), self-direction (.199), achievement (-.423) and security (.062) and higher importance attached to hedonism (.595) and stimulation (-.382). The four generations did not differ statistically significantly on benevolence, conformity, and power.

Table 2.3. Demographics, Means of the nine human values-types in 2008(T0), and Difference Test (ANOVA)

Generation	N	Female	Education (high)	Mean age in 2008 (SD)	Value scores in 2008 (T0)								
					BEN	UNI	SDI	STI	HED	ACH	POW	SEC	CON
Silent	285	43.9%	30.5%	67.71(3.98)	.658	.385	.453	-1.232	.082	-.231	-.681	.544	.021
Baby-boomers	865	51.3%	33.5%	53.67(5.37)	.710	.307	.456	-.992	.230	-.343	-.732	.395	-.03
Gen. X	343	54.2%	39.0%	37.42(4.06)	.672	.129	.357	-.792	.485	-.461	-.749	.375	-.016
Millennials	106	52.8%	69.8%	21.40(3.39)	.565	.007	.199	-.382	.595	-.423	-.589	.062	-.033
F					2.56	26.35***	8.61***	19.22***	40.31***	7.49***	.88	16.08***	.33
Total	1599	50.7%	36.6%	49.95(13.1)	.683	.263	.417	-.952	.282	-.354	-.717	.395	-.018

*. p < .05. **. p < .01. ***. p < .001. Value-types are measured in 2008 (T0). Education is education in 2020 (T6) to appropriately reflect the level of education of the Millennials. BEN = benevolence, UNI = universalism, SDI = self-direction, STI = stimulation, HED = hedonism, ACH = achievement, POW = power, SEC = security, CON = conformity. Differences between generations are statistically significant for all values except benevolence, power, and conformity.

2.3. Results

2.3.1. Value Profile Stability.

We start with the question: Does the order of importance people attach to the 9 values change over time? If value importance changes within individuals, one type of such change is change in the relative order of importance of the values that is, their personal value hierarchy. The more the personal hierarchies change, the lower the correlation between the value-profiles in different points in time. We assessed value-profile stability between 2008 and 2020. We calculated similarity of the individual value profiles using Spearman rank-order correlations; a value-profile stability of .00 indicates no relationship and a profile stability of 1.00 indicates the same rank-order after 12 years. Table 2.4 shows that Millennials were lowest and the Baby-boomers highest on value-profile stability, with Generation-X and the Silent-generation in between ($F_{(3,1576)} = 12.44, p = .000$). A mean-comparison test between the generations using TukeyHSD shows that the average within-person value-profile stability is similar for Baby-boomers and the Silent-generation as well as for Millennials and Generation-X. The largest differences are between the Millennials and Silent-generation and between Millennials and Baby-boomers (See also Appendix Fig. 2.A.1).

Hence people's values were quite stable over time, with most change found in the youngest generation, and least change in the Baby-boom generation. We also noticed a possible decline in value stability for the oldest generation.

Value stability over time.

A second aspect of value change is the stability of value priorities: how stable are people within a group regarding the priority of a certain value? If most people in a group have a similar score of the priority of a value across two time periods, correlations between these two time periods will be high, i.e., the stability of the value will be high. And vice

versa: the more people within a group change in their appreciation of a particular value over time, the lower the correlation between two time periods and thus the lower the stability of this particular value in the population. To estimate how value priorities change over time for each value-type between all consecutive time points, we calculated rank-order correlations. To capture the ordinal character of the values measurement, we used Spearman correlations. Results are shown in Table 2.5.

Table 2.4. Ipsative stability of the within-person value-type hierarchies (i.e., value-profile stability) in the period 2008-2020 within 4 generations and for all individuals

Generation	Central tendency			Dispersion			Percentiles			Shape	
	Mean	Median	SD	Min	Max	25th perc.	75th perc.	Skewness	Kurtosis		
Silent-generation	.618	.732	.356	-.911	.996	.515	.864	-1.862	3.748		
Baby-boomers	.643	.722	.283	-.958	1.000	.519	.849	-1.613	3.476		
Generation-X	.562	.655	.330	-.970	1.000	.402	.798	-1.476	2.665		
Millennials	.477	.508	.356	-.895	.983	.292	.765	-.907	1.034		
Average all generations	.610	.702	.316	-.970	1.000	.470	.839	-1.613	3.281		

Table 2.5. Rank-order stability (Spearman rank-order correlations) in full sample of each human value over time between pairs of waves

	2008-2009		2009-2011		2011-2013		2013-2014		2014-2017		2017-2020		2008-2020	
Benevolence	.570	.572	.582	.590	.572	.582	.590	.572	.573	.572	.572	.572	.452	.452
Universalism	.556	.582	.596	.595	.582	.596	.595	.582	.550	.572	.572	.572	.468	.468
Self-direction	.562	.534	.566	.558	.566	.566	.558	.558	.531	.544	.544	.544	.480	.480
Stimulation	.595	.576	.566	.588	.566	.566	.588	.588	.570	.564	.564	.564	.466	.466
Hedonism	.499	.472	.491	.516	.491	.491	.516	.516	.510	.472	.472	.472	.432	.432
Achievement	.471	.476	.477	.512	.477	.477	.512	.512	.481	.496	.496	.496	.408	.408
Power	.449	.444	.493	.491	.493	.493	.491	.464	.464	.477	.477	.477	.377	.377
Security	.577	.587	.596	.587	.596	.596	.587	.566	.566	.551	.551	.551	.454	.454
Conformity	.507	.521	.504	.506	.504	.504	.506	.483	.483	.482	.482	.482	.432	.432
<i>Average across all values</i>	.532	.529	.541	.549	.541	.541	.549	.525	.525	.525	.525	.525	.441	.441

Columns indicate Spearman rank-order correlation coefficient for each value-type between 2 waves. Time between waves varies from 1 to 3 years. Last column indicates coefficient between first and last wave (12-year period). All correlations are significant $p < .01$

Table 2.6. Rank-order stability (Spearman rank-order correlations) within generations of each human value over time between 2008 and 2020

	Silent Gen.	Baby B.	Gen. X	Millennials	Total sample
Benevolence	.424	.486	.464	.248	.452
Universalism	.454	.474	.458	.413	.468
Self-direction	.401	.573	.460	.270	.480
Stimulation	.396	.475	.505	.433	.466
Hedonism	.349	.388	.436	.299	.432
Achievement	.386	.445	.376	.250	.408
Power	.365	.389	.377	.354	.377
Security	.436	.468	.448	.372	.454
Conformity	.378	.483	.356	.423	.432
<i>Average across all values</i>	.399	.465	.431	.340	.441

Columns indicate Spearman rank-order correlation coefficient for each value-type between waves 1 (2008) and 7 (2020), per generation: Time between waves is 12 years. Last column indicates coefficient between first and last wave (12-year period). All correlations are significant $p < .01$

Across all respondents the Spearman rank-order correlation between the respective value-types at two consecutive time points was on average $\rho = .533$, and $\rho = .441$ over the 12-years period (between 2008 (T0) and 2020 (T6)). Across all generations, between T0 and T6, self-direction was the most stable over time ($\rho = .480$) and power the least stable ($\rho = .377$).

To provide insight into differences between generations, we compared value stability across generations. Results are shown in Table 2.6.

As can be seen in this table, average value stability was clearly lower for the Millennial-generation and the highest average value stability was found within the Baby-boomer generation. Millennials were most stable in stimulation, conformity, and universalism values, and least stable in self-direction, achievement, and benevolence. Within the Baby-boom generation, the highest stability was found for self-direction.

To summarize, we found variation in stability of value-types. The highest stability in the total sample was found for the value-type self-direction, and lowest for power. Focusing on generations, overall lowest stability was found in the Millennial-generation, and the highest stability in the Baby-boomer generation. Within the youngest generation, values that were least stable were self-direction, achievement, and benevolence, while stimulation, conformity and universalism were most stable. Interesting to note is the instability of self-direction in the youngest generation, as self-direction is overall the most stable value.

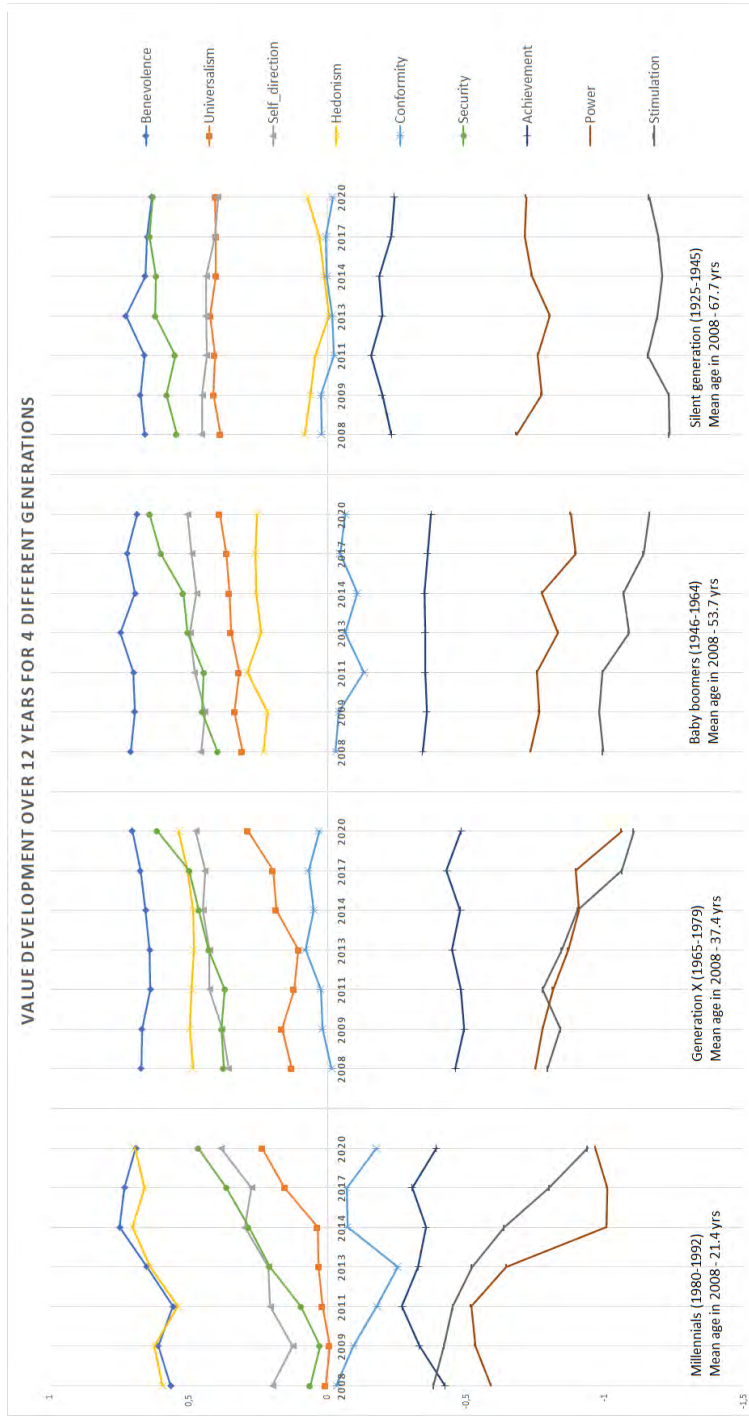
2.3.2. Mean value change over time

Although rank-order stability analysis showed that some values change over time and between generations, it does not give us insights into the direction, nor the scope in which values change. Fig. 2.1 visualizes the development of the values over the period

2008-2020 for each generation respectively. This figure suggests more change over time within the Millennials compared to the other generations.

To evaluate the validity of these changes we estimated latent growth curve models (LGCM) (Preacher et al., 2008), an established technique to assess within individual changes over time in longitudinal data (Bleidorn et al., 2009). To estimate the models, we employed the structural equation approach using lavaan in R (R_Core_Team, 2021; Rosseel, 2012) , including seven time periods (2008, 2009, 2011, 2013, 2014, 2017, and 2020) and three time-invariant covariates, gender (male = 1 female = 0), generation (dummy coding), education (high = 1, low = 0), and within generation age differences in 2008. These covariates were selected as previous literature has shown that age, gender and education are the most influential covariates in human values research (Schwartz & Rubel, 2009). For a visualization of the LGCM model and its parameters see Fig. 2.2.

Figure 2.1. Mean value change for different generations over a period of 12 years



Lines show change over time (7 measurements over a period of 12 years) in the relative importance of nine human value-types for four different generations (Millennials, Generation-X, Baby-boomers and Silent-generation). Scores are ipsitized means of the nine value-types, calculated per generation. Distances per time period (i.e., varying between 1 and 3 years) are equally spaced. Mean age of each generation is indicated for T0 (2008).

Figure 2.2. Latent Growth Model value change over 12 years with latent intercept and slopes

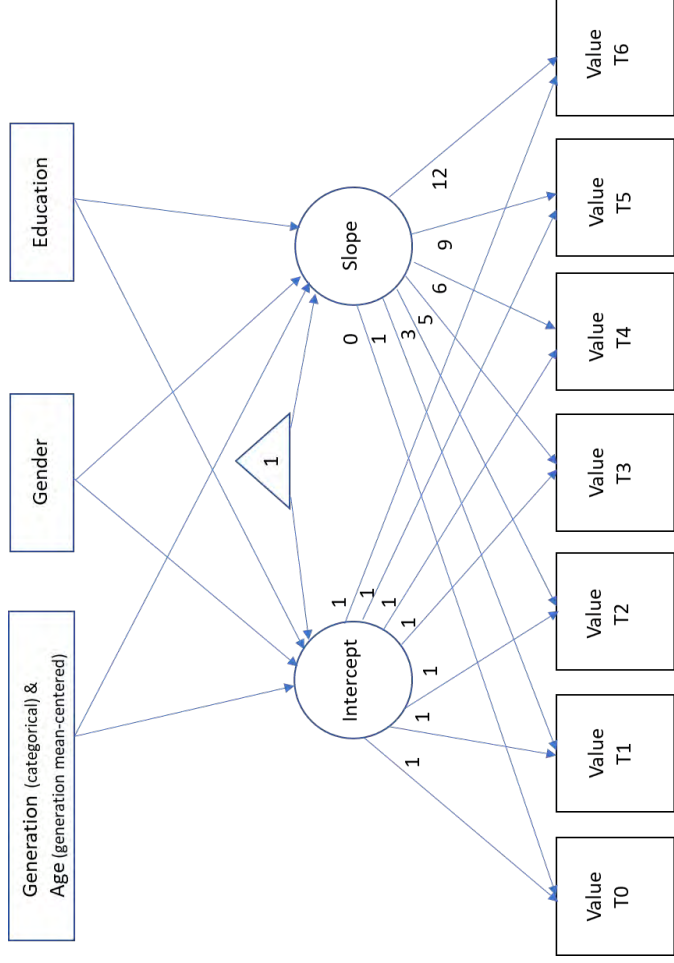


Table 2.7. Growth curves per value; no change and linear change; SEM approach lavaan (R; Rosseel, 2012)

	Benevolence	Universalism	Self-direction	Stimulation	Hedonism	Achievement	Power	Security	Conformity
Intercept mean	0.767***	0.485***	0.434***	-1.392***	0.050	-0.327***	-0.924***	0.744***	0.163***
Gender (male=1)	-0.185***	-0.200***	-0.062*	0.393***	0.014	0.091***	0.263***	-0.188***	-0.125***
Education (high=1)	0.050*	0.091***	0.174***	-0.144**	-0.028	0.261***	0.093*	-0.247***	-0.250***
Age ^o	0.002	0.011***	0.002	-0.023***	-0.015***	0.002	-0.001	0.012***	0.009*
Baby-boomers ¹	0.014	-0.108***	-0.014	0.279***	0.192***	-0.161***	0.025	-0.155***	-0.073
Generation-X	-0.054	-0.323***	-0.107**	0.517***	0.435***	-0.307***	0.014	-0.199***	0.023
Millennials	-0.138**	-0.498***	-0.393***	0.977***	0.554***	-0.271***	0.201	-0.433***	0.001
Slope mean	-0.005	-0.001	-0.005*	0.008	0.001	-0.003	0.007	0.003	-0.005
Gender (male=1)	0.004*	0.002	0.000	-0.007	-0.006**	0.003	-0.007	0.005*	0.006*
Education (high = 1)	-0.001	0.002	0.001	0.001	0.003	-0.005	-0.007	0.006**	-0.002
Age ^o	0.000	0.000*	-0.001**	0.001**	0.000	0.000	0.000	0.000*	0.000
Baby-boomers	0.003	0.006*	0.009***	-0.022***	0.003	0.002	-0.015**	0.012***	0.002
Generation-X	0.006	0.011***	0.014***	-0.033***	0.004	0.005	-0.024***	0.011**	0.007
Millennials	0.017*	0.018***	0.022***	-0.054***	0.009	0.005	-0.043***	0.027***	-0.001
Intercept variance	.157	.123	.173	.609	.145	.170	.443	.211	.283
Slope variance	.0003	.0003	.0004	.0015	.0003	.0005	.0017	.0006	.0005
Covariance slope-intercept	-.0016	-.0008	-.002	-.009	-.0005	-.003	-.003	-.004	-.003

¹Silent-generation is the reference category. ^o mean-centered within generation (i.e., age means age difference within generations). * = p < .05; ** = p < .01; *** = p < .001. Associated p-values and confidence intervals can be found in the supplementary materials (<https://osf.io/sbxtr>, SI 11, Table 6.1 - 6.3)

For each value we estimated a latent growth curve model using maximum likelihood and 1000 bootstrap draws. In the analyses, we coded the times as 0, 1, 3, 5, 6, 9, and 12 indicating the difference in years between the time points. We tested several nested models (see <https://osf.io/gp6ef/> for code), starting with intercept only, and intercept and slope only, followed by models adding the time-invariant covariates. As the variable measuring generations is categorical, we used the Silent-generation as the reference category.

All models converged without problems; common fit statistics including CFI, RMSEA and SRMR indicate that all models fit well using the expected criteria, i.e., $> .95$ for CFI, $< .08$ for RMSEA and SRMR (Hu & Bentler, 1998). By adding the time-invariant covariates, we assessed whether these covariates explained differences in intercept (mean-level differences in value priority) and differences in slopes (mean-level changes over time) of the individual value trajectories. For clarity, we only report the model with random intercept and slope and including all time-invariant covariates for each value. For all values the models with random slope and random intercept, including covariates fitted well (see Appendix 2.A.1 for fit statistics), with the worst fitting model (universalism) still fitting the data well with chi-square (59) = 188.10 $p = .000$, CFI = .979; RMSEA = .037; and SRMR = .029.

The results for all values are shown in Table 2.7 (see also <https://osf.io/sbxtr> SI 11 Table 6.1 to 6.3 for p-values and confidence intervals). Each column first shows the intercept across all respondents, indicating the overall relative importance of the value across all respondents, followed by the coefficients for the time-invariant covariates. For example, a positive coefficient for gender indicates that males score above average (i.e., the intercept) on the value. Next, the overall slope (indicating change over time) is reported, again followed by the coefficients for the covariates. As the Silent-generation is treated as the reference category in the model, coefficients for this generation are not shown (i.e., being 0.0). The coefficients

for the other cohort are to be interpreted in comparison to the reference category. We now report the results for each of the values, starting with benevolence.

Benevolence, the most important value overall, was a less important value for men than for women, and slightly more important for the higher educated, no effects were found for within generation age differences. We only found significant differences for the Millennials: benevolence had a significantly lower priority compared to the Silent-generation and increased slightly in the 12-year period. Men showed a minor increase over time in benevolence.

Universalism was less important for men and more important to the higher educated, and older people were higher on universalism (within each cohort). As for the differences between the generations, Baby-boomers, Generation-X and Millennials, scored lower on universalism compared to the Silent generation, with Millennials scoring lowest. If we look at value change, we see that generations increased in universalism over time with the largest increase in the Millennial-generation.

Self-direction was more important for females and higher educated. Relative to the Silent-generation, self-direction was significantly less important for Generation-X and Millennials. Regarding change in value importance over time, the importance of self-direction increased over the 12-year period for the Baby-boomers, Generation-X and most for Millennials.

Stimulation was more important to males and less to the higher educated. In each generation, older people scored lower on stimulation. Relative to the Silent-generation, stimulation was more important to all other generations, with the Millennials having a significantly higher score than all other generations. Regarding value change over time, for Baby-boomers, Generation-X, and Millennials stimulation decreased in importance, with Millennials decreasing most.

For **hedonism** we found no significant differences for gender nor education and older people within each generation scored lower on hedonism. The importance of hedonism was higher in all generations compared to the Silent-generation, with the Millennials considering hedonism more important than the other generations. Over time none of the generations changed in their appreciation of hedonism.

Achievement was more important for men, more important to the higher educated, and being older was related to a higher achievement score. Significant mean differences in achievement were visible: Compared to the Silent-generation, all generations were lower on achievement. We found no significant change over the 12-year period for any of the generations, which contradicts previous cross-sectional findings (Robinson, 2013; Schwartz, 2005)

In line with the literature, **power** was much higher for men than women. Also, a higher educational level was positively related to this value. Relative to the Silent generation, Millennials valued power more. Notwithstanding the lack of difference of the other generations with the silent generation, we found Millennials decreasing most over time.

The value of **security** was the second most important value overall. Men attached less importance to security, and higher educated also valued security less. Within each generation older people scored higher on security. In all generations (compared to the oldest generation), security was lower, with Millennials scoring lowest. The value-type security seems less stable over time compared to most other value-types: Men, over the 12-year period, increased slightly in security, as did the more highly educated. The different generations did all increase significantly in security, with the Millennials changing most, but also Generation X and the Baby-boomers showing an increase over time.

Conformity was lower for men, and for the more educated. There were no significant differences between the generations, nor did the value change over time for any of the generations.

To summarize the results of the latent growth curve models, we found differences in intercepts between generations for all values except for conformity. Differences for benevolence and power were only minor: only the youngest generation scored significantly lower on benevolence and higher on power. Universalism, self-direction and security were less important in younger generations, while hedonism and stimulation were more important in these generations.

The coefficients indicating change (slopes) show that, within generations, values did not change to the same extent or in the same direction. The main change was in the Millennials, with benevolence, universalism, self-direction, and security increasing, while stimulation and power were decreasing. For Generation-X and Baby-boom generation, the largest changes were in stimulation and power. Over time, hedonism, achievement, and conformity did not change in any of the generations. The latter value-types were stable over a 12-year period. Overall, the largest changes over time were seen in the Millennial-generation (see also Fig. 2.1).

2.4. Discussion

Our study adds important insights into the long-standing conundrum of whether age differences in values are due to generation differences or internal changes with age. We examined the way human values changed over a 12-year period in a representative Dutch sample of 1,599 people. We examined value change over time within individuals and explained differences between individuals by the generation they are in. Our approach differed from previous research into value change: previous research on value change mainly employed cross-sectional studies, and longitudinal studies on value change (until now) were

confined to shorter time spans and/or non-representative samples (Gouveia et al., 2015; Milfont et al., 2016). These studies showed an increase in the value domains conservation and self-transcendence, and a decrease in the value domains of openness-to-change and self enhancement with older age.

Across four generations covering people aged 16-84 at the start, we found that older generations (Silent-generation and Baby-boomers) gave higher importance to universalism, achievement, self-direction, and security, and lower importance to hedonism and stimulation (compared to Generation-X and Millennials). We found that values changed most in the youngest (Millennials) generation. In this generation we found lowest stability, both in individual value-profile, but also in the rank-order of each value-type. Value-profile stability was highest within the Baby-boom generation. Interestingly, we also noticed a (statistically non-significant) decline in stability within the Silent-generation (see Appendix figure 2.A.1), suggesting a possible curvilinear relation of age and value stability. It could be that the confrontation with one's mortality, which is often less salient for the young is influencing people's value priorities. This would be in line with a study in personality research showing that within an elderly sample (aged between 69-81), the oldest group showed personality change while the younger group did not (Möttus et al., 2012). However, it is also possible that the lower stability is due to age related cognitive decline, leading to some people in the generation becoming less reliable in understanding the survey questions (Knäuper et al., 2016).

Regarding value change over time, we found that rank-order stability in the total sample differed per value-type: in the full sample, power was lowest, and stimulation was highest in stability, corroborating other research findings (Bardi et al., 2009). Our dataset spanning 12 years enabled us to show that value stability was not similar across generations, with the youngest (Millennial) generation being least stable. Specifically, within the

Millennial-generation self-direction, achievement, and benevolence were less stable compared to the other generations. The lower rank-order stability of these three value-types within the Millennials was consistent with the lower value-profile stability of this group and may point to a further developing value awareness in younger people, as has also been shown with adolescents (Daniel, 2019). A development in value consciousness is also in line with the increasing perceptual distance between the values for the youngest generation (see Figure 2.1 **Error! Reference source not found.**); for instance, over the 12-year period, security and self-direction became more, and stimulation and power became less important, consistent with a maturation perspective (Schwartz et al., 2013). For the youngest generation becoming a parent could be a trigger for changes in their value-profile as the presence of children can invoke the promotion of prosocial values (Wolf et al., 2022).

In our results concerning mean value change, one value stood out; we found the oldest generation caring least, and the youngest generation caring most for hedonism, however, the value of hedonism did not change over the 12-year period in any of the generations. Thus, we saw a change between generations, but not over time within the generations (see also Appendix 2.A.8 for comparing means between and within cohorts). This result contrasts with results from Schwartz (Schwartz, 2005), who proposed that hedonism declines with age. In view of our results, his results could instead be attributed to generational changes instead of age.

Looking at the pancultural hierarchy of values (Schwartz & Bardi, 2001), hedonism belongs to the least important values, however for our Dutch sample we found hedonism to be one of the more important values. For the Millennial-generation in our sample hedonism is even among the 3 most important values, while for the Silent-generation it's among the least important values (Fig. 2.1).

Within Dutch society the increase in hedonism between generations may be linked to increasing wealth and attention to child rearing: the number of children has decreased over time (*CBS Statline*), while the amount of attention that is given to children has increased. Dutch culture attaching importance to a fun and relaxed childhood could be a cause why hedonism is increasing over generations and may be a reason that Dutch children are amongst the happiest in the world (Currie et al., 2009).

In younger generations we found changes over time, but with each subsequently older generation these changes become smaller. Thus, in line with previous research, human values seem to become engrained with age. However, we also found that not all values become stable in a similar manner. Although values changed most in the Millennial-generation, already some values were relatively stable (hedonism, conformity, achievement), while other values (benevolence, universalism, self-direction, stimulation, power, and security) changed over a 12-year period within the youngest group. Despite changes over time becoming smaller in older generations, we found some values may be still somewhat malleable during adulthood (Appendix 2.A.2, Table 2.A.2 to 2.A.4).

Within our Dutch sample, we found an increase in security and universalism and a decline in the need for stimulation in all generations over time. As the Netherlands is an affluent, democratic, high trust society (OECD, 2021), changes and differences in values should be interpreted in this context. For instance, the (comparatively) low priority of power and high priority of self-direction are reflective of Dutch society (van Herk et al., 2018). Societal events and trends could have caused period effects: e.g., the aftermath of the credit crisis of 2008, the influx of workers from Eastern Europe, increased fear for terrorism (sparked by for instance the attack on the royal family in 2009, and a mass shooting in a mall in 2011), an ongoing refugee crisis, but also (and maybe related) increasing populism,

increasing income inequalities, the climate crisis and strong societal discussions on universalist versus nationalist sentiments.

In summary, within our current research mainly the youngest generation showed indeed change over time for most values, although not for all. Some values seem more stable in adulthood (achievement, conformity, and hedonism) while other values still may increase (security, self-direction, universalism, and benevolence) or may decrease (power, stimulation) in importance. In adults older than the Millennial-generation there was value change (in particular for security, stimulation, and universalism), however, changes become negligible with older age.

Not all values changed in the same manner. Achievement and conformity values did not change at all, not within individuals, nor between generations. Hedonism differed across generations but did not change within individuals over time. Thus, hedonism also seems a stable value; however, over generations change happened. Other values changed between generations, as well as over time. This volatility could mean that societal changes in the values of security, universalism and stimulation may happen faster, not only due to generational change, but also due to adaption of the values within older generations. Further research on the effect of generations is warranted to get a broader insight into the relationship between year of birth (e.g., generations) and age at the time of study with value profiles. Also, as current research is done in a wealthy western (WEIRD) country (Henrich et al., 2010) further research should corroborate our results in other contexts.

Reflecting back to the question whether differences in value profiles are due to generation, or internal change with age, the answer is nuanced. This study in the Netherlands suggests that value importance in adulthood is mainly a factor of generational differences, although there is some value change with age (mainly in the younger people). However, until

this finding replicates across more countries and time periods, the question inevitably remains a somewhat open discussion.

Appendix 2.A.1: Fit statistics Latent Curve Growth Models (LCGM).

Table 2.A.1. Fit statistics of the growth models, the last model (df=59) refers to the model reported in the article, Table 2.7 main text.

		Intercept and slope* (df = 71)	Intercept + slope + time-invariant covariates intercept (df = 65)	Intercept + slope + time-invariant covariates intercept and slope (df = 59)
Benevolence	Chi-square	224.157	156.668	135.956
	Chi-square delta		67.488	20.712
	RMSEA	0.037	0.03	0.029
	SRMR	0.047	0.024	0.022
	CFI	0.971	0.982	0.985
Universalism	Chi-square	426.416	185.710	145.537
	Chi-square delta		240.706	40.173
	RMSEA	0.056	0.034	0.03
	SRMR	0.077	0.029	0.025
	CFI	0.944	0.981	0.986
Self-direction	Chi-square	218.629	125.426	87.927
	Chi-square delta		93.230	37.499
	RMSEA	0.036	0.024	0.018
	SRMR	0.049	0.019	0.016
	CFI	0.974	0.989	0.995
Stimulation	Chi-square	291.346	153.574	97.285
	Chi-square delta		137.772	56.289
	RMSEA	0.044	0.029	0.02
	SRMR	0.058	0.024	0.019
	CFI	0.96	0.984	0.993
Hedonism	Chi-square	421.861	139.227	126.615
	Chi-square delta		282.634	12.61
	RMSEA	0.056	0.027	0.027
	SRMR	0.077	0.028	0.027
	CFI	0.923	0.984	0.985
Achievement	Chi-square	315.538	118.122	110.971
	Chi-square delta		197.417	7.33 NS
	RMSEA	0.046	0.023	0.023
	SRMR	0.066	0.021	0.02
	CFI	0.944	0.988	0.988
Power	Chi-square delta	208.913	158.779	122.992
	Chi-square		50.134	35.787
	RMSEA	0.035	0.03	0.026
	SRMR	0.042	0.026	0.023
	CFI	0.963	0.975	0.983
Security	Chi-square	396.257	197.139	144.182
	Chi-square delta		199.118	52.957
	RMSEA	0.054	0.036	0.03
	SRMR	0.083	0.032	0.028
	CFI	0.945	0.978	0.976
Conformity	Chi-square	263.101	142.788	134.792
	Chi-square delta		120.313	8.000 NS
	RMSEA	0.041	0.027	0.028
	SRMR	0.061	0.024	0.023
	CFI	0.959	0.983	0.984

*All coefficients are significant with $P < .05$, except when indicated NS. * This is the model in which all coefficients except slope and intercept are set to zero to allow comparison between the two other models.*

Appendix 2.A.2: Table 2.A.2 to 2.A.4, LCGM models.

Table 2.A.2. Results of the Latent Growth Curve Models per value using the SEM approach (N=1,599). For each value the coefficients related to the latent intercept are described, these coefficients show first the mean level of the value followed by coefficients related to differences in the mean. Next, the latent slope is given which indicates change over the 12 year period in the study, followed by the coefficients related to the change. For each value the same model is shown in this table to allow comparison; for some values (e.g., for Hedonism) the best model fit is a more parsimonious model (see Appendix Table 2.A.1).

	Benevolence				Universalism				Self-direction			
	Coef.	P value	CI lower	CI Higher	Coef.	P value	CI lower	CI Higher	Coef.	P value	CI lower	CI Higher
Latent Intercept	0.767	0.000	0.711	0.826	-0.485	0.000	0.435	0.534	0.434	0.000	0.379	0.493
Gender (male=1)	-0.185	0.000	-0.234	-0.143	-0.200	0.000	-0.240	-0.161	-0.062	0.010	-0.113	-0.015
Education (high = 1)	0.050	0.041	0.000	0.098	0.091	0.000	0.046	0.135	0.174	0.000	0.122	0.228
Age**	0.002	0.433	-0.003	0.006	0.011	0.000	0.007	0.015	0.002	0.339	-0.003	0.007
Baby-boomers*	0.014	0.635	-0.044	0.072	-0.108	0.000	-0.158	-0.055	-0.014	0.627	-0.071	0.040
Generation-X	-0.054	0.145	-0.121	0.019	-0.323	0.000	-0.387	-0.262	-0.107	0.003	-0.179	-0.034
Millennials	-0.138	0.006	-0.232	-0.034	-0.498	0.000	-0.585	-0.406	-0.393	0.000	-0.500	-0.294
Latent Slope	-0.005	0.072	-0.010	0.000	-0.001	0.532	-0.006	0.003	-0.005	0.046	-0.010	0.000
Gender (male=1)	0.004	0.043	0.000	0.008	0.002	0.306	-0.002	0.005	0.000	0.939	-0.004	0.004
Education (high = 1)	-0.001	0.739	-0.004	0.003	0.002	0.201	-0.001	0.006	0.001	0.758	-0.004	0.005
Age ²	0.000	0.134	-0.001	0.000	0.000	0.022	-0.001	0.000	-0.001	0.008	-0.001	0.000
Baby-boomers	0.003	0.327	-0.003	0.008	0.006	0.010	0.001	0.010	0.009	0.000	0.004	0.014
Generation-X	0.006	0.064	0.000	0.012	0.011	0.000	0.005	0.016	0.014	0.000	0.007	0.020
Millennials	0.017	0.001	0.007	0.026	0.018	0.000	0.009	0.028	0.022	0.000	0.012	0.033

*Silent generation is the reference category. **Age is age-centered on the group mean of each generation to avoid multicollinearity with the birth cohort variable.

Table 2.A.3. Results of the Latent Growth Curve Models per value using the SEM approach (N=1599). For each value the coefficients related to the latent intercept are described, these coefficients show first the mean level of the value followed by coefficients related to differences in the mean. Next, the latent slope is given which indicates change over the 12 year period in the study, followed by the coefficients related to the change. For each value the same model is shown in this table to allow comparison; for some values (e.g., for Hedonism) the best model fit is a more parsimonious model (see Appendix Table 2.A.1).

	Stimulation				Hedonism				Achievement			
	Coef.	P value	CI lower	CI Higher	Coef.	P value	CI lower	CI Higher	Coef.	P value	CI lower	CI Higher
Intercept mean	-1.392	0.000	-1.505	-1.265	0.050	0.090	-0.005	0.110	-0.327	0.000	-0.392	-0.265
Gender (male=1)	0.393	0.000	0.309	0.479	0.014	0.554	-0.032	0.062	0.091	0.000	0.046	0.140
Education (high = 1)	-0.144	0.002	-0.237	-0.053	-0.028	0.251	-0.077	0.020	0.261	0.000	0.207	0.313
Age**	-0.023	0.000	-0.031	-0.014	-0.015	0.000	-0.019	-0.010	0.002	0.358	-0.003	0.007
Baby-boomers*	0.279	0.000	0.168	0.396	0.192	0.000	0.129	0.253	-0.161	0.000	-0.226	-0.093
Generation-X	0.517	0.000	0.373	0.664	0.435	0.000	0.356	0.511	-0.306	0.000	-0.384	-0.229
Millennials	0.977	0.000	0.769	1.188	0.554	0.000	0.443	0.668	-0.270	0.000	-0.381	-0.153
Slope mean	0.008	0.141	-0.002	0.019	0.001	0.668	-0.004	0.007	-0.003	0.251	-0.009	0.002
Gender (male=1)	-0.007	0.082	-0.015	0.001	-0.006	0.008	-0.011	-0.002	0.003	0.148	-0.001	0.008
Education (high = 1)	0.001	0.715	-0.007	0.009	0.003	0.266	-0.002	0.007	-0.005	0.057	-0.009	0.000
Age ²	0.001	0.005	0.000	0.002	0.000	0.842	0.000	0.000	0.000	0.344	0.000	0.001
Baby-boomers	-0.022	0.000	-0.032	-0.011	0.003	0.333	-0.003	0.008	0.002	0.578	-0.004	0.007
Generation-X	-0.033	0.000	-0.046	-0.022	0.004	0.302	-0.003	0.011	0.005	0.181	-0.002	0.012
Millennials	-0.054	0.000	-0.075	-0.033	0.009	0.174	-0.005	0.021	0.005	0.404	-0.007	0.018

*Silent-generation is the reference category. **Age is age centered on the group mean of each generation

Table 2.A.3. Results of the Latent Growth Curve Models per value using the SEM approach (N=1599). For each value the coefficients related to the latent intercept are described, these coefficients show first the mean level of the value followed by coefficients related to differences in the mean. Next, the latent slope is given which indicates change over the 12 year period in the study, followed by the coefficients related to the change. For each value the same model is shown in this table to allow comparison; for some values (e.g., for Hedonism) the best model fit is a more parsimonious model (see Table 2.A.1).

	Power			Security			Conformity					
	Coef.	P value	CI lower	CI Higher	Coef.	P value	CI lower	CI Higher	Coef.	P value	CI lower	CI Higher
Intercept mean	-0.924	0.000	-1.025	-0.808	0.744	0.000	0.685	0.805	0.163	0.000	0.086	0.243
Gender (male=1)	0.263	0.000	0.177	0.346	-0.188	0.000	-0.238	-0.138	-0.125	0.000	-0.187	-0.060
Education (high = 1)	0.093	0.029	0.009	0.178	-0.247	0.000	-0.305	-0.191	-0.250	0.000	-0.312	-0.184
Age**	-0.001	0.783	-0.010	0.007	0.012	0.000	0.007	0.017	0.009	0.006	0.003	0.015
Baby-boomers*	0.025	0.627	-0.077	0.126	-0.155	0.000	-0.221	-0.089	-0.073	0.061	-0.151	0.001
Generation-X	0.014	0.826	-0.121	0.133	-0.199	0.000	-0.286	-0.122	0.023	0.633	-0.075	0.117
Millennials	0.201	0.028	0.010	0.380	-0.433	0.000	-0.567	-0.304	0.001	0.993	-0.147	0.137
Slope mean	0.007	0.124	-0.002	0.017	0.003	0.294	-0.002	0.008	-0.005	0.144	-0.012	0.002
Gender (male=1)	-0.007	0.089	-0.016	0.001	0.005	0.043	0.000	0.010	0.006	0.040	0.001	0.011
Education (high = 1)	-0.007	0.123	-0.015	0.002	0.006	0.006	0.002	0.011	-0.002	0.519	-0.007	0.004
Age**	0.000	0.279	0.000	0.001	0.000	0.047	-0.001	0.000	0.000	0.818	-0.001	0.001
Baby-boomers*	-0.015	0.003	-0.024	-0.005	0.012	0.000	0.007	0.018	0.002	0.551	-0.005	0.009
Generation-X	-0.024	0.000	-0.037	-0.012	0.011	0.002	0.004	0.018	0.007	0.101	-0.002	0.015
Millennials	-0.043	0.000	-0.064	-0.024	0.027	0.000	0.014	0.040	-0.001	0.861	-0.016	0.014

*Silent-generation is the reference category. **Age is age centered on the group mean of each generation

Appendix 2.A.3: Figure 2.A.1: Value Profile Stability Plot.

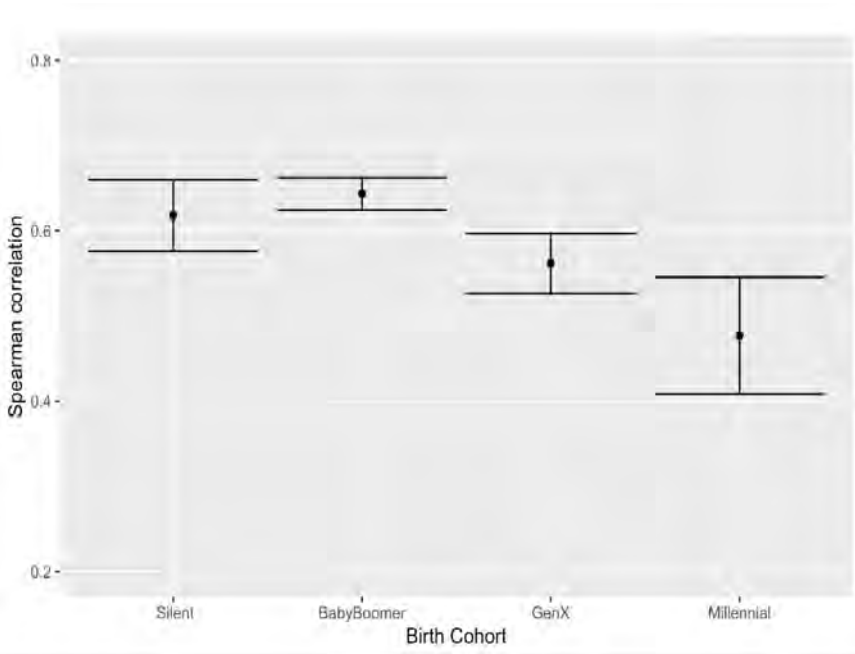


Fig. 2.A.1. Visualization of the value profile stability per generation.

Value rank-order stability: Average Spearman Correlation in birth cohorts over 12 years. As can be seen from the graph the correlation between value profiles in 2008 and 2020 became slightly lower again for the Silent Generation. Also, an increase in variance is visible, making the difference not significant. Lowest correlation between value profiles is found in the youngest generations (Millennials) Also the variance within the group is highest for the millennials, indicating that within the youngest group there is the most variance in stability. The most stable group in value profile is the baby-boom generation: Both a high correlation as well as a low variance indicating less difference within the group in value profile stability.

Appendix 2.A.4: Construction of the human values measurement.

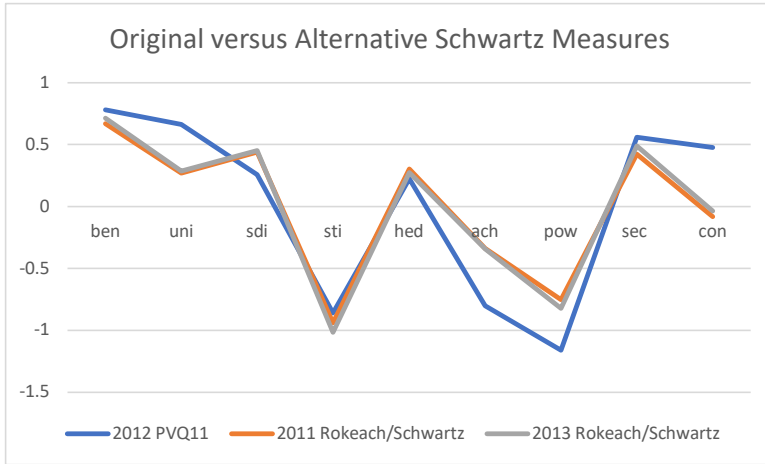


Figure 2.A.2 Graph showing the resemblance between the original Schwartz values measurement from the WVS and the conception of values using the Rokeach Value Survey items. Both are measured in the same people on different moments in time.

We used the Schwartz values conceptualization from his 1992 article (Schwartz, 1992) and compared this with the items from the original Rokeach values (Rokeach, 1973) questionnaire. For 21 items we found an exactly equivalent item, and for an additional 6 items we found items that resembled very closely to another item within the Schwartz scale. There were no items that could be attributed to the value of tradition. However, we found equivalent items measuring conformity, which is closely related to the value of tradition within the value circumplex of Schwartz's theory. Thus, we constructed a set of 9 values closely resembling 9 of the 10 values from the value circumplex proposed by Schwartz. In Figure 2.A.2 we visualize the resemblance, and we also add a correlation table (Table 2.A.3)

We also included some of the items of the Rokeach scale that were almost equivalent in wording and meaning with the Schwartz items to improve construct validity. We dismissed all items that did not have a clear overlap with a corresponding Schwartz item. Item 104 (courageous) showed overlap but was not included as the Dutch translation was clearly

confusing and multi-interprettable. The items that were added to the scales that were not literally the same are marked with an * in Appendix Table 2.A.4. In the corresponding column, the Schwartz item that we considered equivalent is mentioned. There are 2 values that are measured with only one item: Power and Stimulation. For the other 7 values there are multiple items. The multi-item scales show a reliability of minimum .622 (Hedonism) up to .810 (benevolence). Scale reliability has been calculated with the raw item scores of the full sample in 2008.

We acknowledge that the items are scored slightly different from the proposed procedure by Schwartz (Schwartz, 1992; Vaclair et al., 2011). The Rokeach survey uses a scale of 1 (extremely unimportant) to 7 (extremely important), while the Schwartz survey uses a scale of -1 (opposing my values) to 7. We assume that the effect of the different scaling will be limited, as research has shown that people will only sporadically choose the -1 item, leaving comparability with the original Schwartz values sufficiently high (Vaclair et al., 2011). Furthermore, we recognize there has been considerable development in the way the Schwartz value framework is measured in current research (Lee et al., 2008). However, Rokeach values have been used before as a proxy for the Schwartz values framework.

To validate our values further we also compared our values scores with an external data source, the European Social Survey. In Table 2.A.2 we report the mean values over all time periods for the LISS Rokeach/Schwartz values and compared them with the average ESS Schwartz values over the same time period (Wave 4-8).

Table 2.A.2. Means for Ipsatized Schwartz Values of the Dutch sample from the European Social Survey (combined wave 4 to 8) and LISS panel (wave T0 (2008) to T6 (2020)).

	Ben	Uni	Sdi	Sti	Hed	Ach	Pow	Sec	Con
LISS:	0.687	0.30	0.44	-1.02	0.29	-0.35	-0.80	0.49	-0.04
ESS:	0.65	0.54	0.53	-0.53	0.01	-0.50	-1.09	0.03	-0.16

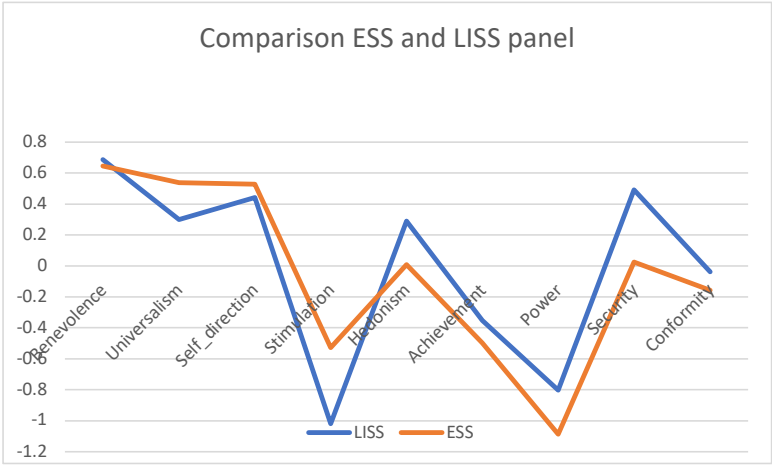


Fig. 2.A.3. Mean Values for Ipsatized Schwartz Values of the European Social Survey (wave 4-8) and LISS panel human values (T0 (2008)-T6 (2020)). Values in Table 2.A.2 correspond with the graph below.

Table 2.A.3. Correlations between LISS panel WVS Schwartz Values in 2012 and Rokeach/Schwartz Values in 2011

	Ben	Uni	Sdi	Sti	Hed	Ach	Pow	Sec	Con
Ben (WVS) ¹	.192**	.132**	.069	-.211**	-.162**	-.064	-.130**	.080*	-.009
Uni (WVS)	.064	.212**	.052	-.196**	-.113**	-.093*	-.177**	.123**	-.008
Sdi (WVS)	-.008	.010	.100**	.050	.004	.021	-.056	-.170**	-.150**
Sti (WVS)	-.115**	-.047	-.018	.336**	.067	.097**	.128**	-.199**	-.136**
Hed (WVS)	.000	-.035	.051	.136**	.264**	-.030	.022	-.142**	-.050
Ach (WVS)	-.162**	-.177**	-.084*	.220**	.075*	.147**	.256**	-.171**	-.058
Pow (WVS)	-.041	-.085*	.022	.210**	.166**	.095*	.147**	-.091*	-.081*
Sec (WVS)	.013	.022	-.031	-.187**	-.034	-.060	-.053	.188**	.105**
Con (WVS)	.056	-.028	-.037	-.173**	-.022	-.048	-.057	.197**	.209**

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). (WVS) indicates: values measured using WVS Schwartz values scale in 2012. Horizontally values measured using Rokeach items in 2011. N differed slightly per comparison: Ben = 714, Uni = 708, Sdi = 699, Sti, Hed = 710, Ach, Pow = 711, Sec = 712, Con = 706. The WVS version of the Schwartz values is also an approximation of the original Schwartz Values, as there are only 11 items measuring the 10 human values. Unfortunately, the official Schwartz PVQ or SVS value scale have not been measured in the LISS panel to date. Correlations of WVS and Rokeach value approximations are following the common pattern as predicted with theory (Vauclair et al., 2011).

Appendix 2.A.5: List of items and translation to Schwartz human values.

Table 2.A.4. List of items and translation to Schwartz human values.

Item	Dutch item	English item	Schwartz alternative	Value
A107	competent	Capable		Achievement
A113	intellectueel*	Intellectual	intelligent	Achievement
A127	prestatie*	a sense of accomplishment	successful	Achievement
A100	verantwoordelijk	Responsible		Benevolence
A102	vergevingsgezind	Forgiving		Benevolence
A105	behulpzaam	Helpful		Benevolence
A126	ware vriendschap	true friendship		Benevolence
A130	liefde en seksualiteit	mature love		Benevolence
A099	eerlijk, oprecht*	sincere and truthful	honest	Benevolence
A112	beleefd*	Polite	politeness	Conformity
A114	gehoorzaam	Obedient		Conformity
A129	comfortabel leven	a comfortable life	enjoying life	Hedonism
A132	plezier	pleasure		Hedonism
A133	erkenning, status	social recognition		Power
A108	netjes	clean		Security
A118	het gezin	family security		Security
A124	nationale veiligheid	national security		Security
A110	onafhankelijk	independent		Self-direction
A119	vrijheid	freedom		Self-direction
A116	creativiteit*	creative	creativity	Self-direction
A121	zelfrespect	self-respect		Self-direction
A134	opwindend leven	an exciting life		Stimulation
A103	open*	open-minded	broadminded	Universalism
A117	wereldvrede	a world at peace		Universalism
A120	gelijkheid	equality		Universalism
A123	wijsheid	wisdom		Universalism
A128	innerlijke harmonie	inner harmony		Universalism
A131	schoonheid	a world of beauty		Universalism

Items that were literally the same have been added to the value type as indicated. Items with a closely resembling meaning have been added accordingly. Dutch items as used in questionnaire are indicated in the first row. “*” means that the alternative items have been included. Values that had no literal or closely resembling equivalent have not been included.

Appendix 2.A.6: Invariance of the value configuration across generations.

To assess invariance of the values structure across generations, we first determined the structure of our values in the respective generations with multi-dimensional scaling analysis using SMACOF in R (Kreft & De Leeuw, 1998; Mair et al., 2022). Next, to assess the invariance of the values configurations between the four generations we used the Procrustean rotation and calculated the congruence coefficient as recommended (Borg et al., 2015; Borg et al., 2018) As the reference configuration we used the configuration of the Silent Generation. The results can be seen in Fig. 2.A.4. The congruence coefficients of the configurations for the Baby Boomers, Generation X and the Millennials are .992, .989, and .982 respectively. These numbers indicate a good correspondence between the respective configurations and invariance of the values structure across generations.

Fig. 2.A.4. Congruence between the MDS configurations of the Silent Generation and Baby Boomers, Generation X and Millennials. The target configuration is the Silent Generation.



Appendix 2.A.7: Comparison sample and longitudinal sample

Table 2.A.5; Sample composition main sample of our study, full sample LISS 2008, and sample 2008-2020.

	Main sample (all waves present)		Full LISS sample in 2008		Sample of people present in 2008 and 2020 with missing on in-between waves of LISS	
	2008-2020				2008-2020	
	N=1599	%	N=6700	%	N=2033	%
Male	787	49.2	3065	45.8	979	48.2
Female	812	50.8	3635	54.2	1054	51.8
Low education	1025	64.1	5469	81.6	1265	62.2
High education	574	35.9	1231	18.4	768	37.8
Silent generation	285	17.8	1128	16.8	313	15.4
Babyboom generation	865	54.1	2681	40	1029	50.6
Generation X	343	21.5	1856	27.7	504	24.8
Millennial generation	106	6.6	1035	15.5	187	9.2
Average Year of Birth	1957.45		1961.63		1959.34	

Appendix 2.A.8: Value differences between cohorts (similar age) and within cohort (same people in T0, 2008 and T6, 2020).

Table 2.A.10: T-test results for the sample of people without missing values (1599 respondents) We used a Between Subject T-test (comparing **different people with similar age**). Cohorts based on age in 2008 16:28=1; 29:40=2; 41:52=3; 53:64=4; 65:90=5*.

COMPARING BETWEEN COHORTS		Ben		Uni		Sdi		Sti		Hed		Ach		Pow		Sec		Con	
A*	B	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P
2008 people	2020 people	0.005	0.938	0.132	0.040	0.010	0.878	-0.173	0.198	0.165	0.033	0.057	0.450	-0.154	0.241	0.136	0.075	0.178	0.062
29-40 (2)	29-40 (1)																		
2008 people	2020 people	0.002	0.964	0.058	0.154	0.065	0.180	-0.169	0.050	0.292	0.000	0.292	0.000	-0.382	0.000	0.177	0.000	-0.060	0.344
41-52 (3)	41-52 (2)																		
2008 people	2020 people	0.016	0.644	0.060	0.094	0.060	0.094	-0.135	0.040	0.162	0.000	0.162	0.000	-0.218	0.002	0.252	0.000	0.037	0.443
53-64 (4)	53-64 (3)																		
2008 people	2020 people	-0.005	0.902	-0.018	0.619	-0.010	0.814	-0.165	0.062	-0.116	0.007	0.124	0.011	-0.136	0.067	-0.045	0.320	-0.099	0.086
65-83 (5)	65-83 (4)																		

* The year is the year of the measurement of the values. Indicated age is age of the cohort in that specific year. Number between brackets (1-5) indicates cohort. A positive score means that this age group has increased in this value, a negative score means this age group has decreased on his value.

Table 2.A.11. T-test results for the sample of people without missing values (1599 respondents). We used a Within subject T-test (comparing the **same people with different ages**). Cohorts based on age in 2008 16:28=1; 29:40=2; 41:52=3; 53:64=4; 65:90=5*.

COMPARING WITHIN COHORTS		Ben		Uni		Sdi		Sti		Hed		Ach		Pow		Sec		Con	
A*	B	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P	Mean Diff. (B-A)*	P
2008 people	2020 people	0.126	0.075	0.230	0.000	0.186	0.004	-0.555	0.000	0.101	0.213	0.030	0.720	-0.376	0.004	0.404	0.000	-0.145	0.107
16-28 (1)	28-34 (1)																		
2008 people	2020 people	0.035	0.369	0.183	0.000	0.119	0.002	-0.336	0.000	0.050	0.239	-0.048	0.329	-0.264	0.001	0.244	0.000	0.016	0.760
29-40 (2)	41-52 (2)																		
2008 people	2020 people	-0.386	0.022	0.104	0.000	0.081	0.000	-0.221	0.000	-0.221	0.022	-0.000	0.998	-0.245	0.000	0.265	0.000	-0.029	0.461
41-52 (3)	53-64 (3)																		
2008 people	2020 people	-0.875	0.004	0.070	0.000	0.030	0.173	-0.139	0.001	-0.007	0.782	-0.039	0.126	-0.132	0.006	0.222	0.000	-0.002	0.936
53-64 (5)	65-76 (5)																		
2008 people	2020 people	-0.059	0.011	-0.715	0.286	-0.085	0.019	0.148	0.081	-0.014	0.742	-0.005	0.906	0.052	0.444	0.046	0.278	-0.073	0.174
65+(5)	77+(5)																		

* The year is the year of the measurement of the values. Indicated age is age of the cohort in that specific year. Number between brackets (1-5) indicates cohort. Positive scores mean that the values decrease for this cohort, negative values mean the values increase for this cohort.

Chapter III. Cultural Variation in Healthcare Consumption: National and Individual Drivers of Preference for Medical Help

This chapter (Chapter 3) is based on the original paper published in *Journal of Environmental Research and Public Health*:

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Abstract

Preference for professional vs. non-professional or informal healthcare for non-acute medical situations influences healthcare use and varies strongly across countries. Important individual and country-level drivers of these preferences may be human values (the fundamental values that individuals hold and guide their behavior) and country-level characteristics such as social tightness (societal pressure for “acceptable” behavior). The aim of this study was to examine the relation of these individual and country-level characteristics with healthcare preferences. We examined European Social Survey data from 23,312 individuals in 16 European countries, using a multi-level, random effect approach, including individual and country-level factors. Healthcare preferences were explained by both human values (i.e., Schwartz values) and societal tightness (i.e., tightness-looseness scores by Gelfand). Stronger conservatism increased, whereas self-transcendence and openness to change decreased preference for professional healthcare. In socially tight countries, we found a higher preference for professional healthcare. Furthermore, we found interactions between social tightness and human values. These results suggest that professional healthcare preference is related to both people’s values and societal tightness. This improved understanding is useful for both predicting and channeling healthcare seeking behavior across and within nations.

Keywords: healthcare preferences; Schwartz values; tightness-looseness; European Social Survey

3.1.Introduction

Despite healthcare demand growing worldwide (OECD, 2021), there is still a knowledge gap regarding factors that drive peoples' preferences for professional medical help. Economic and social consequences of seeking medical help in the area of non-acute diseases can be large as the prevalence of conditions such as backpain, headache, sleeplessness and a sore throat is high (Katz, 2006; Stovner & André, 2008; Worrall, 2007). Although this preference can be influenced by factors such as accessibility and personal financial costs of the medical treatment, other factors can also play an important role. Moreover, dealing with limited resources, stakeholders in healthcare must outweigh costs and benefits when promoting healthcare seeking behaviors. On the one hand, a person's decision to visit a doctor may lead to larger health costs than awaiting natural recovery or seeking help from friends or family. On the other hand, choosing not to visit a doctor could also lead to under-diagnoses of serious illnesses, threatening individual well-being and affecting society in the form of lost productivity. Thus, individuals, as well as medical professionals, healthcare organizations, insurance companies, health authorities and other stakeholders involved in the distribution of healthcare, will be in favor of self-help behavior for some conditions (e.g., to prevent antibiotics misuse), whereas for other conditions they may endorse professional help (e.g., vaccination or prevention programs). Despite the importance of guiding people towards either a medical professional or seeking self-help, insight into the drivers of the choice between these alternatives is scant. Therefore, healthcare preferences are, both in theory and practice, an important research area (Berry & Bendapudi, 2007; Stremersch & Van Dyck, 2009).

For identifying determinants for help-seeking behaviors, non-acute medical conditions (e.g., headache, backache, sore throat and sleeping problems) are particularly relevant, since people may have multiple options to choose from. These may vary from

visiting a specialized clinic, a public health facility or general practitioner, or search other, non-professional help, such as asking help from family/friends, visiting a drugstore, calling a medical helpline or finding information online. Some people may decide to wait for natural recovery.

Existing research on healthcare preferences of people with non-acute conditions is mainly focused on the choice between emergency versus primary care (Carret et al., 2007; Sempere-Selva et al., 2001). These studies included socio-demographics and variables related to the healthcare service such as trust, convenience and familiarity (Durand et al., 2011; Padgett & Brodsky, 1992). Moreover, these single-country studies did not compare preferences between countries, whereas it is known there are sizable differences in healthcare behavior between nations.

A previous multi-country study looking at country characteristics and healthcare outcomes and behaviors focused on aggregate group-level data. For instance, smoking and drinking, and prevalence of diseases have been explained by country characteristics such as the state of healthcare, and national culture (Mackenbach, 2014). Others studied differences between specific cultural groups within society, such as ethnicity (Levesque & Li, 2014) to show differences in specific healthcare choice behavior. Although these studies show there are important differences between cultural groups in healthcare behavior, little is known about the factors related to healthcare preferences, and more specifically, preference for professional medical help by individuals from different countries.

In previous studies, several objective factors have been linked to healthcare preference and utilization, such as socio-demographics characteristics (such as income, education, and age) and context-related factors (such as characteristics of the national

healthcare system (including insurance and healthcare accessibility) (Andersen, 1995; Hunt et al., 2006).

Other studies focused on socio-cultural factors influencing an individual's choice for a certain healthcare option providing medical help such as trust in medical doctor, causing both satisfaction and loyalty (Hall et al., 2002). Trust in medical doctors has been included in many studies (Crocker et al., 2013; Gilson, 2003), and a consistent finding is that it is an important factor in choosing professional medical help (Wilk & Platt, 2016). Thus, in addition to socio-demographics, it is expected that trust in medical doctor is an important factor related to preference for professional medical help.

An additional explanation might be related to what people consider important in their lives and drives their attitudes and behaviors; that is, the basic human values people hold (Racko, 2017). People's values relate to motivations, attitudes and behavior within the larger context of society (Bardi & Schwartz, 2003; Boer & Fischer, 2013; Feather, 1995), and thus have a profound influence on many daily life decisions.

The values people hold have been shown to explain or predict their behavior. The currently dominant theory that captures human values is the seminal theory by Schwartz (Schwartz, 1992). In Schwartz' theory, ten basic values are distinguished: benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity and tradition. Studies have combined these values into four higher order domains: openness to change (containing stimulation, self-direction, and hedonism), conservation (containing security, conformity, and tradition), self-enhancement (containing achievement, power) and self-transcendence (containing universalism, benevolence) (Steenkamp et al., 1999; van Herk & Poortinga, 2012), as visualized in Figure 3.1.

Figure 3.1 Human Values Framework based on Schwartz (1992)

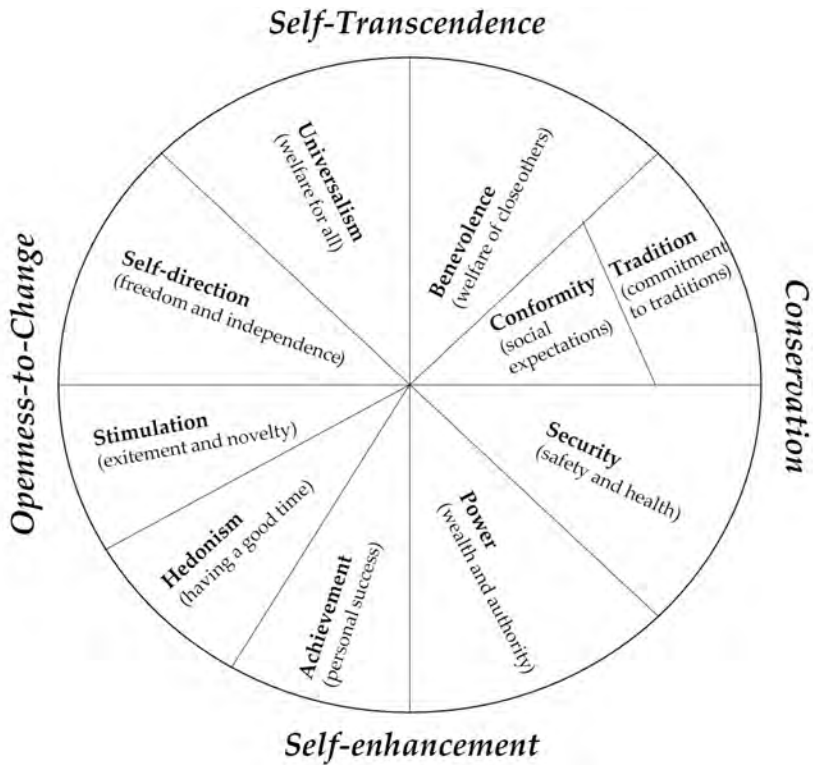


Figure 3.1. Human Values Framework based on Schwartz (1992). The circumplex structure shows the compatibilities between adjacent values (e.g., universalism and benevolence) and oppositions between conflicting values (e.g., universalism and power). The labels outside the circumplex refer to combinations of values that are seen as higher order values (e.g., openness to change and conservation).

The combining of value types into the higher order value domains can be explained as follows: Conservation implies that a person who feels that conforming to norms set by society and family is important, as well as valuing personal security and traditions. Openness to change means that a person is not afraid of trying novel things, strives for creativity, and is not afraid of challenges that will foster mastery and independence. People who prefer conservation to openness to change values will prefer to behave in a way congruent with common behavior within one's community. Individuals considering conservation values, (e.g., security), more important in their lives might reduce their

perceived health risks by showing a higher preference for professional medical help to mitigate this risk. In contrast, people considering openness to change values more important, which implies a personal disposition more directed towards making independent choices, might have a higher propensity to take risks (Feather, 1995). Furthermore, being more self-directed promotes entrepreneurial behavior (Licht, 2010) and is also associated with lower levels of anxiety (Schwartz, 2012). Thus, we expect openness to change to increase the motivation for self-help, causing lower preference for professional medical help.

Self-enhancement, including power and achievement values, implies emphasizing the promotion of the self, prestige, social power, and control over others (Schwartz, 1992). Since individuals with high self-enhancement focus more on themselves and their own benefit, and less on other people's interests, we expect them to care strongly about the protection of their personal health and prefer care from a specialized medical professional. The opposing value of self-transcendence implies people to be more sensitive to the situation of others. This could also relate to a higher level of altruism and trust in (close) others (Schwartz, 1992). Consequently, these individuals are expected to show a higher preference for seeking care from (close) others within their social environment, foregoing the option of visiting a professional medical doctor or nurse.

In addition to individual factors influencing health care preferences, societal factors may also play a vital role. However, little research has investigated the role of social norms within a society in the context of healthcare (Hamilton & Mahalik, 2009; Jenkins & Kim, 2004).

Given the expected importance of social norms in case of non-acute medical situations, we consider a country's tightness-looseness as an important contributor to healthcare preference, as it specifically relates to the strength of social norms and tolerance

of deviant behavior in society (Gelfand et al., 2011). According to Gelfand's conceptualization of tightness-looseness, in some nations, deviant behavior in public is more acceptable than in others; for instance, eating, arguing, kissing, singing, or listening to music in public is acceptable in some, but not in other nations. That is, in a tight society people will more likely have a higher need to show constrained behaviors, and will be high on self-control (Gelfand et al., 2011), feeling the need to comply with social norms in order to avoid disapproval. In contrast, in a loose society, deviation from the norms is more acceptable.

The presence or absence of pressure to do things in a specific way could influence the dependence on professional medical help; when the social norm is to seek professional help, it may lead to a higher preference for professional help in tight societies. Moreover, as societal tightness is considered a societal adaptation to survival in harsh circumstances (Gelfand et al., 2011), it may also be associated with a stronger focus on avoiding risk (in general) in that nation. In the latter context, visiting a healthcare specialist can be considered a risk reducing strategy. Thus, we expect that preference for choosing professional medical help will be higher in tight societies.

Summarizing, research investigating human preferences for professional medical help is scant, and mostly limited to emergency room (mis)use. Research on seeking help in non-acute medical conditions is as far as the authors are aware lacking. Especially in non-acute healthcare conditions we expect cultural context and human values to have a prominent role in determining healthcare preferences. Our contribution to the literature is, therefore, threefold. (1) Using a large dataset with 23,312 individuals from 16 countries we extend the literature on healthcare choice behavior by looking at preferences for professional medical help in non-acute medical conditions; (2) we investigate the relation of human values with the preference for professional healthcare in a non-acute medical

condition; (3) we assess whether societal tightness-looseness inhibits or strengthens these relations.

3.2. Materials and Methods

3.2.1. Method

Our data consisted of representative samples from the 2004 round of the European Social Survey (ESS). The ESS is a large scale, bi-annual, pan-European survey measuring social attitudes and behavior in nationally representative samples in more than 30 European countries. Data of this high-quality international survey is open source. For detailed information about this survey see (ESS, 2024). We used the 2004 round of the ESS as it includes a module on health-related behavior. The ESS includes nations with more- and less developed economies and healthcare systems. For our research, we used respondents from the 16 countries for which tightness-looseness (TL) scores were available [31] Austria (n = 1644), Belgium (n = 1541), Germany (n = 2221), Estonia (n = 1140), Spain (n = 1340), France (n = 1499), United-Kingdom (n = 1593), Greece (n = 2071), Hungary (n = 1087), Iceland (n = 391), Netherlands (n = 1546), Norway (n = 1458), Poland (n = 1294), Portugal (n = 1741), Turkey (n = 1375), and Ukraine (n = 1371). We removed respondents under 18 and respondents with missing values on variables of interest, leading to a total sample size of 23,312 respondents (=78% of the original sample). The percentage of retained respondents varies between 57% for Estonia and 87% for Belgium.

3.2.2. Measures

From the ESS data, we included human values and used several control variables including trust and socio-demographic information of all individuals. At the country-level we included the variable tightness-looseness. Tightness-looseness values were taken from the research of Gelfand et al. (2011). We calculated preference for professional medical

help by using a summated score of preference with four non-acute medical conditions: headache, backache, sore throat, and sleeping problems. For each problem one option for medical help could be selected: Doctor, nurse, nobody, friends or family, pharmacist/chemist/drug store, Internet/web, medical helpline, or another practitioner. When doctor or nurse was chosen, we allocated a score of “1” to our main dependent variable (i.e., preference for professional medical help), all other options received “0”. The choice for doctor or nurse varied between 42.1% (sore throat) and 77.8% (backpain). We added nurse to the choice for professional help (i.e., coded as 1) as in some countries nurses seem to have a more prominent role in giving care. We defined the difference based on payment for service: i.e., having a paid professional medical service versus all other non-paid options. We grouped pharmacist to the second option as this option could be seen as a way of self-help without paid consultation. The variable preference for professional medical help consisted of summing scores for the four non-acute medical conditions, resulting in a variable ranging from 0 to 4.

Schwartz human values were measured using the Portrait Value Questionnaire (PVQ-21) (Schwartz, 2003). Human values were ipsatized following the common suggested procedure for analyzing values (Schwartz, 2003) and subsequently aggregated into the four higher-order value domains: openness to change, conservation, self-enhancement, and self-transcendence. Openness to change was calculated as the average of the values self-direction, stimulation, and hedonism, conservation was calculated as the average of conformity, tradition, and security. Self-enhancement was calculated as the average of achievement and power, and self-transcendence was calculated as the average of universalism and benevolence (see Figure 3.1).

To measure trust in the doctor, we developed a formative scale using items available in the ESS: we combined answers on 3 questions that captured several distinct

aspects of trust in medical doctor. These questions measured equality, openness in communication and approachability of a doctor. Following established practice in cross-national research measurement (Schwartz, 2007), invariance for trust in medical doctor was assessed. Although the Chi-square was significant (large n) the other fit measures indicate a reasonable fit comparative Fit Index (CFI) = 0.957, Tucker–Lewis Index (TLI) = 0.933 and root mean square error of approximation (RMSEA) = 0.077). Thus, the scale was found to be metric invariant and can be used for further analysis in our multi-level regression analyses.

Several other control variables were included: At the individual level, interpersonal trust was measured with a 3-item, 11-point, reflective scale (Cronbach Alpha (α) = 0.765, min. α = 0.625 (Belgium), maximum α = 0.825 (Greece)). Trust in institutions was measured with a 3-item, 11-point reflective scale (α = 0.793, min. α = 0.726 (Poland), max. α = 0.825 (Hungary)). Following methodological standards (Steenkamp & Baumgartner, 1998), for both measures we assessed whether the scales were metric invariant across the 16 nations. Results showed that, although the chi-square was significant (as expected given the large n), the other fit indices indicated a good fit; for both measures CFI > 0.99, TLI > 0.98 and RMSEA < 0.06). Self-perceived-health (5-point scale) and perceived state-of-healthcare (11-point scale) were both measured with one item. Health impairment and having children in household (yes/no) were measured with one item. Gender was measured as 1 = male 0 = female, and age was measured in years. Education was measured using education in years; a measure in years that is highly correlated (r = 0.895, p < 0.001) with the harmonized ISLED (International Standard Level of Education) score to measure education (Schröder & Ganzeboom, 2013).

3.2.3. Participants

Our sample was on average 46.9 years old (SD = 17.479; range 18 to 99, 54.6% female, 45.4% male). The average preference for professional medical help was 2.64 (SD = 1.42) with lowest average for Ukraine (1.68) and highest average for Turkey (3.39). We found significant differences in preference between nations ($F_{(15, 23,286)} = 135.90, p < 0.001$). In Figure 3.2, the preference for medical help in non-acute situations across nations is visualized.

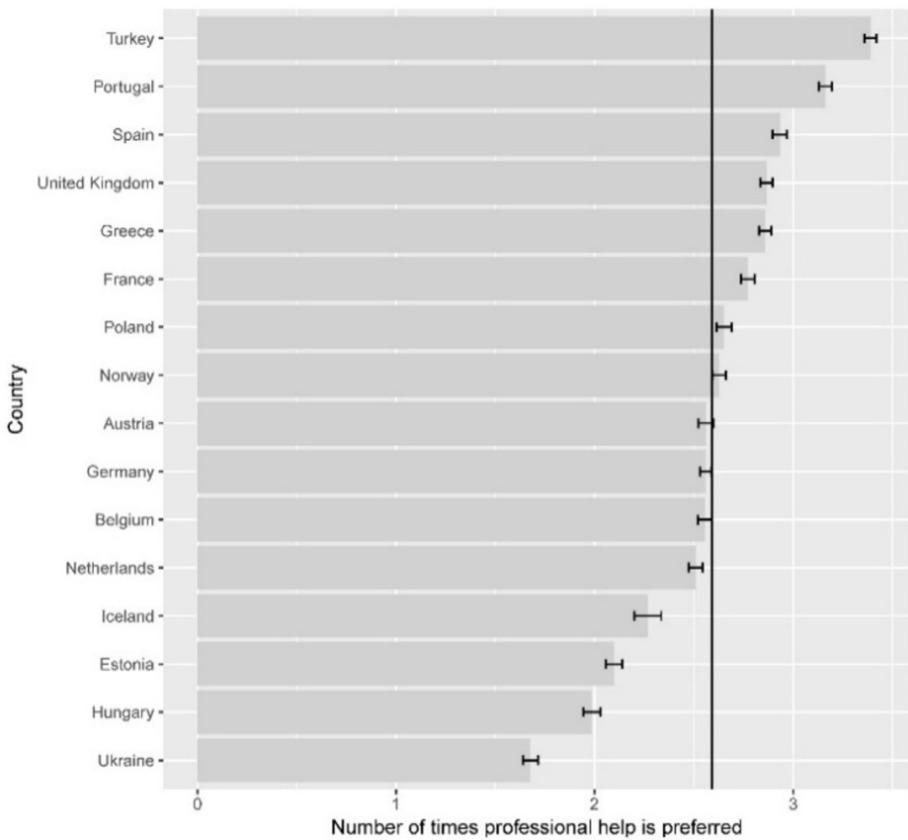


Figure 3.2. Preference for professional medical help in non-acute medical situations is a summated scale, showing preference or either professional help (1) or help from other sources (0) in the situation of serious headache, stomach-ache, back-ache or sleeping problems. Preference in these situations is summated into individual scores from 0 (preference for professional help in no situation) to 4 (always prefer professional help). The vertical line indicates the overall mean. For each nation the 5% confidence limits are shown; the graph indicates that there are substantial differences between nations in preference for professional medical help, with respondents from Turkey being the most prone to choose for professional help and respondents from Ukraine the least.

For descriptive statistics of all main variables see Table 3.1. Correlations between variables in the model can be found in Appendix 3.A (individual level Table 3.A.1, country level Table 3.A.2).

Table 3.1. Descriptive statistics for the main variables.

Measurement Level	Parameter	Min	Max	M	SD
I-individual	Preference for professional medical help	0	4	2.64	1.415
I-individual	Age	18	99	46.85	17.479
I-individual	Education (in years)	0	32	11.44	4.314
I-individual	Health impairment	1	3	1.31	0.579
I-individual	Gender (Male = 1, Female = 0)	Female 54.6%	Male 45.4%	-	-
I-individual	Children in household (yes = 1, 0 = no)	0	1	0.24	0.426
I-individual	Perceived state of healthcare	0	10	4.95	2.609
I-individual	Self-perceived health	1	5	3.70	0.922
I-individual	Interpersonal trust	0	10	3.93	1.983
I-individual	Institutional trust	0	10	5.08	2.17
I-individual	Trust in doctor	1	6	2.51	0.682
I-individual	Conservation	-2.60	2.71	0.15	0.634
I-individual	Openness to change	-4.00	2.55	-0.25	0.640
I-individual	Self-enhancement	-3.52	2.10	-0.61	0.716
I-individual	Self-transcendence	-2.37	3.20	0.60	0.514
II-country	Tightness-looseness (TL)	1.60	9.50	5.79	2.197

3.3. Results

3.3.1. Study Design

As individuals are nested in countries, we employed a multilevel regression approach (Kreft & De Leeuw, 1998; Snijders & Bosker, 2011) in the analysis of our data, investigating both individual (level 1) and national (level 2) effects. This approach is preferred in cross-national research as variance within nations often is much higher than variance between nations (Steenkamp et al., 1999) there is a need to include both individual- and national-level characteristics to explain preference for medical help in non-acute medical conditions.

3.3.2. Multi-Level Analyses

In the next section we describe several nested multilevel regression models in which we present the additional effect of individual level human values and national level tightness-looseness on the preference for professional medical help in case of non-acute situations.

As common in multilevel regression modeling, we started with a null model, without any explanatory variables; this is the reference model. To test our model, we estimate a first model including socio-demographics and control variables. After estimating this first model, we the higher-order human values are included one by one. Values were added separately as they have high intercorrelations. As a next step, we add tightness-looseness at the country level, and subsequently the cross-level interaction between human values and societal tightness-looseness.

3.3.2.1. Null model

The null model, with random intercept for country and a random error term for individuals, showed that the variance in the data at the individual level is 1.776, and at the country level 0.129. This results in an intra-class correlation (ICC) of 0.087, meaning 8.7% of variance in the dependent variable was at the national level. As more than 5% of variance was shared by the people in one country, there was sufficient reason to warrant a multi-level-analysis approach (Kreft & De Leeuw, 1998). To enable estimating added explained variance between our nested models, we used a Full-Maximum-Log-Likelihood (FML) approach as needed when nested models are to be compared (Snijders & Bosker, 2011). Chi-Square difference tests (using -2 Log Likelihood) were used to assess significant changes in explained variance between respective nested models. To obtain robust confidence-intervals for all estimates we used a bootstrapping procedure (1000 iterations). Analyses were carried out using IBM SPSS 24.0 for multilevel modeling, and the package lavaan (Rosseel, 2012) in R (R_Core_Team, 2021) for metric invariance.

3.3.2.2. Control Variables: Socio-Demographics, Attitudes, and Trust

In Table 2, we report five nested multilevel regression models. Model 1 is the model with only individual level variables. In Models 2 to 5, country-level tightness-looseness is added as well as the human values one at a time and the interaction term. In Model 1, the individual-level variables socio-demographics, attitudes, and trust are added as control variables and this results in a significant change ($-2 \text{ Log Likelihood}$) in explained variance: ($\chi^2_{\text{diff}(11)} = 756.58, p < 0.001$), compared with the null model. In Model 1, a positive effect for age was found ($\gamma_{AGE} = 0.010, p < 0.001$); The negative estimate for age-squared ($\gamma_{AGE^2} = -0.0002, p < 0.001$) indicates that the middle age group had a relatively higher preference for seeking professional help. Education had a significant negative effect ($\gamma_{EDU} = -0.011, p < 0.0001$). Being health-impaired had a positive effect on professional medical help preference ($\gamma_{HIMP} = 0.052, p < 0.01$) and women showed a higher preference for professional healthcare than men ($\gamma_{GENDER} = -0.128, p < 0.001$). Finally, having children in a household increased preference for professional medical help: ($\gamma_{CHILD} = 0.031, p < 0.01$). We also include the effect of attitudinal measures. The effect of the people's perception of the state of healthcare services in one's country is not significant: ($\gamma_{HCS} = -0.001, p > 0.05$), whereas self-perceived health has a decreasing effect on preference ($\gamma_{HEALTH} = -0.050, p < 0.001$). Interpersonal trust decreased preference for professional medical help ($\gamma_{IPTR} = -0.019, p < 0.001$) whereas institutional trust has a significant positive effect on this preference ($\gamma_{INTR} = 0.029, p < 0.001$). Finally, trust in medical doctor has a significant positive effect ($\gamma_{MEDTRUST} = 0.065, p < 0.001$).

Table 3.2. Results multi-level models to predict preference for professional medical help in non-acute medical conditions, including variables at the individual level (indicated by I-) at the country level (indicated by II-) and cross-level interactions. Models 3–6 are nested in Model 2.

Measure Level	Parameter (γ)	Model 1 (Conservation)	Model 2 (Conservation)	Model 3 (Openness to Change)	Model 4 (Self-Enhancement)	Model 5 (Self-Transcendence)
I-individual	Intercept	2.695 ***	2.430 ***	2.431 ***	2.452 ***	2.492 ***
I-individual	Age centered	0.010 ***	0.008 ***	0.009 ***	0.010 ***	0.011 ***
I-individual	Age centr. and squared	-0.0002 ***	-0.0002 ***	-0.0002 ***	-0.0002 ***	-0.0002 ***
I-individual	Education centr.	-0.011 ***	-0.008 **	-0.010 ***	-0.011 ***	-0.011 ***
I-individual	Gender (M = 1, F = 0)	-0.128 ***	-0.114 ***	-0.121 ***	-0.125 ***	-0.143 ***
I-individual	Children < 12 in hh	0.031 **	0.023 *	0.026 *	0.031 **	0.032 **
I-individual	Health impaired	0.052 ***	0.051 **	0.051 **	0.052 ***	0.054 **
I-individual	Self-perceived health	-0.050 ***	-0.044 **	-0.046 ***	-0.050 ***	-0.051 ***
I-individual	Perc. state of healthcare	-0.001	-0.002	-0.002	-0.001	-0.002
I-individual	Interpersonal trust	-0.019 ***	-0.016 **	-0.018 **	-0.019 ***	-0.017 **
I-individual	Institutional trust	0.029 ***	0.026 ***	0.027 ***	0.029 ***	0.029 ***
I-individual	Trust in medical doctor	0.065 ***	0.064 ***	0.065 ***	0.065 ***	0.064 ***
I-values	Conservation		0.102 ***			
	Openness to Change			-0.064 **		
	Self-Enhancement				0.007	
	Self-Transcendence					-0.049 *
II-country	Tightness-Looseness (TL)		0.133 ***	0.134 **	0.129 **	0.147 ***
Cross level	Conservation * TL		0.025 **			
	Openness to Change * TL			-0.006		
	Self-Enhancement * TL				-0.012	
	Self-Transcendence * TL					-0.021 **

***: Estimate is significant at the 0.001 level (2-tailed), **: Estimate is significant at the 0.01 level (2-tailed), *: Estimate is significant at the 0.05 level (2-tailed), n = 23,312.

3.3.2.3. Schwartz Values

In Models 2 - 5, we added the Schwartz values of Conservation, Openness to Change, Self-Enhancement and Self-Transcendence, respectively. Note that in Table 3.2, only the final models including effects of two levels and the cross-level effects are shown (models without country-level effects or interaction effects are available from the authors upon request). The reporting of only final models is justified, as the coefficients of the individual level effects did not change meaningfully when adding the country level variable tightness-looseness (TL) and cross level effects.

Conservation showed a significant positive relation with preference for professional medical help ($\gamma_{CON} = 0.102, p < 0.001$) whereas openness to change had a significant negative relation ($\gamma_{OTC} = -0.064, p < 0.01$). This opposite coefficient was expected as the two higher order values are opposites on the same bipolar value dimension.

Self-enhancement is not significant ($\gamma_{SE} = 0.007, p > 0.05$), but self-transcendence decreased preference for professional medical help ($\gamma_{ST} = -0.049, p < 0.05$)

3.3.2.4. Country-Level Effect: Tightness-Looseness

The country-level variable tightness-looseness added to explained variance in all 4 multilevel regression models. Tightness-looseness statistically significantly contributed to explained variance in all four models: explained variance compared with Model 1, Model 2_(cons): ($\chi^2_{diff(3)} = 110.78, p < 0.001$), Model 3_(otc): ($\chi^2_{diff(3)} = 35.13, p < 0.001$), Model 4_(se): ($\chi^2_{diff(3)} = 16.64, p < 0.01$), Model 5_(st): ($\chi^2_{diff(3)} = 41.49, p < 0.001$). Societal tightness increased preference for professional medical help (γ_{TL} between 0.129 and 0.147, all $p < 0.01$).

In Figure 3.3, a visualization of the relation of the country level tightness-looseness with average preference for professional medical help is provided. The figure suggests a linear relation between country level tightness-looseness and preference for professional

medical help. This relationship seems unrelated to any north-south or east-west dichotomy, nor seems to have a direct relation to GDP-per-capita. For example, both in Norway with a high GDP-per-capita, and in Turkey with a low GDP-per-capita a high preference for professional medical help is found. Thus, there seems no clear pattern that could hint at such a simple geographical or economic explanation for relation between tightness-looseness and preference.

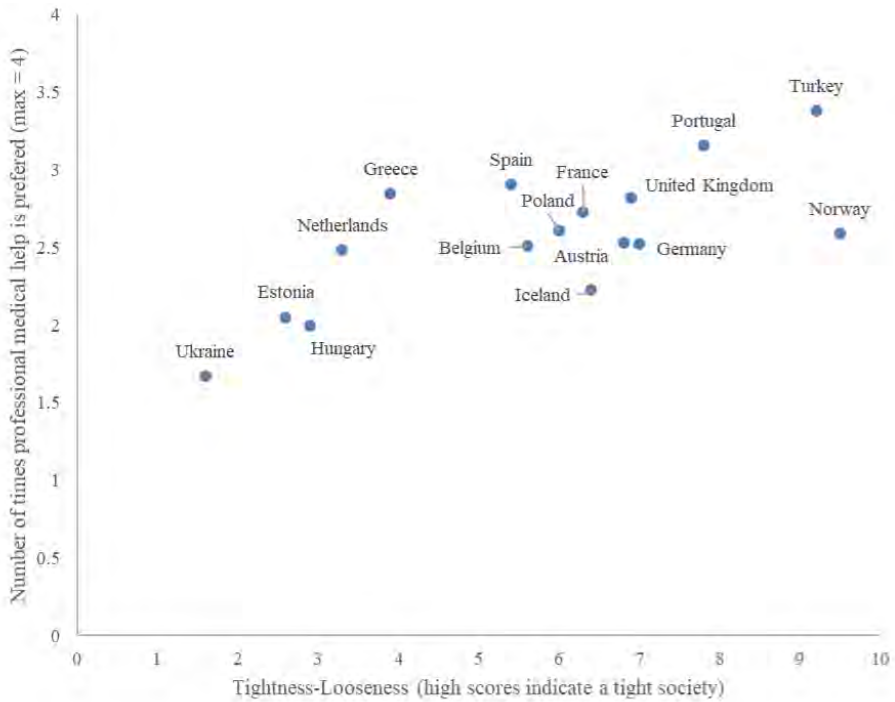


Figure 3.3. Relation between Tightness-Looseness and Preference for professional medical help in non-acute medical situations. The graph suggests a linear relation between Tightness-Looseness and the number of times professional medical help is preferred in the case of mild medical conditions (headache, stomach-ache, back-pain and sleeping problems). Tightness-Looseness is not related to GDP per capita as both Turkey (emerging economy) and Norway (highly developed economy) are both tight societies and Ukraine, a comparable economy to Turkey, has a low tightness.

3.3.2.5. Cross-Level Interactions between Trust, Values, and Tightness-Looseness

Finally, we estimated cross level interactions between (1) tightness-looseness and (2) the 4 higher order values conservation, openness to change, self-enhancement, and self-

transcendence, respectively (Table 3.2). Results show that the interaction between tightness-looseness and conservation had an enhancing effect on preference for professional medical help ($\gamma_{\text{CONS}} * \text{TL} = 0.025, p < .01$); the effect of conservation is significantly stronger when societal tightness is higher. Furthermore, the interaction between tightness and self-transcendence was negative and significant ($\gamma_{\text{ST}} * \text{TL} = -0.021, p < .01$), showing that in more tight societies the negative effect of self-transcendence becomes stronger. Self-enhancement also showed a significant interaction effect, but the interaction did not add to explained variance of the model. Openness to change showed no significant interactions with tightness-looseness.

3.3.2.6. *Robustness-Checks*

To assess robustness of our findings we performed several additional analyses. We considered the effect of adding a country level control variable (GPD-per-capita.) as well as the effect of substituting, tightness-looseness with GDP-per-capita, out-of-pocket healthcare expenditure, physician-density, and healthcare-insurance-systems. Information on physician density and GDP per capita in 2004 were taken from OECD (2021) and UNDP (2014). To check whether a more privately versus a more governmentally financed healthcare structure would be affecting preferences, we created a measure that captured this dichotomy. Specifically, we coded healthcare-insurance systems within countries on a 4 point scale using data from KPMG (2006) ranging from fully publicly financed (1), mainly publicly financed (2), mixed financed (3) to mainly privately financed (4). We observed no significant effects of any these variables. The estimates for tightness-looseness were stable when separately including each of the control variables on the country level.

We also took alternative other national-cultural dimensions to explain preference for professional medical help. We used Hofstede's culture dimensions (Hofstede, 1980),

which have been used in healthcare research before (Deschepper et al., 2008; Mackenbach, 2014). None of the main Hofstede dimensions (Individualism, Uncertainty avoidance, Masculinity and Power Distance) showed significant correlations with preference for professional medical help.

3.4. Discussion

Our study examined the relation of human values and societal tightness with the preference for professional medical in case of non-acute medical conditions as opposed to informal health care, controlling for socio-demographics and several factors such as trust. We found that both human values as well as societal tightness were related to preferences for medical healthcare.

First, we found that human values can help explain why people choose for professional medical help in non-acute situations. Conservation (being a measure of tradition, conformation to others and opposition to change) was positively related to preference for professional medical help. The negative relation of openness to change with preference is congruent with the positive relation of conservation. From these results we can conclude that preferring to obtain professional medical help is associated with a stronger importance attached to conservation values and less importance attached to openness values. Self-transcendence, measuring the degree to which people are more inclined to the need of others, was related to a decreasing preference for professional medical help. It may be assumed that valuing other people's interests (versus valuing the self) is negatively associated with the preference for help from medical professionals.

Second, we showed that tightness-looseness (Gelfand et al., 2011) is an important predictor of preference for professional medical help in non-acute situations across countries. In additional analyses, in which we included several supply effects in our model, such as physician density, out-of-pocket expenditures, insurance systems, and GDP per

capita, we still found that tightness was positively related to preference for professional medical help in non-acute conditions. Additionally, alternative cultural measures (i.e., Hofstede dimensions) did not show significant effects, adding to the robustness of the results. We found that the tighter a society, the more prone people will be to visit a doctor. Future research could look at the influence of tightness-looseness in other areas of healthcare behavior such as vaccination behavior/hesitation or emergency room (mis)use. Additionally, from a theoretical perspective, the interaction of individuals' values with aspects of the environment they live in is an important avenue for further research.

Third, examining interaction effects, we found that social tightness is strengthening the positive relation of conservation with preference for professional medical help. We also found negative interaction of tightness with self-transcendence, suggesting that in a looser society the relation of self-transcendence with preference becomes stronger. This may make sense, as tightness-looseness is associated with a higher prevention-focus (Gelfand et al., 2006): as a measure of freedom to deviate from norms and rules within society, it may also enhance or inhibit the relation of values with the preference for a medical professional in case of non-acute medical situations.

Taken together, our results show the relation of both societal context and human values with preference for professional medical help in the case of non-acute medical conditions. High scores on conservation values were related to stronger preference, and high scores on openness-to-change values were related to a weaker preference for help by a medical professional. High scores for tightness-looseness were related to a higher preference, and the effect of conservation was enhanced by tightness-looseness.

As in any study, our study has limitations: we were confined to a limited sample of 16 European countries, as we used existing data from both the European Social Survey and the published scores for tightness. Additionally, we could not directly account for cost of

access to healthcare services, which might also be a predictor of preference. Nevertheless, we found with this limited number of countries that a substantial amount of variance on the aggregated level could be explained by tightness-looseness. Having a broader set of countries, with a more global scope, or looking at regional differences within countries could help in determining the boundaries of our findings.

3.5. Conclusions

Our results imply that, next to trust in medical doctor, both country level tightness-looseness and individual human values play an important role in the preference for seeking professional medical help. Higher importance attached to the Schwartz value domains conservation and the self-enhancement was associated with higher preferences for professional medical help, and also countries with higher levels of societal tightness faced a higher inclination to turn to professional medical help in case of non-acute medical situations. Our results may be of interest to governments, insurance companies, public policy makers, and general practitioners in delivering better attuned and personalized health care, improving communication to customers, or to increase or decrease care-seeking. As these common medical conditions are on the one hand related to increased cost of healthcare, and on the other hand to lost productivity and other social costs it is important to know that values add to explained variance in healthcare preferences. People who value conservation will be more prone to consult a medical professional, whereas on the other hand, people who value openness and self-transcendence will be less inclined to visit a doctor. To convince the latter groups of people to either use more, or less, professional medical services it is important to develop communication congruent with their values: focused messages appealing to values that people find important can strongly improve the effectivity of a communication strategy (Torelli et al., 2012).

Lastly, general practitioners could use our results to improve communication and treatment of patients, as they can better predict the preference for going to a doctor with non-acute complaints, taking the cultural background of patients into account. This could be an informative cue to improve on communication about treatments.

Appendix 3.A: Correlation Matrices

Table 3.A.1. Correlation Matrix of individual level factors of preference for professional medical help.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Pref Prof Medical help														
2 Age	0.146 **													
3 Education	-0.139 **	-0.278 **												
4 Health Impairment	0.042 **	0.334 **	-0.141 **											
5 Gender (Male = 1, Female = 0)	-0.043 **	-0.028 **	0.065 **	-0.050 **										
6 Having children	-0.005	-0.288 **	0.100 **	-0.122 **	-0.044 **									
7 Perceived state of healthcare	0.000	0.015 *	-0.045 **	-0.048 **	0.057 **	-0.005								
8 Perceived health	-0.057 **	-0.385 **	0.249 **	-0.571 **	0.085 **	0.136 **	0.080 **							
9 Interpersonal trust	-0.053 **	0.006	0.224 **	-0.058 **	0.000	-0.015 *	0.177 **	0.157 **						
10 Institutional trust	0.009	-0.007	0.098 **	-0.066 **	0.022 **	0.004	0.354 **	0.151 **	0.365 **					
11 Trust in doctor	0.057 **	0.078 **	0.060 **	0.000	0.020 **	-0.065 **	0.114 **	0.067 **	0.189 **	0.172 **				
12 Conservation	0.138 **	0.417 **	-0.293 **	0.199 **	-0.103 **	-0.053 **	0.031 **	-0.273 **	-0.122 **	-0.004	-0.027 **			
13 Openness to Change	-0.110 **	-0.377 **	0.242 **	-0.185 **	0.100 **	0.025 **	-0.034 **	0.262 **	0.101 **	-0.021 **	0.058 **	-0.788 **		
14 Self-Enhancement	-0.025 **	-0.203 **	-0.004	-0.103 **	0.142 **	0.042 **	0.021 **	0.082 **	-0.098 **	-0.003	-0.078 **	-0.357 **	0.013 *	
15 Self-Transcendence	-0.011	0.161 **	0.073 **	0.087 **	-0.156 **	-0.002	-0.020 **	-0.070 **	0.139 **	0.037 **	0.041 **	0.092 **	-0.324 **	-0.578 **

** : Correlation is significant at the 0.01 level (2-tailed), * : correlation is significant at the 0.05 level (2-tailed), n = 23,312

Table 3.A.2. Correlation matrix of country level factors and preference for professional medical help (n = 16).

	1.	2.	3.	4.
1. Pref for prof med help				
2. Tightness-looseness	0.715 **			
3. GDP per Capita	0.104	0.402		
4. Insurance public vs. private	0.452	0.279	0.504 *	
5. Physicians per 1000	-0.228	-0.250	0.322	0.044

** : Correlation is significant at the 0.01 level (2-tailed), * : Correlation is significant at the 0.05 level (2-tailed), n = 16.

Chapter IV. Longitudinal Analysis of the Relation between Changes in Human Values and Social Attitudes

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Abstract

Although the relation between attitudes and human values has been investigated extensively, little is known about how they influence each other. Therefore, instead of looking at the direct relation between values and attitudes, current research focuses on the reciprocal relation between values and attitudes over a period of 12 years, showing how changes in human values and changes in attitude (toward euthanasia, income equality, marriage, and foreigners) over time influence each other. Using Random Intercept Cross-Lagged Panel Modeling with a sample of 1044 individuals followed between 2008 to 2020 (aged 16 to 84 at the start), we found evidence that both value changes were causing attitude changes, as well as vice versa. As both values and attitudes were fairly stable, these effects were small. Nevertheless, values as well as attitudes evolved gradually over time. No clear picture emerged in dominating causal paths; both value change caused attitude change, as vice versa. Most cross-lagged effects were found for attitude toward marriage and income equalities, and least effects for attitude toward foreigners and euthanasia.

Keywords: human values, value change, Schwartz values, longitudinal research, attitude toward euthanasia, attitude toward marriage, attitude toward income equality, attitude toward foreigners.

4.1. Introduction

Personal values and attitudes are strongly interrelated aspects of human psychology that have been the focus of extensive research in social and personality psychology.

Personal values represent a person's guiding principles or beliefs about what is important in life (Rokeach, 1973; Schwartz, 1992), while attitudes refer to an individual's positive or negative evaluation of a particular object, person, or situation (Ajzen, 2001). In other words, personal values are more general personal characteristics, while attitudes are domain-specific evaluations (van Raaij & Verhallen, 1994).

Personal values are important drivers for many attitudes and behaviors. From previous research, we know that personal values are stable within individuals, but can change over time. There are differences between values in the amount of change over time and until what age these values are changing (Leijen et al., 2022). Also attitudes are changing over time (Bohner & Dickel, 2011; Olson & Zanna, 1993; Schwartz, 2007). Although we have a growing understanding of the relation between values and attitudes in children (Vecchione, Döring, et al., 2016), we know little about whether, and if so, how the relation between values and attitudes can change over time within adults. As values and attitudes are both related to individual and societal changes and events (Collins et al., 2022; Lönnqvist et al., 2018), there is reason to assume that the relation between values and attitudes can change over time: for instance, a decrease in religiosity might be related to lower conservation values, but maybe (but not necessarily) also to more liberal attitudes toward marriage.

Values have been linked to behavior (Benish-Weisman et al., 2017; Boer & Fischer, 2013): changes in values have been linked to behavioral changes, but also the other way around (Daniel et al., 2023; Homer, 1988; Vecchione, Döring, et al., 2016). Bardi and Goodwin (2011) theorized that one of the ways values can change is through a

preference for consistency in values and behavior: if behavior changes, this could lead to adaptation of the related values. Vecchione, Döring, et al. (2016) has shown that values and behavior are reciprocally influencing each other in children (aged 10-12), and that stability was stronger in values and lower in behavior. Not only has behavior been linked to values, but numerous studies have also shown that values and attitudes are connected (Bohner & Dickel, 2011; Lee et al., 2022).

We posit that because values are overarching and more abstract, they are hierarchically superior to attitudes, as attitudes are attached more specifically toward something or someone. (Ajzen, 2001; Boer & Fischer, 2013; Dalege et al., 2016; Homer & Kahle, 1988). Following this reasoning, we expect that firstly attitudes will change more over time than values, secondly that attitudes and behaviors will have a reciprocal effect on each other, and thirdly that changes in attitudes will have a stronger effect on values than changes in values will have on changes in attitudes.

There is a lack of knowledge about the dynamic or static relation between values and attitudes: is this value-attitude relation stable, or will some values become more or less related with attitudes in the course of time? There is some research investigating this in a children population; Daniel et al. (2023) found that self-esteem influenced self-direction values, but that the reciprocal relation was less clear. Eisentraut (2019) showed that attitudes toward minority groups influenced values, as well as vice versa. However, more large-scale, long-term longitudinal research is lacking.

Within current research, we want to disentangle this dynamic relation: we want to map which values are related to the four attitudes we investigate, if and how they change, and how they affect each other over time. For this analysis, we use a longitudinal dataset of 1,044 adult respondents, ages 16 to 90, spanning 12 years. We focus on the dynamic, causal relation between human values and attitudes toward marriage (Gubernskaya, 2010),

immigrants (Hainmueller & Hopkins, 2014), euthanasia (Inglehart et al., 2021) and income equality (García-Sánchez et al., 2020). These attitudes are all often studied, societally relevant, and thus interesting to see the relation with values. For reasons of brevity, and as they are all part of the social domain, we limit our results to the values that are part of the social focus domain in the value circle (i.e. benevolence, universalism, conformity, and security).

Our results can be of interest to many different fields: knowing more about the relation between values and attitudes and how they change over time could be of use for policy making and public campaigns aimed at influencing attitudes, but, for instance, also for cross-cultural research, psychology and counseling, intercultural communication, and conflict resolution.

Using random intercept cross-lagged panel analysis (Mulder & Hamaker, 2021), we explore how changes in values and attitudes are interrelated over time. By examining the cross-lagged effects between these variables, our objective is to shed light on the processes underlying the formation and evolution of values, attitudes, and behavior, and to contribute to our understanding of how these factors interact to shape human psychology.

4.2. Theory

4.2.1. Human values

Human's basic values are deeply rooted, fairly stable parts of people's personality, that function as guides which influence people's opinions, attitudes, and behavior. In Schwartz's theory (1992; 2012), human values form a hierarchy of importance, with some values being more important than others. These hierarchies are different across individuals and can also be reflective of group similarities and differences. Theoretically, these values form a circumplex with values that are conflicting on the opposite side of the circumplex, and values which are more congruent closer to each other on the circumplex (see Figure

4.1). The values can be arranged in four higher order values: conservation (consisting of security, conformity and tradition), openness to change (consisting of self-direction, stimulation (and partly hedonism), self-transcendence (consisting of benevolence, universalism) and self-enhancement (power, achievement, and partly hedonism). On a further aggregated level, the circle with values comprises two contrasting value groupings: One between the importance of growth (related to a lack of anxiety) and protection (related to the avoidance of anxiety), and the other between the importance of the group (social focus) versus self-interests (personal focus) (Schwartz & Cieciuch, 2022).

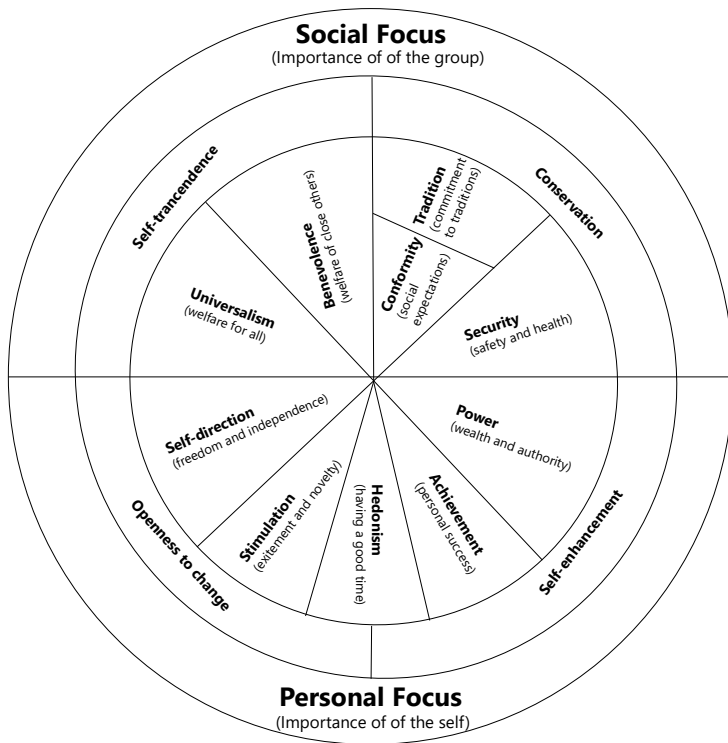


Figure 4.1 The Human Values Circumplex, adapted from Schwartz Values Circle (Schwartz et al., 2012)

Human values tend to change little once people are mature adults. However, recent research shows that within people, value change is still possible in not only younger adults, but also in older people (Leijen et al., 2022).

4.2.1.1. Social attitudes and the relation with human values

Attitudes and changes in our attitudes can influence basic human values by shaping perceptions and experiences, leading to a reevaluation of fundamental beliefs and principles (Bardi & Goodwin, 2011). For example, if an individual has a negative attitude toward people of a certain race, ethnicity, or religion, he/she may develop a more positive attitude toward them as this person comes into contact with and interacts with members of that group. This can lead to a change in values and beliefs about the importance of people who are not part of their ingroup. Next we discuss evidence of the personal values - attitude relation in more detail for four specific societal attitudes (Inglehart, 2004).

4.2.1.2. Attitude toward immigrants

According to Davidov and Meuleman (2012), higher order human values such as self-transcendence and conservation play a significant role in shaping attitudes toward immigration policies. Self-transcendence was positively related, and conservation negatively related to a positive attitude toward lenient immigration policies. Similar results were found in e.g. Araújo et al. (2020). According to Nariman et al. (2021) attitude toward immigrants was negatively related to the values of security, conformity and tradition, and positively to benevolence, and especially universalism. However, Grigoropoulou (2021) shows that although universalism was again positively related, benevolence was negatively related to immigrant attitudes.

Results from an Italian sample showed that human values were the most influential factor in predicting attitudes toward immigrants. Security and tradition showed a negative effect, while benevolence and universalism showed a positive effect. Self-direction had a

negative effect (Angelucci et al., 2021). A meta-analysis of the determinants showed that attitude toward immigrants was mainly connected to education, political affiliation, and exposure to immigrants (Dražanová, 2022). Research using European Social Survey data showed that attitude toward immigrants is mainly influenced by the political discourse, and less by the actual inflow of immigrants, suggesting that people's attitude is not so much a reaction to a real threat but to an expected threat (Schmidt-Catran & Czymara, 2023). Tying this evidence to socially focused human values, we expect that security will be negatively related to attitude toward migrants while universalism and benevolence will be positively related.

4.2.1.3. Attitude toward euthanasia

Results from Bartolomé-Peral and Coromina (2020) show that (in Europe) especially age and religiosity are related to attitude toward euthanasia. Research by Inglehart et al. (2021) showed with World Values Survey data that religiosity was highly correlated with a negative view of euthanasia, with the Netherlands being the most permissive of 62 countries. A systematic review by Castelli Dransart et al. (2021) showed that being male, having a higher education, higher income and (again) lower religiosity were predictors of a more positive attitude toward euthanasia. Their research also showed a lack of research on the relation between values and attitude. Buiting et al. (2012) showed in elderly people in the Netherlands that also “mastery” as measured by the Pearlin Mastery Scale had a positive relation with attitude toward euthanasia. Although this construct is not measuring values, there might be a relation between prioritizing values like self-direction and achievement, and perceived mastery over someone's life, which in turn could be related to attitude. Research in the United States revealed that attitudes toward euthanasia have become more liberal with time (Attell, 2020). Also in the Netherlands, the attitude toward euthanasia has become more permissive (Jaspers et al., 2007). On the basis

of the above, we might speculate about the relation of human values with attitude toward euthanasia. As lower religiosity, as well as higher education and income, were related to a more liberal view on the topic, we expect security and conformity to be negatively related, and universalism and benevolence to be positively related to attitude toward euthanasia.

4.2.1.4. Attitude toward income equality

Attitude toward income equality is investigated extensively in the area of political economy (Clark & d'Ambrosio, 2015; Hansen, 2023), although the term used in this domain is attitude toward income redistribution. Despite the dearth of research, the relation of attitude toward income (in)equality with Schwartz values has not been investigated. Using World Values Survey data, Dutta and Sobel (2023) show that individualism is negatively related to attitude toward income inequality. Another paper using both European Social survey and World Values Survey data shows that both egoistic motives as well as a believe that people should work hard to deserve help have a negative effect on attitude toward income equality (Luttens & Valfort, 2012). As income inequalities are a main topic for parties on the left of the political spectrum, we expect that values which are related to a more progressive political attitude will also be related to a positive attitude toward income equalities (Purko et al., 2011). The results of Fischer and Boer (2015) are in line with this prediction. Thus, we expect that universalism and benevolence will be positively, and conformity and security negatively related to the attitude toward income equality.

4.2.1.5. Attitude toward marriage

In current research, attitude toward marriage is conceptualized as the attitude of people toward marriage, where marriage is meant as a longstanding commitment and people that live together should be legally bound through marriage. For parsimonious reasons, a higher score on means in this case a more liberal and less traditional view on this

construct. As the current sample is from the Netherlands, attitude toward marriage has been rather liberal since decades, and cohabitation, being single parents, and same sex marriage are rather common, while direct marriage without a period of cohabitation has become the exception in the Netherlands (Manting, 1996). The relation between Schwartz values and marriage attitude has not been investigated as a focal topic, but research by Schwartz et al. (2010) showed that traditional morality (in which marriage plays an important role) was related to conservation values. A positive relation with religiosity was established in the study by Thornton et al. (1992). As religiosity is highly related to the values of conformity and security, we expect that these values will also be positively related to a more conservative marriage attitude, while universalism will be related with a more open and accepting attitude toward other forms of cohabiting and raising children compared to the traditional legal and spiritual unification of a man and a woman.

As for changes over time in marriage attitude, there is evidence that lower religiousness in the US is related to a change to more liberal attitude toward marriage (Thornton, 1985). A similar decline in religiosity has occurred in the Netherlands, as well as the transition from a conservative society in the 1950s to a liberal society (with also more liberal views on the institute of marriage) from the 1970s and onward (Hekma & Duyvendak, 2016). Taken together, we expect that security and conformity will be negatively, and universalism positively related with a more liberal (i.e. higher) attitude toward marriage.

In summary, the discussed literature shows a relation between attitudes and values. However, it is not known whether this relation is stable or changes over time: does the relation become stronger or weaker, and how do values and attitudes interact? In a context of large changes in society, like the global financial crisis of 2008, the influx of immigrants, the ongoing discussion about euthanasia, and changing attitudes toward

marriage, we expect that human values and attitudes will change over time. If the relation might change over time is not yet clear, but plausible. Adding to this, we hypothesize there will be a reciprocal relation between values and attitudes, where changes in attitudes will influence changes in values and vice versa. As attitudes are more domain specific and values more general personal characteristics, we expect more change over time than for values, and that changes in attitudes will have a stronger predictive effect on changes in values than the other way around. For clarity reasons, we scale all attitudes from 1 (less liberal) to 5 (more liberal) toward the different topics.

4.3. Method

4.3.1. Data

In this article we make use of data from the LISS panel (Longitudinal Internet studies for the Social Sciences) panel administered by CentERdata (CentERdata, 2024; Scherpenzeel, 2018). The LISS panel is a representative sample of Dutch individuals who participate in monthly Internet surveys. Background information about the LISS panel can be found at: www.lissdata.nl.

The time frame for the analysis is 12 years (2008 – 2020). This time frame allows for the examination of longitudinal changes in attitudes toward marriage, foreigners, income inequality, and euthanasia and the relation with longitudinal changes in a selection of 9 Schwartz values (based on Leijen et al. (2022)). Based on data availability, the selected time points are 2008, 2009, 2011, 2013, 2014, 2017, and 2020. These time points were chosen to capture both short-term and long-term changes in the variables of interest. We constructed a sample of respondents without missing values for values and/or attitudes. Due to panel attrition after 12 years we ended up with a sample of 1044 respondents. 46.8% of the sample was female, $M_{age08} = 51.8$, 37% of the sample had attained higher education. By comparison, we found significant differences from the original sample

representative of the country (6700 respondents). Higher education in the full sample was 18.4%, female 54.6%, $M_{age08} = 46.4$, showing that the selection was higher educated, slightly older, and more male than the country representative original sample (see Appendix 2.A.7).

4.3.2. Measures

We combined measurement of human values in the years 2008, 2009, 2011, 2013, 2014, 2017 and 2020 with measurement of 4 different attitudes (attitude toward marriage, immigrants, income inequality and euthanasia).

Human values were constructed using the Rokeach values scale. Similarly to Leijen et al. (2022), using the items from the Rokeach questionnaire, proxies for 9 out of 10 Schwartz values (all except tradition) were constructed. Within a subsample of the LISS panel (wave of 2012), the validity of the measurement of the values and the similarity with the original Schwartz values have been tested with an original measurement of the PVQ11 as part of the World Values Survey. The proxy values measuring Schwartz values were ipsatised (i.e. partialling out the average across all values by subtracting the mean of the 9 values per respondent), as is often done in values research (Rudnev, 2021; Schwartz, 2007).

The attitudes toward euthanasia and toward income equality were measured using one item. Attitude toward foreigners was measured using six items, of which two reverse items were rescaled, (Cronbach's Alpha between .770 and .834 across the seven time points). Attitude toward marriage was measured using three items, (Cronbach's Alpha between .540 and .600 across the seven time points). Although the reliability coefficient measured by Cronbach's Alpha for attitude toward marriage was not reaching a common threshold of .70 (Nunnally & Bernstein, 1994) we use current measure, as additional factor analyses indicated a higher reliability and stability over time.

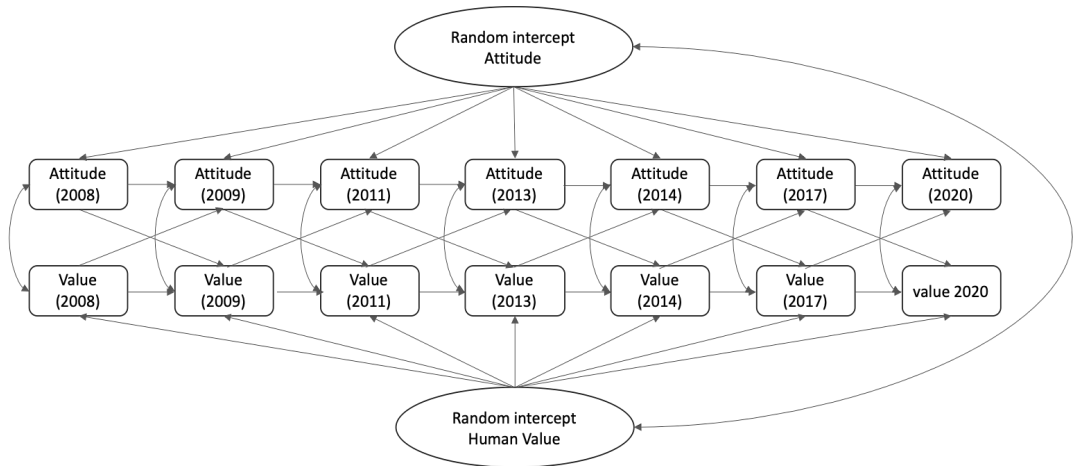


Figure 4.2 Effect of attitudes and values over time, the random intercept cross-lagged panel model.

We assessed measurement invariance over time of both multi-item value constructs using multigroup confirmatory factor analysis (Steenkamp & Baumgartner, 1998). We were able to establish scalar invariance over time (attitude toward foreigner: scalar invariance ($c^2 = 707.86$, $df = 63$, $CFI = 0.956$, $TLI = 0.962$, $RMSEA = 0.067$, $CI: 0.063 - 0.072$, $SRMR = 0.045$), and attitude toward marriage: ($c^2 = 40.396$, $df = 24$, $CFI = 0.992$, $TLI = 993$, $RMSEA = 0.026$, $CI: 0.01 - 0.039$, $SRMR = 0.022$) indicating that measurement of the constructs was sufficiently similar over time to be able to assess change over time. All four attitudes were measured on a 5-point rating scale, ranging from 1= least positive/liberal to 5= most positive/liberal).

4.3.3. Analysis plan

Describing the relation between values and attitudes, we first show mean level changes over time, and the univariate relation between values and attitudes for each time point.

An investigation of the longitudinal relation over time of attitudes and values needs to consider the effects of individual differences (e.g. autocorrelations between variables),

plus the effect of environmental shocks that influence both values and attitudes, and might lead to spurious effects. To investigate this dynamic relation between variables measured over time, a random-intercept cross-lagged panel model (RI-CLPM, (Mulder & Hamaker, 2021)) is used. We estimate 16 models (4 attitudes * 4 values), where each model incorporates lagged effects and cross-lagged paths to investigate the reciprocal influence between an attitude and one human value. Within each model all variables are predicting all other variables. Between-people differences are captured using a random intercept for attitude and a random intercept for value (see Figure 4.2).

The two primary components of a RI-CLPM model are autoregressive paths and cross-lagged paths. The autoregressive paths represent the effect of change of a variable on the score of the consecutive timepoint for the same variable, indicating how much a change in an individual's attitude (e.g. a change from T0 to T1) predicts a change in attitude (i.e. change from T1 to T2) and similar, a change in a Schwartz value at one time point predicts the change in value score at the following time point. For instance, a positive estimate in attitude-to-attitude indicates a trickle-down effect—increasing from T1 to T2 leads to a subsequent increase from T2 to T3. A negative estimate suggests a rebound effect—an increase from T1 to T2 followed by a decrease from T2 to T3.

The cross-lagged paths capture the causal relations (i.e. Granger causality, (Shojaie & Fox, 2022)) between the variables, indicating the extent to which a change in attitude (e.g. a change in attitude toward foreigners) at T1 influences a Schwartz value (e.g. universalism) at T2, and vice versa. In our models we constrained the autocorrelations, as well as the cross-lagged effects, to be equal over time, as this showed the best model fit in all cases. We evaluated model fit using the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMSR). The model fit for each of the value-

attitude combinations was adequate to very good. AIC, BIC, RSMEA and SRMS scores for all models can be found in the appendix, tables 4.A.1 – 4.A.4. In the results, we focus on significant effects using the covariates of age, education, and sex.

We found no cross-lagged effects for the values achievement, hedonism, and self-direction and the 4 attitudes. For the human values stimulation and power, we found some cross-lagged effects, but as we focus on the theoretically relevant values, and for the sake of brevity, we placed these results in the online supplementary materials. We structure the results per attitude. Covariates were age, education (high = 1/low = 0) and sex (male = 0 /female = 1), mean-age 52.1 (SD 12.4), 46.5% female, 35.5% higher educated. For the statistical analysis we used R studio 2024.04.1+748, and Lavaan 0.6-17.

4.4. Results:

We start our analysis by plotting the mean value change of attitudes and human values between 2008 and 2020 (Figure 4.3 to 4.10).

Both human values and attitudes were relatively stable over time within the entire sample. Paired T-tests (Appendix Table 4.A.5) between 2008 and 2020 showed a (comparatively) strong increase in security ($t = 12.299, p < .001$), and a small increase in universalism ($t = 7.098, p < .001$). Benevolence was stable, and conformity ($t = -1.245, p = .04$) showed a small decrease. Attitude toward euthanasia ($t = 6.196, p < .001$), marriage ($t = 5.897, p < .001$), and income equality ($t = 7.378, p < .001$) all became significantly more positive, while attitude toward foreigners ($t = -2.162, p < .001$) became slightly more negative during the 12-year time period.

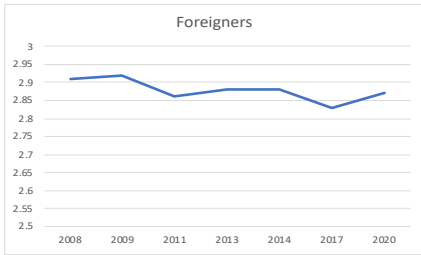


Figure 4.3 mean attitudes towards foreigners

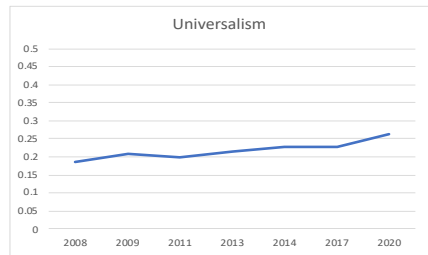


Figure 4.7: mean universalism

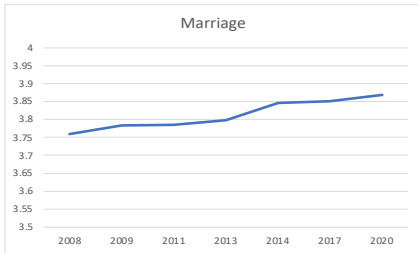


Figure 4.4 : mean attitude toward marriage (liberal)

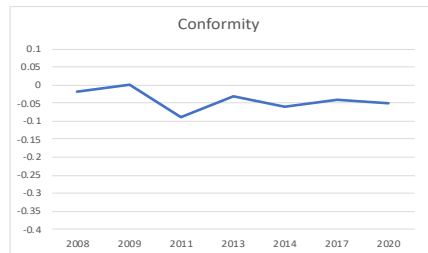


Figure 4.8: mean conformity

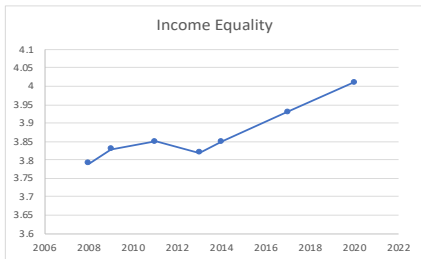


Figure 4.5: mean attitude toward income equality

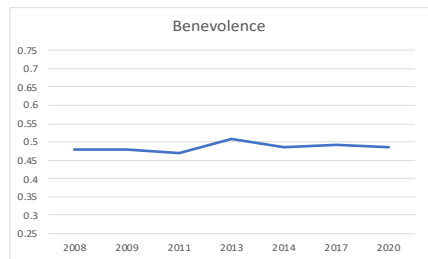


Figure 4.9: mean benevolence

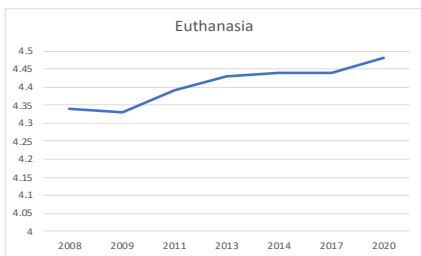


Figure 4.6: mean attitude toward euthanasia

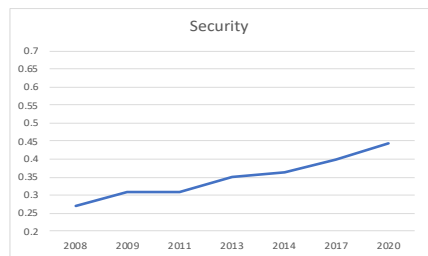


Figure 4.10: mean security

Figure 4.3 - 4.10: Graphs show the development over time (2008, 2009, 2011, 2013, 2014, 2017 and 2020). We took a 0.5 point scale difference for each of the construct as a starting point for the visualization. To harmonize attitudes (5 point) and human values (7 point) we multiplied human value scores with 0.714). $N = 1044$.

4.4.1. Univariate analysis of the relations between values and attitudes

Before looking at time effects using the RI-CLPM models we report the univariate correlations between the values and the attitudes across the different time points (Table 4.1).

Table 4.1: correlations between human values and attitudes 2008 - 2020

Human value	Attitude	ρ (wave 2008)	ρ (wave 2020)
universalism	marriage (liberal)	.070*	.040
universalism	foreigners	.309***	.240***
universalism	euthanasia	.058	.023
universalism	income equality	.169***	.229***
benevolence	marriage (liberal)	-.066*	-.005
benevolence	foreigners	.161***	.235***
benevolence	euthanasia	-.043	-.004
benevolence	income equality	.044	.088
security	marriage (liberal)	-.112***	0.003
security	foreigners	-.141***	-0.100**
security	euthanasia	-.112***	-0.038
security	income equality	-.004	-0.022
conformity	marriage (liberal)	-.135***	-0.112***
conformity	foreigners	-.105***	-0.112***
conformity	euthanasia	-.119***	-0.119***
conformity	income equality	.080	-0.053

Significance * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Examining the univariate correlations between values and attitudes across different time points, several patterns can be distinguished. Universalism consistently displayed positive correlations with attitudes toward marriage, foreigners, income equality, and euthanasia across the years studied, indicating a degree of alignment between this value and the attitudes over time. Security, on the other hand, exhibited varied correlations with attitudes, showing a mix of negative and neutral associations over the years. Similarly, conformity and benevolence showcased fluctuating correlations with attitudes toward various topics, indicating nuanced relations that evolved across different time points. Correlations of all values and attitudes can be seen found in the supplementary materials.

4.4.2. Random Intercept Cross Lagged Panel Models

Next, we investigate if changes in attitudes and values are predictive of changes on consequent time points, using the RI-CLPM approach. We start with reporting fit, the effect of the co-variates in the models, followed by the autoregressive paths in the model. We end with the cross-lagged paths that describe the effect of value change on attitude change and vice versa.

4.4.2.1. Model fit

We estimated 16 RI-CLP models. All models showed acceptable to good fit (RSMEA between 0.058 and 0.033, (average = 0.044), and SMSR between 0.028 and 0.046, (average = 0.037)), all fit measures can be found in Appendix Table 4.A.1 - 4.A.4.

4.4.2.2. Co-variates and the relation with Values

The effects of the co-variates age, sex and education on universalism, benevolence, security and conformity in the random-intercept-cross-lagged panel models are mostly in line with previous research (Schwartz & Rubel, 2005): Women score higher than men on universalism ($\beta \approx 0.185$, $p < .001$)¹, benevolence ($\beta \approx 0.156$, $p < .001$) and security ($\beta \approx 0.165$, $p < .001$). Age is positively related to universalism ($\beta \approx 0.009$, $p < .001$) and security ($\beta \approx 0.005$, $p < .001$), The higher educated score higher on universalism (between $\beta \approx 0.087$, $p < .001$) and lower on security ($\beta \approx -0.185$, $p < .001$).

4.4.2.3. Co-variates and the relation with Attitudes

When looking at the effect of the co-variates on the different attitudes we find that age is positively related to attitude toward foreigners ($\beta \approx 0.005$, $p = .001$), and income

¹ As the estimates were almost equal between models, but there are in some cases slight differences between the estimates in the 16 different models, we use the sign \approx instead of the regular = sign. The differences are within the +/- 0.001 boundary, exact scores per model can be found online <https://osf.io/v8chg> .

equality ($\beta \approx 0.013$, $p < .001$). Women (versus men) score higher on attitude toward foreigners ($\beta \approx 0.113$, $p < .01$), and income equality ($\beta \approx 0.146$, $p < .01$). The higher educated score higher on attitude toward foreigners ($\beta \approx 0.379$, $p < .001$), marriage ($\beta \approx 0.105$, $p < .01$), and lower on income equality ($\beta \approx -0.200$, $p < .001$).

4.4.2.4. Auto-regressive effects of values and attitudes

We summarize first the autoregressive effects for all the 16 RI-CLP models: The autoregressive estimates over time of universalism ($\beta \approx 0.088$, all $p < .001$), benevolence ($\beta \approx 0.067$, $p < .001$) security ($\beta \approx 0.168$, $p < .001$) and conformity ($\beta \approx 0.059$, $p < .001$) show for each human value that a change predicts a change in the same direction on the next measurement. This points to a gradual change over time, more than to a temporal change and a subsequent rebound in the following time period. Similarly, changes in attitudes toward marriage ($\beta \approx 0.108$, $p < .001$), foreigners ($\beta: \approx 0.234$, $p < .001$), euthanasia ($\beta \approx 0.147$, $p < .001$), and income equality ($\beta \approx 0.190$, $p < .001$) exhibit a carryover (and not a rebound) effect in the next period.

4.4.2.5. Between person effects: effects of random intercepts

Next, we report the relation between the random intercepts for the 16 RI-CLP models, which capture the cross-sectional variance. Euthanasia was negatively related to security ($\beta = -0.063$, $p < .001$), conformity ($\beta = -0.079$, $p < .001$), and benevolence ($\beta = -0.022$, $p < .05$). A liberal attitude toward marriage was positively related to universalism ($\beta = 0.019$, $p < .01$), while conformity ($\beta = -0.061$, $p < .001$) and security ($\beta = -0.033$, $p < .001$) were negatively related to a more liberal attitude toward marriage. Attitude toward income equality was positively related to universalism ($\beta = 0.075$, $p < .001$) and benevolence ($\beta = 0.043$, $p < .001$). Security was negatively related to attitude toward income equality ($\beta = -0.031$, $p < .01$). Attitude toward foreigners was positively related to

universalism ($\beta = 0.070$, $p < .001$), and benevolence ($\beta = 0.0452$ $p < .001$) while security ($\beta = - 0.051$, $p < .001$) and conformity ($\beta = - 0.041$ $p < .001$) were negatively related.

4.4.2.6. Cross-lagged effects between values and attitudes

Lastly, we report the effects of values on attitudes, and vice versa (i.e. the cross-lagged effects, corrected for the co-variates, individual differences, and autocorrelation effects). We only report significant results ($p < .05$). An increase in conformity was negatively related to attitude toward marriage ($\beta = - 0.058$, $p < .01$). A liberal attitude toward marriage was positively related to universalism ($\beta = 0.019$, $p < .01$). An increase in security was negatively related to attitude toward foreigners ($\beta = - 0.059$, $p < .001$).

A more positive attitude toward euthanasia lead to an increase in universalism ($\beta = 0.020$, $p < .05$).

An increase in security led to a more positive attitude toward income equality ($\beta = 0.067$ $p < .01$), as well as vice versa, an increase in attitude led to an increase in security ($\beta = 0.025$ $p < .01$). An increase in benevolence ($\beta = 0.019$ $p < .05$) and conformity ($\beta = 0.028$ $p < .05$) was followed by an increase in attitude toward income equality, but not the other way around. A more positive attitude toward income equality was also related to an increase in universalism ($\beta = 0.057$, $p < .05$)

4.5. Discussion

Abundant research has shown that values and attitudes are related, but little research has looked at the stability or change of this relation. Our research tried to show the dynamics between values and attitudes: is the relation between an attitude like euthanasia with a value like security a stable one, or does it change over time? And if this relation changes, is the attitude changing the value, or is the value changing the attitude? To shed light on this topic, we focused on four different attitudes (toward euthanasia, income equality, marriage (liberal) and foreigners) related to social issues and four human

values that are also related to the social domain. We used data from individuals over a 12-year period, with seven measurements of their values and attitudes investigating patterns in these changes.

Relating changes in attitudes and values to societal circumstances, the time period 2008 – 2020 was a period containing considerable debate in the country context we study (i.e. the Netherlands) related to each of the attitudes. During this period, there seemed to be steady increase in the acceptance of LGBTQI+ and same-sex marriage. (insights.paramount.com, 2018). In the media there has been a growing discussion about the influx of foreigners in Dutch society, possibly feeding into an increase in populist right-wing political parties (Shehaj et al., 2021). Although the Dutch population has historically been an open country toward foreigners due to its important position as an international trading country (Israel, 1989), there has been considerable debate on the influx of migrant workers and refugees (www.statistica.com, 2023a). Increased refugee numbers, for instance caused by the civil war in Syria, leading to on the one hand people reaching out to refugees, and on the other hand more xenophobic and practical objections (Getmansky et al., 2018; Hartman & Morse, 2020). Income equality also became a point of societal discussions; although the Netherlands in general has a low level of income inequality, during the 2008-2020 period after the financial crisis, income and wealth inequalities did increase (Bruil, 2023; Van Bavel & Frankema, 2017). Falling housing prices until 2014, and after that an increase in prices again have had their effects on societal trust and income (www.statistica.com, 2023b). Lastly, public opinion on euthanasia in the Netherlands has been in general supportive in this period, although there have been debates between proponents and opponents in the media. After legalizing its status in 2002, euthanasia as a cause of death in the Netherlands increased considerably over the years (Groenewoud et al., 2021).

Based on these social trends and discussions, we may have expected to see sizable changes in attitudes; however, we found fairly stable group mean averages: attitudes within people changed only little over the course of 12 years, and values even less. We saw minor increases in attitude toward euthanasia, income equality, and marriage, and a small decrease in attitude toward foreigners. The strongest (positive) change was in attitude toward income equality. Looking at the mean-level importance of values, we found that security increased most, universalism increased a little, benevolence and conformity more or less were stable. When examining the size of change over time, attitudes seemed to change slightly more than values (Figures 4.3 - 4.10).

Investigating the univariate correlations between values and attitudes and the change over time of these correlations, we found that the strongest correlations were between universalism and attitude toward foreigners and income equality, and benevolence with attitude toward foreigners. Some correlations disappeared over the years, such as the relation between security and marriage attitude, while other relations became stronger, such as the relation from benevolence with the attitude toward foreigners, which became more positive over time. Overall, the relation of attitudes with values showed stability over time: although we indeed found changes over time, in most cases the relation stayed either significant or nonsignificant over time. The relation between the random intercepts in our models showed similar results, although the strongest (negative) relation was found between conformity and euthanasia, which appeared to be less strong in the correlational analysis.

From the autoregressive coefficients, we found that both values and attitudes evolve slowly over time, where the autoregressive coefficients between the attitudes over time were larger compared to the values. As the autoregressive effects are the effects corrected for the general correlation (which is captured by the random intercepts and their

relation) but only reflect the effect of change, we found that both values and attitudes were changing gradually over time, instead of fluctuation with a change leading to a rebound effect.

Interpreting the cross lagged effects in the Random-intercept Cross-lagged Panel Models we found evidence that both changes in values caused changes in attitudes, as well as the other way around. We found that for security and attitude towards income equality there was a reciprocal relation between value and attitude: a change in value/attitude led to a change in attitude/value. Security and attitude toward income equality influenced each other positively over time, with a larger effect for attitude. An increase in security led to a decrease in attitude toward foreigners. An increase in benevolence was followed by a higher attitude toward income equality. For conformity, an increase in conformity was followed by a decrease in liberal marriage attitude and an increase in attitude toward income equality. Changes in attitude toward marriage, euthanasia, and income equality all had a positive effect on universalism.

As expected, we observed slightly more change in attitudes over time compared to shifts in values, but we found a more or less similar impact of changes in attitudes on changes in values (4 times), as vice versa (5 times). For one attitude-value (income equality and security) combination, we found reciprocal effects where attitude change led to value change and vice versa. For 8 of the 16 combinations we did not find significant effects of values on attitudes or vice versa, but we found for every value and for every attitude at least one combination that showed a significant effect of change over time. We did not discover a clear dominant pathway in influence over time; we found both effects of values on attitudes as well as the other way around.

These results are in line with Eisentraut (2019) who found that attitude toward minorities and values were reciprocally influencing each other. Unlike the effect of

personality traits such as self-esteem (Daniel et al., 2023), which led to changes in values, we found that attitudes and values go hand in hand in influencing each other. Although we hypothesized that attitudes would have a stronger effect on values than vice versa, we found no clear evidence for this: we found a more or less equal number of instances of values influencing attitudes, as the other way around.

4.6. Limitations:

We were confined to a limited sample due to panel data: in 12 years attrition was inevitable. As our selection was higher educated, slightly more male, and older than the representative panel, this could have been influencing our results. Nevertheless, we assembled a sample of 1044 people, and focusing not on the representativeness of the sample, but on the causal relations, the attrition problem might be less crucial. Furthermore, possibly due to the stable nature and small changes over time in both values and attitudes, the effects that we found were also rather small (although comparable in magnitude to other research using RI-CLP modeling in values research). Also, since we used a proxy scale for the Schwartz values, based on Rokeach value items, it is possible that the relations between values and attitudes was less strong than we expected, and it could be that relations between attitudes and values would have been slightly different if another scale were available.

4.7. Conclusion:

We found both human values and attitudes changed gradually over time within individuals in an adult population. We also found evidence that showed the relation between values and attitudes was not static but changed over time, albeit very little. Changes in attitudes predicted changes in values and vice versa, whereby no clear dominant path was found. Moreover, the relation between values and attitudes was rather stable.

Appendix 4.A: Fit and Reliability Statistics

Table 4.A.1: Fit indices for 16 RI-CLPM models with Attitude toward Marriage and 4 values

Attitude toward Marriage	Benevolence	Universalism	Security	Conformity
Bayesian Information Criterion (BIC)	17407.626	15949.88	19701.906	23000.968
Akaike Information Criterion (AIC)	17511.593	16053.847	19805.873	23104.935
Mean Square Error of Approximation (RMSEA)	0.033	0.045	0.052	0.037
Mean Square Residual (SRMSR)	0.028	0.037	0.041	0.032

Table 4.A.2: Fit indices for 16 RI-CLPM models with Attitude toward Income Equality and 4 values

Attitude toward Income Equality	Benevolence	Universalism	Security	Conformity
Bayesian Information Criterion (BIC)	23500.86	21993.572	25816.804	29165.164
Akaike Information Criterion (AIC)	23604.827	22097.539	25920.771	29269.132
Mean Square Error of Approximation (RMSEA)	0.033	0.045	0.05	0.034
Mean Square Residual (SRMSR)	0.034	0.041	0.044	0.036

Table 4.A.3: Fit indices for 16 RI-CLPM models with Attitude toward Foreigners and 4 values

Attitude toward Foreigners	Benevolence	Universalism	Security	Conformity
Bayesian Information Criterion (BIC)	14379.671	12862.011	16687.575	20054.311
Akaike Information Criterion (AIC)	14483.638	12965.978	16791.542	20158.278
Mean Square Error of Approximation (RMSEA)	0.044	0.053	0.058	0.042
Mean Square Residual (SRMSR)	0.037	0.042	0.046	0.036

Table 4.A.4: Fit indices for 16 RI-CLPM models with Attitude toward Euthanasia and 4 values

Attitude toward Euthanasia	Benevolence	Universalism	Security	Conformity
Bayesian Information Criterion (BIC)	20744.031	19292.385	23027.21	26366.436
Akaike Information Criterion (AIC)	20847.998	19396.352	23131.177	26470.403
Mean Square Error of Approximation (RMSEA)	0.034	0.047	0.052	0.037
Mean Square Residual (SRMSR)	0.028	0.038	0.042	0.031

Table 4.A.5 Paired T Test Differences over time in values and attitudes

2008	2020	t	df	Cohen's d	SD	Cohen's d	M diff
benevolence	- benevolence	0.465	1043	.642	0.014	0.032	0.008
security	- security	12.299	1043	< .001	0.381	0.033	0.240
conformity	- conformity	-1.245	1043	.213	-0.039	0.033	-0.030
universalism	- universalism	7.098	1043	< .001	0.220	0.032	0.107
marriage	- marriage	5.897	1043	< .001	0.182	0.028	0.110
foreigner	- foreigner	-2.162	1043	.031	-0.067	0.023	-0.035
euthanasia	- euthanasia	6.196	1043	< .001	0.192	0.023	0.141
income eq.	- income eq.	7.378	1043	< .001	0.228	0.030	0.217

N = 1044, the paired T tests show that security and universalism change significantly over time as well as all four attitudes. The values of benevolence and conformity do not change significantly over the 12-year period. Human values item scale between 1 – 7, Attitudes item scale between 1 – 5.

Table 4.A.6 Reliability Statistics for attitude toward marriage* (N = 1044)

Year	Cronbach's alpha	Number of items
2008	.540	3
2009	.553	3
2011	.548	3
2013	.600	3
2014	.600	3
2017	.578	3
2020	.575	3

*Despite the low Cronbach alpha's, the scale showed sufficient configural, metric and scalar invariance

Table 4.A.7: Reliability Statistics for attitude toward foreigners (N = 1044)

Year	Cronbach's alpha	Number of items
2008	.770	6
2009	.788	6
2011	.810	6
2013	.816	6
2014	.811	6
2017	.821	6
2020	.834	6

Appendix 4.B: Measurement Items:

4.B.1 Attitude towards Marriage

- It is perfectly fine for a couple to live together without marriage intentions.
- For a couple that wants to get married, it is good to first start living together.
- A divorce is generally the best solution if a married couple cannot solve their marital problems.

4.B.2 Attitude towards Foreigners

- It is good if society consists of people from different cultures.
- It should be made easier to obtain asylum in the Netherlands.
- Legally residing foreigners should be entitled to the same social security as Dutch citizens.
- There are too many people of foreign origin or descent in the Netherlands.
- Some sectors of the economy can only continue to function because people of foreign origin or descent work there.
- It does not help a neighborhood if many people of foreign origin or descent move in.

4.B.3 Attitude towards Euthanasia

- Some people believe that euthanasia should always be forbidden. Others feel that euthanasia should be permitted if the patient expresses that wish. Still others hold an opinion that lies somewhere in between. Where would you place yourself on a scale from 1 to 5, where 1 means that euthanasia should be forbidden and 5 means that euthanasia should be permitted?

4.B.4 Attitude towards income equality

- Some people believe that differences in income should increase in our country. Others feel that they should decrease. Still others hold an opinion that lies somewhere in between. Where would you place yourself on a scale from 1 to 5, where 1 means that differences in income should increase and 5 means that these should decrease?

Chapter V. Discussion

People's values are at the very core of their personality, and in many instances these values are as important in influencing behavior as their biological personality traits. Research on the way how values are influencing people attitudes, behavior, decisions and feelings is gaining momentum in academia, business and policymaking; businesses look at human values to define their customers, (international) policymakers use human values to improve communications and decision making, and academia is figuring out how human values work, how they can be influenced, and how they can be validly measured.

The aim of current dissertation was to show with 3 essays different aspects of the dynamic nature of human values; how values influence behavior, how their effect can differ over time and in different environments, and how values and attitudes are influencing each other over time.

In Chapter 2 we looked at the way people change in their value priorities over time. In Chapter 3 we studied the way values influence preferences for professional medical help with non-acute health problems. We found sizable differences between countries and discovered that tightness of social norms within a country changes the way values and preferences are related. In Chapter 4 we took again a longitudinal perspective on change: we showed that attitudes and values are related, and that changes over time, in both attitudes as well as in values, can lead to mutual changes. In the following section the findings, implications, limitations and future research will be summarized.

5.1. Summary of findings

Chapter 2 touched upon a long-standing conundrum of whether age differences in values are based on cohort changes or that they are due to internal changes with age. For this, we investigated how human values changed in individuals over a 12-year period using

a representative Dutch sample of 1,599 people. To show both individual change as well as generational (cohort) differences we grouped our respondents in four generations (aged 16 – 84 at the start). We looked at the stability of the value profile of people, the rank order stability of each human value over time and at the mean differences and changes in mean differences over time within the Silent-, the Babyboom-, the X- and the Millennial generation. We used Rokeach values items to construct 9 human values that closely matched the Schwartz values. We found that the millennial generation still had significant changes in their values profile (i.e. the rank order of the importance of each value in people), while Generation X and the Baby Boomer generation were mostly stable in their value profiles. The oldest generation seemed to become less stable again, but this did change did not become significant. When looking at the mean differences and changes within and between generations we found many interesting dynamics. For instance we found that hedonism changed substantially between generations: hedonism changed from unimportant in the oldest generation, to most important (on the same level as benevolence) in the youngest generation. Interestingly, within people we noticed no change in the importance of hedonism when they became 12 years older, which would point to hedonism being a very stable value once people have reached the adult's age. This might indicate that the millennial generation will keep this value in high importance over the years to come. Another interesting finding was that we noticed (within all generations) an increase in the importance of the value of security, with the millennial generation showing the largest increase and the silent generation the smallest increase. So security, contrary to stable value hedonism, is rather malleable over time, and could be related to societal events and trends during the period. One could for instance speculate about the relation between this increase in the value of security and the increase in right wing populism in the Netherlands since 2008.

Chapter 4 investigated the way human values are related to healthcare behavior. Using data from the European Social Survey, we found that in 16 countries in Europe there were sizable differences in the preference for a medical professional (i.e. a doctor or nurse) when people are confronted with non-acute health problems like stomachache, back pain, sleeplessness and headache. We used the aggregated Schwartz values to see whether they predicted preference and found that preference was higher with people that scored higher on conservation and self-enhancement, and preference was lower when people were higher on openness to change.

We found that on the aggregated country level, tightness-looseness played an important role in these preferences. The tighter the countries' social norms, the higher the preferences for professional medical help. We also found that there was an interaction effect of values and tightness-looseness: in countries where the norms were tighter, the effect of human values was slightly different: conservation had a stronger positive effect, and self-transcendence had a more negative effect. These results show that the way values influence behavior is also depending on the context.

Chapter 5 looked at changing values and attitudes and how they influence each other over time. We again used data from the LISS panel to analyze value change, but this time we looked more in detail into the effect of changing attitudes on changes in values, and vice versa, the effect of changing values on changing attitudes. For this we selected 4 socially related values, and investigated the relation with 4 attitudes (attitude toward marriage, income equality, foreigners, and euthanasia). Using a Random Intercept Cross Lagged Panel analysis we showed the changes and interactions in 16 combinations of values and attitudes.

We found evidence for both value changes affecting attitude changes as well as vice-versa. There were slightly more changes in attitudes than in values, but the reciprocal

effects of value change and attitude change were more or less similar. We found that for each value there was at least one attitude that was affected by value change, or vice-versa, per attitude we found at least one value that changed after an attitude change. In one instance (security-income equality) we found both value change influencing attitude as well as vice-versa; attitude change leading to value change.

Results further showed that values were more stable compared to attitudes. Also, we found that changes in values and attitude in general led to changes in the same direction in the next time period, indicating that both values and attitudes change gradually, and in general do not show rebound effects.

5.2. Theoretical implications

Current dissertation adds to the literature in various ways. The results mostly confirm the (relative) stability of values, the predictive validity of values, the cross-cultural validity of values and the importance of human values for attitudes and behavior. They show also the changes over time in values in adults, both confirming (e.g. more value change with younger adults, and higher value stability in older adults) as well as challenging existing theory (showing for instance the interpersonal stability of the importance of hedonism). We confirm values become more stable with age, but also show some values are still malleable across adulthood (e.g. security). Also we show values are still developing in younger adults (the millennial generation from 2008 tot 2020), adding to the existing literature on value change in children and adolescents. Moreover we show clear values differences between generations, confirming that people from different age cohorts have differences in values, which will lead to value change within societies over time due to cohort changes, and maybe, to a lesser extent, to individual value change. Although we did not study the youngest generation, we can assume within this

new generation there will again be sizable difference in values. These differences might also over time affect general opinions in societies about topics like sustainability (Yan et al., 2024; Yan & Murray, 2023) or EU policies (Dennison et al., 2021; Reinl et al., 2024).

We also add to the literature on healthcare behavior by showing the effect of values and culture on healthcare preferences. Till now there is little scientific research into the effect of human values on healthcare behavior. Since recently there has been some research into human values and vaccination behavior (Amin et al., 2017; Torres et al., 2023), but there is a gap in the literature from the perspective of seeking professional help (or other means) with common health problems. Showing how human values influence healthcare preferences, could help in either increasing (e.g. as a prevention strategy) or decreasing (e.g. in the case of overuse of professional healthcare) the preference for seeking professional medical help. As we investigate this preference across 16 different countries, we show that not only human values, but also tightness of social norms in a society, are related to healthcare preferences. We show that tightness in society influences medical preference, both directly as well as indirectly, by influencing the way human values play out in this preference. We find that higher order values conservation and self-enhancement have a positive relation with preference for professional medical healthcare, and openness to change a negative relation. The effect of tightness on preference is positive, with tighter countries having a higher preference for professional medical help. Next to the direct influence, there is also an indirect effect: the positive effect of conservation and the negative effect of openness to change both become stronger when social norms are tighter.

Lastly, we add to the literature on the relation between the rather abstract concept of human values and the more concrete concept of attitudes, by empirically show how they relate and interact over time: using a longitudinal dataset we show that values are related to

attitudes, that the relation between values and attitudes can change over time, and that value change can lead to attitude change, as well as the other way around.

Overall we find that the Schwartz values construct is a robust concept that can be measured in multiple ways, and is predictive of multiple attitudes and preferences. Although we find that the relation between values and attitudes is quite stable, this relation is not set in stone; over time there are gradual changes in the relation between values and attitudes, and there are changes in values over time, within people, but mainly between people of different ages, shaping differences in value priorities between generations. This might lead to changes in attitudes and behaviors between generations and within people. Researchers, policy-makers, marketers and other people interested in understanding and influencing behavior can benefit from this insight. From communication research we know that communication that resonates with important values can be effective in changing people's behaviors and attitudes.

5.3. Limitations and further research directions

The three empirical investigations from this dissertation have given many insights, however not without limitations. Therefore I will discuss some of these limitations and provide avenues for further research hereafter.

First of all, for the longitudinal research as well as for the multi-country study we were confined to existing data, which comes with several restrictions. For the longitudinal studies, we used publicly available data from the LISS panel. Albeit this is an incredibly rich data source, offering a country representative sample, and fantastic possibilities for longitudinal research, for measuring human values we had to resort to using items from the Rokeach Value Survey to make comparable value instantiations. This prevented capturing all the Schwartz values, and limited the amount of measurement items per value.

Therefore, although we established rather convincing similarities with original Schwartz values from different sources, it might limit comparability of the exact value instantiations with other methods of measurement. Also, as we wanted to show individual value change, we maximized the period for which we could follow the same individuals. This led to significant differences in our research sample from the original country representative sample. A bias towards people with higher panel loyalty towards the LISS was inevitable. Moreover, we were limited in the cross-cultural comparability as the sample was from a single country. Future research could investigate whether our results are universal or specifically related to the Dutch population and the time period we studied. Within our research we showed differences in how human values change and which values were stable or malleable. A question to be answered is if these differences are situation and time specific, or that they also hold in other time frames and cultures. This question might be addressed using longitudinal data collected in multiple countries. A promising initiative for this kind of research is the further development of the CRONOS international panel survey (Villar et al., 2018) within the European Social Survey.

Since we observed that some values change over time while others remain stable, it would be interesting to explore the triggers that might influence these changes. Are these shifts linked to significant life events, such as marriage, gaining independence, finishing school, starting a career, or having children? And what about the generational increase in hedonism: what is causing this increased importance? How will this trend develop in generation Z or Alpha? By which age is the relative position of hedonism stabilized within people?

Also we saw an apparent decrease in value stability with the oldest generation: future research might specifically look into this, and try to answer if there indeed is a significant decline. And if so, what causes this apparent decrease in value stability? Is this

merely an effect of age-related mental decline, or are peoples values actually changing in the face of mortality? By analyzing longitudinal data, we can address these questions and gain deeper insights into the nature of values and how they develop over time.

Our research into the relation between values and attitudes was also not without its limitations: as we studied the interplay between value change and attitude change, we studied the change of two concepts that are by nature comparatively stable and trait like. This made us study small effects, even considering the 12-year time frame over which we studied the changes and the reciprocal effect of these changes. Moreover, using existing panel data, we were again limited in the choice for values and attitudes. We made a choice, based on availability and fit, to focus on socially related values and socially related attitudes. Nevertheless, there is a plethora of other value/attitude combinations that would be interesting to study. For instance, one of the avenues that remains underexplored is the reciprocal effect of behavioral change and value change. Will your values change if your behavior (voluntarily or involuntarily) changes? Will a change in for instance eating meat, or saving energy also influence your values if you keep it up for long enough? And if so, which values will change, which values will stay the same? Using country representative longitudinal data from the LISS panel over a long period of time would be a welcome addition to current experimental research, which is mostly limited to cross sectional or short-term effects.

Limitations in our research investigating the interplay between preferences for professional medical help, human values and tightness looseness were in several aspects similar to the previous: using the European Social Survey, we relied on existing data, and as we combined the ESS data with the country level variable of Tightness-Looseness, we could not use data from all countries available. Further, taking into consideration that the data we analyzed was from the second wave of the ESS, the data was slightly older.

Nevertheless, the presence of the specific module that investigated healthcare preferences posed a unique opportunity to study the effect of human values on an individual level in 16 countries. Moreover, the data was collected with the highest scientific standards in survey research with representative country samples, giving confidence in our outcomes. Future research is warranted though, investigating the relation between medical preferences and human values: Are human values similarly influential in other areas of healthcare? Some research is appearing in the realm of vaccinations, but other areas like therapy loyalty, preventive checkups, emergency room visit, complementary and alternative medicine (CAM) and other non-urgent healthcare behavior might also benefit from an increased understanding of the effect of human values and cultural differences. As our research was based on cross-sectional data, interesting would be to assess this also longitudinally, as well as showing the causal relation using experiments. For instance, an exciting experimental question would be if healthcare communication promoting vaccinations could be framed so that it connects to certain values, and if so, would this increase effectivity of this communication? Also interesting additions to the study of values and healthcare preferences would be to dive deeper into the effect of single values, instead of the effect of higher order variables. A lot of research is focused on the more general aggregated value dimension, but, although the values are forming a circle, and are showing strong intercorrelations, with our research on value change and attitude change we found that also values that are close to each other can have quite dissimilar relations with attitudes. A more detailed view towards the individual values might paint a much more nuanced view of the effect of values on healthcare attitudes and behavior. This might lead to insights that could for instance be beneficial for vaccination attitudes, which have been shown to be so important in the combat against infectious diseases, but has been declining in the western world.

Another interesting new development in values measurement that could be helpful when studying value change is the use of LLM's in detecting values and value change: For instance Schachner et al. (2024) developed a tool to recognize organizational values from text. Another important research endeavor is a current international collaborative project with the EU, which is aimed at developing a specialized LLM which can recognize values in texts in different languages (Kiesel et al., 2024). This can be of use in gaining insights into changing values in different societies, as well as giving insights into the way human values are conceptualized in different countries, and how they relate to for instance voting behavior, political preferences, sustainable consumer behavior etc.

5.4. Concluding remarks

To conclude my story, I showed in three chapters how values influence people attitudes and preferences, how values can change within people, and between generations, and how changes in values and attitudes can have reciprocal effects on each other. To show this, I gave an overview of existing literature and used different existing data sources that helped in showing differences in values, and effects of values, across time and across countries. For each research question I used a different statistical method that was best fit for the research question and data at hand.

Being involved in this research was an extremely rich learning experience, which made me very aware of my own value priorities. It helped me a lot to become aware of how much behavior of people can be explained by differences in their values, and how much values are influential in the liking or disliking of other people.

Knowing how value differences are shaping human interactions are a key factor for better understanding of each other. I hope this research has contributed a little to this goal, which in current times is so desperately needed.

Summary

Human values are at the core of people's personality and are related to countless attitudes and behaviors. These human values are people's abstract, core, guiding principles or beliefs about what is most important in life. In this dissertation they are measured using Schwartz values framework, which is widely used and has been extensively validated, in almost a 100 countries across the world (Sagiv & Schwartz, 2022). Schwartz values form a circle with 10 values, where opposing values are on the opposite side of the circle, while values that are congruent with each other are adjacent on the circle. In 3 different studies we look at the dynamics of these values: how they change over time, and how values and attitudes influence each other, and how culture influences the relation between values and preferences. We mainly used 2 publicly available datasets: first, the European Social Survey (a large bi-annual, multi-country questionnaire using rigorous scientific survey methods), and the second the LISS panel (a Dutch nationally representative panel that has been running since 2007). For the essay on healthcare attitudes, we used the European Social Survey, and for the essays on value change and attitude change, we used the LISS panel. Addressing a long-standing debate on whether personality differences are due to generational differences or age, we show in the first essay (chapter 2) how values change over the lifetime of 1599 individuals. Using a representative sample from The Netherlands (N = 1599; aged 16 – 84 at the start), we focused on human values (an important aspect of personality), following the same individuals for 12 years. Distinguishing four generations (Silent-generation, Baby-boomers, Generation-X and Millennials) we found clear differences across generations in human values. For instance, we found that Millennials, value hedonism more than all other generations. Furthermore, value change within individuals was mainly evident in the youngest generation, the Millennials. Some values (achievement and conformity) were stable within individuals and did not differ between

generations. Change within individuals occurred mainly in Millennials, but not all values were subject to change. Some values were stable in adults (e.g., hedonism, conformity) while other values still increased (e.g., security, self-direction) or decreased (e.g., power, stimulation) in importance. In adults older than Millennials change was much less, and change was absent in the oldest generation. Hence, age differences in values seem to exist both due to generational differences, as well as due to internal change, although the latter mainly in young adults.

In the second essay (chapter 3) we investigated another dynamic aspect of human values. Instead of looking at the way values change over time, we investigated how the effect of values on behavior changed between countries. In other words: how does the context in which people live, change the way their values play out. We investigate the relation between human values and preference for professional vs. non-professional or informal healthcare for non-acute medical situations, and how that is influenced by country level characteristics (societal pressure for “acceptable” behavior). Using a multi-level, random effect approach, including individual and country-level factors, we examined European Social Survey data from 23,312 individuals in 16 European countries. Healthcare preferences were related to human values (i.e., Schwartz values) as well as to societal tightness (i.e., tightness-looseness scores by Gelfand). Stronger conservation increased, whereas self-transcendence and openness to change decreased preference for professional healthcare. In socially tight countries, we found a higher preference for professional healthcare. Furthermore, we found interactions between social tightness and human values. Higher tightness resulted in a stronger positive effect of conservation, as well as a stronger diminishing effect of self-transcendence. These results suggest that the way human values are related to behavior is to a certain extent depending on the context (e.g. the culture) people live in.

In the third essay (chapter 4) we focus on the relation between value change and attitude change. While extensive research has explored the relationship between attitudes and human values, little is known regarding their reciprocal influence. We focus in this chapter on the dynamic interplay between values and attitudes over a period of 12 years, showing how changes in human values and changes in attitude (toward euthanasia, income equality, marriage, and foreigners) mutually impact each other. Using Random Intercept Cross-Lagged Panel Modeling with a sample of 1044 individuals followed between 2008 to 2020 (ages 16 to 84 in 2008), we found evidence that both value changes were causing attitude changes, as well as vice versa. As both values and attitudes were fairly stable, these effects were small. Nevertheless, values as well as attitudes evolved gradually over time. No clear picture emerged in dominating causal paths; both value change caused attitude change, as well as vice versa. Most cross-lagged effects were found for attitude toward marriage and income equalities, and least effects for attitude toward foreigners and euthanasia. Our findings contribute to a nuanced understanding of the intricate relationship between values and attitudes, highlighting their gradual dynamics.

In these three essays I investigated different aspects of the dynamics of human values: how they change over time, how they are influenced, and influence attitudes, and how social norms affect the way human values are related to behavioral preferences. For this research I relied on existing, publicly available datasets, mainly the European Social Survey and the LISS panel. For each of the research questions I use a different statistical method to show a different aspect of the dynamic nature of human values. Avenues for further research are plentiful, both theoretical and more applied: are the value changes in individuals and the relation between attitudes and values specific for the Dutch cultural context, or are they universal across countries, and if not; how and why? This asks for longitudinal cross-national data, which hopefully will become available in the future. As

we investigated healthcare preferences and the relation with human values and cultural differences, another fruitful area of investigation could be extending this research into other areas of healthcare behavior.

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It has taken a double-digit number of years, but as promised to many, and believed by few: it seems I finished my dissertation before my retirement. (The joke was of course much wittier 13 years ago, but time flies when you are having fun). I guess that switching from being a musician to an academic is not the most efficient way to handle your career. If you had asked me 35 years ago, this would not have crossed my mind. But how interesting this journey has been! From being a piano teacher, choral conductor and accompanist, during, and after I finished the conservatory, to finally a marketing- and academic skills teacher at the university and human values researcher, has been a process of many years. I guess that there must have been some nature or nurture at play that secretly has been influencing the course of my career. Coming from parents that were both educators, both factors seem plausible, but of course impossible to disentangle.

I could not have done the writing of this thesis all on my own, thus, I want to thank all of the people that helped me achieve this, so many, many thanks to:

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List of publications

In press:

Leijen, I., van Herk, H., & Bardi, A. (2022). Individual and generational value change in an adult population, a 12-year longitudinal panel study. *Scientific Reports*, 12(1), 17844. <https://doi.org/10.1038/s41598-022-22862-1>

Leijen, I., & van Herk, H. (2021). Health and Culture: The Association between Healthcare preferences for Non-acute conditions, human values and social norms. *International Journal of Environmental Research and Public Health*, 18(23), 12808. <https://doi.org/10.3390/ijerph182312808>

Tarsitani, L., Pinucci, I., Tedeschi, F., Patanè, M., Papola, D., Palantza, C., Leijen, I.,... & Barbui, C. (2022). Resilience of people with chronic medical conditions during the COVID-19 pandemic: a 1-year longitudinal prospective survey. *BMC psychiatry*, 22(1), 633. <https://doi.org/10.1186/s12888-022-04265-8>

Leijen, I., & van Herk, H. (2024). Longitudinal Analysis of the Relation between Changes in Human Values and Social Attitudes, <https://osf.io/v8chg/> (Forthcoming in *Personality & Individual Differences*)

Working papers:

Pinucci, I., Tedeschi, F., Serra, R., Patanè, M., Acartük, C., Andriani, D., Leijen, I.,... & Tarsitani, L. (2024). Resilience of people with a history of mental disorder during the COVID-19 pandemic: an international 2-years longitudinal prospective study. <https://doi.org/10.21203/rs.3.rs-3781423/v1> (under review in *Social Psychiatry and Psychiatric Epidemiology*)

Smallenbroek, O., Leijen, I., Stanciu, A., Van Herk, H., & Bardi, A. (2024) Constructing Schwartz Values Framework using the Rokeach Values Survey: Human Value Measurement in the Longitudinal Internet Survey for Social Sciences. <https://osf.io/preprints/osf/3pqhs>, (under review in *Journal of Personality Assessment*)

Scharfbillig, M., Reitis-Münstermann, T., Stefanovitch, N., Kiesel, J., De Longueville, B., Ardag, M., Arieli, S., Daniel, E., Dobewall, H., Krasteva, A., Oeschger, T. P., Russo, L., Seddone, A., Sneddon, J., Tamo-Larrieux, A., van Herk, H., Karl, J., Petasis, G., & Zankina, E., Leijen, I., ... (2024). ValuesML: A new Multilingual Dataset for Values Detection in News and Political Manifestos. *Working Paper*.

References

- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology*, 52(1), 27-58. <https://doi.org/10.1146/annurev.psych.52.1.27>
- Amin, A. B., Bednarczyk, R. A., Ray, C. E., Melchiori, K. J., Graham, J., Huntsinger, J. R., & Omer, S. B. (2017). Association of moral values with vaccine hesitancy. *Nature Human Behaviour*, 1(12), 873-880. <https://doi.org/10.1038/s41562-017-0256-5>
- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of health and social behavior*, 1-10. <https://doi.org/10.2307/2137284>
- Angelucci, D., De Sio, L., & Paparo, A. (2021). Beyond the migration crisis, deep values. Where does hostility to immigrants come from? *Partecipazione e Conflitto*, 14(1), 373-395. <https://hdl.handle.net/11385/208101>
- Araújo, R. d. C. R., Bobowik, M., Vilar, R., Liu, J. H., Gil de Zuñiga, H., Kus-Harbord, L., Lebedeva, N., & Gouveia, V. V. (2020). Human values and ideological beliefs as predictors of attitudes toward immigrants across 20 countries: The country-level moderating role of threat. *European Journal of Social Psychology*, 50(3), 534-546. <https://doi.org/10.1002/ejsp.2635>
- Arieli, S., Grant, A. M., & Sagiv, L. (2014). Convincing yourself to care about others: An intervention for enhancing benevolence values. *Journal of personality*, 82(1), 15-24. <https://doi.org/10.1111/jopy.12029>
- Arieli, S., Sagiv, L., & Roccas, S. (2020). Values at work: The impact of personal values in organisations. *Applied psychology*, 69(2), 230-275. <https://doi.org/10.1111/apps.12181>
- Attell, B. K. (2020). Changing attitudes toward euthanasia and suicide for terminally ill persons, 1977 to 2016: An age-period-cohort analysis. *OMEGA-Journal of Death and Dying*, 80(3), 355-379. <https://doi.org/10.1177/0030222817729612>
- Bardi, A., & Goodwin, R. (2011). The dual route to value change: Individual processes and cultural moderators. *Journal of Cross-Cultural Psychology*, 42(2), 271-287. <https://doi.org/10.1177/0022022110396916>
- Bardi, A., Lee, J. A., Hofmann-Towfigh, N., & Soutar, G. (2009). The structure of intraindividual value change. *Journal of Personality and Social Psychology*, 97(5), 913. <https://doi.org/10.1037/a0016617>
- Bardi, A., & Schwartz, S. H. (1996). Relations among sociopolitical values in Eastern Europe: Effects of the communist experience? *Political Psychology*, 525-549. <https://doi.org/10.2307/3791967>
- Bardi, A., & Schwartz, S. H. (2003). Values and Behavior: Strength and Structure of Relations. *Personality and Social Psychology Bulletin*, 29. <https://doi.org/10.1177/0146167203254602>
- Bartolomé-Peral, E., & Coromina, L. (2020). Attitudes towards life and death in Europe: a comparative analysis. *Sociologický časopis/Czech Sociological Review*, 56(6), 835-862.
- Benish-Weisman, M., Daniel, E., & Knafo-Noam, A. (2017). The Relations Between Values and Aggression: A Developmental Perspective. In S. Roccas & L. Sagiv (Eds.), *Values and behavior: Taking a cross cultural perspective* (pp. 97-114). Springer International Publishing. https://doi.org/10.1007/978-3-319-56352-7_5
- Benish-Weisman, M. (2024). "Tell me who your friends are, and I will tell you who you are:" The contribution of peers to adolescents' values. *Child Development Perspectives*. <https://doi.org/10.1111/cdep.12510>

- Berry, L. L., & Bendapudi, N. (2007). Health care a fertile field for service research. *Journal of Service Research, 10*(2), 111-122. <https://doi.org/10.1177/1094670507306682>
- Beugelsdijk, S., van Herk, H., & Maseland, R. (2022). The nature of societal conflict in Europe; an Archetypal analysis of the postmodern cosmopolitan, rural traditionalist and Urban precariat. *JCMS: Journal of Common Market Studies, 60*(6), 1701-1722. <https://doi.org/10.1111/jcms.13342>
- Bilsky, W., Janik, M., & Schwartz, S. H. (2011). The Structural Organization of Human Values-Evidence from Three Rounds of the European Social Survey (ESS). *Journal of Cross-Cultural Psychology, 42*(5), 759-776. <https://doi.org/10.1177/0022022110362757>
- Bleidorn, W., Kandler, C., Riemann, R., Angleitner, A., & Spinath, F. M. (2009). Patterns and sources of adult personality development: growth curve analyses of the NEO PI-R scales in a longitudinal twin study. *Journal of Personality and Social Psychology, 97*(1), 142. <https://doi.org/10.1037/a0015434>
- Bleidorn, W., Schwaba, T., & Hopwood, C. J. (2020). Health Adversity and Value Change. *Social Psychological and Personality Science, 19*48550620901980. <https://doi.org/10.1177/1948550620901980>
- Boer, D., & Fischer, R. (2013). How and when do personal values guide our attitudes and sociality? Explaining cross-cultural variability in attitude–value linkages. *Psychological Bulletin, 139*(5), 1113. <https://doi.org/10.1037/a0031347>
- Bohner, G., & Dickel, N. (2011). Attitudes and attitude change. *Annual Review of Psychology, 62*, 391-417. <https://doi.org/10.4324/9781315754185>
- Borg, I. (2019). Age-and gender-related differences in the structure and the meaning of personal values. *Personality and Individual Differences, 138*, 336-343. <https://doi.org/10.1016/j.paid.2018.10.013>
- Borg, I., Bardi, A., & Schwartz, S. H. (2015). Does the value circle exist within persons or only across persons? *Journal of personality*(85(2)), 151-162. <https://doi.org/10.1111/jopy.12228>
- Borg, I., Groenen, P. J., & Mair, P. (2018). *Applied multidimensional scaling and unfolding*. SpringerBriefs in Statistics. <https://doi.org/10.1007/978-3-319-73471-2>
- Bruil, A. (2023). Distributional national accounts for the Netherlands and a comparison with 12 other countries. *Review of Income and Wealth, 69*(4), 886-906. <https://doi.org/10.1111/roiw.12609>
- Buiting, H. M., Deeg, D. J. H., Knol, D. L., Ziegelmann, J. P., Pasman, H. R. W., Widdershoven, G. A. M., & Onwuteaka-Philipsen, B. D. (2012). Older peoples' attitudes towards euthanasia and an end-of-life pill in The Netherlands: 2001–2009. *Journal of Medical Ethics, 38*(5), 267-273. <https://doi.org/10.1136/medethics-2011-100066>
- Carneiro, A., e Sousa, H. F. P., Dinis, M. A. P., & Leite, Â. (2021). Human values and religion: Evidence from the european social survey. *Social Sciences, 10*(2), 75. <https://doi.org/10.3390/socsci10020075>
- Carret, M. L., Fassa, A. G., & Kawachi, I. (2007). Demand for emergency health service: factors associated with inappropriate use. *BMC health services research, 7*(1), 131. <https://doi.org/10.1186/1472-6963-7-131>
- Castelli Dransart, D. A., Lapierre, S., Erlangsen, A., Canetto, S. S., Heisel, M., Draper, B., Lindner, R., Richard-Devantoy, S., Cheung, G., & Scocco, P. (2021). A systematic review of older adults' request for or attitude toward euthanasia or assisted-suicide. *Aging & mental health, 25*(3), 420-430. <https://doi.org/10.1080/13607863.2019.1697201>

- CBS Statline. Retrieved 13-12 from <https://opendata.cbs.nl/#/CBS/nl/CentERdata>. (2024). *LISS Panel*. Retrieved 2024-04-12 from <https://www.dataarchive.liissdata.nl/>
- Clark, A. E., & d'Ambrosio, C. (2015). Attitudes to income inequality: Experimental and survey evidence. In *Handbook of income distribution* (Vol. 2, pp. 1147-1208). Elsevier.
- Collins, P. R., Lee, J. A., Sneddon, J. N., & Döring, A. K. (2017). Examining the consistency and coherence of values in young children using a new Animated Values Instrument. *Personality and Individual Differences, 104*, 279-285. <https://doi.org/10.1016/j.paid.2016.08.024>
- Collins, P. R., Sneddon, J., & Lee, J. A. (2022). Do personal values have an effect on self-esteem in middle childhood? *Personality and Individual Differences, 199*, 111861. <https://doi.org/https://doi.org/10.1016/j.paid.2022.111861>
- Crocker, J. E., Swancutt, D. R., Roberts, M. J., Abel, G. A., Roland, M., & Campbell, J. L. (2013). Factors affecting patients trust and confidence in GPs: evidence from the English national GP patient survey. *BMJ open, 3*(5). <https://doi.org/10.1136/bmjopen-2013-002762>
- Curran, P. J., Obeidat, K., & Losardo, D. (2010). Twelve frequently asked questions about growth curve modeling. *Journal of cognition and development, 11*(2), 121-136. <https://doi.org/10.1080/15248371003699969>
- Curran, T., & Hill, A. P. (2019). Perfectionism is increasing over time: A meta-analysis of birth cohort differences from 1989 to 2016. *Psychological Bulletin, 145*(4), 410. <https://doi.org/10.1037/bul0000138>
- Currie, C., Zanotti, C., Morgan, A., Currie, D., De Looze, M., Roberts, C., Samdal, O., Smith, O. R., & Barnekow, V. (2009). *Social determinants of health and well-being among young people*. W. H. Organization.
- Dalege, J., Borsboom, D., Van Harreveld, F., Van den Berg, H., Conner, M., & Van der Maas, H. L. (2016). Toward a formalized account of attitudes: The Causal Attitude Network (CAN) model. *Psychological review, 123*(1), 2. <https://doi.org/10.1037/a0039802>
- Daniel, E. (2019). Value development during adolescence: Dimensions of change and stability. *Journal of personality, 87*(3), 620. <https://doi.org/10.1111/jopy.12420>
- Daniel, E., Bardi, A., Fischer, R., Benish-Weisman, M., & Lee, J. A. (2022). Changes in personal values in pandemic times. *Social Psychological and Personality Science, 13*(2), 572-582. <https://doi.org/10.1177/19485506211024026>
- Daniel, E., Benish-Weisman, M., Sneddon, J. N., & Lee, J. A. (2020). Value profiles during middle childhood: Developmental processes and social behavior. *Child Development, 91*(5), 1615-1630. <https://doi.org/10.1111/cdev.13362>
- Daniel, E., Weisman, M. B., Knafo-Noam, A., & Bardi, A. (2023). Longitudinal links between self-esteem and the importance of self-direction values during adolescence. *European Journal of Personality, 37*(1), 20-32. <https://doi.org/10.1177/08902070211040978>
- Davidov, E., & Meuleman, B. (2012). Explaining attitudes towards immigration policies in European countries: The role of human values. *Journal of Ethnic and Migration Studies, 38*(5), 757-775. <https://doi.org/10.1080/1369183X.2012.667985>
- Dennison, J., Seddig, D., & Davidov, E. (2021). The role of human values in explaining support for European Union membership. *Journal of Cross-Cultural Psychology, 52*(4), 372-387. <https://doi.org/10.1177/00220221211005082>
- Deschepper, R., Grigoryan, L., Lundborg, C. S., Hofstede, G., Cohen, J., Kelen, G. V. D., Deliens, L., & Haaijer-Ruskamp, F. M. (2008). Are cultural dimensions relevant for

- explaining cross-national differences in antibiotic use in Europe? *BMC health services research*, 8(1), 123. <https://doi.org/10.1186/1472-6963-8-123>
- Dobewall, H., Tormos, R., & Vauclair, C.-M. (2017). Normative value change across the human life cycle: Similarities and differences across Europe. *Journal of Adult Development*, 24(4), 263-276. <https://doi.org/10.1007/s10804-017-9264-y>
- Döring, A. K., Blauensteiner, A., Aryus, K., Drogekamp, L., & Bilsky, W. (2010). Assessing Values at an Early Age: The Picture-Based Value Survey for Children (PBVS-C). *Journal of Personality Assessment*, 92(5), 439-448, Article Pii 925538472. <https://doi.org/10.1080/00223891.2010.497423>
- Dražanová, L. (2022). Sometimes it is the little things: A meta-analysis of individual and contextual determinants of attitudes toward immigration (2009–2019). *International Journal of Intercultural Relations*, 87, 85-97. <https://doi.org/10.1016/j.ijintrel.2022.01.008>
- Durand, A.-C., Gentile, S., Devictor, B., Palazzolo, S., Vignally, P., Gerbeaux, P., & Sambuc, R. (2011). ED patients: how nonurgent are they? Systematic review of the emergency medicine literature. *The American journal of emergency medicine*, 29(3), 333-345. <https://doi.org/10.1016/j.ajem.2010.01.003>
- Dutta, N., & Sobel, R. S. (2023). Trust and attitudes toward income inequality: Does individualism matter? *European Journal of Political Economy*, 78, 102351. <https://doi.org/10.1016/j.ejpoleco.2022.102351>
- Eisentraut, M. (2019). Explaining attitudes toward minority groups with human values in Germany-What is the direction of causality? *Social Science Research*, 84, 102324. <https://doi.org/10.1016/j.ssresearch.2019.06.015>
- ESS. (2024). *European Social Survey*. Retrieved 28-02-2024 from <http://www.europeansocialsurvey.org/>
- Feather, N. T. (1995). Values, valences, and choice: The influences of values on the perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology*, 68(6), 1135. <https://doi.org/10.1037/0022-3514.68.6.1135>
- Fetvadjev, V. H., & He, J. (2019). The longitudinal links of personality traits, values, and well-being and self-esteem: A five-wave study of a nationally representative sample. *Journal of Personality and Social Psychology*, 117(2), 448. <https://doi.org/10.1037/pspp0000212>
- Fischer, R., & Boer, D. (2015). Motivational Basis of Personality Traits: A Meta-Analysis of Value-Personality Correlations. *Journal of personality*, 83(5), 491-510. <https://doi.org/10.1111/jopy.12125>
- García-Sánchez, E., Osborne, D., Willis, G. B., & Rodríguez-Bailón, R. (2020). Attitudes towards redistribution and the interplay between perceptions and beliefs about inequality. *British Journal of Social Psychology*, 59(1), 111-136. <https://doi.org/10.1111/bjso.12326>
- Gelfand, M. J., Nishii, L. H., & Raver, J. L. (2006). On the nature and importance of cultural tightness-looseness. *Journal of Applied psychology*, 91(6), 1225. <http://psycnet.apa.org/journals/apl/91/6/1225/>
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliach, A., Ang, S., & Arnadottir, J. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, 332(6033), 1100-1104. <https://doi.org/10.1126/science.1197754>
- Getmansky, A., Sinmazdemir, T., & Zeitzoff, T. (2018). Refugees, xenophobia, and domestic conflict: Evidence from a survey experiment in Turkey. *Journal of Peace Research*, 55(4), 491-507. <https://doi.org/10.1177/0022343317748719>

- Gilson, L. (2003). Trust and the development of health care as a social institution. *Social science & medicine*, 56(7), 1453-1468. [https://doi.org/10.1016/S0277-9536\(02\)00142-9](https://doi.org/10.1016/S0277-9536(02)00142-9)
- Gouveia, V. V., Vione, K. C., Milfont, T. L., & Fischer, R. (2015). Patterns of value change during the life span: Some evidence from a functional approach to values. *Personality and Social Psychology Bulletin*, 41(9), 1276-1290. <https://doi.org/10.1177/0146167215594189>
- Grigoropoulou, N. (2021). The “Malevolent” Benevolence: what happens to perceived immigrant threat when value priorities collide? *Ethnic and Racial Studies*, 44(16), 126-148. <https://doi.org/10.1080/01419870.2021.1877763>
- Groenewoud, A. S., Atsma, F., Arvin, M., Westert, G. P., & Boer, T. A. (2021). Euthanasia in the Netherlands: a claims data cross-sectional study of geographical variation. *BMJ Supportive & Palliative Care*. <https://doi.org/10.1136/bmjspcare-2020-002573>
- Gubernskaya, Z. (2010). Changing attitudes toward marriage and children in six countries. *Sociological Perspectives*, 53(2), 179-200. <https://doi.org/10.1525/sop.2010.53.2.17>
- Hainmueller, J., & Hopkins, D. J. (2014). Public attitudes toward immigration. *Annual review of political science*, 17, 225-249. <https://doi.org/10.1146/annurev-polisci-102512-194818>
- Hall, M. A., Camacho, F., Dugan, E., & Balkrishnan, R. (2002). Trust in the medical profession: conceptual and measurement issues. *Health services research*, 37(5), 1419-1439. <https://doi.org/10.1111/1475-6773.01070>
- Hamilton, C. J., & Mahalik, J. R. (2009). Minority stress, masculinity, and social norms predicting gay men's health risk behaviors. *Journal of Counseling Psychology*, 56(1), 132. <https://doi.org/10.1037/a0014440>
- Hansen, K. J. (2023). Greed, envy, and admiration: The distinct nature of public opinion about redistribution from the rich. *American Political Science Review*, 117(1), 217-234. <https://doi.org/10.1017/S0003055422000582>
- Hartman, A. C., & Morse, B. S. (2020). Violence, empathy and altruism: Evidence from the Ivorian refugee crisis in Liberia. *British Journal of Political Science*, 50(2), 731-755. <https://doi.org/10.1017/S0007123417000655>
- Hekma, G., & Duyvendak, J. W. (2016). The Netherlands: depoliticization of homosexuality and homosexualization of politics. In *The lesbian and gay movement and the state* (pp. 103-118). Routledge.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, 466(7302), 29-29. <https://doi.org/10.1038/466029a>
- Hofstede, G. (1980). Culture and organizations. *International Studies of Management & Organization*, 10(4), 15-41.
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). Cultures and organizations: Software of the mind. Revised and expanded. McGraw-Hill, New York.
- Homer, P. M. (1988). A structural equation test of the value-attitude-behavior hierarchy. *Journal of Personality and Social Psychology*, 54(4), 638. <https://doi.org/10.1037/0022-3514.54.4.638>
- Homer, P. M., & Kahle, L. R. (1988). A structural equation test of the value-attitude-behavior hierarchy. *Journal of Personality and Social Psychology*, 54(4), 638.
- Hu, L.-t., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological methods*, 3(4), 424. <https://doi.org/10.1037/1082-989X.3.4.424>

- Hunt, K. A., Weber, E. J., Showstack, J. A., Colby, D. C., & Callahan, M. L. (2006). Characteristics of frequent users of emergency departments. *Annals of emergency medicine*, 48(1), 1-8. <https://doi.org/10.1016/j.annemergmed.2005.12.030>
- Inglehart, R. (2004). *Human beliefs and values: A cross-cultural sourcebook based on the 1999-2002 values surveys*. Siglo XXI.
- Inglehart, R. C., Nash, R., Hassan, Q. N., & Schwartzbaum, J. (2021). Attitudes toward euthanasia: a longitudinal analysis of the role of economic, cultural, and health-related factors. *Journal of Pain and Symptom Management*, 62(3), 559-569. <https://doi.org/10.1016/j.jpainsymman.2021.01.009>
- Inglehart, R. F., & Norris, P. (2016). Trump, Brexit, and the rise of populism: Economic have-nots and cultural backlash. *Working Paper* <https://doi.org/10.2139/ssrn.2818659>
- insights.paramount.com. (2018). *In the Netherlands, LGBT Acceptance Is Strong But May Not Be Improving*. Retrieved 06-12-2023 from <https://insights.paramount.com/post/in-the-netherlands-lgbt-acceptance-is-strong-but-may-not-be-improving/>
- Israel, J. I. (1989). *Dutch primacy in world trade, 1585-1740*. Clarendon Press.
- Jaspers, E., Lubbers, M., & De Graaf, N. D. (2007). 'Horrors of Holland': explaining attitude change towards euthanasia and homosexuals in the Netherlands, 1970-1998. *International Journal of Public Opinion Research*, 19(4), 451-473. <https://doi.org/10.1093/ijpor/edm029>
- Jenkins, R. A., & Kim, B. (2004). Cultural norms and risk: Lessons learned from HIV in Thailand. *Journal of Primary Prevention*, 25(1), 17-40. <https://doi.org/10.1023/B:JOPP.0000039937.50357.fc>
- Kaasa, A. (2021). Merging Hofstede, Schwartz, and Inglehart into a single system. *Journal of Cross-Cultural Psychology*, 52(4), 339-353. <https://doi.org/10.1177/00220221211011244>
- Katz, J. N. (2006). Lumbar disc disorders and low-back pain: socioeconomic factors and consequences. *JBJS*, 88(suppl_2), 21-24. <https://doi.org/10.2106/JBJS.E.01273>
- Kiesel, J., Çöltekin, Ç., Heinrich, M., Fröbe, M., Alshomary, M., De Longueville, B., Erjavec, T., Handke, N., Kopp, M., & Ljubešić, N. (2024). Overview of Touché 2024: Argumentation Systems.
- Kirkman, B. L., Lowe, K. B., & Gibson, C. B. (2017). A retrospective on Culture's Consequences: The 35-year journey. *Journal of International Business Studies*, 48, 12-29. <https://doi.org/10.1057/s41267-016-0037-9>
- Knafo-Noam, A., Daniel, E., & Benish-Weisman, M. (2024). The development of values in middle childhood: Five maturation criteria. *Current Directions in Psychological Science*, 33(1), 18-26. <https://doi.org/10.1177/09637214231205865>
- Knäuper, B., Carrière, K., Chamandy, M., Xu, Z., Schwarz, N., & Rosen, N. O. (2016). How aging affects self-reports. *European Journal of Ageing*, 13(2), 185-193. <https://doi.org/10.1007/s10433-016-0369-0>
- KPMG. (2006). *Healthcare in Europe - Best Practices and an Overview*. KPMG.
- Kreft, I. G. G., & De Leeuw, J. (1998). *Introducing multilevel modeling*. Sage.
- Lechner, C. M., Beierlein, C., Davidov, E., & Schwartz, S. H. (2024). Measuring the Four Higher-Order Values in Schwartz's Theory: Validation of a 17-Item Inventory. *Journal of Personality Assessment*, 1-14. <https://doi.org/10.1080/00223891.2024.2311193>
- Lee, J. A., Bardi, A., Gerrans, P., Sneddon, J., van Herk, H., Evers, U., & Schwartz, S. H. (2022). Are value-behavior relations stronger than previously thought? It depends

- on value importance. *European Journal of Personality*, 36(2), 133-148.
<https://doi.org/10.1177/08902070211002965>
- Lee, J. A., Soutar, G., & Louviere, J. (2008). The best–worst scaling approach: An alternative to Schwartz's values survey. *Journal of Personality Assessment*, 90(4), 335-347. <https://doi.org/10.1080/00223890802107925>
- Lee, J. A., Ye, S., Sneddon, J. N., Collins, P. R., & Daniel, E. (2017). Does the intra-individual structure of values exist in young children? *Personality and Individual Differences*, 110, 125-130. <https://doi.org/10.1016/j.paid.2017.01.038>
- Leijen, I., van Herk, H., & Bardi, A. (2022). Individual and generational value change in an adult population, a 12-year longitudinal panel study. *Scientific Reports*, 12(1), 17844. <https://doi.org/10.1038/s41598-022-22862-1>
- Levesque, A., & Li, H. Z. (2014). The Relationship Between Culture, Health Conceptions, and Health Practices A Qualitative/Quantitative Approach. *Journal of Cross-Cultural Psychology*, 45(4), 628-645. <https://doi.org/10.1177/0022022113519855>
- Licht, A. N. (2010). Entrepreneurial motivations, culture, and the law. In *Entrepreneurship and culture* (pp. 11-40). Springer. https://doi.org/10.1007/978-3-540-87910-7_2
- Lindeman, M., & Verkasalo, M. (2005). Measuring values with the short Schwartz's value survey. *Journal of Personality Assessment*, 85(2), 170-178.
https://doi.org/10.1207/s15327752jpa8502_09
- Lönnqvist, J.-E., Jasinskaja-Lahti, I., & Verkasalo, M. (2011). Personal values before and after migration: A longitudinal case study on value change in Ingrian–Finnish migrants. *Social Psychological and Personality Science*, 2(6), 584-591.
<https://doi.org/10.1177/1948550611402362>
- Lönnqvist, J.-E., Jasinskaja-Lahti, I., & Verkasalo, M. (2013). Rebound effect in personal values: Ingrian Finnish migrants' values two years after migration. *Journal of Cross-Cultural Psychology*, 44(7), 1122-1126.
<https://doi.org/10.1177/0022022113480040>
- Lönnqvist, J.-E., Leikas, S., & Verkasalo, M. (2018). Value change in men and women entering parenthood: New mothers' value priorities shift towards Conservation values. *Personality and Individual Differences*, 120, 47-51.
<https://doi.org/10.1016/j.paid.2017.08.019>
- Luttens, R. I., & Valfort, M. A. (2012). Voting for redistribution under desert-sensitive altruism. *The Scandinavian Journal of Economics*, 114(3), 881-907.
<https://doi.org/10.1111/j.1467-9442.2012.01708.x>
- Lyons, S. T., Duxbury, L., & Higgins, C. (2007). An empirical assessment of generational differences in basic human values. *Psychological Reports*, 101(2), 339-352.
<https://doi.org/10.2466/pr0.101.2.339-352>
- Mackenbach, J. P. (2014). Cultural values and population health: a quantitative analysis of variations in cultural values, health behaviours and health outcomes among 42 European countries. *Health & place*, 28, 116-132.
<https://doi.org/10.1016/j.healthplace.2014.04.004>
- Maio, G. R., Pakizeh, A., Cheung, W.-Y., & Rees, K. J. (2009). Changing, priming, and acting on values: effects via motivational relations in a circular model. *Journal of Personality and Social Psychology*, 97(4), 699. <https://doi.org/10.1037/a0016420>
- Mair, P., Groenen, P. J., & de Leeuw, J. (2022). More on multidimensional scaling and unfolding in R: smacof version 2. *Journal of statistical software*, 102, 1-47.
<https://doi.org/10.18637/jss.v102.i10>
- Manting, D. (1996). The changing meaning of cohabitation and marriage. *European Sociological Review*, 12(1), 53-65.
<https://doi.org/10.1093/oxfordjournals.esr.a018177>

- Marcus, J., Ceylan, S., & Ergin, C. (2017). Not So “Traditional” Anymore? Generational Shifts on Schwartz Values in Turkey. *Journal of Cross-Cultural Psychology*, 48(1), 58-74. <https://doi.org/10.1177/0022022116673909>
- Milfont, T. L., Milojev, P., & Sibley, C. G. (2016). Values stability and change in adulthood: A 3-year longitudinal study of rank-order stability and mean-level differences. *Personality and Social Psychology Bulletin*, 42(5), 572-588. <https://doi.org/10.1177/0146167216639245>
- Möttus, R., Johnson, W., & Deary, I. J. (2012). Personality traits in old age: Measurement and rank-order stability and some mean-level change. *Psychology and aging*, 27(1), 243. <https://doi.org/10.1037/a0023690>
- Mulder, J. D., & Hamaker, E. L. (2021). Three extensions of the random intercept cross-lagged panel model. *Structural Equation Modeling: A Multidisciplinary Journal*, 28(4), 638-648. <https://doi.org/10.1080/10705511.2020.1784738>
- Nariman, H. S., Nguyen, L. L. A., & Hadarics, M. (2021). Exploring inclusiveness towards immigrants as related to basic values: A network approach. *PloS one*, 16(12), e0260624. <https://doi.org/10.1371/journal.pone.0260624>
- Nurwidiantoro, A., Shahin, M., Chaudron, M., Hussain, W., Perera, H., Shams, R. A., & Whittle, J. (2023). Integrating human values in software development using a human values dashboard. *Empirical Software Engineering*, 28(3), 67. <https://doi.org/10.1007/s10664-023-10305-y>
- OECD. (2021). Retrieved 12-10-2021 from <https://www.oecd.org/>
- Oeschger, T. P., Makarova, E., Raman, E., Hayes, B., & Döring, A. K. (2024). The interplay between teachers’ value-related educational goals and their value-related School climate over time. *European Journal of Psychology of Education*, 1-28. <https://doi.org/10.1007/s10212-024-00849-y>
- Oishi, S., Yagi, A., Komiyama, A., Kohlbacher, F., Kusumi, T., & Ishii, K. (2017). Does a major earthquake change job preferences and human values? *European Journal of Personality*, 31(3), 258-265. <https://doi.org/10.1002/per.2102>
- Olson, J. M., & Zanna, M. P. (1993). Attitudes and attitude change. *Annual Review of Psychology*, 44(1), 117-154. <https://doi.org/10.1146/annurev.ps.44.020193.001001>
- Padgett, D. K., & Brodsky, B. (1992). Psychosocial factors influencing non-urgent use of the emergency room: a review of the literature and recommendations for research and improved service delivery. *Social science & medicine*, 35(9), 1189-1197. [https://doi.org/10.1016/0277-9536\(92\)90231-E](https://doi.org/10.1016/0277-9536(92)90231-E)
- Piurko, Y., Schwartz, S. H., & Davidov, E. (2011). Basic personal values and the meaning of left-right political orientations in 20 countries. *Political Psychology*, 32(4), 537-561. <https://doi.org/10.1111/j.1467-9221.2011.00828.x>
- Preacher, K. J., Wichman, A. L., MacCallum, R. C., & Briggs, N. E. (2008). *Latent growth curve modeling*. Sage.
- R_Core_Team. (2021). R: A language and environment for statistical computing. <https://www.r-project.org/>
- Racko, G. (2017). Bureaucratization and medical professionals’ values: a cross-national analysis. *Social science & medicine*, 180, 76-84. <https://doi.org/10.1016/j.socscimed.2017.03.027>
- Reinl, A. K., Seddig, D., Dennison, J., & Davidov, E. (2024). Basic Human Values and Preferences for an EU-Wide Social Benefit Scheme. *JCMS: Journal of Common Market Studies*, 62(2), 564-582. <https://doi.org/10.1111/jcms.13517>
- Revelle, W. (2021). *psych: Procedures for Psychological, Psychometric, and Personality Research*. Northwestern University. Retrieved 12-12 from <https://CRAN.R-project.org/package=psych>.

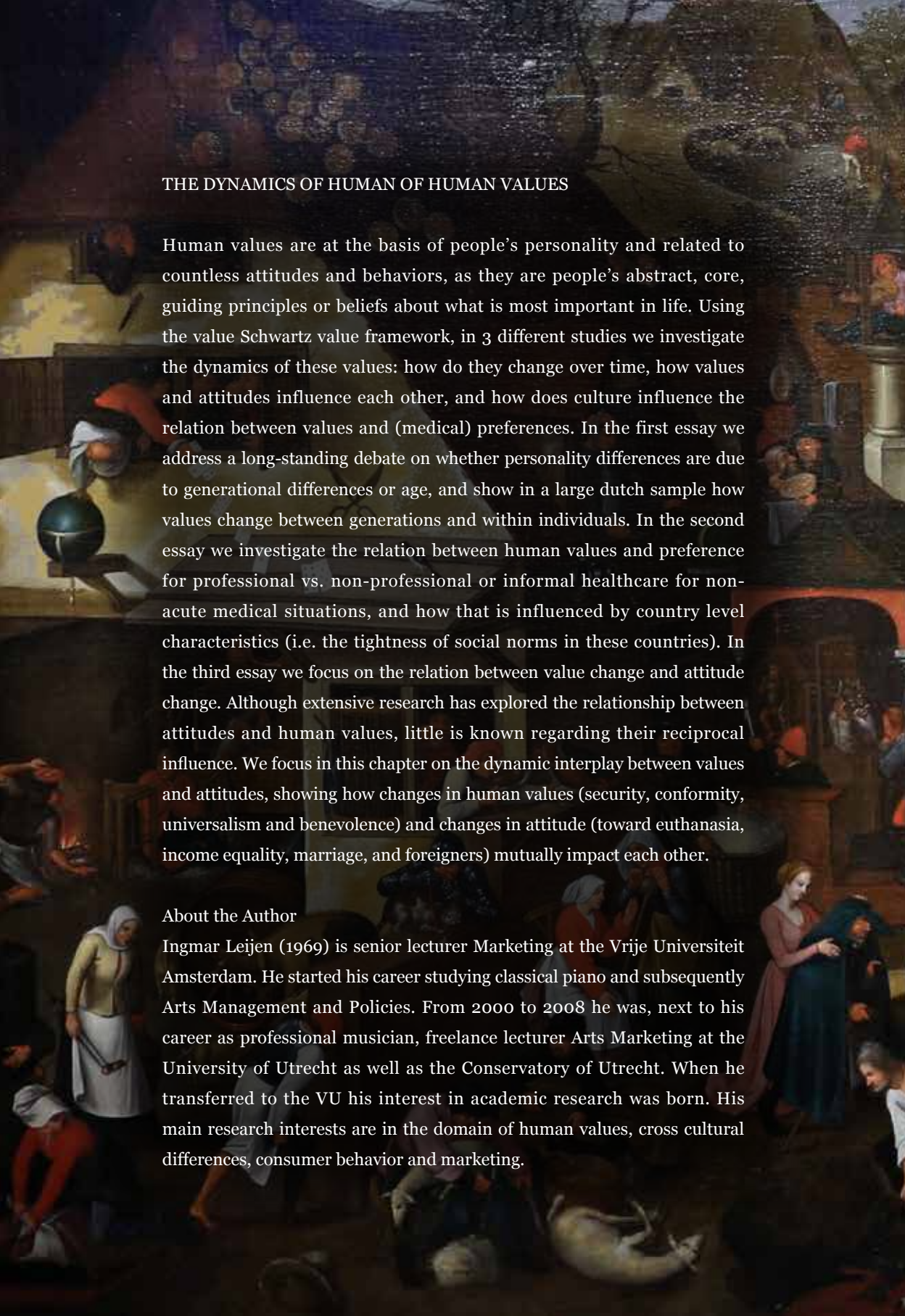
- Robinson, O. C. (2013). Values and adult age: Findings from two cohorts of the European Social Survey. *European Journal of Ageing, 10*(1), 11-23. <https://doi.org/10.1007/s10433-012-0247-3>
- Rokeach, M. (1973). *The nature of human values*. The Free Press.
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling and more. Version 0.5–12 (BETA). *Journal of statistical software, 48*(2), 1-36.
- Rudnev, M. (2021). Caveats of non-ipsatization of basic values: A review of issues and a simulation study. *Journal of Research in Personality, 93*, 104118. <https://doi.org/10.1016/j.jrp.2021.104118>
- Sagiv, L., Roccas, S., Cieciuch, J., & Schwartz, S. H. (2017). Personal values in human life. *Nature Human Behaviour, 1*(9), 630-639. <https://doi.org/10.1038/s41562-017-0185-3>
- Sagiv, L., & Schwartz, S. H. (2022). Personal values across cultures. *Annual Review of Psychology, 73*(1), 517-546. <https://doi.org/10.1146/annurev-psych-020821-125100>
- Schachner, M., Ardag, M. M., Holtz, P., Großer, J., Hartz, C., van Herk, H., Bender, M., Boehnke, K., & Dobewall, H. (2024). Extracting organizational culture from text: the development and validation of a theory-driven tool for digital data. *European Journal of Work and Organizational Psychology, 1-12*. <https://doi.org/10.1080/1359432X.2024.2360225>
- Scharfbillig, M., Cieciuch, J., & Davidov, E. (2024). One and the same? How similar are basic human values and economic preferences. *PloS one, 19*(2), e0296852. <https://doi.org/10.1371/journal.pone.0296852>
- Scharfbillig, M., Reitis-Münstermann, T., Stefanovitch, N., Kiesel, J., De Longueville, B., Ardag, M., Arieli, S., Daniel, E., Dobewall, H., Krasteva, A., Oeschger, T. P., Russo, L., Seddone, A., Sneddon, J., Tamo-Larrieux, A., van Herk, H., Karl, J., Petasis, G., & Zankina, E. (2024). ValuesML: A new Multilingual Dataset for Values Detection in News and Political Manifestos. *Working Paper*.
- Scherpenzeel, A. C. (2018). ““True” Longitudinal and Probability-Based Internet Panels: Evidence From the Netherlands. In *Social and behavioral research and the Internet* (pp. 77-104). Routledge.
- Schmidt-Catran, A. W., & Czymara, C. S. (2023). Political elite discourses polarize attitudes toward immigration along ideological lines. A comparative longitudinal analysis of Europe in the twenty-first century. *Journal of Ethnic and Migration Studies, 49*(1), 85-109. <https://doi.org/10.1080/1369183X.2022.2132222>
- Schröder, H., & Ganzeboom, H. B. (2013). Measuring and modelling level of education in European societies. *European Sociological Review, 30*(1), 119-136. <https://doi.org/10.1093/esr/jct026>
- Schuster, C., Pinkowski, L., & Fischer, D. (2019). Intra-individual value change in adulthood: A systematic literature review of longitudinal studies assessing Schwartz’s value orientations. *Zeitschrift für Psychologie, 227*(1), 42. <https://doi.org/10.1027/2151-2604/a000355>
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In *Advances in experimental social psychology* (Vol. 25, pp. 1-65). VS Verlag für Sozialwissenschaften. [https://doi.org/10.1016/S0065-2601\(08\)60281-6](https://doi.org/10.1016/S0065-2601(08)60281-6)
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues, 50*(4), 19-45. <https://doi-org.vu-nl.idm.oclc.org/10.1111/j.1540-4560.1994.tb01196.x>

- Schwartz, S. H. (2003). A Proposal for Measuring Value Orientations across Nations. Chapter 7 in the Questionnaire Development Package of the European Social Survey. 259-290. www.Europeansocialsurvey.org
- Schwartz, S. H. (2005). Robustness and fruitfulness of a theory of universals in individual values. In *Valores e trabalho* (pp. 56-85). Vozes.
- Schwartz, S. H. (2007). Value orientations: Measurement, antecedents and consequences across nations. *Measuring attitudes cross-nationally: Lessons from the European Social Survey*, 161-193.
- Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture*, 2(1), 11. <https://doi.org/10.9707/2307-0919.1116>
- Schwartz, S. H., & Bardi, A. (2001). Value hierarchies across cultures: Taking a similarities perspective. *Journal of Cross-Cultural Psychology*, 32. <https://doi.org/10.1177/0022022101032003002>
- Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*, 53(3), 550.
- Schwartz, S. H., & Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross-cultural replications. *Journal of Personality and Social Psychology*, 58(5), 878. <https://doi.org/10.1037/0022-3514.58.5.878>
- Schwartz, S. H., Caprara, G. V., & Vecchione, M. (2010). Basic personal values, core political values, and voting: A longitudinal analysis. *Political Psychology*, 31(3), 421-452. <https://doi.org/10.1111/j.1467-9221.2010.00764.x>
- Schwartz, S. H., & Cieciuch, J. (2022). Measuring the refined theory of individual values in 49 cultural groups: psychometrics of the revised portrait value questionnaire. *Assessment*, 29(5), 1005-1019. <https://doi.org/10.1177/1073191121998760>
- Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., Ramos, A., Verkasalo, M., Lönnqvist, J.-E., & Demirutku, K. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, 103(4), 663. <https://doi.org/10.1037/a0029393>
- Schwartz, S. H., & Rubel, T. (2005). Sex differences in value priorities: Cross-cultural and multimethod studies. *Journal of Personality and Social Psychology*, 89(6), 1010. <https://doi.org/10.1037/0022-3514.89.6.1010>
- Schwartz, S. H., & Rubel, T. (2009). Cross-national variation in the size of sex differences in values: Effects of gender equality. *Journal of Personality and Social Psychology*, 97(1), 171. <https://doi.org/10.1037/a0015546>
- Schwartz, S. H., Struch, N., & Bilsky, W. (1990). Values and intergroup social motives: A study of Israeli and German students. *Social Psychology Quarterly*, 185-198. <https://doi.org/10.2307/2786958>
- Schwartz, S. J., Donnellan, M. B., Ravert, R. D., Luyckx, K., & Zamboanga, B. L. (2013). Identity development, personality, and well-being in adolescence and emerging adulthood: Theory, research, and recent advances. In *Handbook of Psychology, Second Edition*.
- Sempere-Selva, T., Peiró, S., Sendra-Pina, P., Martínez-Espín, C., & López-Aguilera, I. (2001). Inappropriate use of an accident and emergency department: magnitude, associated factors, and reasons—an approach with explicit criteria. *Annals of emergency medicine*, 37(6), 568-579. <https://doi.org/10.1067/mem.2001.113464>
- Sharma, A. P. (2021). Consumers' purchase behaviour and green marketing: A synthesis, review and agenda. *International Journal of Consumer Studies*, 45(6), 1217-1238. <https://doi.org/10.1111/ijcs.12722>

- Shehaj, A., Shin, A. J., & Inglehart, R. (2021). Immigration and right-wing populism: An origin story. *Party Politics*, 27(2), 282-293.
<https://doi.org/10.1177/1354068819849888>
- Shojaie, A., & Fox, E. B. (2022). Granger causality: A review and recent advances. *Annual Review of Statistics and Its Application*, 9, 289-319.
<https://doi.org/10.1146/annurev-statistics-040120-010930>
- Smillie, L. a. S., M. (2024). *Trustworthy Public Communications* (1831-9424). (Publications Office of the European Union, Issue.
<https://publications.jrc.ec.europa.eu/repository/handle/JRC137725>
- Snijders, T. A., & Bosker, R. J. (2011). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. Sage.
- Spector, P. E., Cooper, C. L., & Sparks, K. (2001). An international study of the psychometric properties of the Hofstede Values Survey Module 1994: A comparison of individual and country/province level results. *Applied psychology*, 50(2), 269-281. <https://doi-org.vu-nl.idm.oclc.org/10.1111/1464-0597.00058>
- Steenkamp, J.-B., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*, 25(1), 78.
<https://doi.org/10.1086/209528>
- Steenkamp, J. B. E. M., ter Hofstede, F., & Wedel, M. (1999). A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness. *The Journal of Marketing*, 55-69.
<https://doi.org/10.1177/002224299906300204>
- Stovner, L. J., & Andréé, C. (2008). Impact of headache in Europe: a review for the Eurolight project. *The journal of headache and pain*, 9(3), 139-146.
<https://doi.org/10.1007/s10194-008-0038-6>
- Stremersch, S., & Van Dyck, W. (2009). Marketing of the life sciences: A new framework and research agenda for a nascent field. *Journal of Marketing*, 73(4), 4-30.
<https://doi.org/10.1509/jmkg.73.4.004>
- Tanrikulu, C. (2021). Theory of consumption values in consumer behaviour research: A review and future research agenda. *International Journal of Consumer Studies*, 45(6), 1176-1197. <https://doi.org/10.1111/ijcs.12687>
- Tarsitani, L., Pinucci, I., Tedeschi, F., Patanè, M., Papola, D., Palantza, C., Acarturk, C., Björkenstam, E., Bryant, R., & Burchert, S. (2022). Resilience of people with chronic medical conditions during the COVID-19 pandemic: a 1-year longitudinal prospective survey. *BMC psychiatry*, 22(1), 633. <https://doi.org/10.1186/s12888-022-04265-8>
- Thornton, A. (1985). Changing attitudes toward separation and divorce: Causes and consequences. *American Journal of Sociology*, 90(4), 856-872.
<https://doi.org/10.1086/228147>
- Thornton, A., Axinn, W. G., & Hill, D. H. (1992). Reciprocal effects of religiosity, cohabitation, and marriage. *American Journal of Sociology*, 98(3), 628-651.
<https://doi.org/10.1086/230051>
- Torelli, C. J., Özsumer, A., Carvalho, S. W., Keh, H. T., & Maehle, N. (2012). Brand concepts as representations of human values: do cultural congruity and compatibility between values matter? *Journal of Marketing*, 76(4), 92-108.
<https://doi.org/10.1509/jm.10.0400>
- Tormos, R., Vauclair, C.-M., & Dobewall, H. (2017). Does contextual change affect basic human values? A dynamic comparative multilevel analysis across 32 European countries. *Journal of Cross-Cultural Psychology*, 48(4), 490-510.
<https://doi.org/10.1177/0022022117692675>

- Torres, C. V., Longo, C. A., Macedo, F. G. L., & Faiad, C. (2023). COVID-19 vaccination in Brazilian public security agents: are human values good predictors? *Policing: An International Journal*, 46(2), 293-308. <https://doi.org/10.1108/PIJPSM-07-2022-0093>
- UNDP. (2014). *HDR*. Retrieved May 1 from <http://hdr.undp.org/en/content/human-development-report-2004>
- Van Bavel, B. J., & Frankema, E. H. (2017). Wealth inequality in the Netherlands, c. 1950-2015.: The paradox of a northern European welfare state. *Tijdschrift voor sociale en economische geschiedenis*, 14(2). <https://doi.org/10.18352/tseg.916>
- van Herk, H., & Poortinga, Y. H. (2012). Current and historical antecedents of individual value differences across 195 regions in Europe. *Journal of Cross-Cultural Psychology*, 43(8), 1229-1248. <https://doi.org/10.1177/0022022111429719>
- van Herk, H., Schoonees, P. C., Groenen, P. J., & van Rosmalen, J. (2018). Competing for the same value segments? Insight into the volatile Dutch political landscape. *PLoS one*, 13(1), e0190598. <https://doi.org/10.1371/journal.pone.0190598>
- van Raaij, W., & Verhallen, M. M. (1994). Domain-specific market segmentation. *European Journal of Marketing*, 28(10), 49-66.
- Vauclair, C.-M., Hanke, K., Fischer, R., & Fontaine, J. (2011). The Structure of Human Values at the Culture Level: A Meta-Analytical Replication of Schwartz's Value Orientations Using the Rokeach Value Survey. *Journal of Cross-Cultural Psychology*, 42(2), 186-205. <https://doi.org/10.1177/0022022110396864>
- Vecchione, M., Alessandri, G., Roccas, S., & Caprara, G. V. (2019). A look into the relationship between personality traits and basic values: A longitudinal investigation. *Journal of personality*, 87(2), 413-427. <https://doi.org/10.1111/jopy.12399>
- Vecchione, M., Döring, A. K., Alessandri, G., Marsicano, G., & Bardi, A. (2016). Reciprocal relations across time between basic values and value-expressive behaviors: A longitudinal study among children. *Social Development*, 25(3), 528-547. <https://doi.org/10.1111/sode.12152>
- Vecchione, M., Schwartz, S. H., Alessandri, G., Döring, A. K., Castellani, V., & Caprara, M. G. (2016). Stability and change of basic personal values in early adulthood: An 8-year longitudinal study. *Journal of Research in Personality*, 63, 111-122. <https://doi.org/10.1111/jopy.12502>
- Vecchione, M., Schwartz, S. H., Davidov, E., Cieciuch, J., Alessandri, G., & Marsicano, G. (2020). Stability and change of basic personal values in early adolescence: A 2-year longitudinal study. *Journal of personality*, 88(3), 447-463. <https://doi.org/10.1111/jopy.12502>
- Verkasalo, M., Goodwin, R., & Bezmenova, I. (2006). Values following a major terrorist incident: Finnish adolescent and student values before and after September 11, 2001. *Journal of Applied Social Psychology*, 36(1), 144-160. <https://doi.org/10.1111/j.0021-9029.2006.00007.x>
- Vernon, P. E., & Allport, G. W. (1931). A test for personal values. *The Journal of Abnormal and Social Psychology*, 26(3), 231.
- Vilar, R., Liu, J. H.-f., & Gouveia, V. V. (2020). Age and gender differences in human values: A 20-nation study. *Psychology and aging*. <https://doi.org/10.1177/1948550620901980>
- Villar, A., Sommer, E., Finnoy, D., Gaia, A., Berzelak, N., & Bottoni, G. (2018). CROSS-National Online Survey (CRONOS) panel data and documentation user guide.

- Wilk, A. S., & Platt, J. E. (2016). Measuring physicians' trust: A scoping review with implications for public policy. *Social science & medicine*, 165, 75-81. <https://doi.org/10.1016/j.socscimed.2016.07.039>
- Wolf, L. J., Thorne, S. R., Iosifyan, M., Foad, C., Taylor, S., Costin, V., Karremans, J. C., Haddock, G., & Maio, G. R. (2022). The salience of children increases adult prosocial values. *Social Psychological and Personality Science*, 13(1), 160-169. <https://doi.org/10.1177/19485506211007605>
- Worrall, G. J. (2007). Acute sore throat. *Canadian Family Physician*, 53(11), 1961. www.statistica.com. (2023a). *Immigration, emigration, and migration balance in the Netherlands from 1995 to 2022*. Retrieved 06-12-2023 from <https://www.statista.com/statistics/525434/netherlands-total-immigration-total-emigration-and-migration-balance/>
- www.statistica.com. (2023b). Percentage change on previous year of housing prices in the Netherlands from January 1996 to September 2023. <https://www.statista.com/statistics/593390/housing-prices-change-in-the-netherlands/>
- Yan, L., Keh, H. T., & Murray, K. B. (2024). Feeling the values: How pride and awe differentially enhance consumers' sustainable behavioral intentions. *Journal of the Academy of Marketing Science*, 52(1), 75-96. <https://doi.org/10.1007/s11747-023-00928-4>
- Yan, L., & Murray, K. B. (2023). The motivational dynamics of arousal and values in promoting sustainable behavior: a cognitive energetics perspective. *International Journal of Research in Marketing*, 40(3), 679-699. <https://doi.org/10.1016/j.ijresmar.2022.12.004>
- Zhang, J., van Herk, H., & Tims, M. (2023). Country and individual drivers of employee conflict management style preference across 50 countries. International Association for Cross-Cultural Psychology conference (IACCP) 2023,



THE DYNAMICS OF HUMAN OF HUMAN VALUES

Human values are at the basis of people's personality and related to countless attitudes and behaviors, as they are people's abstract, core, guiding principles or beliefs about what is most important in life. Using the value Schwartz value framework, in 3 different studies we investigate the dynamics of these values: how do they change over time, how values and attitudes influence each other, and how does culture influence the relation between values and (medical) preferences. In the first essay we address a long-standing debate on whether personality differences are due to generational differences or age, and show in a large dutch sample how values change between generations and within individuals. In the second essay we investigate the relation between human values and preference for professional vs. non-professional or informal healthcare for non-acute medical situations, and how that is influenced by country level characteristics (i.e. the tightness of social norms in these countries). In the third essay we focus on the relation between value change and attitude change. Although extensive research has explored the relationship between attitudes and human values, little is known regarding their reciprocal influence. We focus in this chapter on the dynamic interplay between values and attitudes, showing how changes in human values (security, conformity, universalism and benevolence) and changes in attitude (toward euthanasia, income equality, marriage, and foreigners) mutually impact each other.

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