

## THE LITHUANIAN VERSION OF THE ZIMBARDO TIME PERSPECTIVE INVENTORY (ZTPI)

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*The article presents the process of adaptation of the Zimbardo Time Perspective Inventory (ZPTI) in Lithuania and the psychometric characteristics of the Lithuanian ZTPI version. To assess the construct and its convergent validity, as well as other psychometric characteristics, four studies with the participation of 1529 respondents were conducted. By means of confirmatory factor analysis, the following goodness of fit indices were obtained: Chi-square = 3262.546; df = 1474;  $p < 0.001$ ; Chi-square/df = 2.216; RMSEA = 0.044; CFI = 0.666; TLI = 0.651. All of them were acceptable, except for the values of CFI and TLI. All the obtained subscale Cronbach alpha values exceeded 0.7, with the exception of Past Positive. The value of the Past Positive Cronbach's alpha coefficient was 0.634. The findings of the study have shown quite acceptable psychometric characteristics of the Lithuanian ZTPI version which does not essentially differ from the original or its adaptations in other countries.*

**Key words:** time perspective, ZTPI, Lithuanian ZPTI version.

Currently, the science of psychology has been taking an intensive interest in a number of personality time parameters: time management (Hellsten and Rogers, 2009), subjective experience of time (Hale, 1993), emotional experience of time (Parker, 2003), etc. Special attention has been devoted to time perspective.

#### **The conception of time perspective.**

P. Zimbardo and J. Boyd (1999) believe that time perspective (TP) is one of the essential processes, and frequently an unconscious one, that allows individuals to structure and evaluate their experience by interrelating the events of their lives and placing them in time. Time perspective is a complex phenomenon attached by

some researchers to cognitive–motivational processes (Nuttin, 1985; Fraisse, 1963; and others), by others to attitudes (Zimbardo and Boyd, 2008), and by some others to personality dispositions (Lens and Moreas, 1994; Сырцова и др., 2007b). The rapidly expanding field of TP research shows that time perspective relates to such phenomena as substance use (Apostolidis et al., 2006; Keough et al., 1999; Wills et al. 2001), coping with homelessness (Epel et al., 1999), motivation (Kauffman and Husman, 2004), ecological attitudes (Milfont and Gouveia, 2006), the choice of leisure occupations (Shores and Scott, 2007), health behaviour (Henson et al., 2006), health-promoting behaviour (Hamilton et

al., 2003), academic achievements (Adelabu, 2007; Mello and Worrell, 2006), academic engagement (Horstmannshof and Zimitat, 2007), procrastination (Diaz-Moralez et al., 2008), etc. Lately, research in the field of TP becoming more intensive, increasingly more attention has been paid to the search for reliable and valid instruments of measuring the phenomenon. However, the search was not easy, as both TP and its structure were understood in different ways.

As early as in 1986, J. E. McGrath and J. R. Kelly presented 211 different TP definitions in their review of the psychology literature devoted to the analysis of TP (McGrath and Kelly, 1986, quoted after Boniwell and Zimbardo, 2004). Over the last two decades, their number has spectacularly increased. However, most of them reflected essential attitudes of one of the two predominating conceptions of time perspective. The representatives of the first trend (Lennings and Burns, 1998; Nuttin, 1985; Seijts, 1998; Vazquez and Rapetti, 2006 et al.) tended to view TP as a future perspective, orientation towards the future, and future plans.

However, lately, another attitude has been gaining popularity with TP researchers, viz. that the exclusive focus on the future perspective was a limited view (Zimbardo and Boyd, 1999); therefore, an idea of TP as a multi-component phenomenon was developing in parallel. In that case, time perspective was understood as *“the process by which individuals automatically partition the flow of their personal experiences into psychological time frames of future, present, and past”* (Harber et al., 2003, p. 256). As noted by P. G. Zimbardo and J. N. Boyd (1999), it was typical of an

individual to concentrate on one or another time interval (past, present, or future), and that was a relatively stable attitude that allowed to understand and predict many of their actions.

#### **Ways of measuring time perspective.**

To date, there is no consensus on how to measure time perspective (Zimbardo and Boyd, 1999; Сырцова и др., 2007a, b). For the TP measuring, attempts have been made to either adapt the instruments of measuring other psychological phenomena or to design special instruments. Among the ones used for the purpose most frequently, Thematic Aperception Test (TAT) (Zimbardo and Boyd, 1999) and Rorschach Inkblot Test (Kahn, 1967) could be named, even if they had not been designed specifically for measuring time perspective. Both complex instruments, such as, e.g., Motivational Induction Method (Nuttin, 1985) or Cottle Circle Test (Getsinger and Leon, 1979; Zimbardo and Boyd, 1999), and questionnaires oriented towards the future time perspective, such as, e.g., Consideration of Future Consequences Scale (Petrocelli, 2003), Future Time Orientation Scale (Gjesme, 1979), and Heiberg’s Future Time Perspective Inventory (quoted after Gjesme, 1979) were employed. However, the said ways of TP measuring frequently provoked criticism due to their psychometric problems or narrowness (Seijts, 1998; Zimbardo and Boyd, 1999). Increasingly more frequently, Zimbardo Time Perspective Inventory (ZTPI) was chosen for measuring time perspective.

**Zimbardo Time Perspective Inventory and its subscales.** As indicated by P. G. Zimbardo and J. N. Boyd (1999; 2008), the ZTPI was designed by continuing and

developing the tradition of conceptualization of K. Lewin's time perspective. The first stimulus to design a TP measuring instrument was the famous Stanford prison experiment, when P. G. Zimbardo witnessed the change of the prisoner respondents' time perspective oriented towards future – it turned into Present Fatalistic. The change was accounted for by the strong influence of the situation. The designing of ZTPI (initially called STPI – Stanford Time Perspective Inventory) started with the survey of 12,000 readers of *Psychology Today* who were asked to fill in the Inventory published in the journal (Gonzales and Zimbardo, 1985, quoted after Zimbardo and Boyd, 1999). As the scope of the Inventory was limited by the fact of its being published in the journal, and the researchers were mainly interested in the differences among the individuals oriented towards the present and the future, the questions related to the past time perspective were not included. "*Factor analysis revealed a number of distinct temporal factors within the present and future domains along with interesting correlations with many occupations and other lifestyle variables*" (Zimbardo and Boyd, 1999, p. 1273). The scale became the core of the present ZPTI; it was constantly refined on the basis of the outcomes of different empirical research, and later, items related to the past time perspective were added. The present ZPTI is an instrument with excellent psychometric characteristics, theoretically grounded, reliable and highly valid, as well as user-friendly, and it consists of 56 items divided into 5 subscales that examine five dimensions of time perspective.

*The Past Negative perspective* reflects an individual's general negative, pessi-

mistic view of the past. The said time perspective is related to depression, anxiety, unhappiness, and low self-esteem, even aggression. The subscale consists of such items as, e.g., "*Painful past experiences keep being replayed in my mind*". Given the reconstructive nature of memory, negative attitudes can be caused either by actual negative experiences in the past or by negative interpretations of positive events, or by both factors simultaneously.

Individuals with the *Present Hedonistic* time perspective are characterized as oriented towards pleasure, entertainment, and excitement at the present moment. Such people will not sacrifice the present comfort for the sake of the future. They will not worry about the future consequences of the present events, they hardly control their ego and impulses, and they tend to pursue novelty and the rush of adrenalin. The subscale includes such items, as, e.g., "*I do things impulsively*" or "*It is important to put excitement in my life*".

*Future time perspective* means planning future achievements and goals. Individuals oriented towards it are distinguished by serious consideration of future consequences, dependence on reward, and a low level of pursuit of novelty or the rush of adrenalin. The subscale includes the following statements: "*I believe that a person's day should be planned ahead each morning*"; "*It upsets me to be late for appointments*".

*Past Positive time perspective* reflects a warm, nostalgic, and sentimental positive attitude towards the past. That time perspective is the opposite of the past negative time perspective, therefore, individuals characterized by a positive view of the past are distinguished for a low level of depression and anxiety, high self-

esteem, and are generally happier; the perspective marks a healthy view of life. Such items as, e.g. “*It gives me pleasure to think about my past*” or “*I like family rituals and traditions that are regularly repeated*” are good examples of the statements on the subscale.

*Present Fatalistic time perspective* reflects the shortage of the focused time perspective. That is a fatalistic, helpless view of the future and life. Individuals with such time perspective believe that the future is unpredictable and does not depend on their actions, while the present has to be faced with resignation, as human actions are ruled by fate. They are distinguished for a high level of depression and anxiety. The subscale includes such items as “*Fate determines much in my life*” or “*Often luck pays off better than hard work*” (Zimbardo and Boyd, 1999, 2008).

**ZTPI adaptations in different countries.** TP studies with the use of ZTPI have been spreading fast all over the world. As the authors of the instrument emphasized the links of TP with social-cultural factors (Zimbardo and Boyd, 2008), to use the instrument in different cultures one had to adapt the instrument (Сырцова и др., 2007b).

Different methods have been employed for the adaptation of the questionnaires in different cultures. Usually, attempts were made to test both the reliability and validity of the translated questionnaire. The most frequent ways of testing were internal consistency, by using Cronbach’s alpha (Steiner, 2003), and test–retest reliability measures. The time interval between the test and retest could vary between several days and several years (Anastasi and Urbina, 1997). The customary procedures

for testing the validity of the construct were the exploratory factor analysis (EFA) and the confirmatory factor analysis (CFA) (Thompson and Daniel, 1996). Lately, the advantages and disadvantages of both procedures have been widely discussed to establish which of them was best suited to test the validity of the construct (Swister et al., 2004; Thompson, 2005). Even greater discussions were provoked by the issue whether it made sense to use both the EFA and CFA in one research, and provided both of them were employed, in what order they should be used (Hurley et al., 1997). However, there is a general agreement that the outcomes received by means of both EFA and CFA should be validated, i.e. checked whether they could be repeated. The ways of outcome validating are different: bootstrapping, jackknifing, or model testing in either split or alternative samples (Byrne, 2001; Thompson, 2005). Quite a number of researchers, in testing the validity of the construct, used both EFA and CFA, with EFA coming first, and CFA used in a different sample (e.g., Justicia et al., 2008; Swister et al., 2004, and others). To measure the convergent validity, a search for correlations with other variables, and frequently with other measuring instruments was applied. (Anastasi and Urbina, 1997). All the above mentioned reliability and validity procedures have been used in working out the Lithuanian version of ZPTI.

Currently, the ZTPI has been adapted in France (Apostolidis et Fieulaine, 2004), Russia (Сырцова и др., 2007a, b), Brazil (Milfont et al., 2008), and Spain (Diaz-Morales, 2006). All the above mentioned adaptations confirmed the five-factor structure, however, in all the cases several

items “migrated” from one scale to another (two items in France and 11 in Spain) or were removed (two items in France and 18 in Brazil). In Italy, an older three-factor ZTPI version has been adapted (D’Alessio et al., 2003).

Intercultural research into TP with the use of ZTPI has just started. One large-scale study was published that presented an analysis of the outcomes of TP research conducted in several countries with the use of ZTPI (Сырцова и др., 2007b). The data presented by the said study and by other research (D’Alessio et al., 2003; Diaz-Moralez, 2006; Milfont et al., 2008; Zimbardo and Boyd, 1999) were not unambiguous, and they led to a discussion of the possible TP links with social-cultural factors (one’s ethnic and social origin, religion, education, etc.), as well as gender and age. Some common age-related trends of TP change stood out: with an individual maturing, the total score tended to decrease on the Present Hedonistic subscale (D’Alessio et al., 2003; Zimbardo and Boyd, 1999; Сырцова и др., 2007b) and to increase on the Future subscale (D’Alessio et al., 2003; Diaz-Moralez, 2006; Zimbardo and Boyd, 1999; Сырцова и др., 2007b). However, changes in the scores on other subscales were more complex. The link between gender and TP was even more complex and could be related to different social-cultural factors (Сырцова и др., 2007b).

Although in Lithuania research in the field of time psychology has been conducted for more than one decade, a shortage of measuring instruments is still acutely felt. To evaluate time perspective, only one instrument can be employed, i.e. that of Psychological Time Questionnaire (PTQ) designed in Lithuania (Liniauskaitė, 2007);

beside other subscales, it also has three subscales to measure the aspects of time perspective. With an interest in applying ZTPI for both scientific and pragmatic purposes increasing all over the world, we considered the adaptation of Zimbardo Time Perspective Inventory (ZPTI) in Lithuania a task of great significance. Therefore, on receiving the authors’ consent, we undertook the task. A research was conducted with the principal aim of designing the Lithuanian ZPTI version and establishing its psychometric characteristics. Moreover, we sought to establish TP correlation with age and gender.

## METHOD

**Participants.** For the research, four independent samples were used. The questionnaire was filled in by 1529 respondents, both male and female, of different age and occupation, and living in different places of Lithuania. All four were convenience samples.

To assess the validity of the construct, by means of Exploratory Factor Analysis (EFA), a sample of 619 individuals was collected: 221 males (35.7 %) and 385 females (62.2 %), while 13 respondents did not indicate their gender. The range of age was wide: (from 18 to 85), the mean age being 26.4. To collect data for the Confirmatory Factor Analysis (CFA), in another independent sample, the questionnaire was filled in by 625 respondents, including 370 males (59.2 %) and 255 females (40.8 %). Their age varied from 18 to 80, the mean age being 35.28. The respondents of the first two samples were students, representatives of different professions, and retired people from different places of Lithuania.

To test the convergent validity of the questionnaire, a sample of 245 Klaipėda University students of different years of study and different study programmes (psychology, philology, education, applied mathematics, navigation, etc.) was collected, including 87 males (35.5 %) and 158 females (64.5 %). The respondents' age was 18 to 30, the mean age being 20.7. To test the validity of the questionnaire by the test-retest procedure, a research of 40 second-year Klaipėda University students of psychology, education, and social pedagogy was conducted (90 % females, 10 % males, the age from 18 to 21, mean age 19.8). To assess the internal consistency (Cronbach's alpha) and a correlation of TP with age and gender, data collected from the first two samples (the total of 1244 respondents) were used.

## Instruments

1. The **Zimbardo Time Perspective Inventory (ZTPI)** was used (Zimbardo and Boyd, 1999), consisting of 56 items divided into five subscales: the time perspectives of Past Negative (the subscale of 10 items), Present Hedonistic (15 items), Future (13 items), Past Positive (9 items), and Present Fatalistic (9 items). The subscales corresponding to the five TP dimensions were exhaustively presented in the Introduction.

The items were assessed on a five point Likert-type scale. The scores for each item on all subscales could vary from 1 to 5, and the mean score of the subscale was estimated. Each respondent was given a questionnaire and asked to mark the most appropriate response to each item. The ins-

truction for the respondents was formulated in the following way: *“Read each item and, as honestly as you can, answer the question: “How characteristic or true is this of you?” Check the appropriate box using the scale. Please answer ALL of the following questions on both sides.”* („*Perskaitykite kiekvieną teiginį ir kuo nuoširdžiau atsakykite į klausimą: “Ar tai Jums būdinga, arba tinka?” Naudodamiesi skale, pažymėkite atitinkamą langelį. Atsakykite į VISUS klausimus.*“).

2. **Psychological Time Questionnaire** (Liniauskaitė, 2007) was used to test the convergent validity of the ZPTI. The questionnaire included 30 items to be assessed on a five-point Likert-type scale. The items were grouped into 6 subscales: time planning (7 items), mixing up working and leisure time (6 items), time anxiety (5 items), orientation towards the past (4 items), orientation towards the present (4 items) and orientation towards the future (4 items). The mean score for each subscale was estimated (the points were turned “upside down”: the smaller the mean score, the stronger expressed the respective characteristic of psychological time). The items and possible responses were presented on a single sheet of paper. The coefficients of Cronbach's alpha in the questionnaire were the following: mixing up working and leisure time: 0.826; time anxiety: 0.799; time planning: 0.759; orientation towards the present: 0.567; orientation towards the past: 0.7; and orientation towards the future: 0.678. Other psychometric indicators were also sufficient (Liniauskaitė, 2007) to be able to test the convergent validity of the Lithuanian ZTPI version on the basis of that questionnaire.

## The process of the research

ZTPI was several times translated from English into Lithuanian by independent translators, with back translation following. The questionnaire was compared with the original, revised with the help of its Russian and French versions, and afterwards, the Lithuanian version of the questionnaire was designed.

In four independent samples, new data were pooled, and new research was conducted to evaluate the reliability, validity, and other psychometric characteristics of the Lithuanian ZPTI version.

First, the **validity** of the Lithuanian ZTPI version was tested. The data of 619 respondents were pooled for the exploratory factor analysis with the aim of evaluating the construct validity of the Lithuanian version of the questionnaire. The demographic data of the respondents were presented above. The research was conducted in 2006-2008.

In further testing of the **construct validity** of the Lithuanian version of the questionnaire, new independent sample of 624 respondents filled in the Lithuanian ZTPI version. The data received were used for the confirmatory factor analysis, with the aim of testing the appropriateness of use of the structure received during the exploratory factor analysis. The research was conducted in 2009. Moreover, the analysis of the **psychometric characteristics** of the Lithuanian ZTPI version and the of time perspective with regard to gender and age was done. For the analysis, the joint data of the samples of Study 1 and 2 (1243 respondents) were used.

In testing the **convergent validity** of the questionnaire, the Psychological Time Questionnaire (PTQ) was used. The Li-

thuanian ZTPI version and the PTQ were filled in by 245 students. The research was conducted in 2008-2009,

The **reliability** of the Lithuanian version of the questionnaire was checked by the test-retest method, with 40 students filling in the questionnaire twice, on October 2 and October 16, 2009. The time interval between the test and retest was 14 days.

The research was conducted either individually or in groups, with the researcher present. The respondents were given the Lithuanian ZTPI version (during the first two studies) or the Lithuanian ZTPI version and the PTQ (during the third and fourth studies).

## RESULTS

**Exploratory factor analysis.** The data of Study 1 were used to test the validity of the questionnaire construct by means of exploratory factor analysis.

After the exploratory factor analysis of the questionnaire, the KMO indicator was 0.827, which meant that the data were appropriate for the factor analysis. The identified five factors accounted for 34.7 % variance (the first factor for 11.99 %, the second for 7.71 %, the third for 7.3 %, the fourth for 4.4 %, and the fifth for 3.3 %). The sixth factor would have merely added a 2.94 % variance; moreover, the scree plot would indicate that the most appropriate numbers of factors were 4 or 5. On the basis of the theoretical model of the instrument (Zimbardo and Boyd, 1999), five factors were finally identified.

The Varimax rotation method was employed, with the outcomes presented in Table 1.

Table 1. Factor loadings of the Lithuanian ZTPI version

	Component				
	1	2	3	4	5
z13	0.683				
z40	0.661				
z21	0.604				
z45	0.602				
z10	0.574				
z51	0.55				
z30	0.504				
z56	-0.487		0.296	0.239	
z9	-0.447			0.211	
z6	0.447				0.322
z28	-0.432		0.224		
z18	0.345				
z43	0.319				0.226
z50		0.714			
z16		0.682			
z34		0.661			-0.236
z27		0.601			
z4		0.548			
z25		0.508			-0.447
z36		0.495		0.352	
z54		0.471		0.295	
z22		0.462			
z33		0.358		0.353	
z5		0.296	0.227		
z42			0.626		
z31			0.597		
z26			0.589		
z17			0.561		

	Component				
	1	2	3	4	5
z55			0.523		
z48			0.515		
z32	-0.215		0.482	0.224	
z46	-0.243	0.235	0.476		
z1			0.471		
z19			0.457		
z23	-0.258	0.208	0.438	0.221	
z8			0.397		
z52	-0.322		0.352	0.219	
z12			0.352		
z39				0.755	
z14				0.692	
z38		0.226		0.619	
z3				0.524	
z24	-0.325			0.475	-0.254
z37				0.469	
z53			0.282	0.465	
z35	-0.217	0.229		0.385	
z47		0.339		0.343	0.262
z44		0.216	0.172	0.273	
z7					0.666
z20			0.282	0.216	0.54
z2					0.506
z11		-0.434			0.492
z29		0.326			0.484
z49	0.248				0.433
z15		0.251			0.39
z41					-0.376

Note: the table presents merely the weights of factors whose absolute value is more than 0.2. “Problematic“ items and their loadings are highlighted.

The identification of five factors is obvious. The first factor represents the Future time perspective, the second Past Negative, the third Present Hedonistic, the fourth Present Fatalistic, and the last Past Positive.

The majority of the items got into “their own” factors, except for five items. Those shall be viewed in more detail:

Item 24 “Kiekvieną dieną aš priimu tokią, kokia ji yra, nesistengiu jos planuoti” (“I take each day as it is rather than try to plan it out“). In P. G. Zimbardo and J. N. Boyd’s research (1999), it belonged to the Future scale, while in the Lithuanian ZTPI version, it appeared on the Present Fatalistic subscale. In fact, it had a rather high



loading (-0.325) in the first factor, corresponding to the Future time perspective;

Item 25 “*Su praeitimi susiję per daug nemalonių prisiminimų, todėl esu linkęs (-usi) apie juos negalvoti*” (“*The past has too many unpleasant memories that I prefer not to think about*”), which belonged to the Past Positive TP subscale in the original version, appeared on the Past Negative TP subscale, with the loading of -0.433 on the Past Positive TP subscale;

Item 28 “*Manau, kad svarbiau mėgautis tuo, ką darai, nei laiku baigti darbus*” (“*I feel that it’s more important to enjoy what you’re doing than to get work done on time*”): which originally belonged to the Past Hedonistic TP subscale, appeared on the Future TP subscale, with the loading of -0.432

Item 44 „*Dažnai labiau vadovaujuosi širdimi nei protu*” (“*I often follow my heart rather than my head*”), which originally belonged to the Present Hedonist TP subscale, appeared on the Present Fatalistic TP subscale. True, its loading did not amount to 0.3 in either of the factors;

Item 52, „*Geriau išleisti uždirbtus pinigų šiandienos malonumams, nei taupyti juos saugesniam rytojui*” (“*Spending what I earn on pleasures today is better than saving for tomorrow’s security*”) appeared on the Present Hedonistic TP subscale, although originally it belonged to the Present Fatalistic. The said statement had similar loadings (0.219–0.352) in three subscales: those of Future, Present Hedonistic, and Present Fatalistic.

We tend to consider the migration of items 24, 25, 28, and 52 from one scale to another to be logical, as by their meaning they fit well into the new scale. The case

of item 44 is more doubtful, however, it essentially fits into the new scale. It should also be noted that several items, e.g. 47 or 33, have similar weights in two factors, however, the greatest is still in their own factor. Thus, the conducted exploratory factor analysis revealed a clear five-factor structure of the Lithuanian ZTPI version. The identified factors comply with the structures worked out in the USA and other countries (cf. Apostolidis et Fieulaine, 2004; Milfont et al., 2008; Zimbardo and Boyd, 1999), just five items changed “their places” in the Lithuanian version.

### **Confirmatory factor analysis**

The outcomes of the second research were used to confirm the structure of the instrument established by means of the exploratory factor analysis. The method of confirmatory factor analysis was employed for the purpose.

The confirmatory factor analysis was done with the MPLUS3 software. The estimation method was applied: Maximum Likelihood Robust (MLR).

Four competing models were tested: 1) the original ZTPI structure proposed by P. G. Zimbardo and J. N. Boyd (1999); 2) the structure obtained during Study 1 by means of the exploratory factor analysis (hereinafter: the Lithuanian ZTPI version); 3) the CFA of the Lithuanian version revealed that item 41 was statistically insignificant ( $p > 0.05$ ); therefore, the CFA had been repeated after it had been removed; and 4) a traditionally tested 3-factor model, with the Present Fatalistic and Present Hedonistic making up a single Present factor, and Past Positive and Past Negative a single Past factor.

*Table 2. Fit indices for alternative models of the Lithuanian ZTPI version*

Model	Corrected Chi-square	df	p	Chi-square/df	RMSEA	CFI	TLI
ZTPI original structure	3417.412	1474	0.000	2.318	0.046	0.637	0.620
Structure of the Lithuanian ZTPI version	3262.546	1474	0.000	2.216	0.044	0.666	0.651
Structure of the Lithuanian ZTPI version after the removal of statement 41	3150.293	1420	0.000	2.219	0.044	0.673	0.658
The three-factor model	4047.906	1481	0.000	2.733	0.053	0.520	0.501

The outcomes presented in Table 2 revealed that the five-factor model of the Lithuanian ZTPI version established by means of the exploratory factor analysis best complied with the data; however, the indices of the goodness of fit structure proposed by P. G. Zimbardo and J. N. Boyd (1999) were almost equally good. Unfortunately, we were not able to test whether the difference in the fitness of the models (by Chi-square difference test) was statistically significant, as the degrees of freedom were the same. Meanwhile, the model, with the removal of item 41 and Satorra–Bentler scaled Chi-square difference test (Muthen L. and Muthen B., 2005), turned out to be better in terms of its statistical significance than the model with item 41 (TRd = 110,99;  $\Delta df = 54$ ;  $p < 0.001$ ). However, other indices basically did not improve, and therefore, we shall use the model with item 41. The three-factor model demonstrated a significantly poorer goodness of fit indices, and the Satorra–Bentler scaled Chi-square difference test also revealed a statistically significant ( $p < 0.05$ ) difference from either of the said models.

However, it should be noted that, in the case of the Lithuanian version, Chi-square was statistically significant ( $p < 0.00$ ) and accordingly hardly fit for the data.

The Chi-square test is very sensitive to the size of the sample, therefore, it is not surprising that in our relatively large sample it was statistically significant (Hooper et al., 2008). The ratio between the Chi-square index and the degrees of freedom of the Lithuanian ZTPI version was 2.22. The recommended ratio is up to 2 (Hooper et al., 2008); however, some authors state that for large samples the value  $> 5$  is also acceptable (Hooper et al., 2008). Thus, in our case, the Chi-square divided by the degrees of freedom was within the acceptable limits or close to them.

The RMSEA index is required to be  $< 0.05$  (Byrne, 2001; Hooper et al., 2008), while the RMSEA of the Lithuanian ZPTI version was 0.044, implying that the model complied with the data. The CFI and TLI indices should be closely approaching 1, or at least should exceed 0.9 (Byrne, 2001; Hooper et al., 2008); in our study, CFI = 0.666 and TLI = 0.651, and thus were unsatisfactory.

Accordingly, with regard to the outcomes of the confirmatory factor analysis, in our further estimations we shall use the Lithuanian ZTPI structure established by means of the exploratory factor analysis, as it produced a slightly better, although not ideal, goodness of fit indices.

To test the **convergent validity** of the Lithuanian ZPTI version, the PTQ was employed as the only Lithuanian questionnaire designed to measure the parameters of psychological time which, in addition to other subscales, had also three subscales for measuring the aspects of time perspective. Hypotheses were made that negative<sup>1</sup> correlations would be established between the scores of TP subscales of both the questionnaires (e.g., Orientation towards Future of the PTQ and the Present Hedonistic

and Fatalistic of the ZPTI). However, it should be noted that the conceptualization of the time perspective of the PTQ and the ZPTI was different, and the subscales measuring time perspective in the PTQ did not have a clear positive or negative shade. A negative correlation between the scores of the Time Anxiety subscale in the PTQ and the scores of the Present Fatalistic and Negative Past subscales in the ZPTI was expected. A negative correlation was also expected between the scores of the Time Anxiety subscale (PTQ) and Future Time Perspective (ZPTI).

<sup>1</sup> Please note that the scores of the PTQ are turned upside down: a higher score means a non-expressed quality.

*Table 3. Correlations between ZPTI and PTQ subscale values*

		Time Planning	Mixing up of Working and Leisure Time	Time Anxiety	Orientation towards Present	Orientation towards Past	Orientation towards Future
Future Time Perspective	r	-0.541(**)	-0.284(**)	-0.046	0.417(**)	0.023	-0.386(**)
	P	0.000	0.000	0.476	0.000	0.727	0.000
	N	238	237	237	237	236	240
Past Positive Time Perspective	r	-0.116	-0.154(*)	-0.198(**)	0.072	-0.218(**)	-0.03
	P	0,073	0.017	0.002	0.265	0.001	0.641
	N	241	241	240	241	240	243
Present Fatalistic Time Perspective	r	0.121	-0.152(*)	-0.305(**)	-0.374(**)	-0.342(**)	0.094
	P	0.062	0.019	0.000	0.000	0.000	0.145
	N	237	237	236	238	237	239
Present Hedonistic Time Perspective	r	0.029	-0.077	-0.192(**)	-0.431(**)	-0.169(**)	0.044
	p	0,661	0.239	0.003	0.000	0.009	0.504
	N	235	235	234	235	236	237
Past Negative Time Perspective	r	-0.044	-0.257(**)	-0.416(**)	-0.079	-0.492(**)	-0.083
	P	0.497	0.000	0.000	0.222	0.000	0.198
	N	239	239	238	239	238	241

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

It was established that, as expected, the scores of TP subscales of the two used instruments correlated. The scores of the Orientation towards Present of the PTQ correlated both with the scores of the Present Fatalistic ( $r = 0.374, p < 0.001$ ) and the Present Hedonistic ( $r = 0.431, p < 0.001$ ) TP subscales, as well as with the points of the Future TP subscale ( $r = 0.417, p < 0.001$ ). The scores of the Orientation towards the Past correlated only with the scores of both Past Positive ( $r = 0.218, p < 0.01$ ) and Past Negative ( $r = 0.492, p < 0.001$ ) TP subscales, as well as with the scores of Present Fatalistic ( $r = 0.342, p < 0.001$ ), and Present Hedonistic ( $r = 0.169, p < 0.01$ ) TP subscales. The points of the Orientation towards Future subscale correlated only with the scores of the Future TP subscale ( $r = 0.386, p < 0.001$ ).

Some links were also established between the scores of the subscales of time perspectives and other phenomena of psychological time measured by PTQ. The points of the Future TP subscale correlated with the points of the subscales of Time

Planning ( $r = 0.541, p < 0.001$ ) and Mixing up Working and Leisure Time ( $r = 0.284, p < 0.001$ ).

The scores of the Past Positive TP subscale correlated with the points of the subscales of Mixing up Working and Leisure Time ( $r = 0.154, p < 0.05$ ) and Time Anxiety ( $r = 0.198; p < 0.01$ ).

The scores of the Present Fatalistic TP subscale correlated with the scores of the subscales of Mixing up Working and Leisure Time ( $r = 0.152, p < 0.05$ ) and Time Anxiety ( $r = 0.305, p < 0.001$ ).

The scores of the Present Hedonistic TP subscale were linked with the scores of the Time Anxiety subscale ( $r = 0.192, p < 0.01$ ).

The scores of the Past Negative TP subscale correlated with the scores of the subscales of Mixing up Working and Leisure Time ( $r = 0.257, p < 0.001$ ) and Time Anxiety ( $r = 0.416, p < 0.001$ ).

**Reliability.** To establish **internal consistency**, Cronbach's alpha values were calculated. They are presented in Table 4.

*Table 4. Cronbach Alpha values in the Lithuanian ZPTI version and their comparison with the values obtained in other countries*

	Future TP subscale	Past Negative TP subscale	Present Hedonistic TP subscale	Present Fatalistic TP subscale	Past Positive TP subscale
Lithuanian ZPTI version	0.770	0.793	0.765	0.733	0.634
Original ZPTI version (data collected in Lithuania)	0.775	0.779	0.760	0.709	0.632
Original ZPTI version (USA, Zimbardo and Boyd, 1999)	0.77	0.82	0.79	0.74	0.8
Russian ZPTI version (Сырцова и др., 2007a)	0.77	0.76	0.78	0.64	0.53
Russian version (Сырцова и др., 2007b)	0.75	0.78	0.79	0.75	0.68
French version (Apostolidis et Fieulaine, 2004)	0.74	0.72	0.79	0.7	0.7
Brazilian version (Milfont et al., 2008)	0.67	0.6	0.55	0.6	0.46

Table 5. *Intercorrelations of the ZPTI subscales*

		Future	Past Negative	Past Positive	Present Fatalistic
Past Negative	r	-0.077(**)			
	p	0.008			
	N	1198			
Past Positive	r	0.167(**)	0.022		
	p	0.000	0.443		
	N	1209	1204		
Present Fatalistic	r	-0.181(**)	0.484(**)	0.170(**)	
	p	0.000	0.000	0.000	
	N	1200	1203	1208	
Present hedonistic	r	-0.234(**)	0.164(**)	0.198(**)	0.221(**)
	p	0.000	0.000	0.000	0.000
	N	1191	1191	1200	1199

\*\* Correlation is significant at the 0.01 level (2-tailed).

Table 6. *Test–retest correlations (2-week interval)*

	Future Time Perspective	Past Positive Time Perspective	Present Fatalistic Time Perspective	Present Hedonistic Time Perspective	Past negative Time Perspective
r	0.894	0.725	0.898	0.833	0.932
p	0.000	0.000	0.000	0.000	0.000

As demonstrated in Table 3, the Cronbach’s alpha coefficient of the Lithuanian ZPTI version in many cases did not deviate much from the indicators of the USA version, with slightly lower results on the Past Positive subscale. However, in the context of adaptations they did not stand out.

The inter-correlation of all the TP scales was established ( $p < 0.01$ ), except for the Past Negative and Past Positive ones. Therefore, they could be assumed to be totally independent constructs. The correlation between Present Fatalistic and Past Negative was the strongest ( $r = 0.484$ ).

**External reliability** was checked by test–retest, looking for correlations between the same scores tested. As is seen in Table 6, all the subscales of the 1st and 2nd measurements statistically significantly correlated between themselves, and the correlation coefficients exceeded 0.93.

**ZPTI correlation with gender and age.**

The data were analysed in terms of gender and age. The differences established between the male and female mean scores on the subscales are presented in Table 7.

In our sample, the following statistically significant differences between male and female scores on the TP subscales

**Table 7. Mean total, male and female scores on the subscales and the differences between them**

		N	Mean	Standart deviation	t	df	p
Future	Total	1219	3.579	0.571	-3.711	1205	0.000
	Males	735	3.630	0.568			
	Females	472	3.506	0.567			
Past Negative	Total	1220	2.848	0.674	-0.334	1205	0.739
	Males	740	2.852	0.692			
	Females	467	2.839	0.649			
Past Positive	Total	1226	3.567	0.563	-6.534	1211	0.000
	Males	739	3.651	0.562			
	Females	474	3.439	0.536			
Present Fatalistic	Total	1223	2.839	0.627	-3.987	1209	0.000
	Males	741	2.896	0.622			
	Females	470	2.749	0.627			
Present Hedonistic	Total	1211	3.239	0.552	-3.245	1198	0.001
	Males	735	3.280	0.552			
	Females	465	3.174	0.550			

**Table 8. Mean scores of different age respondents and standard deviations**

Age		Future	Past Negative	Past Positive	Present Fatalistic	Present Hedonistic
18–29	Mean	3.483	2.835	3.572	2.71	3.329
	N	719	710	721	718	708
	Std. Deviation	0.572	0.677	0.558	0.622	0.529
30–59	Mean	3.721	2.797	3.525	2.895	3.125
	N	327	334	330	333	330
	Std. Deviation	0.5377	0.655	0.553	0.599	0.544
Over 60	Mean	3.8561	3.127	3.640	3.158	2.965
	N	93	93	93	92	93
	Std. Deviation	0.5242	0.676	0.583	0.654	0.617
Total	Mean	3.5815	2.848	3.564	2.839	3.239
	N	1139	1137	1144	1143	1131
	Std. Deviation	0.5737	0.675	0.559	0.627	0.554

were established: Future TP ( $t = -3.711$ ,  $p < 0.001$ ), and Present Hedonistic TP ( $t = -3.245$ ,  $p < 0.01$ ). On all those subscales, female scores were higher.

The respondents were divided into three age groups: 18–29-year-old (729 respondents), 30–59 years (339 respondents), and 60-years or older (93 respondents). The mean scores on the TP subscales and standard deviations are presented in Table 8.

For the comparison of age groups, the ANOVA was used (with the Bonferroni

post hoc test employed). The outcomes are presented in Table 9.

Statistically significant age differences were established on all subscales ( $p < 0.001$ ), except for Past Positive. By means of the Bonferroni post hoc test, the following statistically significant differences were established ( $p < 0.05$ ): 18–29 year-old

*Table 9. Comparison of the mean scores of different age respondents on the subscales*

Dependent Variable	ANOVA results		Bonferroni post hoc results			
	F	p	(I) Age	(J) Age	Mean Difference (I-J)	p
Future	32.724	0.000	18–29	30-059	-0.238(*)	0.000
				over 60	-0.373(*)	0.000
			30–59	18–29	0.238(*)	0.000
				over 60	-0.135	0.119
			over 60	18-029	0.373(*)	0.000
				30-059	0.135	0.119
Past Negative	9.170	0.000	18–29	30–59	0.0384(*)	1.000
				over 60	-0.292	0.000
			30–59	18–29	-0.038	1.000
				over 60	-0.330(*)	0.000
			over 60	18–29	0.292(*)	0.000
				30–59	0.330(*)	0.000
Past Positive	1.742	0.176	Not used			
Present Fatalistic	17.886	0.000	18–29	30–59	-0.124(*)	0.008
				over 60	-0.386(*)	0.000
			30–59	18–29	0.124(*)	0.008
				over 60	-0.262(*)	0.001
			over 60	18–29	0.386(*)	0.000
				30–59	0.262(*)	0.001
Present Hedonistic	28.966	0.000	18–29	30–59	0.203(*)	0.000
				over 60	0.364(*)	0.000
			30–59	18–29	-0.203(*)	0.000
				over 60	0.161(*)	0.035
			over 60	18–29	-0.364(*)	0.000
				30–59	-0.161(*)	0.035

\* The mean difference is significant at the 0.05 level.

respondents were characterized by a stronger expressed Future Time Perspective as compared to ones aged 30–59 or over 60. The respondents over 60 got higher scores on the Negative Past TP subscale as compared to the 18–29 or 30–59-year-old ones. The former were also distinguished for a stronger expressed Present Fatalistic TP as compared to the 18–29 or 30–59-year-old respondents, and the 30–59-year-old group had a stronger expressed Present Fatalistic TP than the 18–29-year-old group. As for the Present Hedonistic TP, 18–29-year-old respondents it was stronger expressed than in respondents aged 30–59 and 60 or over 60 and in 30–59-year-old people it was more pronounced than in people aged 60 and over 60.

## DISCUSSION

As can be seen from the outcomes, the Lithuanian version of the Zimbardo Time Perspective Inventory (ZTPI) had a 5-factor structure designed by P. G. Zimbardo and J. N. Boyd (1999). By means of the exploratory factor analysis, we managed to identify five factors that accounted for 34.7 % of variance. This figure did not essentially differ from the original ZTPI version employed in the USA (36 % of variance) (Zimbardo and Boyd, 1999). The French ZTPI version accounted for 32.75 % (Apostolidis et Fieulaine, 2004), and the Spanish (Diaz-Moralez, 2006) for 33.82 % of variance. Such percentage of explained variance is not high. The metaanalysis of marketing and psychology research done by R. A. Peterson (2000) demonstrated that factor analysis in those fields accounted for 56.6 % of variance on average. The percentage of the explained variance tended to decrease when more than 31 varia-

bles were included and when the sample was relatively large; this was also typical of our research. However, the small percentage of explained variance, obtained in the process of ZTPI adaptation in different countries, led to the conclusion that we should either establish more factors (which would be of little use, as each further factor adds less than 3 % of explained variance) or admit that the items factorized were unique.

Five items of the Lithuanian version appeared in other factors as compared to the original version (Zimbardo and Boyd, 1999), however, by their meaning, the items fitted into the new factor as well. When adapting the ZTPI in other countries, in each of them several items were also transferred to different subscales (Apostolidis et Fieulaine, 2004; Diaz-Moralez, 2006).

The testing of several competing structural models of ZTPI by confirmatory factor analysis proved that the 5-factor structure of both the Lithuanian and the original ZTPI versions had a better fit of goodness indices than the 3-factor model. The differences between the original structure and the Lithuanian one, established by means of the exploratory factor analysis, were not great. However, both models (the original and the Lithuanian) only partly corresponded to the data.

Chi-square was statistically significant, and that was to be expected as the sample was relatively large (over 600 respondents). The ratio of Chi-square and the degrees of freedom (2.216) was close to appropriate, RMSEA = 0.044 witnessed a good compliance of the model with the data; however, the value of CFI = 0.666 (as well as of TLI = 0.651) was unsatisfactory.



It should be noted that unsatisfactory values of CFI were also received in other ZPTI versions: in Brazil CFI = 0.7 (Milfont et al., 2008); in Russia the CFI of different models varied from 0.623 to 0.711 (Сырцова и др., 2007b); in validating the ZPTI in a sample of academically talented adolescents, the CFI value was 0.636 (Worrell and Mello, 2007). Thus, as one can see, the structure of the Lithuanian ZPTI version did not essentially differ either from the original or from the versions adapted in other countries. We would say that the low values of some of the indicators, incidentally found also in the versions of other countries, imply that most likely the 5-factor model requires further research and specification. Another explanation of the failure to get an ideal goodness of fit indices was an attempt to use the ZPTI for measuring a temporal dimension in a huge range of different situations; therefore, the inventory was simply unable to boast of ideal characteristics (N. Fieulaine, personal communication, Oslo, 07-07-2009).

In the case of Cronbach's alpha values, on all the scales they exceeded 0.7, except for Past Positive. The value of the Past Positive Cronbach's alpha coefficient was 0.634. For basic research tools, the minimum alpha value of 0.8 is recommended, and the values from 0.50 to 0.60 are acceptable for early stages of research (Steiner, 2003). A comparison of the indicator with an analogical indicator of inventories adapted and used in other countries demonstrated similar outcomes (Apostolidis et Fieulaine, 2004; Milfont et al., 2008; Сырцова и др., 2007b).

The convergent and construct validity was tested employing the Psychological Time Questionnaire. All the TP scales of

both questionnaires inter-correlated, however, correlations were also established between the scale of Orientation towards Past of the PTQ and the scales of Present Hedonistic and Present Fatalistic of the ZPTI. Those correlations may be due to the difference in conceptions of both inventories.

The research indicated that people oriented towards future were more inclined to plan their time and ignore the dividing line between work and leisure. Time planning was one of the aspects of orientation towards future (Zimbardo and Boyd, 1999, 2008), while the inclination not to distinguish between working and leisure time could be accounted for by the fact that future-oriented individuals tended to devote more time and effort to work and occasionally forget about leisure (Zimbardo and Boyd, 2008).

The established correlations between the Past Negative and the Present Fatalistic time perspectives with time anxiety essentially corresponded to outcomes of the former research (Zimbardo and Boyd, 1999). The correlations between these subscales with the mixing up of working and leisure time could be explained by the fact that the scale of mixing up the working and leisure time also included worrying about the disappearing line between the work and leisure areas.

However, it was more difficult to explain the links between the Past Positive TP with those two scales of the PTQ, as Positive Past related to a lower level of anxiety (Zimbardo and Boyd, 1999). Moreover, it was established that the phenomena that had positive links with Past Negative tended to have negative links with Past Positive (Zimbardo and Boyd, 1999). One could assume that Time Anxiety as

measured by PTQ reflected a slightly different aspect than the means of assessment by P. G. Zimbardo and J. N. Boyd (1999). One could not totally reject an assumption of the invalidity of the Time Anxiety scale in the PTQ. Problems were possible on the Past Positive subscale of the Lithuanian ZPTI version, as it did not correlate, as had been expected, with the Past Negative subscale, and also had a relatively lower score of Cronbach's alpha.

The Present Hedonistic TP correlated with Time Anxiety. One could assume that individuals living for today and seeking to get all pleasure or benefit at the present moment felt the pressure of time and worried about time flying past and pleasant moments going by, or possibly also about frightening future prospects. On the other hand, an assumption could be made that, in some cases, the Present Hedonistic TP could function as a mask or a defence mechanism that would hide other problems. And again, a possibility of invalidity of the Time Anxiety subscale in PTQ could not be totally rejected.

The obtained subscale interrelations were similar to those established in other countries (Milfont et al., 2008; Zimbardo and Boyd, 1999; Сырцова и др., 2007a), and they essentially complied with the conception of the TP structure of the authors of the instrument. It was interesting to note that scores of the Past Positive and Past Negative subscales did not inter-correlate; therefore, at least in our sample, a doubt arose whether they really measured the opposite aspects of the past as stated by the authors of the inventory (Zimbardo and Boyd, 1999).

After a repeated testing of the same respondents in a two weeks' time, high (0,735

to 0,932) and statistically significant correlations among the subscales were obtained. Similar values of the test-retest correlations were also obtained in the USA after a 4-week period (Zimbardo and Boyd, 1999). Therefore, we could state that the Lithuanian ZTPI version was characterized by the test-retest reliability.

Like in many other ZTPI adaptations, given the age and gender differences surfacing in intercultural research, an analysis of the obtained data with regard to gender and age was conducted. In the Lithuanian sample, on all the subscales except Past Negative, gender differences were established. However, in comparison with the American sample (Zimbardo and Boyd, 1999), opposite trends were identified: in the USA women while in Lithuania men were basically characterized by distinctly expressed Future and Past Positive TP. In Brazil (Milfont et al., 2008), the mean scores of men and women differed only on the Past Negative subscale, while in the Lithuanian case this was the only subscale which demonstrated no differences. The established discrepancies may be accounted for cultural differences, different social roles of males and females and their social significance in different cultures (Сырцова и др., 2007b). Moreover, it should be noted that in our research the age range was much wider than in the research of P. G. Zimbardo and J. N. Boyd (1999) or T. L. Milfont et al. (2008), which could also be a reason for discrepancies.

In the analysis of the ZTPI subscale scores with regard to age groups, the following trends were established that also surfaced in the research of other countries: on the subscales of Future and Present Fatalistic, senior respondents got higher scores than junior ones, while on

the Present Hedonistic subscale, on the contrary, the youngest respondents got the highest scores, whereas in senior groups the scores went down (Zimbardo and Boyd, 1999; D'Alessio et al., 2003; Diaz-Moralez, 2006; Сырцова и др., 2007b). Moreover, as established in our sample, with age, the Past Negative time perspective becomes increasingly more pronounced.

In terms of TP research prospects, we should think that, with research in the field expanding, some presently problematic or questionable questionnaire-related issues would be resolved. In the opinion of the authors of the Lithuanian ZTPI version, the most serious problem typical both of the Lithuanian version of the instrument and of adaptations in other countries was some not totally acceptable psychometric indicators. We would advise a revision of the ZTPI or at least of its Lithuanian version. A representative sample could be collected: in the present research, by its wide ranges of demographical characteristics, it was close to a representative one, but only to a certain degree. A representative sample could both contribute to the revision of measuring validity and reliability and to the establishing of norms. Another domain of the nearest research could be studies of practical application.

Thus, the present research has shown that the Lithuanian ZTPI version is a rather valid and reliable instrument of measuring time perspective and could be employed in the studies of the phenomenon.

## Conclusions

1. The Lithuanian ZTPI version has a clear 5-factor structure, the first factor representing the Future Time Perspective, the second the Past Negative, the third the Present Hedonistic, the fourth the Present Fatalistic, and the fifth the Past Positive TP.

2. The confirmatory factor analysis has demonstrated that the Lithuanian ZTPI Version shows of an acceptable goodness of fit indices, except for CFI and TLI (CFI = 0.666; TLI = 0.651), however, they did not essentially differ from the ZPTI versions adapted in other countries.

3. The questionnaire is characterized by its internal and external reliability. All the Cronbach's alpha values on the subscales exceeded 0.7, except for Past Positive. On the Past Positive subscale, the value of the Cronbach's alpha coefficient was 0.634.

4. The mean score differences between the genders were established on all subscales except Past Negative.

5. Mean score differences among different age groups were established on all subscales except Past Positive.

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## LIETUVIŠKOJI ZIMBARDO LAIKO PERSPEKTYVOS KLAUSIMYNO (ZTPI) VERSIJA

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### Santrauka

*Straipsnyje pristatoma Zimbardo laiko perspektyvos klausimyno (ZTPI) lietuviškoji versija ir jos psichometrinės charakteristikos. Atlikti keturi tyrimai (1529 dalyviai) siekiant įvertinti konstrukto bei konvergentinį validumą ir kitas psichometrines charakteristikas. Patvirtinančiosios faktorinės analizės metu gauti tokie tinkamumo indeksai:  $\chi^2$  kvadratas = 3262,546;  $df = 1474$ ;  $p < 0,001$ ;  $\chi^2$  kvardatas /  $df = 2,216$ ; RMSEA = 0,044; CFI = 0,666; TLI = 0,651, jie yra priimtini, išskyrus CFI ir TLI reikšmes.*

*Visos gautos subskalių Cronbacho alpha reikšmės viršijo 0,7, išskyrus pozityvios praeities subskalę. Pozityvios praeities subskalės Cronbacho alpha koeficiento reikšmė lygi 0,634. Atlikto tyrimo rezultatai rodo, kad lietuviška ZTPI versija pasižymi nors ir neidealiomis, bet priimtinais psichometrinėmis charakteristikomis ir esmingai nesiskiria nuo originalo ir kitose šalyse darytų adaptacijų.*

**Pagrindiniai žodžiai:** laiko perspektyva, ZTPI, lietuviška ZTPI versija.

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