Time Perspective Profiles of Cultures

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Introduction

This chapter deals with the question of cross-cultural similarities and differences in time perspective. Are there reliable similarities and differences in the way persons deal with time? Do persons from different cultures have similar or different views of the past, present, and future? This chapter is based on a large-scale study from the International Time Perspective Research Project, involving samples from 24 countries, which was designed to address these questions. In the remainder of introduction, we first describe the theoretical background and findings of related studies, followed by a short description of the main findings. We draw conclusions in the final section.

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The Concept of Time

Two dominant views of the perception of time have prevailed (McHale 1978). The first and more traditional view – and prevailing in psychology – treats time from a linear perspective. This linear perspective emphasises "life tasks" rather than something "given" and/or "unalterable" (Bauman 1999). This linear view embodies the idea of progress: human welfare, perfectibility of human institutions, and to a degree the perfectibility of the human condition. The second view is based on the life cycle and assumes that the past is unalterable and the future unknowable.

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This cyclic view of time accentuates recurrence, fatalism, and balance (e.g., in Chinese philosophy between the passive, female Yin and the dynamic, male Yang).

Going into a more detailed classification, McGrath and Tschan (2004) distinguished four processes in temporal aspects of everyday life: *time use*, *pace of life*, *time perception*, and *time orientation*. Time use refers to an individual's distribution of time over daily activities such as working, eating, leisure time, travel time, and personal care. Pace of life refers to the speed of doing everyday activities. Time perception is about how humans judge the passage of time and is often studied by asking individuals to estimate durations of specific temporal intervals and feelings about the passage of time in general. Finally, time orientation refers to how people compare the present to the future (hopes and fears).

Focusing specifically on time orientation and drawing from his anthropological work, Hall (1989) dichotomised time orientations into monochronic and polychronic. He argues that people with monochronic time orientation tend to prefer to do one thing at a time and rely on schedules and segmentation. On the other hand, people with polychronic time orientation tend to do several things at once, and they stress the completion of transactions rather than adherence to preset schedules. Hall (1989) asserts that Westerners are likely to be monochronic, whereas Latin American and Mediterranean people tend to have a more polychronic orientation. Hall's concept of time orientation has also attracted the attention of cross-cultural scholars. For example, Brislin and Kim (2003) have suggested a closely related dichotomy of clock and event time. Clock-time cultures, like the USA, adhere to schedules and punctuality, whereas event-time cultures, like Latin America, go more with the natural flow of social events. Although perhaps still prevalent, these distinctions may blur with globalisation and the advance of technology and multitasking in all developed countries.

Time perspective is another concept relevant for the perception of time and that has been gaining prominence in the last decade. Time perspective corresponds to an individual's view on his or her past and future at a given time (Frank 1939; Lewin 1942). Time perspective links past, present, and future (Hoornaert 1973), or in Zimbardo and Boyd's (1999) words: "Between the abstract, psychological constructions of prior past and anticipated future events lies the concrete, empirically centered representation of the present" (p. 1271). In addition, these researchers conceive of time perspective as the ways in which individuals partition the flow of their personal experiences into time zones or temporal categories (see also Zimbardo and Boyd 2008).

Cross-Cultural Research on Time

Our study is the first extensive cross-cultural examination focused entirely on time perspective. Previous cross-cultural studies have addressed other aspects according to McGrath and Tschan's (2004) classification of psychological time processes. Three prior large-scale survey studies have been conducted.

The first was done by Hofstede (2001), who studied work-related values in 40 countries. He did not report a temporal factor in his IBM data published in 1980, but

added a long-term versus short-term orientation factor in his later work based on the Confucian Work Dynamism dimension, found in the Chinese Values Survey administered to university students in 22 countries (Chinese Culture Connection 1987). Countries with a strong short-term orientation (most Western countries) foster values involving future-oriented rewards, in particular perseverance and thrift, whereas countries with a long-term orientation (such as China and Taiwan) foster respect for tradition, preservation of "face", and fulfilling social obligations. Long-term orientation shows significant correlations with other national characteristics, notably the current economic growth.

Recently, Hofstede et al. (2010) proposed a new version of this index of long-term versus short-term orientation based on a subset of the World Values Survey items and reported a significant relation between the score calculated for 93 countries with school results and economic growth (Hofstede and Minkov 2010). A similar distinction between past and future orientations was found by Meade (1972), who asked Americans and samples from Indian subcultures to write stories. Americans tended to write more stories with future themes (involving more personal aspects of achievement) than most Indian samples who wrote more stories with past themes.

The second large cross-cultural study is the GLOBE project. This 62-country study focusing on leadership and organisational behaviour also collected data on future orientation, described as "the degree to which a collectivity encourages and rewards future-oriented behaviours such as planning and delaying gratification" (Ashkanasy et al. 2004, p. 282). Their data deal with the extent to which an organisation or society is focused on its future and reinforces future-oriented behaviours, such as planning. The scale showed good equivalence across varied nations. Societies with a stronger future orientation tend to be less hierarchical, more humane, and individualistic.

The third study conducted by Trompenaars and Hampden-Turner (1998) examined time horizon in 42 countries. Time horizon refers to the length of the planning horizon and the length of time a person uses to think about the past or future. Confucian cultures scored higher on long-term planning, whereas Western cultures scored higher on short-term planning.

The convergence of findings of the three studies is lacking. Ashkanasy et al. (2004, p. 311) computed correlations between the country scores of the three studies mentioned, and almost none of the correlations were significant. There are a number of possible reasons for this negative finding. First, correlations were computed at the country level, which implies that the number of units for computing the correlations was small (with a minimum of eight) and showed limited cultural variation (all studies involved just Western countries). Also, the different studies covered dissimilar aspects of psychological time. Finally, only the GLOBE study conducted equivalence analyses to ensure that the instrument measured the same construct in each country.

Apart from these large survey studies, three other studies could be mentioned. One focused on the pace of life in 31 countries, using behavioural observations (Levine and Norenzayan 1999). Their three measures were the average walking

speed of pedestrians in a downtown location, the average time needed for a routine transaction in a post office, and the average accuracy of public clocks. The pace of life was faster in individualistic, more affluent, and colder countries. A study by Luszczynska et al. (2005) in Americans, Turkish, and Polish high-school students showed a small, positive relation between orientation towards the future, measured by a shortened version of the Consideration of Future Consequences scale (Strathman et al. 1994), and general self-efficacy (Bandura 1997). A more recent study (Milfont and Gapski 2010) integrated a number of culture-level data of time orientations from 73 countries, yielding two factors. The first factor grouped data measuring how much cultures emphasise future orientation (fast pace of life, planning and investing in the future). The second factor grouped data measuring how cultures assign different meanings to time horizons, with an emphasis on long-term orientation (enduring goals, long-standing plans). Both factor scores were compared with per capita gross national product and the Human Development Index from 2007. Only the first factor correlated strongly positively with these two indicators, indicating that only the future-oriented factor seems to be related to the countries' national wealth and level of human development.

Challenges in Cross-Cultural Research

Time orientation has been the topic of several major cross-cultural studies, which were often based on the juxtaposition of Eastern and Western time concepts. However, an integration of their findings is impossible due to the absence of an underlying general theoretical basis and a lack of methodological convergence across these studies. In our view, this is due to both substantive and methodological reasons. To start with the former, the instruments that have been used cover only parts of the domain of psychological time and do not start from a global view on the integration of these parts, thus, the essential overarching theoretical framework of psychological time is missing. Methodological shortcomings include an absence of widely employed instruments with well-established psychometric properties for the time concepts studied. In addition, almost no cross-cultural studies have conducted equivalence analyses, thus, some reported cross-cultural differences in time orientation might have been influenced by measurement anomalies, such as inadequate item content for some countries.

Why is equivalence analysis so important in this kind of cross-cultural research? When comparing groups on a measured construct, such as time perspective, an assumption is made that the instrument measures the same psychological construct in all groups. This assumption is verified by equivalence testing. Equivalence refers to the measurement invariance of the measured construct across groups. If this equivalence assumption holds, the group comparisons are valid, and differences/similarities between groups can be meaningfully interpreted. If this equivalence assumption does not hold, comparisons and interpretations are not fully meaningful (Chen 2008; Milfont and Fischer 2010; van de Vijver and Leung 1997). Establishing

measurement invariance is thus a prerequisite for meaningful comparisons across groups, and four main levels of equivalence can be distinguished: functional, structural, metric, and full-score or scalar equivalence (Fontaine 2005).

The International Time Perspective Research Project tries to overcome the theoretical and methodological shortcomings of past research by using a particular theoretical frame underlying the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo and Boyd 1999) and by examining the equivalence of the ZTPI across cultures. Participants completing the ZTPI are asked to indicate the extent to which each of the 56 statements are characteristic or true of them on a 5-point Likert scale ranging from 1 (*very untrue*) to 5 (*very true*). It measures five temporal orientations: Past Positive (PP), Past Negative (PN), Present Hedonistic (PH), Present Fatalistic (PF), and Future (F).

The PP dimension represents pleasurable, usually sentimental and nostalgic views of one's past while emphasising the maintenance of relationships with family and friends. In contrast, the PN dimension reflects a focus on personal experiences that were aversive, noxious, traumatic, or filled with regret. Those high on PH live in the moment, enjoy high intensity activities, sensation seeking, and act with minimal concern for the consequences of their behaviour. The PF dimension reflects helpless and hopeless attitude towards the future and one's life that seems fated and not under personal control. The Future factor represents an attitude of goal setting and working for these goals at the expense of present enjoyment and delaying gratification, while always considering the consequences of one's own actions and decisions.

Establishing Equivalence of the ZTPI Across 24 Countries

Various studies have addressed the psychometric properties of the ZTPI, and the scales reveal adequate internal consistencies (usually in the range of .63 and .84). Adequate psychometric properties were found in Algeria (Djarallah and Seghir Chorfi 2009), Brazil (Leite and Pasquali 2008; Milfont et al. 2008), the Czech Republic (Lukavská et al. 2011), Estonia (Seema and Sircova 2013), France (Apostolidis and Fieulaine 2004), Greece (Anagnostopoulos and Griva 2012), Israel (Carmi and Goroshit 2013), Japan (Shimojima et al. 2012), Latvia (Kolesovs 2009), Lithuania (Liniauskaite and Kairys 2009), Mexico (Corral-Verdugo et al. 2006), the Netherlands (van Beek et al. in preparation), the Philippines (Cebuano language; Agsoy et al. 2010), Poland (Przepiorka 2011), Portugal (Ortuño, and Gamboa 2009), Romania (Gavreliuc et al. 2012), Russia (Sircova et al. 2008), Serbia (Nedeljković 2013), South Africa (Dissel and Potgieter 2007), Spain (Diaz-Morales 2006), Sweden (Carelli et al. 2011), and Ukraine (Senyk 2012). The predictive, convergent, and discriminant validity of the instrument has also been demonstrated across a number of studies.

From these studies conducted in 15 different countries, Past Negative and Present Fatalistic orientations repeatedly appeared as negatively associated with psychologi-

cal well-being and behaviours, whereas past positive and future orientations appeared to be positively associated in many cases. Present hedonistic appeared as having associations, simultaneously related to risky behaviours and to more satisfactory relations and greater psychological well-being. Recently, Boniwell and Zimbardo (2004) investigated temporal profiles based on the interrelations between the five dimensions of his model. These authors proposed that the more functional profile is a balanced time perspective with low scores on dysfunctional orientations, high scores on the functional ones, and a moderate score on the remaining present hedonistic orientation. Two studies subsequently demonstrated that balanced time perspective profiles are closely related to subjective well-being and satisfaction with life (Boniwell et al. 2010; Drake et al. 2008). Lastly, clinical investigations demonstrated that this time perspective model is effective for diagnosis and interventions (van Beek et al. 2011).

Even though studies in various countries have employed the ZTPI, only few studies adopted a comparative approach. Studies have performed comparisons of time perspective as measured by the ZTPI between countries (Russia and the UK; Boniwell et al. 2010) or ethnolinguistic samples (Kolesovs 2009), but with no or limited tests for structural equivalence. This chapter builds upon our earlier review study (Sircova et al. 2007) that presented a summary of applications of the ZTPI in Brazil, France, Italy, South Africa, Spain, Russia, and the USA. Using more refined statistical approaches, White et al. (2011) tested for structural equivalence of the ZTPI measure between three countries (Estonia, Morocco, and the USA) using principal components analysis within each country sample compared to factors extracted from a pooled matrix through Tucker coefficients of congruence. They concluded that the ZTPI showed somewhat comparable, but not completely identical factors across the three countries.

The first stage of our study aimed to examine whether the proposed five factors of time perspective (as proposed by the ZTPI) can be empirically identified across cultures and whether their meaning is fully or partially invariant across countries and gender. We performed invariance tests across a set of data ($N = 12{,}200$) from 24 countries, 17 countries from Europe (Croatia, the Czech Republic, Estonia, France, Germany, Greece, Israel, Italy, Lithuania, Poland, Portugal, Serbia, Russia, Spain, Sweden, Turkey, the UK), 3 countries from Asia (China, Japan, New Zealand) and America (Brazil, Mexico, the USA), and 1 African country (Algeria). Two independent translations were available for Brazil, China, and Greece. Details on the specific country samples, translation procedure, and the invariance analyses are presented in a special paper (Sircova et al. 2014). Here we briefly summarise the main findings and focus on some preliminary results on cultural differences that were obtained in the course of this study.

Factor Structure of the ZTPI. Correlation matrices of individual country samples were summed up (using weighting based on square root of sample size to reduce sample size bias) to form a pooled correlation matrix. The factor structure of the resulting cross-cultural matrix was similar to the original structure published by Zimbardo and Boyd (1999), with the exception of two items: 25 (loading on Past Negative, non-reverse-scored) and 52 (loading on Present Hedonistic). Both

items had cross-loadings of similar magnitude on two scales in the original US sample and were assigned arbitrarily by the authors (J. N. Boyd, personal communication, May 2012). The factor loading matrix is presented elsewhere (Sircova et al. 2014).

Construct Equivalence. In order to assess the cross-cultural equivalence, originally a confirmatory factor analysis was applied. However, this approach proved too challenging because of the large number of country samples and size of the instrument (56 items), as well as its complexity due to intrinsic heterogeneity of the scales (e.g., within the Past Negative scale, two subfactors, Trauma and Regret, can be extracted). As a result, a more traditional approach using target (Procrustes) rotation was applied with subsequent calculation of factor congruence coefficients (Tucker's phi; the proportionality coefficients above .95 suggest factorial similarity, according to van de Vijver and Leung 1997).

In most cases, the proportionality coefficient values were above .90, suggesting good overall structural equivalence. Countries that showed notably low congruence coefficients were Algeria, Italy, Mexico, and both Chinese versions. The reasons may vary across countries and can include sample particulars, translation issues, limited applicability of some items, and response styles. Additionally we calculated factor congruence coefficients for each factor separately (i.e., based on five separate factor analyses rather than a single factor analysis including all items). Median values then were .99 for all five scales. This indicates that the core of the factors is well replicable across cultures. However, various factors have items with substantial secondary loadings that "walk between" factors.

Scalar Equivalence and Bias. To address the question if direct comparison of scores on the ZTPI subscales across the cultural groups is possible (scalar equivalence), the assessment of item bias, or differential item functioning (DIF), was performed using an ANOVA approach (van de Vijver and Leung 1997). The individual mean scores of the ZTPI scales were split into 3 score levels (bands) based on 33rd and 66th percentile cutoff points. Subsequently, country and score level (band) were used in two-way ANOVA as factors predicting raw scores on each respective scale.

To provide an overall DIF indicator per each item, effect sizes (partial eta-squared) for the country factor were calculated. In order to single out specific countries that resulted in DIF for each item, deviance values were calculated. They indicate absolute difference between mean item score for each score band in a specific country and the country-pooled mean for that item for each score band, divided by country-pooled standard deviation. The resulting effect size indicator was similar in nature to Cohen's *d*. Mean deviance values (for each item-country pair across the 3 score bands) above .50 were used as indication of item bias, which corresponds to a medium effect size in terms of Cohen's (1988) guidelines. We decided to consider only moderate and large effect sizes, since we expected that with our large sample size the use of conventional significance criteria would lead to an overestimation of DIF.

If a country or an item was identified as having the strongest sources of bias, they were removed, and then the analysis on the reduced item set was repeated. The iterative strategy was used to create such a subset of items and country samples,

where item bias would be limited to specific item-country pairs. In order to reach this goal, countries with three or more instances of bias were removed, and items that showed medium or strong bias in two or more countries, or demonstrated effect size (partial eta-squared) values above .06 for the country factor, were removed as well. The remaining sources of bias were examined to find theoretical explanations for why specific items performed poorly in specific countries (e.g., translation artifact or cultural differences).

Three country samples were identified as outliers in terms of average item bias (in decreasing order): China 2, Japan, China 1, and Algeria. Items and country samples contributing to most bias were iteratively removed. The resulting set included 36 items and 23 country samples with one instance of strong bias (item 21 in Algeria, $d = .90$) and 12 instances of medium item bias: items 37 and 49 in China 1 ($d = .64$ in both cases), item 52 in Germany ($d = .53$), items 29 and 31 in Estonia ($d = .51$ and .61, respectively), item 51 in France ($d = .59$), item 17 in Italy ($d = .59$), items 23 and 34 in Poland ($d = .51$ and .52, respectively), item 51 ($d = .52$) in Serbia, and items 8 and 50 in Turkey ($d = .78$ and .60, respectively).

Only three country samples with more than 2 instances of bias were removed: China 2, Japan, and Greece 2. We decided to keep the two items (51 and 52) showing only marginal bias (d between .50 and .60) for the sake of construct representation in the item subset. Thus, data from 23 out of the 24 participating countries (except for Japan) were deemed suitable for country-level analyses, and at most a single biased item per scale remained.

Interestingly, samples from Mexico and Italy identified earlier as outliers in terms of construct equivalence did not exhibit strong item bias, suggesting that these countries differ from the cross-cultural version mostly in cross-loadings and scale intercorrelations. On the other hand, we observed China and Algeria having the highest average bias and Japan (which was removed altogether) with many item bias instances. This suggests potential differences in the structure or content of the construct of time perspective (and, as a result, limited applicability of the ZTPI) in non-Western cultures. However, our data set is mostly composed with data from European countries or cultures historically linked to them that in turn can cause the bias. More data from different cultures is needed to test this hypothesis.

The 36-Item Version of the ZTPI

The resulting subset of 36 items from ZTPI we recommend as the working instrument for cross-cultural comparison studies. The item numbers (corresponding to the full version numbering) of this subset are given in Table 1. The 36 items for any specific language can be created by extracting these items from the full version either before data collection or during the data analysis (if the 56-item version was used) and numbering from 1 to 36 in their original order.

The factor structure of this short version was similar to that of the cross-cultural 56-item version, with the exception of two items. Item 24 had a noticeably stronger

Table 1 Keys for the 36-item cross-cultural version of the ZTPI

Scale	Original ZTPI items
Past-Negative	4, 25, 27, 34, 36, 50, 54
Past-Positive	9 (reverse-scored), 10, 21, 30, 40, 45, 51
Present-Fatalistic	24, 33, 35, 37, 38, 47
Present-Hedonistic	8, 12, 17, 19, 23, 31, 42, 44, 52, 55
Future	2, 7, 11, 20, 29, 49

Table 2 Reliability coefficients for the full and short unbiased ZTPI version in different countries

		Cronbach's alpha, 56 items					Cronbach's alpha, 36 items				
Country	N	PN	PP	PF	PH	F	PN	PP	PF	PH	F
Algeria	434	.79	.68	.73	.82	.76	.67	.65	.57	.77	.73
Brazil	528	.80	.64	.68	.80	.71	.76	.63	.62	.73	.63
China 1	356	.74	.60	.62	.64	.63	.68	.56	.55	.50	.41
China 2	924	.81	.67	.78	.69	.71	.73	.64	.72	.61	.59
Croatia	357	.86	.73	.72	.77	.82	.84	.68	.62	.69	.77
Czech Rep.	1,034	.84	.70	.75	.85	.74	.80	.71	.66	.79	.64
Estonia	891	.84	.73	.70	.81	.78	.82	.74	.65	.72	.67
France	419	.74	.61	.68	.79	.76	.75	.64	.54	.70	.67
Germany	215	.81	.74	.66	.82	.76	.79	.66	.55	.72	.65
Greece 1	337	.82	.72	.70	.85	.83	.78	.70	.60	.77	.73
Greece 2	215	.84	.76	.64	.86	.76	.80	.72	.52	.80	.72
Israel	334	.84	.72	.72	.80	.76	.83	.72	.62	.70	.66
Italy	143	.82	.61	.72	.70	.68	.80	.58	.63	.55	.58
Japan	433	.76	.69	.63	.72	.74	.72	.69	.45	.60	.64
Lithuania	438	.80	.66	.72	.77	.77	.74	.66	.62	.67	.70
Mexico	293	.76	.58	.70	.73	.70	.72	.59	.59	.62	.65
New Zealand	329	.81	.75	.64	.8	.78	.77	.72	.50	.71	.61
Poland	200	.84	.62	.64	.77	.70	.83	.63	.60	.64	.60
Portugal	342	.81	.61	.71	.80	.72	.79	.63	.64	.72	.66
Russia	1,269	.84	.71	.66	.78	.70	.73	.66	.64	.69	.66
Serbia	401	.77	.68	.71	.78	.77	.83	.68	.57	.68	.57
Spain	763	.77	.65	.63	.80	.74	.73	.64	.47	.70	.63
Sweden	325	.85	.74	.66	.82	.73	.82	.73	.60	.75	.64
Turkey	475	.81	.60	.65	.76	.72	.78	.55	.56	.64	.61
UK	180	.82	.75	.69	.76	.76	.79	.77	.62	.68	.57
USA	565	.79	.70	.71	.76	.73	.74	.66	.62	.67	.58
Median value		.82	.69	.70	.78	.74	.78	.66	.60	.69	.64

Note. PN Past-Negative, *PP* Past-Positive, *PF* Present-Fatalistic, *PH* Present-Hedonistic, *F* Future

loading on Present Fatalistic. Item 33 had loadings of .38 on Past Negative and .40 on Present Fatalistic. The wording of item 33 indeed taps into both negative past experiences and fatalistic attitudes; it was decided to assign it to the Present Fatalistic scale. Table 2 presents reliability coefficients of this version for different country samples.

Table 3 Descriptive statistics for the 36-item cross-cultural version of the ZTPI scales in the balanced sample ($N = 7{,}942$, age 18–35, equal weighting for gender)

	N		Mean					SD				
Country	Male	Female	PN	PP	PF	PH	F	PN	PP	PF	PH	F
Algeria	172	240	3.31	3.63	3.15	3.62	3.62	0.7	0.69	0.74	0.7	0.71
Brazil	264	237	3.04	3.47	2.68	3.26	3.53	0.78	0.69	0.7	0.65	0.6
China-1	117	204	3.04	3.4	2.86	2.88	3.51	0.59	0.54	0.54	0.42	0.42
Croatia	148	204	2.74	3.38	2.88	3.22	3.44	0.87	0.7	0.67	0.55	0.68
Czech Rep.	152	141	2.81	3.51	2.99	3.29	3.51	0.72	0.67	0.67	0.69	0.53
Estonia	624	203	2.66	3.82	2.62	3.08	3.77	0.83	0.64	0.66	0.57	0.56
France	124	288	2.76	3.33	2.9	3.33	3.45	0.77	0.65	0.63	0.61	0.61
Germany	32	132	2.47	3.4	2.56	3.21	3.67	0.72	0.53	0.52	0.47	0.53
Greece-1	109	214	2.61	3.35	2.6	3.26	3.74	0.75	0.65	0.64	0.62	0.61
Israel	88	204	2.68	3.78	2.68	3.23	3.65	0.75	0.55	0.61	0.54	0.54
Italy	47	75	2.8	3.65	2.71	3.1	3.7	0.82	0.56	0.7	0.52	0.54
Lithuania	109	263	2.83	3.56	2.89	3.18	3.64	0.75	0.63	0.64	0.58	0.59
Mexico	52	71	2.89	3.42	2.67	3.21	3.38	0.77	0.66	0.6	0.56	0.57
New Zealand	87	214	2.87	3.56	2.92	3.45	3.19	0.7	0.61	0.54	0.5	0.58
Poland	86	113	2.79	3.65	2.66	3.36	3.57	0.84	0.64	0.65	0.52	0.56
Portugal	98	190	2.64	3.61	2.7	3.31	3.86	0.79	0.63	0.64	0.58	0.56
Russia	277	457	2.67	3.71	2.53	3.28	3.69	0.75	0.69	0.67	0.6	0.63
Serbia	112	282	2.68	3.59	2.8	3.37	3.48	0.88	0.69	0.63	0.59	0.57
Spain	67	94	2.59	3.57	2.78	3.15	3.45	0.78	0.66	0.58	0.57	0.53
Sweden	37	219	2.65	3.4	2.66	3.27	3.38	0.72	0.64	0.45	0.56	0.49
Turkey	203	229	2.88	3.64	2.77	3.52	3.89	0.83	0.6	0.65	0.52	0.5
UK	26	128	2.75	3.63	2.74	3.35	3.49	0.79	0.62	0.59	0.54	0.56
USA	192	317	3.21	3.51	2.91	3.28	3.48	0.74	0.61	0.68	0.54	0.55

Note. PN Past-Negative, *PP* Past-Positive, *PF* Present-Fatalistic, *PH* Present-Hedonistic, *F* Future

As expected, the scales of the 36-item version display somewhat lower reliability than the full version of the ZTPI, with the added benefit of improved invariance. In most cases scales display reliability coefficients above .60, which is sufficient for research purposes. Thus, the 36-item version can be recommended for cross-cultural comparison studies and large-scale surveys, where shorter scales have a strong preference.

Cultural Differences in Time Perspective. In order to gain some preliminary insight into the cultural differences in time perspective, we correlated country-level scores of the ZTPI and other culture-level variables. We computed mean scores for the 36-item version of the ZTPI for a balanced sample by selecting individuals aged 18–35 and equal weighting for males and females from 23 countries (except for Japan and China 2 and Greece 2 samples). The descriptive statistics are presented in Table 3.

We used dimensions of national culture by Hofstede and Minkov (2010; power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, indulgence) and the 2011 Human Development Index (Human Development Report

Table 4 Pearson correlations between the ZTPI average scores and cultural indicators

Indicator	N	PN	PP	PF	PH	FU
Power distance	22	.12	−.22	−.05	−.07	.09
Individualism vs Collectivism	22	.08	.13	.18	.19	−.27
Masculinity vs Femininity	22	.31	−.11	.05	−.07	−.13
Uncertainty avoidance	22	**−.37*** **	.09	−.29	.28	**.44***
Long-term orientation	23	**−.37*** **	−.03	−.19	**−.58****	.19
Indulgence vs Restraint	22	.15	**−.41*** **	−.07	.24	**−.54****
Human development index	23	**−.45***	−.09	−.14	−.10	−.28

Note. PN Past-Negative, *PP* Past-Positive, *PF* Present-Fatalistic, *PH* Present-Hedonistic, *F* Future. Significant and marginally significant correlations marked in bold
*$p < .05$; **$p < .01$; ***$p < .10$

2011). Indices of power distance, individualism, masculinity, and uncertainty avoidance were unavailable for Algeria, and the index of indulgence was unavailable for Israel. The resulting correlations are presented in Table 4.

The results suggest some convergent validity between the Hofstede dimensions and the ZTPI scales, as confirmed by the pronounced negative associations between Present Hedonistic and long-term orientation, as well as between future and indulgence. Greater long-term orientation in a country is associated with lower hedonistic focus, and greater indulgence is associated with lower Future time perspective. Interestingly, both pairs of scales from the ZTPI and Hofstede dimensions are not related significantly to each other, suggesting that the related pairs capture two different aspects of future versus present orientation (cf. Milfont and Gapski 2010).

Past negative is also negatively associated with the Human Development Index, suggesting that a greater focus on past traumatic events that individuals experience in countries is associated with lower income, educational level, and life expectancy that form the HDI. Future was positively associated with uncertainty avoidance, suggesting that in countries where people are uncomfortable with unstructured, novel, and unknown situations, they tend to have a stronger accent on planning their future and to be more committed to their goals.

Other associations emerged that may be of interest, but were marginally significant ($p < .10$) due to small sample size. Past negative was negatively associated with uncertainty avoidance and long-term orientation, suggesting that in countries where people are more inclined to focus on negative past experiences, they are also more uncomfortable with unknown situations and attach less importance to the future. The association of Past Positive with restraint suggests that in countries where people have a more positive, pleasurable, and nostalgic views of the past and are more focused on preserving traditions, need gratification is more strongly regulated by social norms.

Cultural Differences in Time Perspective Profiles. We further set out to investigate the typical TP profiles characteristic of each country. We applied cluster analysis approach at the individual level based on the scores on the five scales of the 36-item ZTPI for the above 23 countries. This approach has been successfully applied to individual country samples (e.g., Boniwell et al. 2010; Osin and Orel 2012).

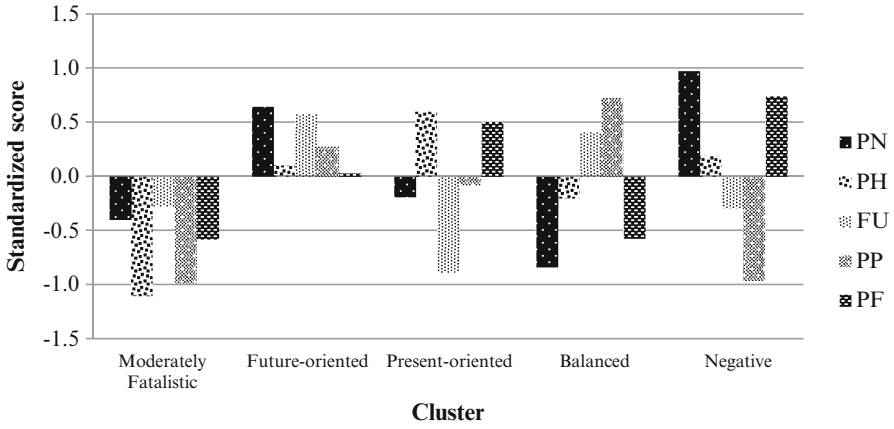

Fig. 1 Cluster profiles (in standardised ZTPI scores)

We aimed to equalise the contribution of different countries and genders to the resulting cluster structure; thus, we formed a balanced sample by selecting randomly 120 individuals aged 18–35 from each country (60 female and 60 male where available). The ZTPI scores were standardised by variable and cluster-analysed using Ward's method and squared Euclidean distance measure. A five-cluster model was chosen, consistent with previous research results. The cluster profiles are presented on Fig. 1. The clusters can be respectively labelled as moderately fatalistic ($N=322$), future-oriented ($N=738$), present-oriented ($N=587$), balanced ($N=727$), and negative ($N=386$).

The distribution of types was significantly nonuniform across genders ($\chi^2(4)=33.89$, $p<.001$), but the prevalence of persons of any gender in each cluster did not exceed 60 %, suggesting that gender differences in time perspective types are weak. Weak age differences were also observed ($F(4, 2{,}755)=15.09$, $p<.001$), with post hoc tests indicating a higher average age in the Cluster 1 ($M=23.7$) compared to the other four clusters (mean age in the 21.7–22.6 range).

According to the chi-square test, the distribution of cluster representation was not the same across countries ($\chi^2(88)=353.08$, $p<.001$). See Table 5 for cluster membership statistics, and the distribution for the overall sample is given below.

Since all country samples have equal size, percentages for the overall sample correspond to expected frequencies of each time perspective type in each sample, and differences between observed and expected frequencies can be calculated and interpreted. The results of such analysis suggest that in some countries the distribution of types is statistically different from the overall distribution. The strongest differences were found for New Zealand ($\chi^2(4)=50.28$, $p<.001$), China ($\chi^2(4)=49.40$, $p<.001$), Estonia ($\chi^2(4)=33.97$, $p<.001$), the USA ($\chi^2(4)=28.41$, $p<.001$), and Algeria ($\chi^2(4)=23.17$, $p<.001$), followed by Israel ($\chi^2(4)=18.13$, $p<.01$), Mexico ($\chi^2(4)=16.83$, $p<.01$), France ($\chi^2(4)=14.57$, $p<.01$), and Brazil ($\chi^2(4)=14.22$, $p<.01$). Weaker, yet still significant, differences were found for

Table 5 Percentages of time perspective profiles across country samples

	Time perspective profile				
Country	Moderately fatalistic (%)	Future-oriented (%)	Present-oriented (%)	Balanced (%)	Negative (%)
Brazil	16.67	36.67	20.83	14.17	11.67
China-1	27.50	30.00	9.17	11.67	21.67
Czech Rep.	10.83	21.67	25.83	26.67	15.00
Germany	14.17	24.17	21.67	30.83	9.17
Algeria	5.83	35.00	21.67	13.33	24.17
Estonia	4.17	30.00	10.83	46.67	8.33
France	12.50	17.50	30.00	19.17	20.83
Greece-1	17.50	26.67	17.50	22.50	15.83
Croatia	17.50	17.50	24.17	24.17	16.67
Israel	8.33	27.50	15.83	41.67	6.67
Italy	10.83	31.67	14.17	32.50	10.83
Lithuania	15.00	28.33	15.83	28.33	12.50
Mexico	19.17	28.33	28.33	14.17	10.00
New Zealand	5.00	13.33	45.00	17.50	19.17
Poland	7.50	26.67	17.50	35.00	13.33
Portugal	8.33	34.17	16.67	32.50	8.33
Serbia	9.17	19.17	31.67	27.50	12.50
Russia	11.67	33.33	14.17	34.17	6.67
Spain	18.33	18.33	25.83	26.67	10.83
Sweden	15.00	19.17	28.33	26.67	10.83
Turkey	2.50	31.67	17.50	30.00	18.33
UK	5.00	24.17	25.00	31.67	14.17
USA	5.83	40.00	11.67	18.33	24.17
Overall sample	*11.67*	*26.74*	*21.27*	*26.34*	*13.99*

Turkey ($\chi^2(4) = 12.77$, $p < .05$), Russia ($\chi^2(4) = 12.18$, $p < .05$), Sweden ($\chi^2(4) = 9.78$, $p < .05$), and Serbia ($\chi^2(4) = 9.57$, $p < .05$).

Scores in the countries with statistically stronger differences from expected distribution (i.e., $p < .01$ above) showed some interesting patterns. For instance, in New Zealand and France, there was an emphasis on present-oriented and negative patterns indicative of hedonistic, present-day orientation. China exhibited emphasis on moderately fatalistic and negative profiles, suggesting a rather pessimistic time perspective. In Estonia and Israel, the balanced profile was particularly pronounced. The combination of future-oriented and negative types was characteristic of the USA, Algeria, and, to a weaker extent, Turkey. The combination of present-oriented and moderately fatalistic subtypes was shown in Mexico and, to a weaker extent, in Sweden. Brazil was characterised by moderately fatalistic and future orientation. Serbia tended towards a present-oriented pattern. Russia exhibited increased prevalence of future-oriented and balanced profiles, which was marginally significant. These data suggest that some countries may be characterised by a prevalence of people with specific time perspective profiles.

However, these results should be considered only as pilot and explorative. Currently our data shows evidence only of scalar equivalence of the ZTPI. Possibly average country score reflects the cultural bias associated with the way people in different cultures react to survey questions (e.g., acquiescence bias). When the individual scores were standardised within countries in order to eliminate response bias (such as acquiescence or extreme responding), no statistically significant cultural differences emerged. However, this approach may also eliminate valid variance associated with cultural differences. We plan to further investigate these emerging cultural profiles.

Discussion

An increasing number of studies have examined time perspective and other constructs dealing with the perception of time across cultures. Trying to overcome theoretical and methodological deficiencies in past research, our International Time Perspective Research Project has systematically examined the equivalence of the ZTPI across cultures. The data we presented in this chapter allow us to address the main question we posed in the introduction. We observed important similarities across countries in time perspective. Our results suggest that five temporal orientations are invariant across many countries with diverse cultural traditions. Therefore, we now can strongly recommend the revised version of the ZTPI as the "gold standard" for further research on time perspective, as well as its utility in cross-cultural comparisons. The basic dimensions underlying time perspective, as measured by the ZTPI, do not differ across cultures. This observation is in line with general findings in cross-cultural psychology according to which basic features of psychological functioning are invariant across cultures. However, the problems we had with the equivalence of items clearly illustrated another common finding in the field. Even if the structure of psychological functioning is invariant, that does not yet mean that items always "travel well"; some items may just not be suitable to measure the basic factors (in our case mainly due to unstable secondary loadings).

Future orientation, present orientation, and a balanced orientation are the most important time perspective profiles, followed by a negative and moderately fatalistic orientation. Clearly, the more positive orientations prevail as this is the pattern found in many countries. Yet, countries also show certain differences in preferred time perspective. For example, China has relatively high scores on the latter two negative orientations whereas Israel has very low scores on these dimensions.

Future research should relate time perspective to indicators of economic development, well-being, social functioning, and sustainability in various domains. At the current time of economic crises in many countries, those with insecure economic situations tend to move away from a focus on the future of saving and investing towards a more pragmatic style: living each day as it comes. Previous research has shown that time perspective changes during economical crises, as the future becomes unpredictable and uncertain, people cannot afford to plan for the long term and thus

focus more on the present (Muzdybaev 2000). The revised version of the ZTPI we propose opens the way to more integrative and cumulative research on this issue of economic and political instability as related to time perspective.

Similarly, we would expect that central to establishing a solid future orientation is a sense of trust in one's predictions of outcomes of given current behaviours. With instability in one's family, children cannot trust that parents will deliver on their promises, so it is wiser to accept lesser short-term certain gains than plan on bigger elusive future ones. Hence, individuals' time perspectives are not only antecedent of society's sustainability and growth but also consequences, and research is needed to clarify how this construct, largely considered as a personality variable, interacts with cultural contexts. It is our hope that our study will stimulate researchers to pay more attention to time perspective as a critical construct linking attitudes, values, and behaviours in cross-cultural research.

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